CHYSIK PROJECT MANAGEMENT

SD – 027 – Mechanical Room & Water Entry

PROJECT NAME: ATRIUM APARTMENTS – 19945 Brydon Crescent, Langley	DATE: Monday, June 21, 2021

TO: SMITH&ANDERSEN, F.ADAB Arch	FROM: Chysik Project Management
ATTENTION: Luke Burton, Fred Adab,	CONTACT: Kaj Briscoe
PHONE:	PHONE: 604.760.2623
Email:	Email: kaj@chysikprojectmanagement.com

QUESTION OR CONCERN

SUBJECT: Mechanical Room Engineering Data

REQUIRED DATE OF RESPONSE: Friday, June 25th 2021.

Submittals:

Find Enclosed (as separate attachments due to size)

1. Operation and Maintenance Manuals https://chysikprojectmanagement-my.sharepoint.com/:b:/p/cpmcontacts/EVdayO9EjGREnZ2hY60osE4B5SXja9TBHtjXadLxFsgfeA?e=sGphfI

2. Shop Drawings Submission https://chysikprojectmanagement-my.sharepoint.com/:b:/p/cpmcontacts/EZuEMUWnKHBIhk7aPlgco1cByn32P75NAWVaqOne9_UURw?e=n05T3S

   P-SAN 01/02: SANITARY – 20 USGPM @ 40' TDH
   P-SAN 03/04: SANITARY – 50 USGPM @ 30' TDH
   P-STM: 01/02: STORM – 300 USGPM @ 30' TDH
   P-STM 03/04: STORM – 27 USGPM @ 30' TDH
   P-STM 05/06: STORM – 60 USGPM @ 30' TDH

3. Water Entry Room Valve Shops https://chysikprojectmanagement-my.sharepoint.com/:b:/p/cpmcontacts/ESYkO_oOHy5GlhJSo0FWTBoBe_9x2TEsI8VVpW1MtdWhHA?e=TWJL7W

4. Water Heater and Expansion Tanks Shops https://chysikprojectmanagement-my.sharepoint.com/:b:/p/cpmcontacts/ESb5Alrx475EkLNpW67RtBwBxlpXcQ_ubWQ1KOeJ2jdl_w?e=WESSbQ

Comments

SHOP DRAWING REVIEW
S+A Project No.

This review is for the sole purpose of ascertaining conformance with the general design concept and for general arrangement. This shall not mean approval of the detail design inherent in the shop drawings, responsibility for which shall remain with the Contractor and such review shall not relieve the Contractor of his responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site for information that pertains solely to fabrication processes, quantities or the techniques of construction and installation and for co-ordination with related work. This form is a record of transmittal to return the documents to the individual noted above.

REVIEWED BY: Ryan.ketler	DATE: 15/07/2021
SHOP DRAWING NO.:	SD - 027 - Plumbing - Mechanical Room and Water Entry Systems.pdf

☒ REVIEWED ☐ REVIEWED WITH COMMENTS ☐ RESUBMIT

2021.07.15
Ryan Ketler

June 8, 2021

EPSL File No: **21-0211**

THE ATRIUM
19945 BRYDON CRESCENT, LANGLEY
SHOP DRAWING SUBMISSION

engineered pump systems ltd.

1635 INDUSTRIAL AVENUE, PORT COQUITLAM, BC V3C 6M9

604-552-7900 | 1-800-668-4533 | www.engineeredpump.com

THE ATRIUM
19945 BRYDON CRESCENT, LANGLEY

Prepared For:

BA ROBINSON CO. LTD.
11897 – 103A Avenue
Surrey, BC
V3V 0B5

Attention: Sam Sidhu

Prepared By:

E.P. ENGINEERED PUMP SYSTEMS LTD.
1635 Industrial Avenue
Port Coquitlam, BC
V3C 6M9

Contact: Bruce Lawson
Toll Free: 1-800-668-4533
Fax: (604) 552-7901
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THE ATRIUM
19945 BRYDON CRESCENT, LANGLEY

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THE ATRIUM
19945 BRYDON CRESCENT, LANGLEY
P-SAN 01/02: SANITARY – 20 USGPM @ 40’ TDH
P-SAN 03/04: SANITARY – 50 USGPM @ 30’ TDH
P-STM 05/06: STORM – 60 USGPM @ 30’ TDH
EACH SYSTEM C/W THE FOLLOWING EQUIPMENT

IMPORTANT

NO PRODUCT WILL BE ORDERED NOR FABRICATION COMMENCE UNTIL RECEIPT OF YOUR APPROVAL OF THIS DRAWING

MYERS® WHR5H-WHR20HH

The Myers WHR5H-WHR20HH series vortex pumps are designed for use in light commercial sewage and effluent applications.

The series passes 2 inch solids and the WHR20HH pumps are available to deliver higher head conditions. Recessed impeller is standard allowing the pump to handle stringy waste without plugging the impeller.

SPECIFICATIONS

Shut-off Head – Up to 75' (22.9 m)
Solids Handling – 2" (50.8 mm)
Liquids Handling – Raw sewage and sewage effluent
Intermittent Liquid Temperature – Up to 140°F (60°C)
Motor/Electrical Data – 1/2 HP, 115V, 1Ø; 1/2, 1, 1-1/2 and 2 HP, 3450 RPM, 208/230V, 1Ø, 60 Hz, PSC; 208/230/460V/575v, 3Ø, 60Hz
Acceptable pH Range – 6-9
Discharge, NPT – Discharge, NPT – 2" (50.8 mm), Optional 3" (76.2 mm)
Housing – Cast iron
Power Cord – 20' (6.1 m), 16/3, SJOW/SJOW-A, 1Ø; ~~20' (6.1 m),~~ 16/4, SJOW/SJOW-A, 3Ø 50' (15.24m)
Impeller – Ductile iron, recessed
Volute Case – Cast iron
Shaft Seal – Type 21, carbon and ceramic
Minimum Sump Diameter – Simplex: 24" (610 mm); Duplex: 30" (762 mm)

FEATURES

Tough Against Corrosion
All cast iron construction resists the most extreme corrosive environments

Runs Cooler
Oil-filled motor for bearing lubrication and maximum heat dissipation

Flow to Meet Demand
Higher head performance for demanding sewage and effluent applications

Powerful Starts
High-torque, permanent split capacitor (PSC) motor; no starting switches or relays to wear out

Thermal Protection
Heat sensor overload protection with automatic reset when motor cools to a safe operating temperature

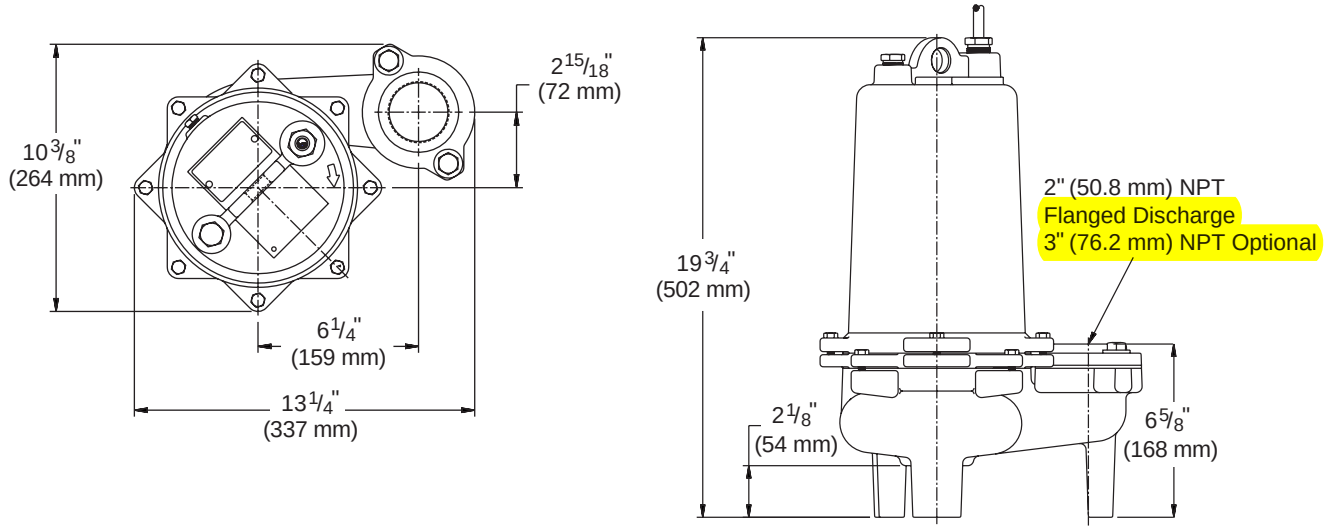
MYERS® WHR5H-WHR20HH

ORDERING INFORMATION

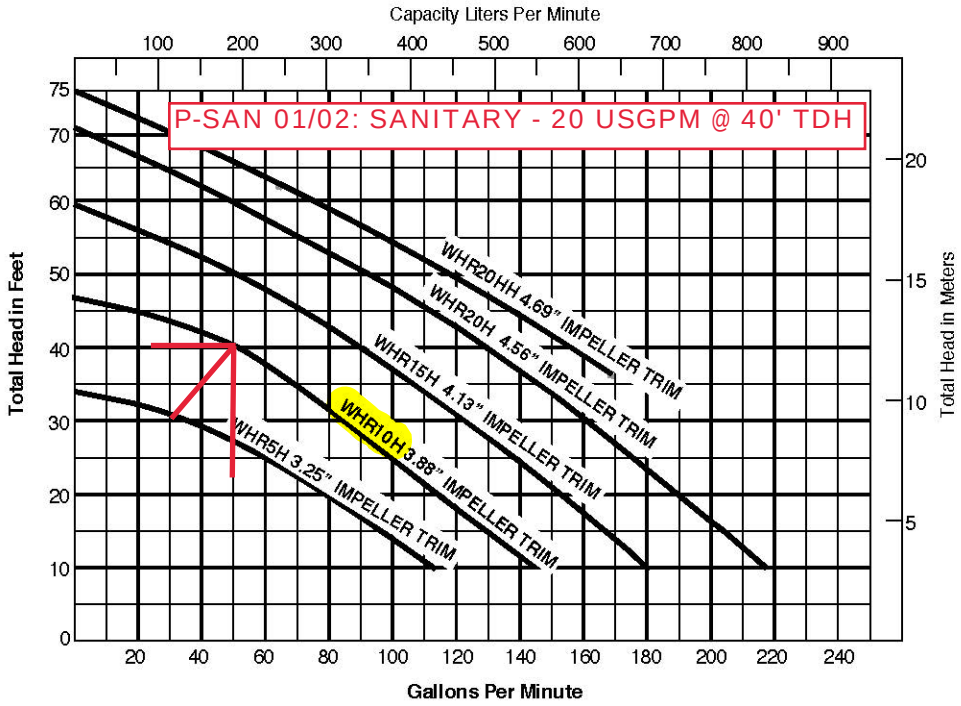
MODEL NUMBER	HP	VOLTS	PHASE/CYCLES	DISCHARGE SIZE	SWITCH TYPE	CORD LENGTH	WEIGHT LBS.
WHR5H-11	1/2 (0.37 kw)	115	1/60	2" (50.8 mm)	Manual	20' (6.1 m)	75 (34 kg)
WHR5H-01		208	1/60				
WHR5H-21		230	1/60				
WHR5H-03		208	3/60				
WHR5H-23		230	3/60				
WHR5H-43		460	3/60				
WHR5H-53		575	3/60				
WHR10H-01	1 (0.75 kw)	208	1/60	2" 3" (50.8 mm) (75mm)	Manual	20' 50' (6.1 m) (15.24m)	79 (35.8 kg)
WHR10H-21		230	1/60				
WHR10H-03		208	3/60				
WHR10H-23		230	3/60				
WHR10H-43		460	3/60				
WHR10H-53		575	3/60				
WHR15H-01	1-1/2 (1.1 kw)	208	1/60	2" (50.8 mm)	Manual	20' (6.1 m)	85 (38.6 kg)
WHR15H-21		230	1/60				
WHR15H-03		208	3/60				
WHR15H-23		230	3/60				
WHR15H-43		460	3/60				
WHR15H-53		575	3/60				
WHR20H-21	2 (1.5 kw)	230	1/60	2" (50.8 mm)	Manual	20' (6.1 m)	95 (43.1 kg)
WHR20H-03		208	3/60				
WHR20H-23		230	3/60				
WHR20H-43		460	3/60				
WHR20H-53		575	3/60				
WHR20HH-21	2 (1.5 kw)	230	1/60	2" (50.8 mm)	Manual	20' (6.1 m)	95 (43.1 kg)
WHR20HH-03		208	3/60				
WHR20HH-23		230	3/60				
WHR20HH-43		460	3/60				
WHR20HH-53		575	3/60				

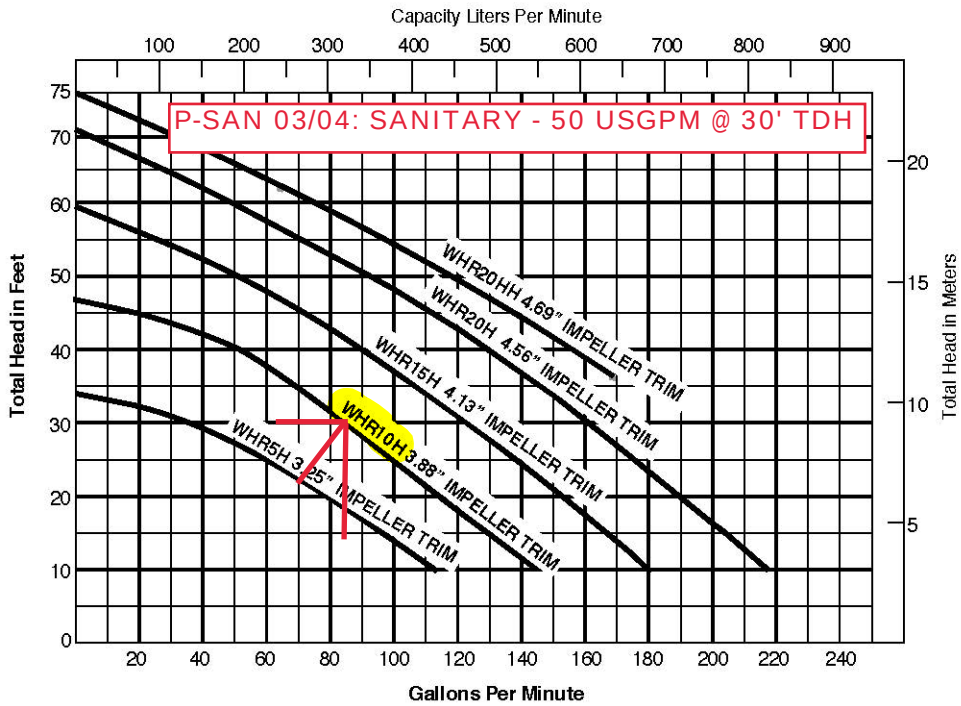
WHR20HH: Highest Head Series

DIMENSIONS

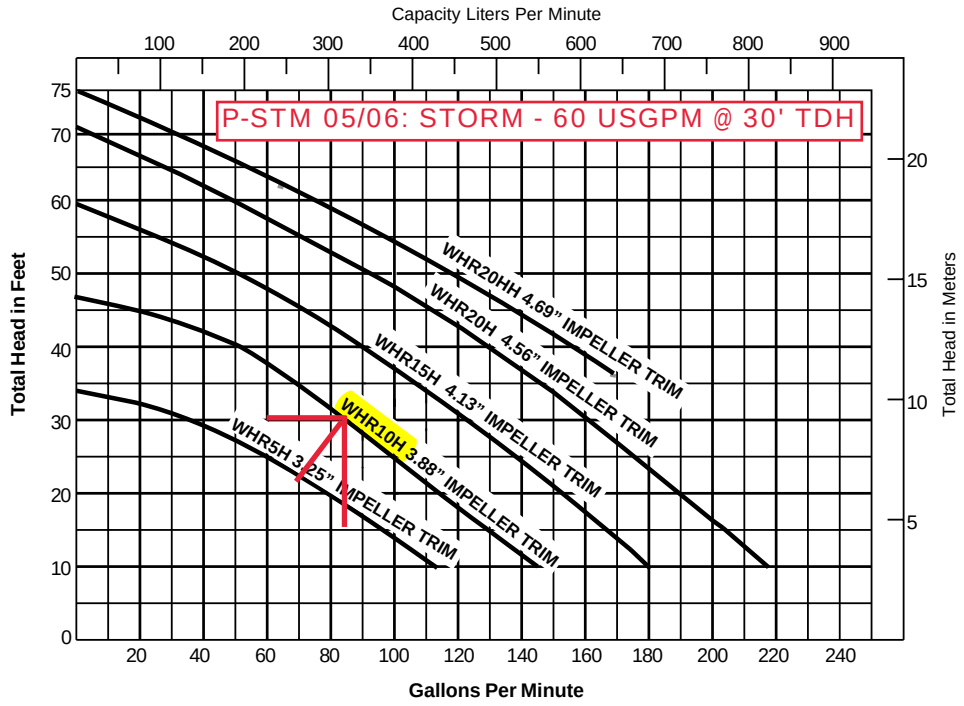


MYERS® WHR5H-WHR20HH





MYERS® WHR5H-WHR20HH



MOTOR ELECTRICAL DATA

MODEL NUMBER	HP	VOLTS	PHASE	HERTZ	START MAX AMPS	RUN AMPS	RUN KW	START KVA	NEC code KVA	LETTER
WHR5H-11	1/2	115	1	60	30.4	13.8	1.9	3.5	1.6	H
WHR5H-01	1/2	208	1	60	16.2	7.6	1.7	3.4	1.6	H
WHR5H-21	1/2	230	1	60	16.2	6.9	1.7	3.7	1.6	H
WHR5H-03	1/2	208	3	60	20.2	5.2	1.4	7.3	1.9	R
WHR5H-23	1/2	230	3	60	20.2	4.7	1.4	8.0	1.9	S
WHR5H-43	1/2	460	3	60	10.1	2.3	1.4	8.0	1.9	S
WHR5H-53	1/2	575	3	60	8.1	1.9	1.4	8.0	1.9	S
WHR10H-01	1	208	1	60	28.0	14.8	3.0	5.8	2.8	B
WHR10H-21	1	230	1	60	23.0	12.8	3.0	5.3	2.8	B
WHR10H-03	1	208	3	60	30.0	7.7	2.5	10.8	3.0	J
WHR10H-23	1	230	3	60	30.0	7.0	2.5	10.8	3.0	K
WHR10H-43	1	460	3	60	15.0	3.5	2.5	11.9	3.0	K
WHR10H-53	1	575	3	60	12.0	2.8	2.5	11.9	3.0	K
WHR15H-01	1-1/2	208	1	60	39.9	15.3	3.3	8.3	3.2	D
WHR15H-21	1-1/2	230	1	60	33.4	13.1	3.3	7.7	3.0	C
WHR15H-03	1-1/2	208	3	60	30.0	8.5	2.8	10.8	3.4	F
WHR15H-23	1-1/2	230	3	60	30.0	7.7	2.8	11.9	3.1	G
WHR15H-43	1-1/2	460	3	60	15.0	3.9	2.8	11.9	3.1	G
WHR15H-53	1-1/2	575	3	60	12.0	3.1	2.8	11.9	3.1	G
WHR20H-21	2	230	1	60	63.0	18.0	3.8	14.5	3.7	E
WHR20H-03	2	208	3	60	53.0	10.4	3.3	19.1	3.6	G
WHR20H-23	2	230	3	60	46.0	9.0	3.3	18.3	3.6	G
WHR20H-43	2	460	3	60	23.0	4.5	3.3	18.3	3.6	G
WHR20H-53	2	575	3	60	18.4	3.6	3.3	18.3	3.6	G
WHR20HH-21	2	230	1	60	63.0	18.0	3.8	14.5	3.7	E
WHR20HH-03	2	208	3	60	53.0	10.4	3.3	19.1	3.6	G
WHR20HH-23	2	230	3	60	46.0	9.0	3.3	18.3	3.6	G
WHR20HH-43	2	460	3	60	23.0	4.5	3.3	18.3	3.6	G
WHR20HH-53	2	575	3	60	18.4	3.6	3.3	18.3	3.6	G

MYERS® WHR5H-WHR20HH

SPECIFICATIONS

Sewage Pumps – Pump(s) shall be Myers WHR5H - WHR20HH series sewage pumps selected in accordance with the following design criteria:

	P-SAN 01/02: SANITARY	P-SAN 03/04: SANITARY	P-STM 05/06: STORM
Number of Pumps:	2	2	2
Primary Design Flow:	20 USGPM	50 USGPM	60 USGPM
Primary Design Head:	40' TDH	30' TDH	30' TDH
Minimum Shut-off Head:			
Motor Horsepower:	1 HP	1 HP	1 HP
Motor Speed:	3450 RPM	3450 RPM	3450 RPM
Electrical:	208/3/60	208/3/60	208/3/60

Pump – The pump shall be designed to handle raw sewage and be capable of passing 2 inch (50.8 mm) spherical solids. The pump shall be capable of handling liquids with temperatures to 140°F (60°C) intermittent and shall be capable of intermittently running dry without damage to the seals or bearings.

Motor – The pump motor shall be of the submersible type rated 1/2, 1, 1-1/2 or 2 hp as required. Motor shall operate at 3450 RPM and shall be for 115, 208 or 230 volts single phase, or 208, 230, 460, or 575 volts, 3 phase, 60 cycles. Single phase motors shall be of the permanent split capacitor type with no relays or starting switches. Three phase motors shall be squirrel cage induction type. Stator winding shall be of the open type with Class B insulation rated for 130°C maximum operating temperature. The winding housing will be filled with clean dielectric oil to lubricate bearings, seals, and transfer heat from the windings to the outer shell. The motor assembly shall be of the standard frame design and shall be secured in place by four threaded fasteners allowing for easy field serviceability.

The motor shall be capable of operating over the full range of the performance curve without overloading the motor and causing any objectionable noise or vibration. The common motor pump shaft shall be of 416 stainless steel and shall be heat shrunk into the die cast motor rotor. The motor shall have two bearings to support the rotor; an upper ball bearing to accommodate radial loads and a lower ball bearing to take thrust and radial loads. Ball bearings shall be designed for a B-10 life of 50,000 hours.

A heat sensor thermostat and overload shall be attached to the top end of the motor windings and shall be wired in series with the windings to stop the motor if the motor winding temperature reaches 266°F (130°C). The overload thermostat shall reset automatically when the motor cools to a safe operating temperature. Three phase motors shall be protected by 3 leg overload relay in control box. Overload shall be of the quick trip ambient compensated type and shall have manual reset button.

Power Cord – The motor power cord shall be SJOW/A for single phase and SOOW for three phase. The cable jacket shall be sealed at the motor entrance by means of a rubber compression washer and compression nut. A heat shrink tube filled with epoxy shall seal the outer cable jacket and the individual leads to prevent water from entering the motor housing.

Shaft Seal – The motor shall be protected by a rotating mechanical shaft seal. The seal shall have carbon and ceramic seal faces lapped to a tolerance of one light band. Metal parts and springs for seals shall be 300 series stainless steel.

Pump Impeller – The pump impeller shall be of the recessed vortex type. The impeller shall be constructed of ductile iron. The impeller shall be threaded onto the 416 stainless steel pump/motor shaft.

Pump and Motor Castings – All castings shall be of high tensile strength Class 30 gray cast iron. Castings shall be treated with phosphate rinse and painted with a high quality air dry alkyd enamel.

Fasteners – All exposed fasteners shall be of 300 series stainless steel.

PENTAIR

USA
293 WRIGHT STREET, DELAVAN, WI 53115 WWW.FEMEYERS.COM
PH: 888-987-8677 ORDERS FAX: 800-426-9446

CANADA
490 PINEBUSH ROAD, UNIT 4, CAMBRIDGE, ONTARIO, CANADA N1T 0A5
PH: 800-363-7867 ORDERS FAX: 888-606-5484

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Your Peace of Mind is Our Top Priority®

Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.

ZOELLER®
PUMP COMPANY
Zoeller Family of Water Solutions™

SECTION: 2.60.010
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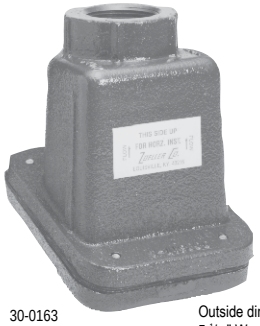
THE "FULL-FLOW" UNICHECKS

30-0163 1¼" CAST IRON NPT
30-0164 1½" CAST IRON NPT



30-0163
Pictured

Outside dimensions
5 1/16" W x 4" W x 6 ¼" H

POWDER COATED TOUGH™

- Vertical or horizontal installation
- Full-flow design, no restrictions
- Stops backflow of water
- Standard, 1¼", 1½", 2", 3" female NPT pipe
- Neoprene polyester reinforced flapper, smooth edge design with cast iron and noncorrosive metal backing plates & stainless steel fastener
- Corrosion-resistant powder coated epoxy finish
- Rated at 50 PSI (115 feet of head) at 130°F
- Stainless steel bolts
- 1 per carton
- Weight: 30-0163, 7.5 lbs.; 30-0164, 7.5 lbs.; 30-0152, 10 lbs.; 30-0160, 18 lbs.
- Suitable for installation below basin cover

30-0152 2" CAST IRON NPT
30-0160 3" CAST IRON NPT

30-0160
Pictured

Outside dimensions
6 5/8" W x 6 5/8" W x 8" H

30-0021 2" PLASTIC SLIP X SLIP UNIONS
30-0151 2" CAST IRON SLIP X SLIP UNIONS

- Full 2" flow design - meets BOCA (P.604.2) 2" full flow pump code
- Checks backflow of water and sewer gas
- Simple to install (no threading of pipe required). Save time & material costs
- Neoprene gasket and flapper, weighted with heavy stainless steel metal backing plates and rivet
- Can be installed on vertical or horizontal line
- Slips over PVC, steel pipe or copper piping
- Reduces motor and pump noise from plumbing system
- 6 per carton
- Flexible neoprene slip x slip union includes stainless steel clamps for low pressure systems. Avoid more than 10 ft. static head above the check valve. 4.3 PSI at 130°F
- Extra wide hinge to reduce hinge stress
- Plastic check has PVC body and can be installed with solvent welded couplings for pressure systems to 25 PSI, 57 ft. of head (P/N 30-0023)
- Model 30-0151 has corrosion-resistant powder coated epoxy finish.
- Plastic check individual rack pack Model 30-0022

Consult Factory or local representative for state approvals

30-0151
Cast Iron

30-0021
Pvc Plastic

30-0181 1¼" - 1½" SLIP X SLIP UNION
30-0200 1¼" - 1½" SLIP X SLIP UNION W/ SS SCREW & CLAMPS

- Flapper bends over a radius, no sharp 90° edges — lengthens life of flapper hinge
- PVC plastic check body, ultrasonically welded and can be solvent welded for rigid pressure rated piping systems to 25 PSI, 57 ft. of head at 130°F (30-0182)
- Slip x slip for 4.3 PSI, 10 ft. of head at 130°F. Avoid more than 10 ft. static head above the check valve.
- Vertical or horizontal installation
- Available in individual packages for pegboard display (30-0181)
- All stainless steel screws, nuts and clamps on model 30-0200 only
- Stainless steel clamps with zinc screws on model 30-0181 only
- Designed to reduce water hammer
- 10 per carton

30-0181
Pictured

30-0200
Pictured

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BALL VALVES

PVC BLOCKED TRUE UNION BALL VALVES

- Threads conform to ANSI/ASME B1.20.1
- Slip connections conform to ASTM D2466
- Working Temperature Range: 41°F to 122°F (5°C to 55°C)
- Max Pressure Rating: 150 PSI @ 73°F(22°C)

0924 Series 1/2" - 2" Threaded (FPT)

- Grey PVC body, suitable for both schedule 40 & 80 pipe
- Seal material: EPDM O-ring
- Seat material: PTFE
- Ends are blocked with bayonet style lock to prevent ball from being blown out
- Blue ABS handle is equipped with removable spanner device
- Shipped complete with both thread and slip interchangeable connections
- Double union/double block design permits in-line maintenance without disconnecting pipe

0925-NL Series 1/2" - 4" EPDM "O" Ring Seal
0926 Series 1/2" - 4" VITON "O" Ring Seal

- Seat material: PTFE
- Double union / double block design permits in-line maintenance without disconnecting pipe
- Ends are blocked with bayonet style lock to prevent ball from being blown out
- Blue (0925-NL) or Red (0926) ABS handle is equipped with removable spanner device
- NSF/ANSI Standard 61 & 372 Certified (0925-NL series only)
- Shipped complete with both thread and slip interchangeable connections

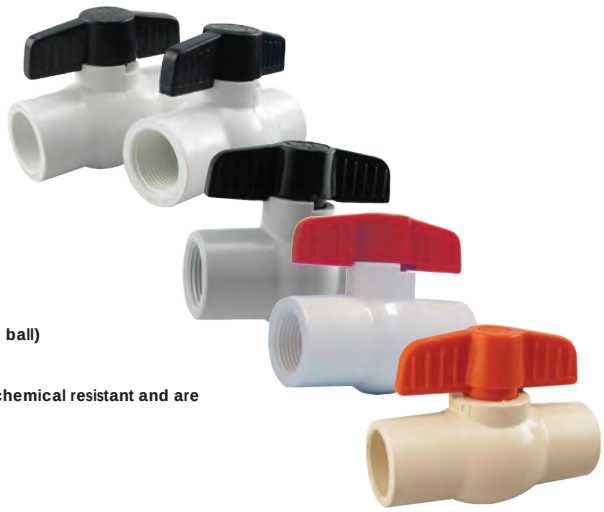
PVC SINGLE UNION BALL VALVES

0933 Series 1-1/2" - 2" Threaded (FPT)
0933S Series 1-1/2" - 2" Slip

- White PVC body, suitable for both schedule 40 & 80 pipe
- Seal material: EPDM O-ring
- Seat material: EPDM

MOLDED-IN-PLACE BALL VALVE

- Working Temperature Range 32°F to 122°F (0°C to 50°C)
- 150 PSI Working Pressure at 73°F (22°C)
- Suitable for both Schedule 40 and 80 PVC Pipe



0929 Series 1/2" - 4" Threaded (FPT)
0929S Series 1/2" - 4" Slip

- NSF/ANSI Standard 372 Certified

0921 Series 1/2" - 4" Threaded (FPT) NSF APPROVED 1/2" TO 2" ONLY
0921S Series 1/2" - 4" Slip NSF APPROVED 1/2" TO 2" ONLY
0923 Series 1/2" - 2" Threaded (FPT) NOT NSF APPROVED
0923S Series 1/2" - 2" Slip NOT NSF APPROVED

- Shock-resistant PVC body, ball and handle. **(2-1/2" - 4" have polypropylene ball)**
- NSF/ANSI Standard 61 & 372 Certified **(0921/0921S series only)**

NOTE: EPDM seats are recommended for most cold water system applications. PTFE seats are chlorine and chemical resistant and are recommended for most pool/spa applications.

CPVC HOT WATER SYSTEM BALL VALVES

0922CTS Series 1/2" - 2" Threaded (CTS x CTS)

- High heat resistance - Max. Service Temperature
  Continuous 32°F - 194°F (0°C - 90°C)
  Short hours 212°F (100°C)
- Test Pressure: 225 PSI
- Working Pressure: 150 PSI
- EPDM O-Ring
- PTFE (polytetrafluoroethylene) Seat
- CTS (Copper Tube size) Socket for CPVC pipe
- NSF/ANSI Standard 61 & 372 Certified

0929(S) SERIES PVC MOLDED-IN-PLACE BALL VALVES

Specification:

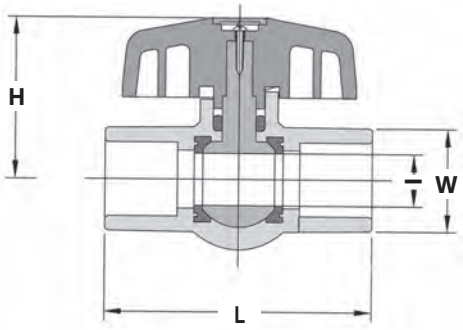
- Threads conform to ANSI/ASME B1.20.1
- Slip connections conform to ASTM D2466
- Working Temperature Range: 41°F to 122°F (5°C to 55°C)
- Max Pressure Rating: 150 PSI @ 73°F(22°C)
- White PVC body, suitable for both schedule 40 & 80 pipe
- Stem seal material: EPDM o-ring
- Seat material: EPDM
- Black ABS Handle

NO LEAD <0.25% Pb by weighted avg. | Third Party Certified to NSF / ANSI 372

Certification:

- NSF/ANSI Standard 372 Certified

MATERIAL LIST	
Name	**Material**
Screw	Steel
Cap	ABS
Handle	ABS
Ball	PVC
O-ring	EPDM
Body	PVC
Seat	EPDM



DIMENSIONS											
Part No. Threaded	Part No. Slip	Nominal Size	I		W		H		L		Weight
			inches	mm	inches	mm	inches	mm	inches	mm	grams
0929-05	0929S-05	1/2"	0.59	15.00	1.24	31.40	1.78	45.30	2.94	74.70	95
0929-07	0929S-07	3/4"	0.79	20.00	1.45	36.80	2.00	50.90	3.39	86.20	144
0929-10	0929S-10	1"	0.98	25.00	1.77	45.00	2.26	57.30	4.05	102.80	220
0929-12	0929S-12	1-1/4"	1.26	32.00	2.07	52.50	2.66	67.50	4.34	110.20	326
0929-15	0929S-15	1-1/2"	1.42	36.00	2.49	63.20	2.91	73.80	4.83	122.70	467
0929-20	0929S-20	2"	1.81	46.00	3.01	76.40	3.32	84.30	5.67	144.10	708
0929-25	0929S-25	2-1/2"	2.48	63.00	3.54	90.00	4.07	103.50	7.17	182.00	1120
0929-30	0929S-30	3"	3.15	80.00	4.25	107.90	4.47	113.50	9.25	235.00	2140
0929-40	0929S-40	4"	3.81	97.00	5.21	132.40	4.89	124.30	10.08	256.00	3030

Temperature Correction Factor for PVC Valves

As temperature increases, working pressure decreases. The optimal working pressure for PVC valves is 150 PSI @ 73°F (22°C)
If the temperature increases above 73°F (22°C), use the PVC correction factor to determine working pressure.
Multiply the maximum working pressure by the correction factor.

Temperature	73°F (22°C)	90°F (32°C)	100°F (38°C)	110°F (38°C)	120°F (49°C)	130°F (54°C)	140°F (60°C)
PVC Correction Factor	1.00	1.00	1.00	0.83	0.66	0.50	0.33

BOSHART INDUSTRIES
COMMITTED TO EXCELLENCE SINCE 1955

25 Whaley Avenue, PO Box 310, Milverton, ON CANADA N0K 1M0
Tel: 519-595-4444 Fax: 519-595-4380 Toll Free: 800-561-3164

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NWTC **36** YEARS IN SYSTEMS CONTROL DESIGN

LIQUID PROCESS & CONTROL SOLUTIONS FOR TOMORROWS TECHNOLOGIES

SIMPLEX AND DUPLEX PUMP CONTROLLER

An innovative Simplex / Duplex Pump Controller designed for:

Residential, Commercial, Municipal, and Industrial Sump and Sewage for Indoor and Outdoor Applications

"Over Thousands and Thousands Units Are Operating In Western Canada"

280 TO **600** VOLT - **THREE** PHASE FROM **½** TO **Unlimited** HP

3 or 4 Floats Operation

FEATURES:

- Modular Circuit Board PC 3000 / D
- Low Energy Output to Floats
- Automatic Alternations
- Hand-off Auto Switches
- LED Test / Alarm Silence / Systems Test Push Button
- Programmable Switch, Lead / Lag, or Alternate
- Motor RUN Indicator
- Power ON Indicator
- LED Float Level Indicators
- High Level Alarm (audible and visual)
- Low Level Protection
- High Peak Sonalert Alarm
- Remote Alarm (12 VDC output)
- Motor Contactor and Circuit Protector

Northwest Tech-Con System's model SCP and DCP panel are high quality simplex and duplex pump controller specially design for residential and commercial sump and sewage pump down applications. A low voltage control module is used to operate the starting, stopping and alternation of the pumps, with one pump operating to handle the normal flow. A second pump becomes operational in the event the water level continues to rise. A built-in alarm high level alarm in the control module will sound when the water level reaches a high level.

OPTION:

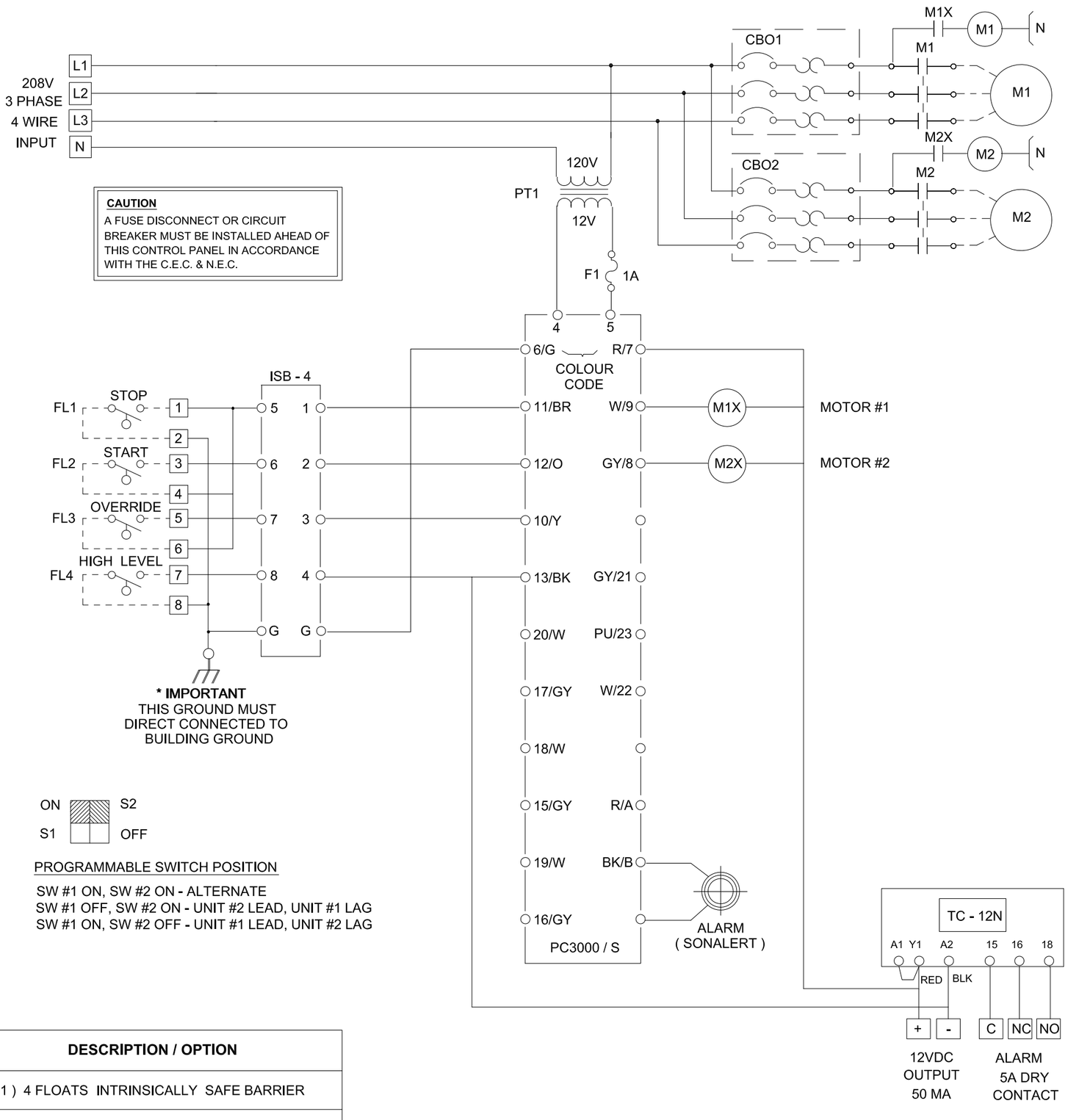
- 24 hour time clock (24HC)
- Battery backup HL alarm (BHA)
- Overload alarm (OLA)
- Dual input power (DP)
- Elapsed time (RTM)
- External panel top alarm light (STL)
- High motor temperature (HT)
- Intrinsic safe barrier (ISB)
- Low level alarm (redundant) (LLA)
- Panel heater c/w thermostat (CH)
- Panel main disconnect (MD)
- Phase monitor or surge arrester
- Pump seal fail alarm (SL)
- Pump start capacitor (LABOR ONLY)
- Remote annuciator (LOBBY-HWA12/L)
- TC-12N timer (TN)
- Vandal proof (for parkade) (VP)
- Communication by text message via internet
- Level Float (20"/30"/50")

REPERSENTATIVE:

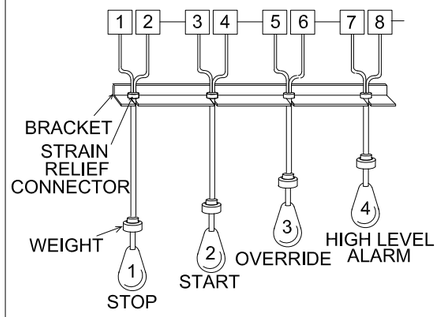
Engineered Pump Systems Ltd.
1635 Industrial Ave, Port Coquitlam, BC
V3C 6M9
Email: sales@engineeredpump.com
Phone: 604-552-7900

Unit 104 - 7450 Lowland Drive, Burnaby, British Columbia Canada V5J 5A4
Tel: (604) 439-1046 Fax: (604) 439-1079 Email: info@nwtc.ca Website: www.nwtc.ca

Intertek LISTED

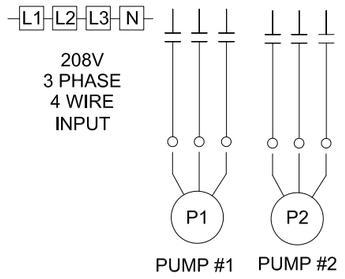


CONTROL CONNECTION



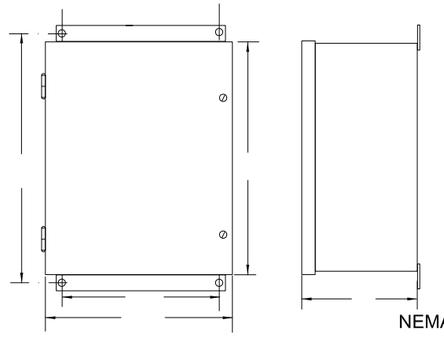
INPUT CONNECTION

PUMP POWER CONNECTION

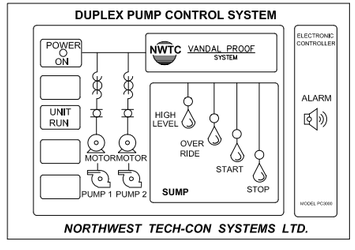


LEGEND :

ITEM	DESCRIPTION	PART NUMBER	MAKER
CBO1 - 2	CIRCUIT BREAKER OVERLOAD	MMA - 32	LG
M1 - 2	MOTOR CONTACTOR	GMC - XX	LG
PT1	TRANSFORMER 120 / 12	7450	NWTC
F1	FUSE RATE : 250V, 1 AMP	MDL - 1	BUSS
PC 3000	CONTROL MODULE	PC3000 / D	NWTC
ALM	REMOTE ALARM WITH TIMER	TC - 12N	NWTC
M1X, M2X	CONTROL AUX RELAY	G2R - 1 12VDC	OMRON
ISB - 4	INTRINSICALLY SAFE BARRIER	ISB - 4	NWTC
	VANDAL PROOF ENCLOSURE		



VIEW OF CONTROLLER FACE PLATE



DESCRIPTION / OPTION
(1) 4 FLOATS INTRINSICALLY SAFE BARRIER

CUSTOMER:
BA ROBINSON CO. LTD.

END USER:
THE ATRIUM

NORTHWEST TECH-CON SYSTEMS LTD.

NWTC

TEL: (604)439-1046 FAX: (604)439-1079

FUNCTION:
DCP 208 / IO
DUPLEX CONTROL PANEL

DESIGN: A. CHUNG

DATE: SEP., 2008

REF.FILE:

NUMBER: **50.7**

SJE MILLIAMPMASTER™ Control Switch

Mechanically-activated control switch designed to activate low current control panels and alarms.

This wide-angle or narrow-angle control switch offers reliable low current control for AC and DC applications in water, wastewater, and sewage. The internal switching mechanism has sealed gold cross-point contacts for reliable low current operation. Common applications include PLC (programmable logic controller) panels, IS panels with intrinsically safe barriers, low current solar applications, and other low current control panels and alarms applications.

The wide-angle version activates/deactivates approximately 4" (10.16 cm) above and below horizontal with a 3.5" (9 cm) tether. The narrow angle version activates/deactivates at approximately 1.5" (3.81 cm) above and below horizontal with a 3.5" (9 cm) tether. It is not sensitive to rotation.

Normally Open Model (high level)
The control switch turns on (closes) when the switch tips **above** horizontal signaling a high level, and turns off (opens) when the switch drops below horizontal.

Normally Closed Model (low level)
The control switch turns on (closes) when the switch drops **below** horizontal signaling a low level, and turns off (opens) when the switch tips above horizontal.

FEATURES

- Low current, non-arching applications down to 0.160 mA at 125 VAC.
- Mechanically-activated, snap action contacts.
- High impact, corrosion resistant polypropylene float housing.
- Not sensitive to rotation.
- Blue colored cap for easy identification of SJE MilliAmpMaster™ control switch.
- UL Listed for use in non-potable water and sewage.
- CSA Certified.
- Five-year limited warranty.

LR54245 LISTED 83N2

SPECIFICATIONS

CABLE: flexible 18 gauge, 2 conductor (UL,CSA) SJOW, water-resistant (CPE)

FLOAT: 2.74 inch diameter x 4.83 inch long (7.0 cm x 12.3 cm), high-impact, corrosion resistant, polypropylene housing for use in sewage and water up to 140°F (60°C)

MAXIMUM WATER DEPTH: 30 feet (9 meters), 13 PSI (90kPa)

ELECTRICAL:

125 VAC
Maximum Electrical Load: 1 amp
Minimum Electrical Load: 0.160 milliamps

30 VDC
Maximum Electrical Load: 0.1 amps
Minimum Electrical Load: 0.160 milliamps

5 VDC
Minimum Electrical Load: 1 milliamps

OPTIONS

This switch is available:

- for normally open (high level) applications or normally closed (low level) applications.
- with narrow or wide-angle pumping ranges.
- in standard cable lengths of ~~10, 15, 20, or 30 feet and 3, 5, 6, or 10~~ meters (longer lengths available). 50' (15.24m)
- with two mounting options that allow for flexibility in installation:

  Mounting Clamp: for applications where the switch can be attached to a discharge pipe or similar mounting device.

  Externally Weighted: for applications where the switch can be suspended from above.

California Prop 65 requires the following: ⚠ WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

SEE REVERSE SIDE FOR ORDERING INFORMATION.
SEE PRICE BOOK FOR LIST PRICE.

SJE RHOMBUS
1-888-DIAL-SJE • 1-218-847-1317
1-218-847-4617 Fax
email: customer.service@sjeinc.com
www.sjerhombus.com

SJE MILLIAMPMASTER™ Control Switch

Mechanically-activated control switch designed to activate low current control panels and alarms.

ORDERING INFORMATION

Narrow-Angle Versions

Normally Open		Normally Closed		Shipping Weight
Part #	Description	Part #	Description	
1018838	10MANPCNO	**1018839**	10MANPCNC	1.04 lbs.
1018840	10MANWENO	**1018841**	10MANWENC	2.16 lbs.
1018842	15MANPCNO	**1018843**	15MANPCNC	1.37 lbs.
1018844	15MANWENO	**1018845**	15MANWENC	2.45 lbs.
1018846	20MANPCNO	**1018847**	20MANPCNC	1.69 lbs.
1018848	20MANWENO	**1018849**	20MANWENC	2.70 lbs.
1018850	30MANPCNO	**1018851**	30MANPCNC	2.34 lbs.
1018852	~~30~~MANWENO	**1018853**	30MANWENC	3.43 lbs.

Wide-Angle Versions

Normally Open		Normally Closed		Shipping Weight
Part #	Description	Part #	Description	
1015725	10MAPCNO	**1016180**	10MAPCNC	1.04 lbs.
1016181	10MAWENO	**1016182**	10MAWENC	2.16 lbs.
1016184	15MAPCNO	**1016185**	15MAPCNC	1.37 lbs.
1016186	15MAWENO	**1016187**	15MAWENC	2.45 lbs.
1016211	20MAPCNO	**1016212**	20MAPCNC	1.69 lbs.
1016213	20MAWENO	**1016214**	20MAWENC	2.70 lbs.
1016215	30MAPCNO	**1016216**	30MAPCNC	2.34 lbs.
1016217	30MAWENO	**1016218**	30MAWENC	3.43 lbs.

PC = **P**ipe **C**lamp **WE** = **W**eighted **E**xternally **NO** = **N**ormally **O**pen **NC** = **N**ormally **C**losed
NOTE: Descriptions are grouped by cable length measured in feet (10, 15, 20, 30).
SEE PRICE BOOK FOR LIST PRICE.

OPTIONS

PACKAGING
Bagged - standard
Boxed - optional
Bulk - optional

ADDITIONAL CABLE
Longer cable lengths available. Please call for details.
50' (15.24m)

UL Listed for Water & Sewage

LISTED 83N2 LR54245

SSPMA MEMBER

SPECIFICATIONS

CABLE: flexible 18 gauge, 2 conductor (UL, CSA) SJOW, water-resistant (CPE) jacket

FLOAT: 2.74 inch diameter x 4.83 inch long (7.0 cm x 12.3 cm), high impact, corrosion resistant, polypropylene housing for use in sewage and water up to 140°F (60°C)

MAXIMUM WATER DEPTH: 30 feet (9 meters), 13 psi

ELECTRICAL:
125 VAC
Maximum Electrical Load:
1 amp
Minimum Electrical Load:
0.160 milliamps
30 VDC
Maximum Electrical Load:
0.1 amps
Minimum Electrical Load:
0.160 milliamps
5 VDC
Minimum Electrical Load:
1 milliamps

OTHER INFORMATION

NORMALLY OPEN (HIGH LEVEL) OPERATION
The control switch closes (turns on) when the float tips **above** horizontal signaling a high level, and opens (turns off) when the float drops **below** normal.

NORMALLY CLOSED (LOW LEVEL) OPERATION
The control switch closes (turns on) when the float drops **below** horizontal signaling a low level, and opens (turns off) when the float tips **above** horizontal.

Call or fax your order!
1-888-DIAL-SJE (1-888-342-5753) • Fax 218-847-4617

SJE RHOMBUS

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9500117E 10/18
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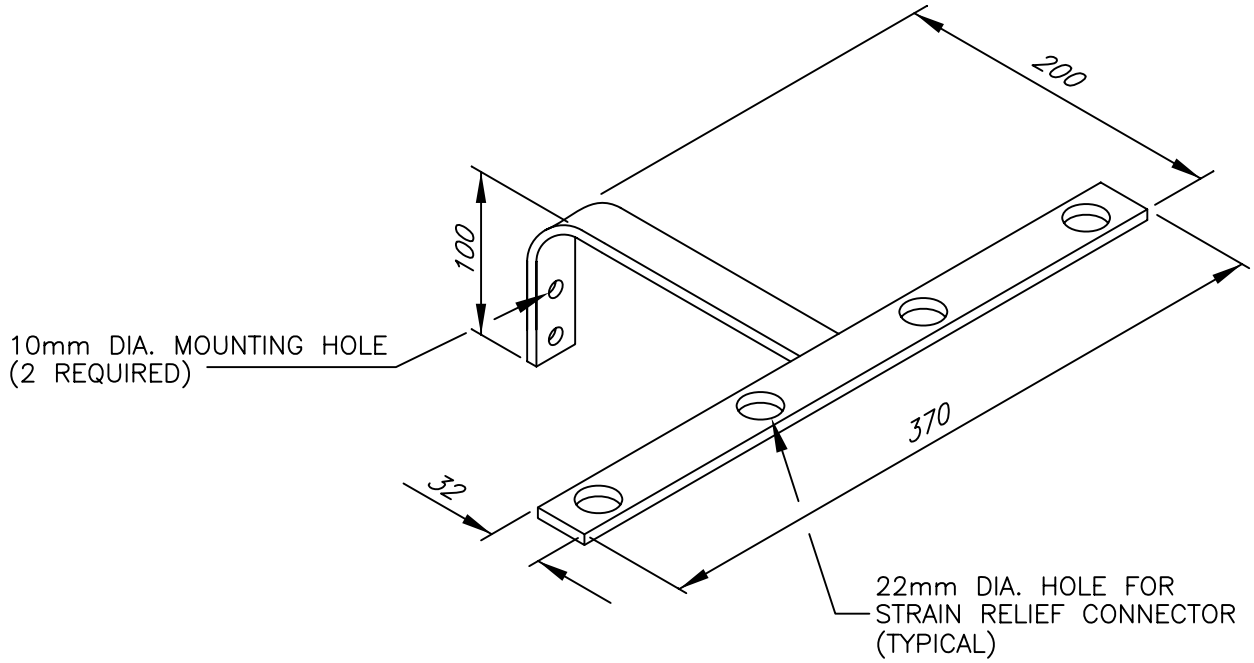
FOUR FLOAT BRACKET

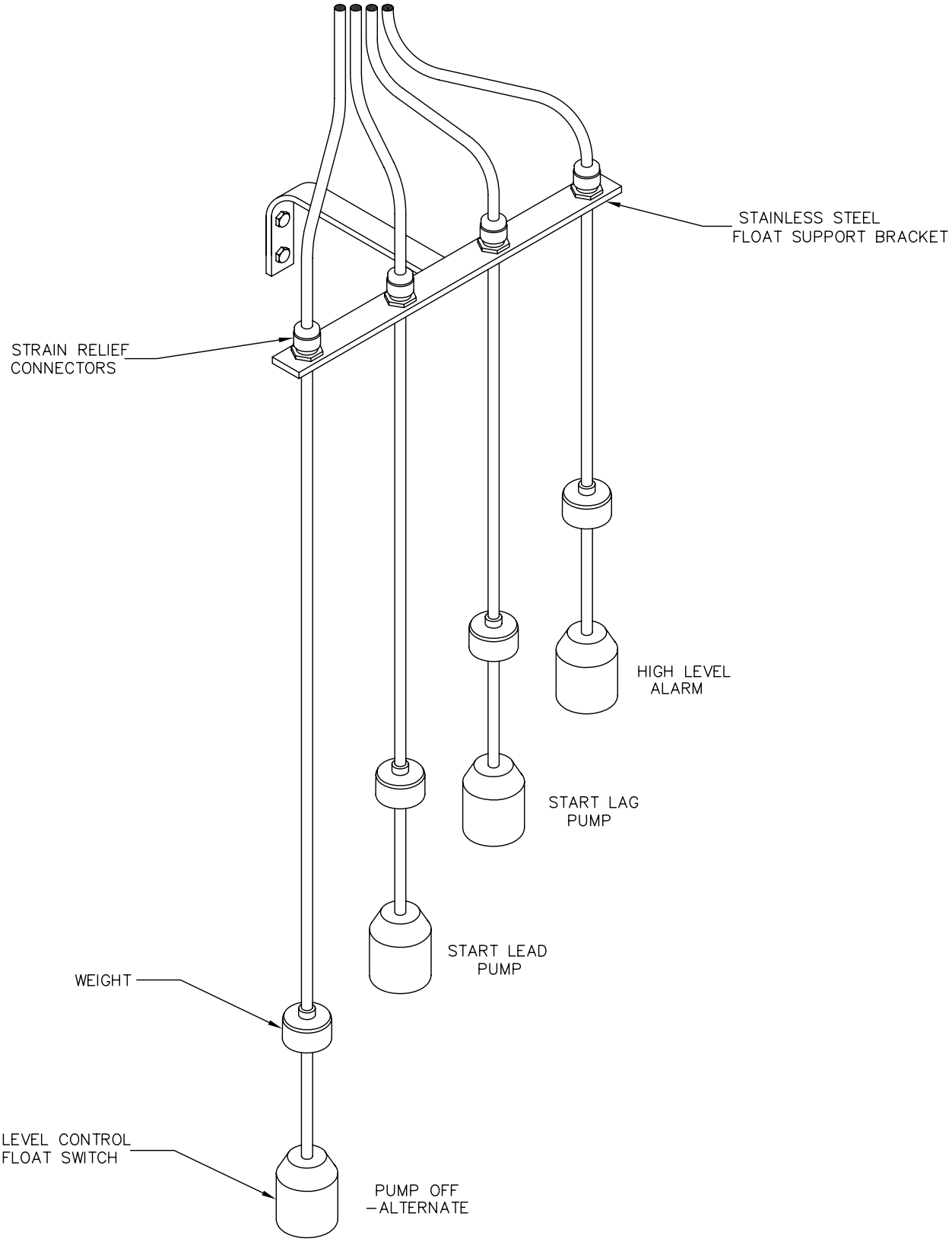


MATERIAL:
32mm X 4mm STAINLESS STEEL

ISSUE No	D/M/Y	DESCRIPTION	DR	CH	APP

SCALE: NTS	APPROVED BY:	DRAWN BY: JB
DATE: Sept/03		PROJECT:
FOUR FLOAT BRACKET		
engineered pump systems ltd.		DRAWING NUMBER: 4 Float Bracket

DUPLEX FLOAT CONTROL SYSTEM



ISSUE No	D M Y	DESCRIPTION	DR	CH	APP

SCALE: NTS	APPROVED BY:	DRAWN BY: JB
DATE: JUNE 16/95		PROJECT:
DUPLEX FLOAT CONTROL SYSTEM		
engineered pump systems ltd.		DRAWING NUMBER: FSB–4

THE ATRIUM
19945 BRYDON CRESCENT, LANGLEY
P-STM 01/02: STORM – 300 USGPM @ 30’ TDH

IMPORTANT

NO PRODUCT WILL BE ORDERED NOR FABRICATION COMMENCE UNTIL RECEIPT OF YOUR APPROVAL OF THIS DRAWING

PENTAIR

Shown with optional leg kit

MYERS®

MODELS 4V AND 4VX

SOLIDS HANDLING WASTEWATER PUMPS

STANDARD (4V) AND HAZARDOUS LOCATION (4VX) CONSTRUCTION

FM APPROVED

WWW.FEMYERS.COM

MYERS® MODELS 4V AND 4VX
Solids Handling Wastewater Pumps

The Right Choice

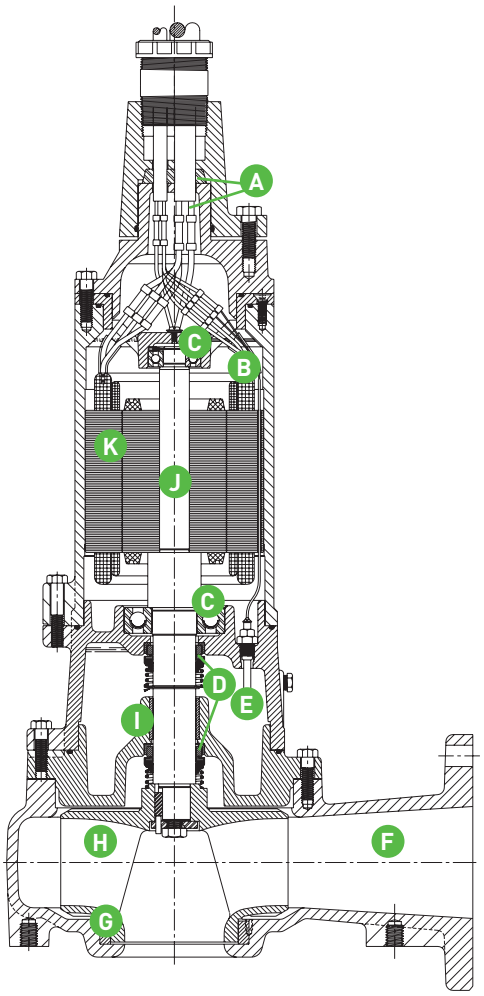
The 4V and 4VX (hazardous location) submersible wastewater pumps pass a full 3" spherical solid and are the ideal choice when selecting a pump for your next application. Myers® rounded port, 2-vane, enclosed impellers prevent solids from binding or clogging and offer high operating efficiencies to cut your pumping costs. The 4V series modified constant velocity volute case provides smooth operation over an extended portion of the performance curve for longer seal and bearing life. For use in municipal lift stations, treatment plants and industrial waste applications. Myers offers a complete line of wastewater pumps, lift-out rail assemblies, controls and accessories to meet your needs.

Product Capabilities		
Capacities To	715 gpm	45.1 lps
Heads To	59 ft.	17.9 m
Solids Handling (dia.)	3 in.	76 mm
Liquid Handling	raw unscreened sewage, effluent, storm water	
Intermittent Liquid Temp.	up to 140°F	up to 60°C
Winding Insulation Temp. (Class F)	311°F	155°C
Motor Electrical Data (Single phase motors are capacitor start type. Myers control panels or capacitor kits are required for proper operation and warranty.)	1750 RPM 3–5 HP, 230V, 1Ø, 60 Hz 3–10 HP, 208/230/460/575V 3Ø, 60 Hz 1150 RPM 1–2 HP, 208/230V, 1Ø, 60 Hz and 208/230/460/575V 3Ø, 60 Hz	
Std. Third Party Approvals Optional Approvals	CSA CSA & FM Class 1, Group D (4VX only)	
Acceptable pH Range	6 – 9	
Specific Gravity	.9 – 1.1	
Viscosity	28 – 35 SSU	
Discharge, Flanged Ceterline (Horizontal)	4 in. 125 lb. ANSI	101.6 mm

Construction Materials	
Motor Housing, Seal Housing, Cord Cap and Volute Case	cast iron, Class 30, ASTM A48
Enclosed 2-Vane Impeller	ductile iron, Class 65 ASTM A536
Power Cord	SOOW, W 50' (15.24m)
Control Cord	SOOW 50' (15.24m)
Mechanical Seals Standard Optional	double tandem, type 21 carbon and ceramic lower tungsten, carbide
Pump, Motor Shaft	416 SST
Fasteners	300 Series SST
Volute Wear Ring	brass

Note: Consult factory for applications outside these recommendations.

Pump Features and Applications



A. Cable Entry System

Provides double seal protection.
Cable jacket sealed by compression grommet.
Individual wires sealed by epoxy potting.

B. Heat Sensor on Motor Winding

Protect motor from burnout due to excessive heat from any overload condition. Automatically resets when motor has cooled.

C. Ball Bearings

Upper and lower ball bearings support shaft and rotor and take axial and radial loads.

D. Shaft Seals

Double tandem mechanical shaft seals protect motor. Oil-filled seal chamber provides continuous lubrication.

E. Seal Leak Probe

Detects water in seal housing. Activates warning light in control panel.
(Test resistor on FM listed models.)

F. Volute Case

Modified constant velocity volute handles 3" solids. 4" ANSI 125 lb. flange.

G. Brass Wear Ring

Prevents rust buildup and reduces leakage and wear. Replaceable to restore original running clearance and pump efficiencies.

H. High Efficiency Impeller

2-vane with rounded port. (Optional single vane.) Handles 3" solids. Pump-out vanes help keep trash from seal; reduce pressure at seal faces.

I. Sleeve Bearing

Takes radial shock load;
provides flame path.

J. Heavy 416 SST Shaft

Corrosion resistant.

K. Motor Stator

Press fit for optimal alignment and heat transfer. Oil-filled for continuous lubrication of bearings and seals.

High efficiency hydraulic design cuts pumping costs and extends life of fluid end components.

- Two-vane, rounded port, enclosed type impellers handle 3" solids with ease at high operating efficiencies.
- Modified constant velocity volute offers quiet operation, low radial loads over extended portion of performance curve.

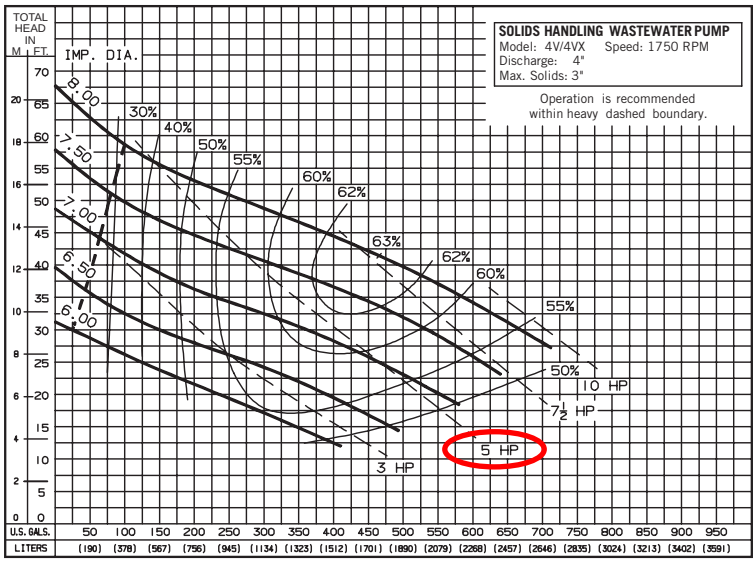
Durable motor will deliver many years of reliable service.

- Oil-filled motor for maximum heat dissipation and constant bearing lubrication.
- Heat sensor thermostats embedded in windings protect motor from overheat conditions.
- Seal leak probe in seal chamber warns of moisture entry; helps prevent costly motor burnout.
- Double tandem shaft seals prevent sewage from entering motor.
- Power and control cables are double sealed with epoxy and compression grommet.

Available With Optional CSA & FM Approval For Use In Class 1, Group D Hazardous Locations (4VX Only).

Performance Data

1750 RPM



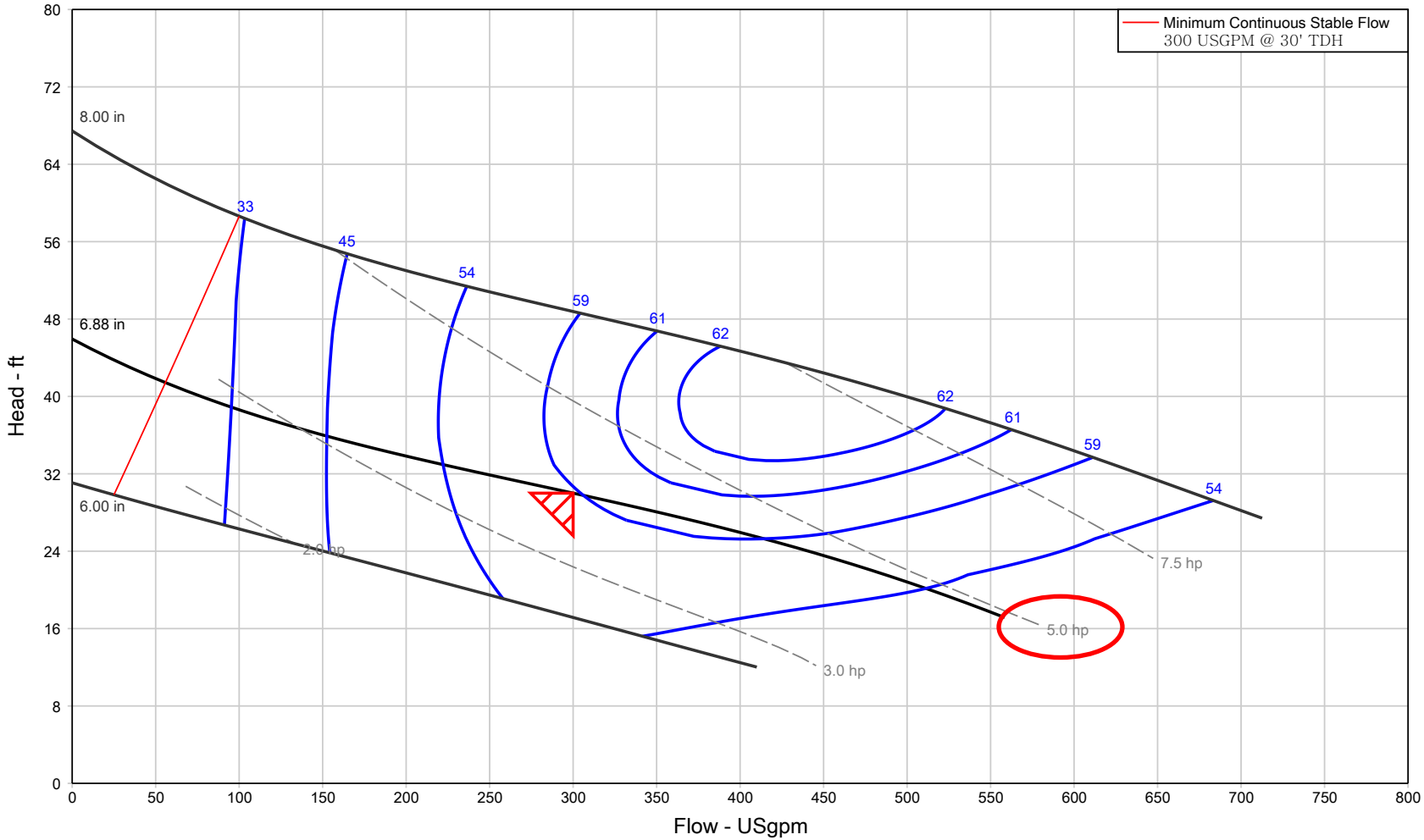
SEE PERFORMANCE CURVE NEXT PAGE

Available Models		Motor Electrical Data											
Standard	Hazardous Location	HP	Volts	Phase	Hertz	Start Amps	Full Load Amps	Service Factor Amps	Full Load kW	Start KVA	Full Load KVA	NEC Code Letter	Service Factor
4V30M4-21	4VX30M4-21	3	230	1	60	106	17.5	21	4.5	24.4	4.8	K	1.2
4V30M4-03	4VX30M4-03	3	208	3	60	86	15	18	5.0	30.9	5.4	M	1.2
4V30M4-23	4VX30M4-23	3	230	3	60	52	12	14.4	4.6	20.1	4.8	H	1.2
4V30M4-43	4VX30M4-43	3	460	3	60	26	6	7.2	4.5	20.1	4.8	H	1.2
4V30M4-53	4VX30M4-53	3	575	3	60	25	5	6	4.6	25.1	5.0	K	1.2
4V50M4-21	4VX50M4-21	5	230	1	60	153	34	41	6.7	35.2	7.8	H	1.2
4V50M4-03	4VX50M4-03	5	208	3	60	140	21.6	26	8.0	50.4	8.6	M	1.2
4V50M4-23	4VX50M4-23	5	230	3	60	125	18	21.6	7.6	49.7	8.4	L	1.2
4V50M4-43	4VX50M4-43	5	460	3	60	62	9	10.8	7.6	49.3	8.4	L	1.2
4V50M4-53	4VX50M4-53	5	575	3	60	45	7.2	8.6	7.6	44.8	8.4	K	1.2
4V75M4-03	4VX75M4-03	7.5	208	3	60	221	32.2	37	10.2	79.5	11.6	M	1.2
4V75M4-23	4VX75M4-23	7.5	230	3	60	164	28	32	9.7	65.3	11.1	K	1.2
4V75M4-43	4VX75M4-43	7.5	460	3	60	82	14	16	9.7	65.3	11.1	K	1.2
4V75M4-53	4VX75M4-53	7.5	575	3	60	75	11.2	13	7.6	74.6	11.1	L	1.2
4V100M4-03		10	208	3	60	221	37	37	12.7	79.5	13.9	J	1.0
4V100M4-23		10	230	3	60	164	32	32	12.0	65.3	13.0	H	1.0
4V100M4-43		10	460	3	60	82	16	16	12.0	65.3	13.0	H	1.0
4V100M4-53		10	575	3	60	75	13	13	11.7	74.6	13.7	J	1.0

Motor Efficiencies and Power Factor									
		Motor Efficiency %				Power Factor %			
HP	Phase	Service Factor Load	100% Load	75% Load	50% Load	Service Factor Load	100% Load	75% Load	50% Load
3	1	73	73	70	63	88	85	80	70
3	3	74	73.5	69.5	61.5	73	70.5	62.5	52
5	1	67.5	68	65	56	83	81	73	62.5
5	3	75	76	76	71	86	83	76	65
7.5	3	75	75	72.5	65	77	72	62	49.5
10	3	75	75	75	71	79	79	72	58

Pump Performance Curve

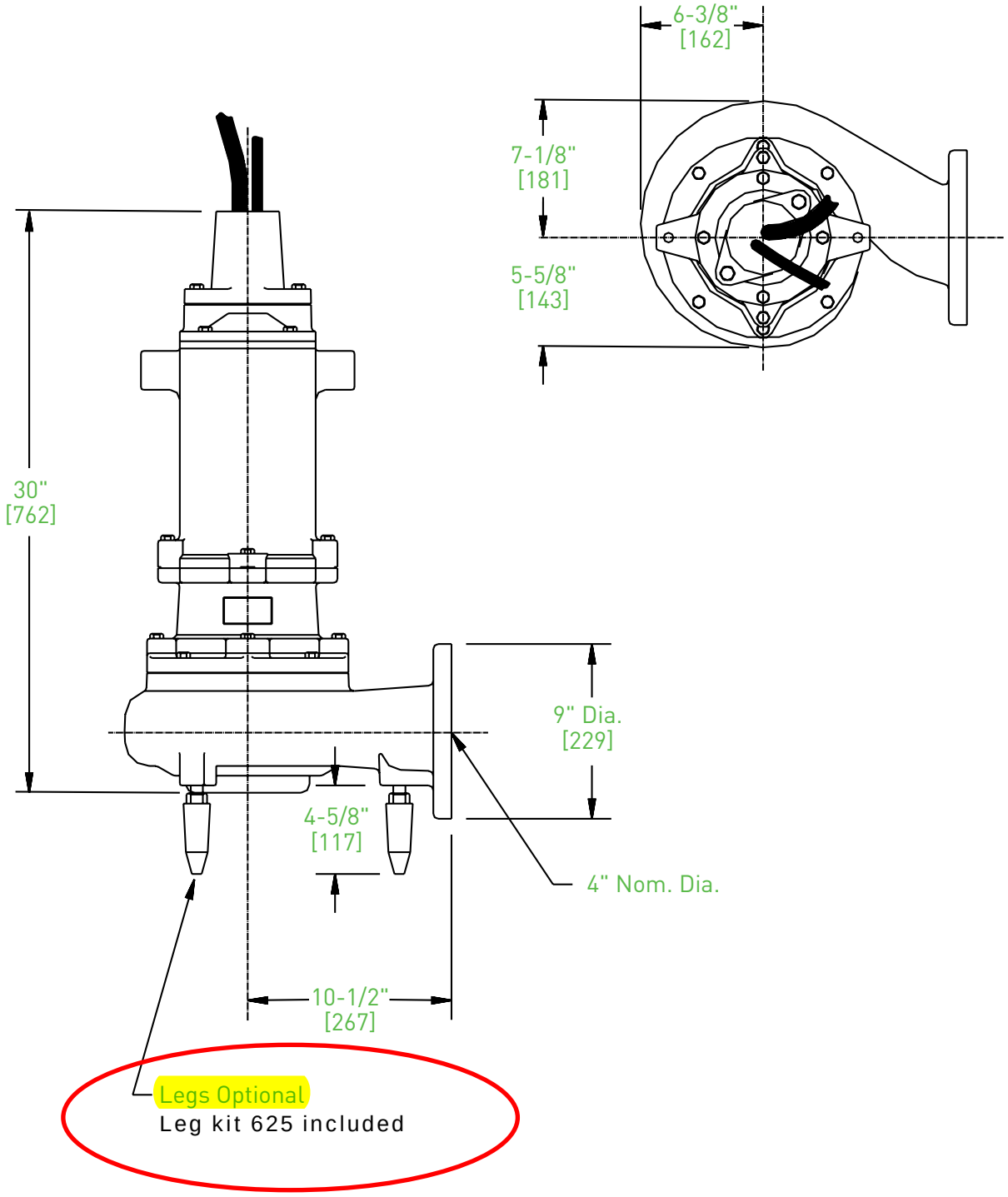
Encompass 2.0 - 21.1.4



Item number	: Default	Size	: Myers - 4V/4VX	Flow, rated	: 300.0 USgpm
Service	:	Stages	: 1	Differential head / pressure, rated	: 30.00 ft
Quantity	: 1	Speed, rated	: 1750 rpm	NPSH required	: -
Quote number	:	Based on curve number	: SUB_S_E_AH_00023_B_4 Rev 2012-03-23	Fluid density, rated / max	: 1.000 / 1.000 SG
Date last saved	: 08 Jun 2021 1:21 PM			Viscosity	: 1.00 cP
		Efficiency	: 58.81 %	Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
		Power, rated	: 3.86 hp		

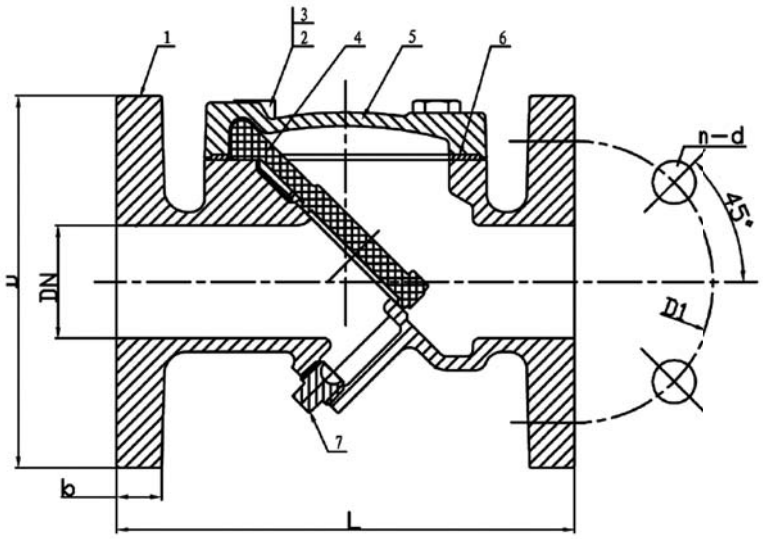
Dimensions

[Dimensions in inches, [ ] Dimensions in mm]



Rubber Disk Full Flow Pump Check Valve
W30-A-(EP/NP)FF-F
AWWA C 508

NSF/ANSI 61 NSF/ANSI 372



- Connection Ends: Flange to ASME B16.1 CL 125
- Meets Applicable AWWA C508 Standard
- Working Pressure: 300PSI
- Temperature Range: 0°C- 100°C
- Coating: Fusion Bonded Epoxy Coating in accordance with ANSI/AWWA C550 / 10 mil minimum
- Sizes: NPS 14 and over (B - 250PSI)

MATERIAL SPECIFICATION

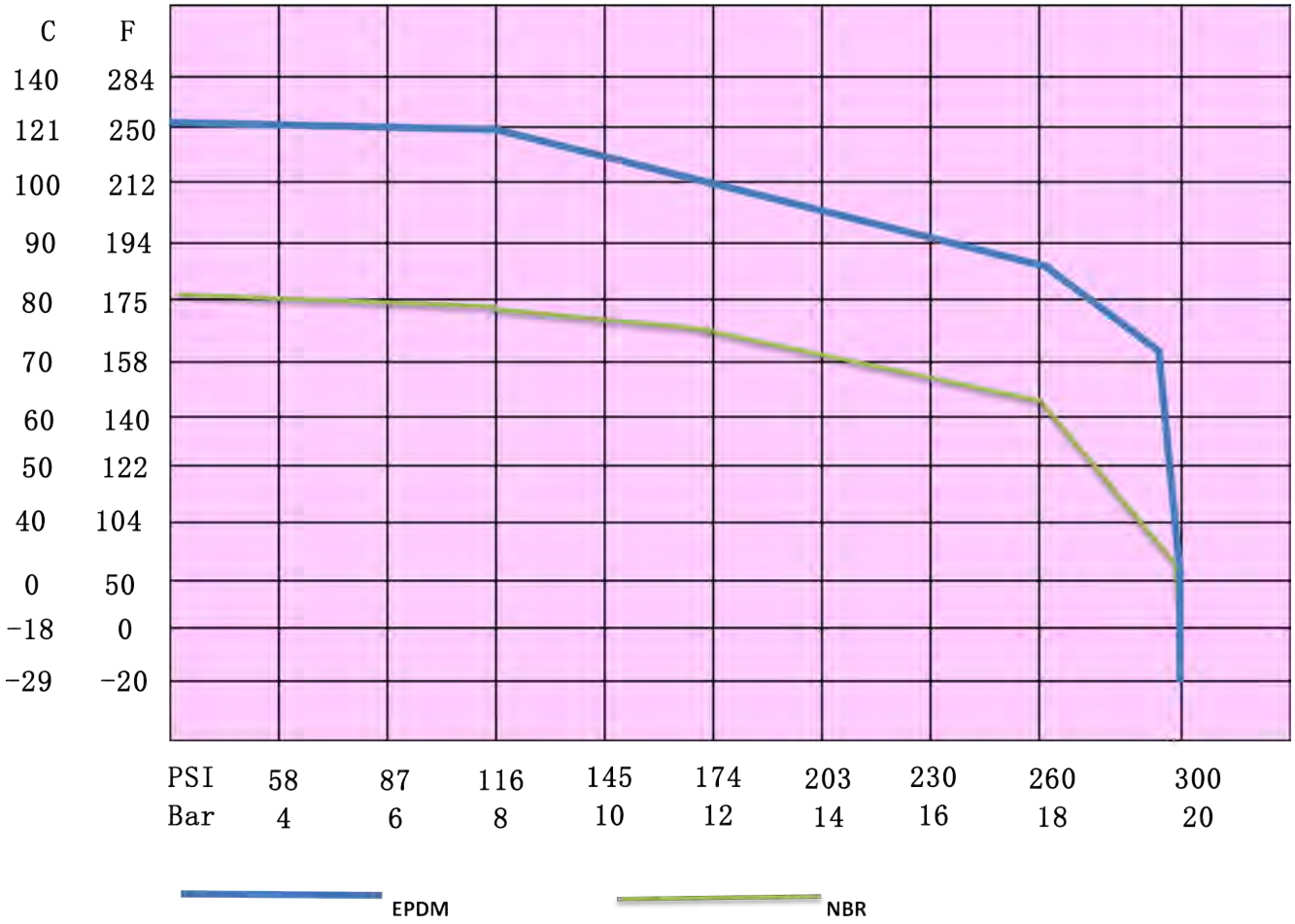
Part No.	Part	Standard Specification	Options
1	Valve Body	ASTM A536, 65-45-12	
2	Bolt	AISI 304	AISI 316
3	Washer	AISI 304	AISI 316
4	Disc	Carbon Steel + NBR	Carbon Steel + EPDM
5	Bonnet	ASTM A536, 65-45-12	
6	Bonnet Gasket	EPDM	
7	Plug	Bronze ASTM B584	

Note: For special material request other than standard specification, please indicate clearly on the inquiry or order list.

DN		Dimensions(mm)				
Inch	mm	L	D	D1	b	n-Φd
2"	50	203	152	120.5	16	4-Φ19.1
2.5"	65	216	178	139.5	17.5	4-Φ19.1
3"	80	241	191	152.5	19	4-Φ19.1
4"	100	292	229	190.5	24	8-Φ19.1
5"	125	330	254	216	24	8-Φ22.2
6"	150	356	279	241.5	25.5	8-Φ22.2
8"	200	495	343	298.5	28.5	8-Φ22.2
10"	250	622	406	362	30.5	12-Φ25.4
12"	300	698	483	432	32	12-Φ25.4

M. A. Stewart & Sons Ltd.
VALVES AND FITTINGS

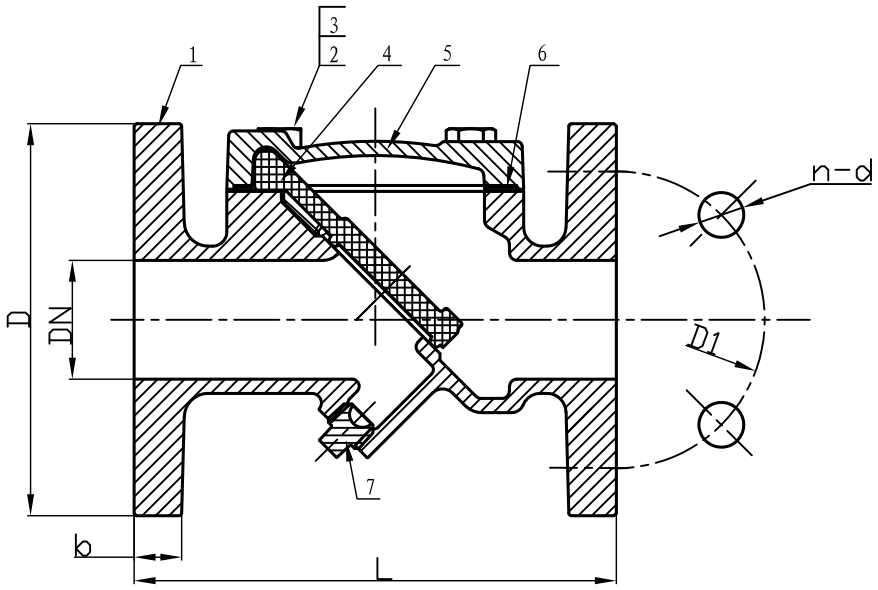
W Series Pressure / Temperature
EPDM & NBR Materials.



Note: Not recommended for steam service.

FM APPROVED c UL us LISTED NSF/ANSI 61 NSF/ANSI 372

RELEASE NO.



DN		PN (PSI)	L (mm)	D (mm)	D1 (mm)	b (mm)	n-d (mm)
in	mm						
2"	50	300	203	152	120.5	16	4-19.1
21/2"	65	300	216	178	139.5	17.5	4-19.1
3"	80	300	241	191	152.5	19	4-19.1
4"	100	300	292	229	190.5	24	8-19.1
5"	125	300	330	254	216	24	8-22.2
6"	150	300	356	279	241.5	25.5	8-22.2
8"	200	300	495	343	298.5	28.5	8-22.2
10"	250	300	622	406	362	30.5	12-25.4
12"	300	300	698	483	432	32	12-25.4

NOTES:
1.Flange specification:ASME B16.1 Class125;
2.Design standards AWWA C508;
3.Working Pressure: 300PSI;
4.Working temperature: NBR DISC,≤80℃.MAX:-12℃~82℃;
5.Testing Specification:API 598;
6.Coating:Fusion Bonded Epoxy Costing Complies with ANSI/AWWA C550/10 Mil Minimum;
7.Applications:Potable Water,Water Distribution Service & Feed lines, Sewage Disposal,Irrigation and Fire Protection Pipe System etc;
8.NSF61/372 .

Part No.	Part&size	MATERIAL
7	Plug	ASTM B584
6	Bonnet Gasket	NBR
5	Bonnet	ASTM A536,65-45-12
4	Disc	Carbon Steel and NBR
3	Washer	SS304
2	Bolt	SS304
1	Valve Body	ASTM A536,65-45-12

DATE	REVISION	BY	MATERIAL:	DRAWN BY Mu Jiyuan	DRAWING# W30-A-NP-FF-F	TITLE FIG# W30-A-NP-FF-F Rubber Swing Check Valve Flanged Joint Ends	
				CHECKED BY Ma Qingbo	APPROVED BY Zhang Yanqing		
			FINISH:	SCALE	ISSUE DATE 03-01-18		REV.0

SERIES 120

Eccentric Plug Valve

For over 120 years Homestead® has been building a reputation of dependability, reliability, safety and uncompromising quality.

120 YEARS of Dependability

HOMESTEAD®
WATER PRODUCTS

120 years of quality is built into every Homestead®

Dependable Valves for Water, Wastewater & HVAC Service

SERIES 120

FEATURES & BENEFITS

BODY: The Homestead eccentric body casting is in ASTM A126 Class B cast iron. Flange thickness, diameter and drilling fully conform to ANSI B16.1 Class 125. Alternative mechanical joint ends are available. A wide range of high quality epoxy coatings can be applied externally and internally to protect the casting integrity and assure long, trouble-free performance.

SEAT: Homestead's eccentric valve seat has been geometrically optimized for low torque operation and extended life. A welded seat of 95% minimum nickel content is incorporated to resist the effects of corrosion and erosion.

STEM SEAL: Homestead's fully adjustable seals assure stem sealing in even the most demanding applications.

BEARINGS: Permanently self lubricated radial bearings are utilized to assure long trouble-free operation.

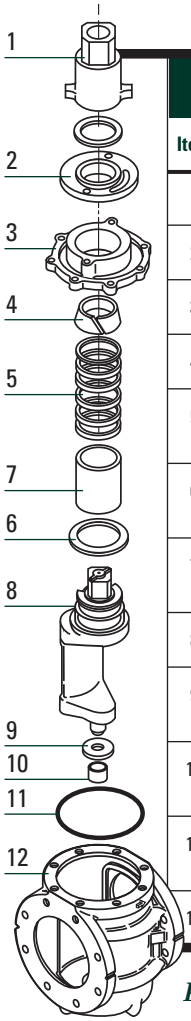
PLUG: Single piece plug/stem is designed for a quick lift camming motion to provide both low torque and reduced wear of the plug face elastomer. A wide range of plug elastomers are available to assure complete fluid compatibility.

BONNET: The high stresses associated with compression gasketing have been eliminated by incorporating high quality o-rings into our bonnet design.

FLOW: Valve ports have been enlarged and tapered to reduce pressure drop and provide enhanced handling of municipal sludges.

POSITION INDICATORS: Travel stops are integral for full travel indication in both directions. Intermediate positions are indicated in 10 degree increments. Positive indication is given on lever and gear operated valves.

- Designed and tested in accordance with AWWA-C517, latest revision
- Exclusive TRUE bi-directional design
- CAD Design
- Unequaled craftsmanship
- Advanced manufacturing procedures



MATERIALS OF CONSTRUCTION

Item	Component	Material	Specification
1	Stop Collar	Cast Iron	A126 Class B
2	Memory Plate	Cast Iron	A126 Class B
3	Bonnet	Cast Iron	A126 Class B
4	Brake Ring	Teflon®	PTFE
5	V-Ring Packing	Neoprene, Buna-N, EPDM	
6	Upper Thrust Washer	Teflon®	PTFE
7	Upper Radial Bearing	Permanently self lubricated	316SS
8	Plug	Cast Iron/Ductile Iron	A126 Class B
9	Lower Thrust Washer	Teflon®	PTFE
10	Lower Radial Bearing	Permanently self lubricated	316SS
11	O-Ring	Neoprene, Buna-N, EPDM	
12	Body	Cast Iron	A126 Class B

Plug Facing Materials

Standard: Neoprene, Buna-N, EPDM **Optional:** Viton

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Eccentric Plug Valve — The Eccentric of Choice.

Large diameter stem/actuator connection gives added strength for heavy slurry and automation applications.

Large diameter stem/plug is designed for superior (trouble-free) operation in throttling or other services experiencing line vibration.

Resilient coated plug resists corrosion and sustains a bubble-tight seal when activated against the welded nickel seat.

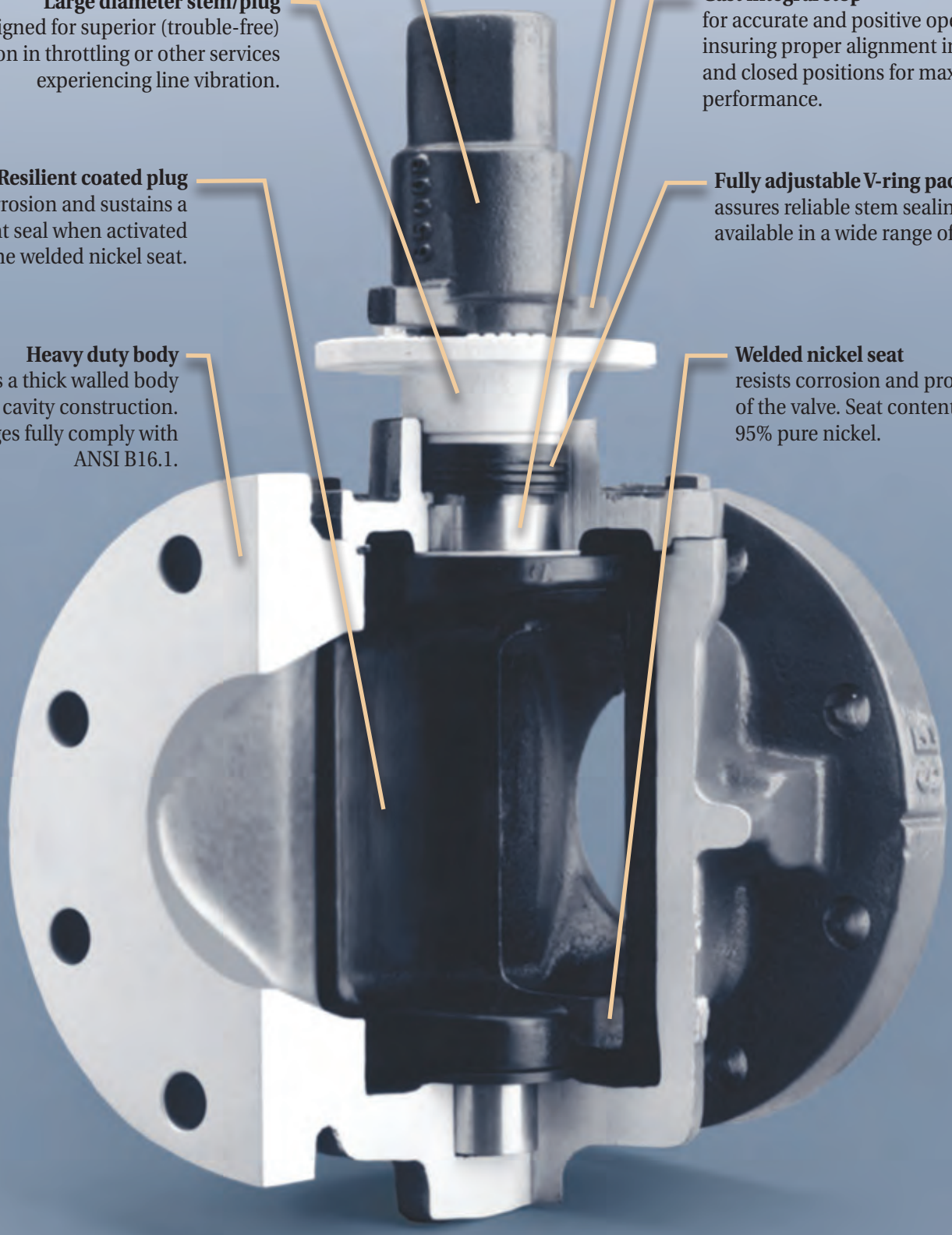
Heavy duty body features a thick walled body cavity construction. Flanges fully comply with ANSI B16.1.

Low friction corrosion-resistant shaft and thrust bearings create smooth lower torque operation and assure long trouble-free operation.

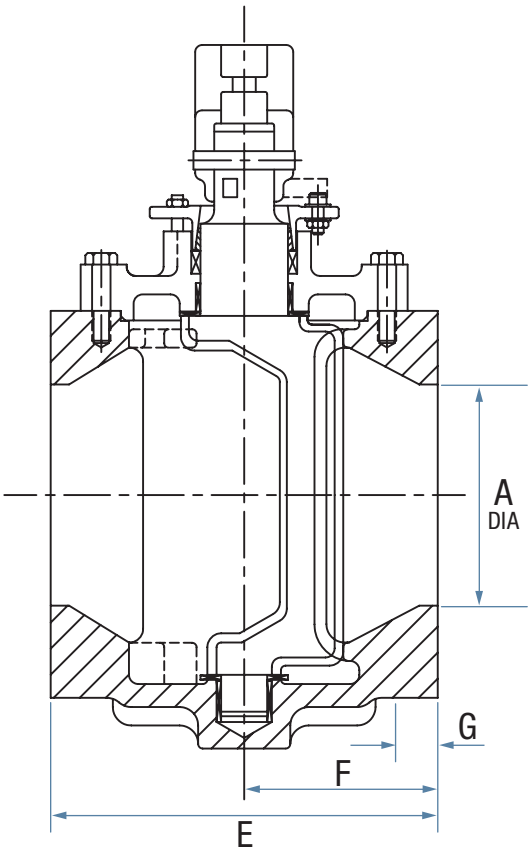
Cast integral stop for accurate and positive operation by insuring proper alignment in the open and closed positions for maximum performance.

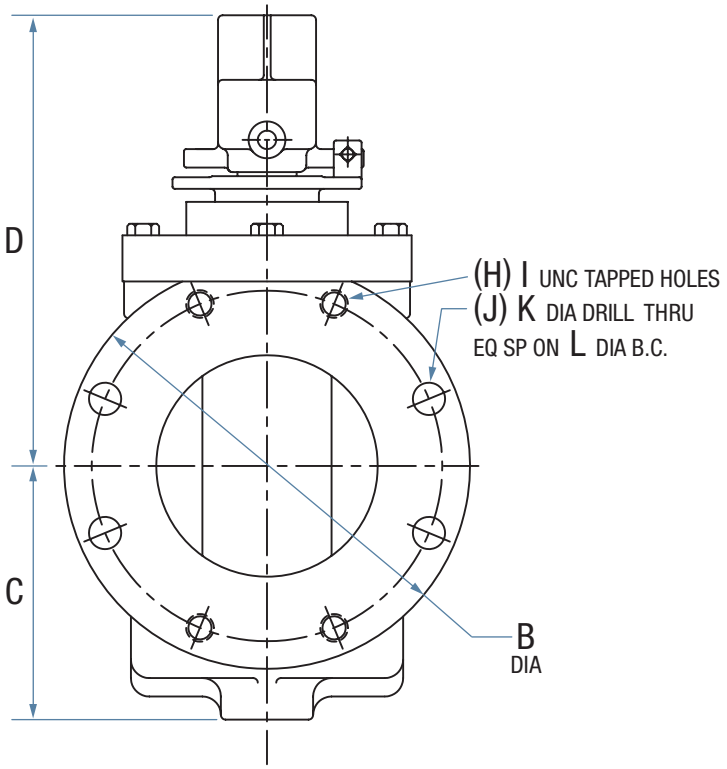
Fully adjustable V-ring packing assures reliable stem sealing and is available in a wide range of materials.

Welded nickel seat resists corrosion and prolongs life of the valve. Seat content is minium 95% pure nickel.



3"– 8" HAND OPERATED **FLANGED VALVE**



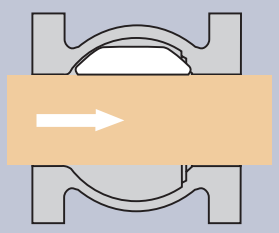


NOTE: Drawings are for illustrative purposes only.
Please request certified drawings for preparing layout and piping diagrams.

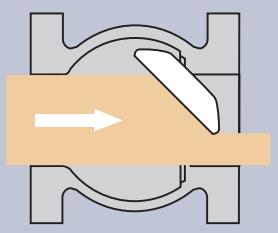
Dimensions (inches)

Size	A	B	C	D	E	F	G	H	I	J	K	L	Wt.
3	3.00	7.50	4.28	9.53	8.00	4.00	.75	–	–	4	.750	6.00	55
4	4.00	9.00	5.18	10.38	9.00	4.50	.94	–	–	8	.750	7.50	74
5	5.00	10.00	5.18	10.38	10.00	5.00	.94	–	–	8	.875	8.50	105
6	6.00	11.00	6.88	12.21	10.50	5.25	1.00	4	.75-10	4	.875	9.50	119
8	8.00	13.50	9.14	16.93	11.50	5.75	1.12	4	.75-10	4	.875	11.75	270

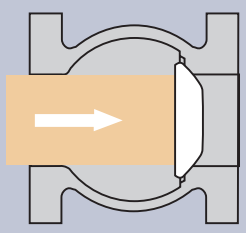
The Homestead Eccentric Operation



In the open position, the Homestead eccentric allows maximum straight-through flow thus minimizing pressure drop.



The Homestead eccentric plug opens and closes freely, without scraping the body walls, therefore there is no plug binding. Flow remains straight making this eccentric ideal for gases, liquids, and slurries.



Simple quarter-turn operation achieves positive shut-off in either direction. The long-lasting resilient plug remains in full contact with the eccentric raised seat. Pressure and flow assist in producing an even tighter seal when flow is in the direction shown above.

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SERIES 120

SERIES 120 ECCENTRIC PLUG VALVES

SUGGESTED SPECIFICATIONS

- Valve design shall conform to AWWA C517 – Latest revision.
- Bodies, bonnets and 3"-8" plugs shall be made from Gray Iron castings, ASTM A-126, Class B per AWWA C517, Section 4.4.1.5. Plugs 10" and larger shall be made from Ductile Iron castings, ASTM A-536 65-45-12 per AWWA C517-09, Section 4.4.3.1. Body wall thickness shall meet AWWA C517, Section 4.4.1.4.
- Plug elastomers shall be bonded in accordance with ASTM D429, method B per AWWA C517, Section 4.4.5.
- End flanges shall be integral with the valve body. Flange drilling and thickness shall conform to ANSI B16.1 (Cast Iron Pipe Flanges and Flanged Fittings) for pressure Class 125. Flanges shall be finished in accordance with MSS SP-6 (Finishes for Contact Faces of Connecting End Flanges of Ferrous Valves and Fittings).
- Mechanical joint ends shall conform to ANSI/AWWA C111/A21.11.
- Face-to-Face dimensions of flanged end valves shall conform to ANSI B16.10 up to and including 12" size.
- Valves shall be rated for 175 psi CWP for sizes 3" through 12"; 150 psi CWP for valves 14" through 72".
- Valves shall conform to MSS SP-108 (Resilient Seated-Eccentric Cast Iron Plug Valves)
- Port areas of valves 24" and smaller shall be not less than 80% of pipe area; valves 30" and larger shall be not less than 70% of pipe area.
- Upper and lower bearings shall be replaceable, permanently self lubricated.
- Welded seats shall be a minimum 1/8" thick 95% minimum nickel content.
- Stem seals shall be gland type multiple V-ring packing, field adjustable and replaceable without valve disassembly, conforming to AWWA C517, Section 4.4.7.

HOMESTEAD® WATER PRODUCTS

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120 YEARS of Dependability

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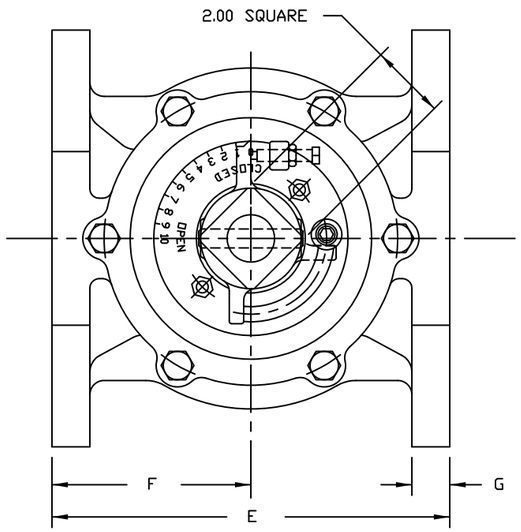
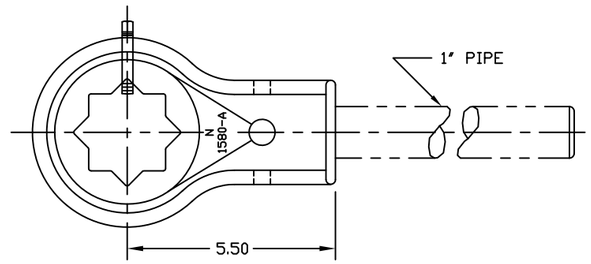


TABLE OF DIMENSIONS (INCHES)															
VALVE SIZE	NEOPRENE PART NO.	NITRILE PART NO.	EPDM PART NO.	A	B	C	D	E	F	G	H	I	J	K	L
3.00	1261870030	1262670030	1269770030	3.00	7.50	4.28	9.53	8.00	4.00	.75	–	–	4	.750	6.00
4.00	1261870040	1262670040	1269770040	4.00	9.00	5.18	10.38	9.00	4.50	.94	–	–	8	.750	7.50
5.00	1261870050	1262670050	1269770050	5.00	10.00	5.18	10.38	10.00	5.00	.94	–	–	8	.875	8.50
6.00	1261870060	1262670060	1269770060	6.00	11.00	6.88	12.21	10.50	5.25	1.00	4	.75–10	4	.875	9.50

△B

△C



"N" WRENCH SOLD SEPARATELY WITHOUT PIPE HANDLE

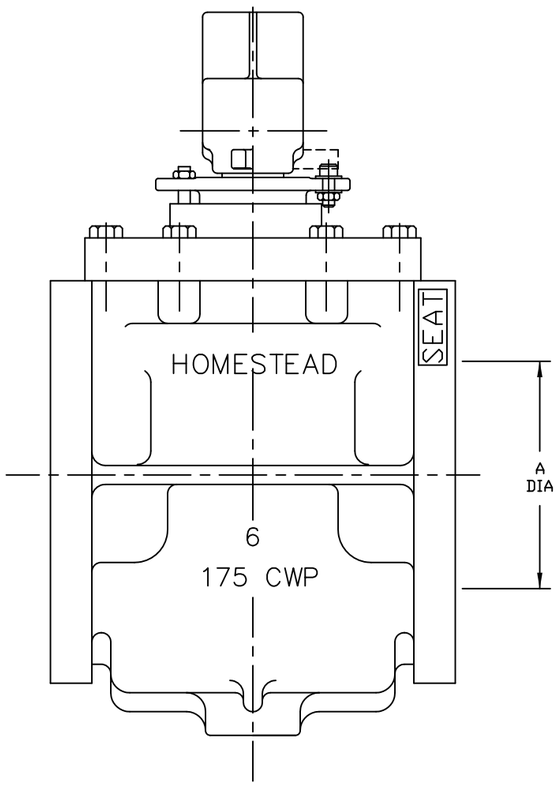
NOTES:

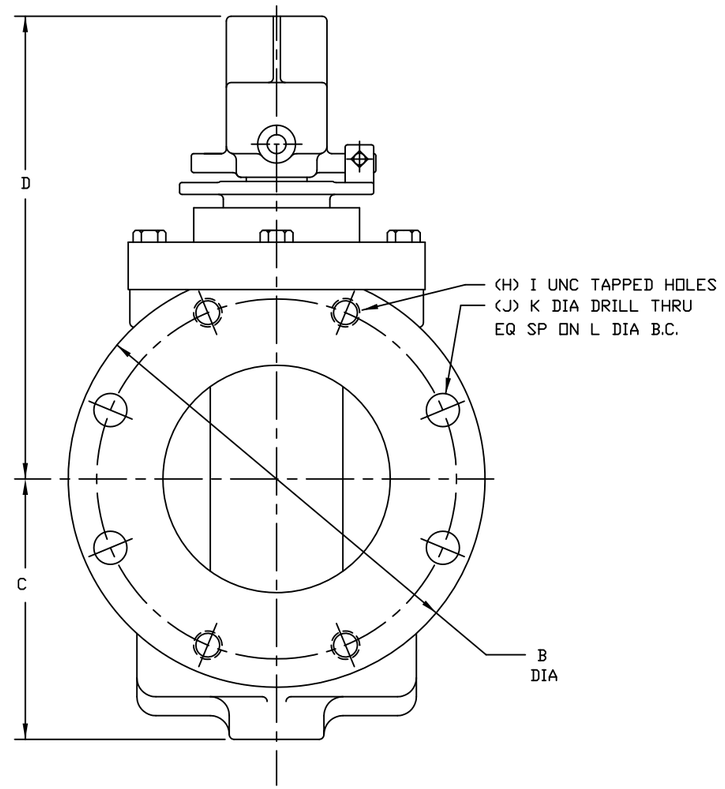
△D 1. VALVES ARE MANUFACTURED IN ACCORDANCE WITH ANSI/AWWA C517-09, "RESILIENT-SEATED CAST IRON ECCENTRIC PLUG VALVES."

2. END FLANGE DIMENSIONS AND DRILLING ARE IN ACCORDANCE WITH ASME/ANSI B16.1, CLASS 125, "CAST IRON PIPE FLANGES AND FLANGE FITTINGS."

△F 3. PAINT: BLUE – SEMI-GLOSS METAL PRIMER

4. ELASTOMERS AVAILABLE IN NITRILE, EPDM, NEOPRENE, VITON





NO.	PART NAME	MATERIAL
21	PIPE PLUG	A126 CLB
20	STOP BOLT	STEEL, ZINC PLATED
19	CAP SCREW	STEEL, ZINC PLATED
18	FLAT WASHER	STEEL, ZINC PLATED
17	JAM NUT	STEEL, ZINC PLATED
16	MEMORY BOLT	STEEL
15	PIN	STAINLESS STEEL
14	STOP COLLAR	A126 CLB
13	SEAL	SEE NOTE 4
12	BRAKE RING	POLYMER
△E 11	JAM NUT	STEEL, ZINC PLATED
10	STUD	STEEL, ZINC PLATED
9	MEMORY PLATE	A126 CLB
8	PACKING	V-RING/SEE NOTE 4
7	RADIAL BEARING	PERM. LUBRICATED 316SS
△F 6	THRUST BEARING	PTFE
5	THRUST BEARING	PTFE
4	RADIAL BEARING	PERM. LUBRICATED 316SS
3	COVER PLATE	A126 CLB
2	PLUG	A126 CLB/ SEE NOTE 4
1	BODY	A126 CLB/NICKEL SEAT

PARTS LIST

HOMESTEAD® VALVES
A DIVISION OF OLSON TECHNOLOGIES, INC.
160 WALNUT ST. ALLENTOWN, PA. 18102 (610) 770-1100

REV	ISSUE	BY	APPR	DATE
F	S1600	RH		9/10/14
E	S1421	RH	DED	5/10/12
D	S1122	RH	DED	5/18/09
C	S331	RH	DED	6/20/02

TITLE: 3"-6" ECCENTRIC PLUG VALVE w/ 2" SQ NUT

NUMBER: SK-4034

3x

NWTC **36** YEARS IN SYSTEMS CONTROL DESIGN

LIQUID PROCESS & CONTROL SOLUTIONS FOR TOMORROWS TECHNOLOGIES

SIMPLEX AND DUPLEX PUMP CONTROLLER

An innovative Simplex / Duplex Pump Controller designed for:

Residential, Commercial, Municipal, and Industrial Sump and Sewage for Indoor and Outdoor Applications

"Over Thousands and Thousands Units Are Operating In Western Canada"

280 TO **600** VOLT - **THREE** PHASE FROM **½** TO **Unlimited** HP

3 or 4 Floats Operation

FEATURES:

- Modular Circuit Board PC 3000 / D
- Low Energy Output to Floats
- Automatic Alternations
- Hand-off Auto Switches
- LED Test / Alarm Silence / Systems Test Push Button
- Programmable Switch, Lead / Lag, or Alternate
- Motor RUN Indicator
- Power ON Indicator
- LED Float Level Indicators
- High Level Alarm (audible and visual)
- Low Level Protection
- High Peak Sonalert Alarm
- Remote Alarm (12 VDC output)
- Motor Contactor and Circuit Protector

Northwest Tech-Con System's model SCP and DCP panel are high quality simplex and duplex pump controller specially design for residential and commercial sump and sewage pump down applications. A low voltage control module is used to operate the starting, stopping and alternation of the pumps, with one pump operating to handle the normal flow. A second pump becomes operational in the event the water level continues to rise. A built-in alarm high level alarm in the control module will sound when the water level reaches a high level.

OPTION:

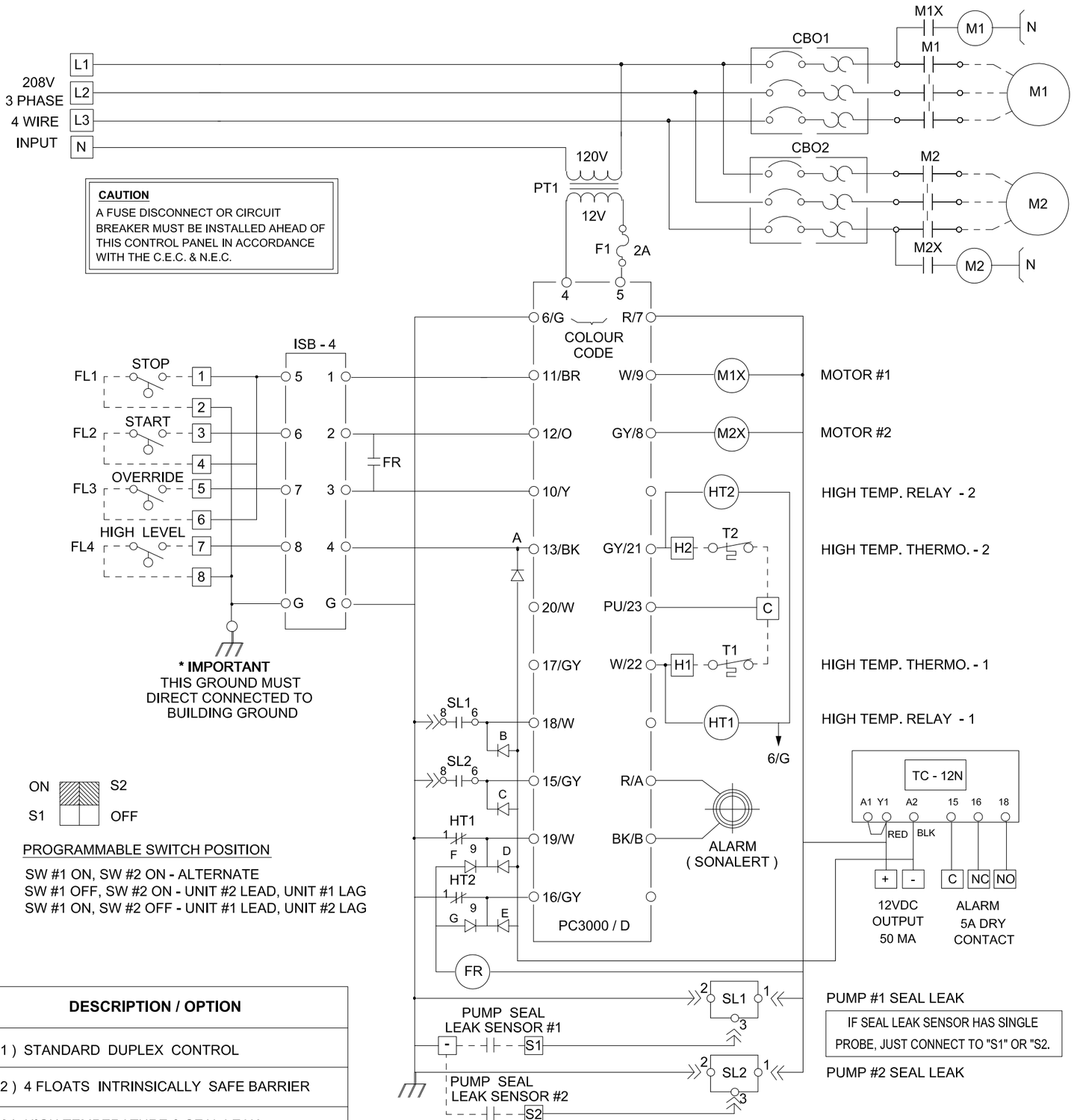
- 24 hour time clock (24HC)
- Battery backup HL alarm (BHA)
- Overload alarm (OLA)
- Dual input power (DP)
- Elapsed time (RTM)
- External panel top alarm light (STL)
- High motor temperature (HT)
- Intrinsic safe barrier (ISB)
- Low level alarm (redundant) (LLA)
- Panel heater c/w thermostat (CH)
- Panel main disconnect (MD)
- Phase monitor or surge arrester
- Pump seal fail alarm (SL)
- Pump start capacitor (LABOR ONLY)
- Remote annuciator (LOBBY-HWA12/L)
- TC-12N timer (TN)
- Vandal proof (for parkade) (VP)
- Communication by text message via internet
- Level Float (20"/30"/50")

REPERSENTATIVE:

Engineered Pump Systems Ltd.
1635 Industrial Ave, Port Coquitlam, BC
V3C 6M9
Email: sales@engineeredpump.com
Phone: 604-552-7900

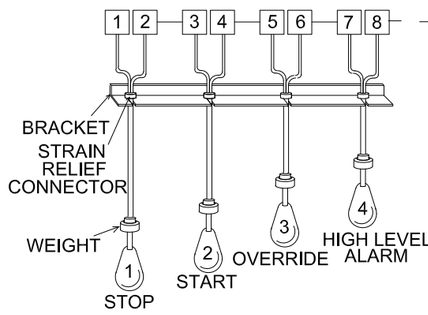
Unit 104 - 7450 Lowland Drive, Burnaby, British Columbia Canada V5J 5A4
Tel: (604) 439-1046 Fax: (604) 439-1079 Email: info@nwtc.ca Website: www.nwtc.ca

Intertek LISTED

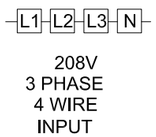


DESCRIPTION / OPTION
(1) STANDARD DUPLEX CONTROL
(2) 4 FLOATS INTRINSICALLY SAFE BARRIER
(3) HIGH TEMPERATURE & SEAL LEAK

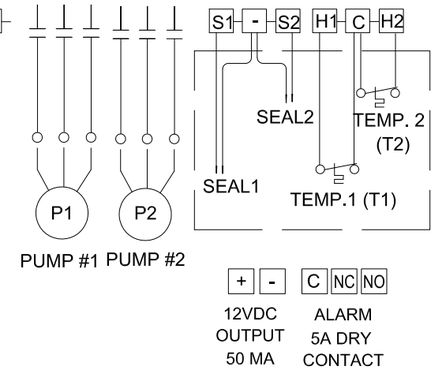
CONTROL CONNECTION



POWER CONNECTION

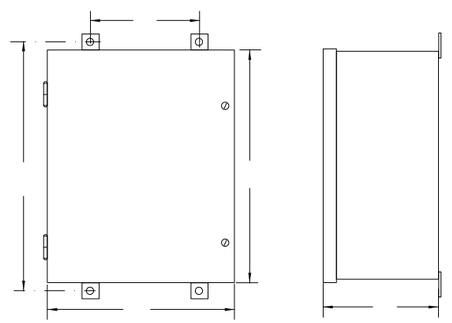


SEAL LEAK & TEMP. THERMO. CONNECTION



LEGEND :

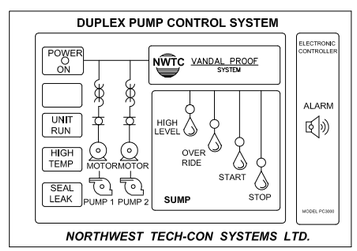
ITEM	DESCRIPTION	PART NUMBER	MAKER
CBO1, CBO2	MANUAL MOTOR STARTER	MMS - 32	LG
M1, M2	MOTOR CONTACTOR	GMC - XX	LG
PT1	TRANSFORMER 120 / 12	7450	NWTC
F1	FUSE RATE : 250V, 2 AMP	MDL-2	BUSS
PC 3000	CONTROL MODULE	PC3000 / D	NWTC
ALM	REMOTE ALARM C/W TIMER	TC - 12N	NWTC
M1X, M2X	CONTROL AUX RELAY 12VDC	G2R - 1 12VDC	OMRON
ISB - 4	INTRINSICALLY SAFE BARRIER	ISB - 4	NWTC
FR	FAIL RELAY 12VDC	G2R - 1 - T	OMRON
SL1, SL2	SEAL LEAK	WS - 12	NWTC
HT1, HT2	HIGH TEMPERATURE RELAY 12VDC	G2R - 1 - T	OMRON



VANDAL PROOF ENCLOSURE

NEMA 1

VIEW OF CONTROLLER FACE PLATE



CUSTOMER:
BC ROBINSON CO. LTD.

END USER:
THE ATRIUM

NORTHWEST TECH-CON SYSTEMS LTD.

NWTC

TEL: (604)439-1046 FAX: (604)439-1079

FUNCTION:
DCP 208 / I O
DUPLEX CONTROL PANEL

DESIGN: A. CHUNG

DATE: SEP., 2008

REF.FILE:

NUMBER: **55.6**

SJE MILLIAMPMASTER™ Control Switch

Mechanically-activated control switch designed to activate low current control panels and alarms.

This wide-angle or narrow-angle control switch offers reliable low current control for AC and DC applications in water, wastewater, and sewage. The internal switching mechanism has sealed gold cross-point contacts for reliable low current operation. Common applications include PLC (programmable logic controller) panels, IS panels with intrinsically safe barriers, low current solar applications, and other low current control panels and alarms applications.

The wide-angle version activates/deactivates approximately 4" (10.16 cm) above and below horizontal with a 3.5" (9 cm) tether. The narrow angle version activates/deactivates at approximately 1.5" (3.81 cm) above and below horizontal with a 3.5" (9 cm) tether. It is not sensitive to rotation.

Normally Open Model (high level)
The control switch turns on (closes) when the switch tips **above** horizontal signaling a high level, and turns off (opens) when the switch drops below horizontal.

Normally Closed Model (low level)
The control switch turns on (closes) when the switch drops **below** horizontal signaling a low level, and turns off (opens) when the switch tips above horizontal.

FEATURES

- Low current, non-arching applications down to 0.160 mA at 125 VAC.
- Mechanically-activated, snap action contacts.
- High impact, corrosion resistant polypropylene float housing.
- Not sensitive to rotation.
- Blue colored cap for easy identification of SJE MilliAmpMaster™ control switch.
- UL Listed for use in non-potable water and sewage.
- CSA Certified.
- Five-year limited warranty.

LR54245 LISTED 83N2

SPECIFICATIONS

CABLE: flexible 18 gauge, 2 conductor (UL,CSA) SJOW, water-resistant (CPE)

FLOAT: 2.74 inch diameter x 4.83 inch long (7.0 cm x 12.3 cm), high-impact, corrosion resistant, polypropylene housing for use in sewage and water up to 140°F (60°C)

MAXIMUM WATER DEPTH: 30 feet (9 meters), 13 PSI (90kPa)

ELECTRICAL:
125 VAC
Maximum Electrical Load: 1 amp
Minimum Electrical Load: 0.160 milliamps
30 VDC
Maximum Electrical Load: 0.1 amps
Minimum Electrical Load: 0.160 milliamps
5 VDC
Minimum Electrical Load: 1 milliamps

OPTIONS

This switch is available:

- for normally open (high level) applications or normally closed (low level) applications.
- with narrow or wide-angle pumping ranges.
- in standard cable lengths of ~~10, 15, 20, or 30 feet and 3, 5, 6, or 10~~ meters (longer lengths available). 50' (15.24m)
- with two mounting options that allow for flexibility in installation:

  Mounting Clamp: for applications where the switch can be attached to a discharge pipe or similar mounting device.

  Externally Weighted: for applications where the switch can be suspended from above.

California Prop 65 requires the following: ⚠ WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

SEE REVERSE SIDE FOR ORDERING INFORMATION.
SEE PRICE BOOK FOR LIST PRICE.

SJE RHOMBUS
1-888-DIAL-SJE • 1-218-847-1317
1-218-847-4617 Fax
email: customer.service@sjeinc.com
www.sjerhombus.com

SJE MILLIAMPMASTER™ Control Switch

Mechanically-activated control switch designed to activate low current control panels and alarms.

ORDERING INFORMATION

Narrow-Angle Versions

Normally Open		Normally Closed		Shipping Weight
Part #	Description	Part #	Description	
1018838	10MANPCNO	**1018839**	10MANPCNC	1.04 lbs.
1018840	10MANWENO	**1018841**	10MANWENC	2.16 lbs.
1018842	15MANPCNO	**1018843**	15MANPCNC	1.37 lbs.
1018844	15MANWENO	**1018845**	15MANWENC	2.45 lbs.
1018846	20MANPCNO	**1018847**	20MANPCNC	1.69 lbs.
1018848	20MANWENO	**1018849**	20MANWENC	2.70 lbs.
1018850	30MANPCNO	**1018851**	30MANPCNC	2.34 lbs.
1018852	~~30~~MANWENO	**1018853**	30MANWENC	3.43 lbs.

Wide-Angle Versions

Normally Open		Normally Closed		Shipping Weight
Part #	Description	Part #	Description	
1015725	10MAPCNO	**1016180**	10MAPCNC	1.04 lbs.
1016181	10MAWENO	**1016182**	10MAWENC	2.16 lbs.
1016184	15MAPCNO	**1016185**	15MAPCNC	1.37 lbs.
1016186	15MAWENO	**1016187**	15MAWENC	2.45 lbs.
1016211	20MAPCNO	**1016212**	20MAPCNC	1.69 lbs.
1016213	20MAWENO	**1016214**	20MAWENC	2.70 lbs.
1016215	30MAPCNO	**1016216**	30MAPCNC	2.34 lbs.
1016217	30MAWENO	**1016218**	30MAWENC	3.43 lbs.

PC = **P**ipe **C**lamp **WE** = **W**eighted **E**xternally **NO** = **N**ormally **O**pen **NC** = **N**ormally **C**losed
NOTE: Descriptions are grouped by cable length measured in feet (10, 15, 20, 30).
SEE PRICE BOOK FOR LIST PRICE.

OPTIONS

PACKAGING
Bagged - standard
Boxed - optional
Bulk - optional

ADDITIONAL CABLE
Longer cable lengths available. Please call for details.
50' (15.24m)

UL Listed for Water & Sewage

LISTED 83N2 LR54245

SSPMA MEMBER

SPECIFICATIONS

CABLE: flexible 18 gauge, 2 conductor (UL, CSA) SJOW, water-resistant (CPE) jacket

FLOAT: 2.74 inch diameter x 4.83 inch long (7.0 cm x 12.3 cm), high impact, corrosion resistant, polypropylene housing for use in sewage and water up to 140°F (60°C)

MAXIMUM WATER DEPTH: 30 feet (9 meters), 13 psi

ELECTRICAL:
125 VAC
Maximum Electrical Load:
1 amp
Minimum Electrical Load:
0.160 milliamps
30 VDC
Maximum Electrical Load:
0.1 amps
Minimum Electrical Load:
0.160 milliamps
5 VDC
Minimum Electrical Load:
1 milliamps

OTHER INFORMATION

NORMALLY OPEN (HIGH LEVEL) OPERATION
The control switch closes (turns on) when the float tips **above** horizontal signaling a high level, and opens (turns off) when the float drops **below** normal.

NORMALLY CLOSED (LOW LEVEL) OPERATION
The control switch closes (turns on) when the float drops **below** horizontal signaling a low level, and opens (turns off) when the float tips **above** horizontal.

Call or fax your order!
1-888-DIAL-SJE (1-888-342-5753) • Fax 218-847-4617

SJE RHOMBUS

www.sjerhombus.com
customer.service@sjeinc.com

Product offering and pricing are subject to change without notice.
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9500117E 10/18
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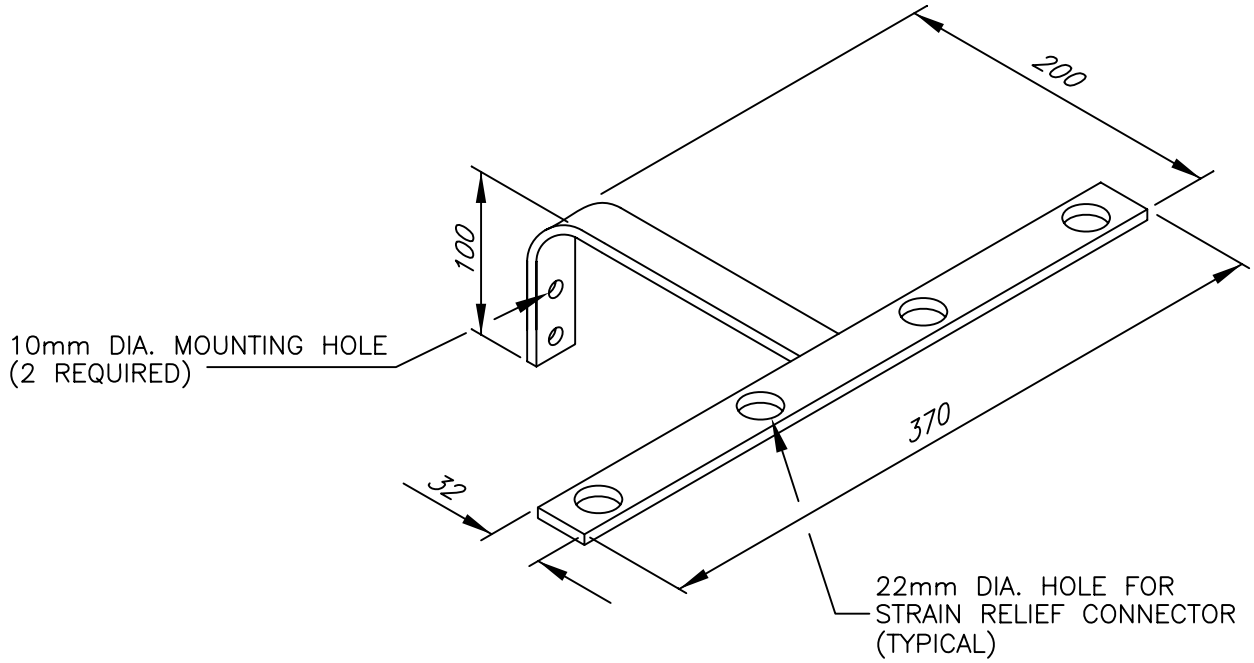
FOUR FLOAT BRACKET

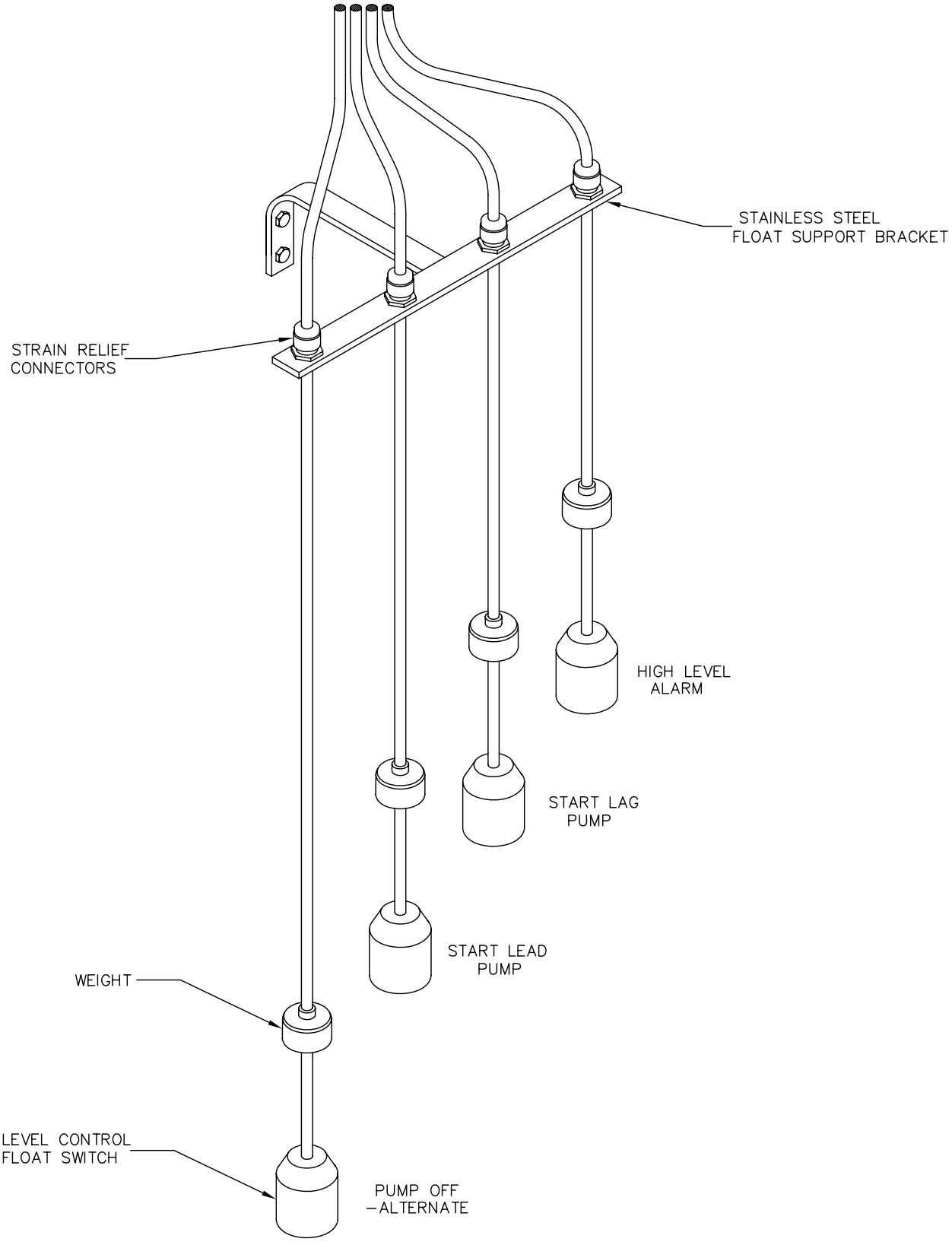


MATERIAL:
32mm X 4mm STAINLESS STEEL

ISSUE No	D/M/Y	DESCRIPTION	DR	CH	APP

SCALE: NTS	APPROVED BY:	DRAWN BY: JB
DATE: Sept/03		PROJECT:
FOUR FLOAT BRACKET		
engineered pump systems ltd.		DRAWING NUMBER: 4 Float Bracket

DUPLEX FLOAT CONTROL SYSTEM



ISSUE No	D M Y	DESCRIPTION	DR	CH	APP

SCALE: NTS	APPROVED BY:	DRAWN BY: JB
DATE: JUNE 16/95		PROJECT:
DUPLEX FLOAT CONTROL SYSTEM		
engineered pump systems ltd.		DRAWING NUMBER: FSB–4

THE ATRIUM
19945 BRYDON CRESCENT, LANGLEY
P-STM 03/04: STORM – 27 USGPM @ 30’ TDH

IMPORTANT

NO PRODUCT WILL BE ORDERED NOR FABRICATION COMMENCE UNTIL RECEIPT OF YOUR APPROVAL OF THIS DRAWING

MYERS® WHR5H-WHR20HH

The Myers WHR5H-WHR20HH series vortex pumps are designed for use in light commercial sewage and effluent applications.

The series passes 2 inch solids and the WHR20HH pumps are available to deliver higher head conditions. Recessed impeller is standard allowing the pump to handle stringy waste without plugging the impeller.

SPECIFICATIONS

Shut-off Head – Up to 75' (22.9 m)
Solids Handling – 2" (50.8 mm)
Liquids Handling – Raw sewage and sewage effluent
Intermittent Liquid Temperature – Up to 140°F (60°C)
Motor/Electrical Data – 1/2 HP, 115V, 1Ø; 1/2, 1, 1-1/2 and 2 HP, 3450 RPM, 208/230V, 1Ø, 60 Hz, PSC; 208/230/460V/575v, 3Ø, 60Hz
Acceptable pH Range – 6-9
Discharge, NPT – Discharge, NPT – 2" (50.8 mm), Optional 3" (76.2 mm)
Housing – Cast iron
Power Cord – 20' (6.1 m), 16/3, SJOW/SJOW-A, 1Ø; ~~20' (6.1 m), 16/4, SJOW/SJOW-A, 3Ø~~ 50' (15.24m)
Impeller – Ductile iron, recessed
Volute Case – Cast iron
Shaft Seal – Type 21, carbon and ceramic
Minimum Sump Diameter – Simplex: 24" (610 mm); Duplex: 30" (762 mm)

FEATURES

Tough Against Corrosion
All cast iron construction resists the most extreme corrosive environments

Runs Cooler
Oil-filled motor for bearing lubrication and maximum heat dissipation

Flow to Meet Demand
Higher head performance for demanding sewage and effluent applications

Powerful Starts
High-torque, permanent split capacitor (PSC) motor; no starting switches or relays to wear out

Thermal Protection
Heat sensor overload protection with automatic reset when motor cools to a safe operating temperature

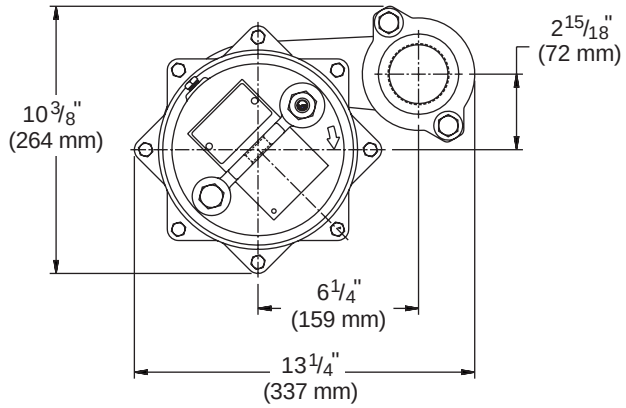
MYERS® WHR5H-WHR20HH

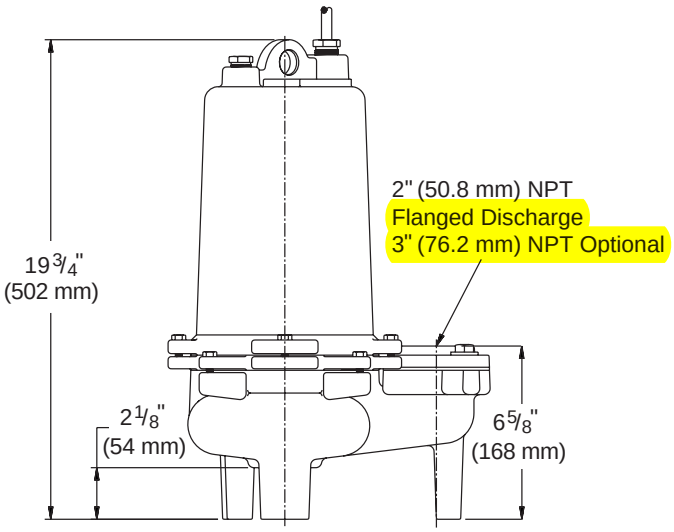
ORDERING INFORMATION

MODEL NUMBER	HP	VOLTS	PHASE/CYCLES	DISCHARGE SIZE	SWITCH TYPE	CORD LENGTH	WEIGHT LBS.
WHR5H-11	1/2 (0.37 kw)	115	1/60	~~2"~~ 3" ~~(50.8 mm)~~ (75mm)	Manual	~~20'~~ 50' ~~(6.1 m)~~ (15.24m)	75 (34 kg)
WHR5H-01		208	1/60				
WHR5H-21		230	1/60				
WHR5H-03		208	3/60				
WHR5H-23		230	3/60				
WHR5H-43		460	3/60				
WHR5H-53		575	3/60				
WHR10H-01	1 (0.75 kw)	208	1/60	2" (50.8 mm)	Manual	20' (6.1 m)	79 (35.8 kg)
WHR10H-21		230	1/60				
WHR10H-03		208	3/60				
WHR10H-23		230	3/60				
WHR10H-43		460	3/60				
WHR10H-53		575	3/60				
WHR15H-01	1-1/2 (1.1 kw)	208	1/60	2" (50.8 mm)	Manual	20' (6.1 m)	85 (38.6 kg)
WHR15H-21		230	1/60				
WHR15H-03		208	3/60				
WHR15H-23		230	3/60				
WHR15H-43		460	3/60				
WHR15H-53		575	3/60				
WHR20H-21	2 (1.5 kw)	230	1/60	2" (50.8 mm)	Manual	20' (6.1 m)	95 (43.1 kg)
WHR20H-03		208	3/60				
WHR20H-23		230	3/60				
WHR20H-43		460	3/60				
WHR20H-53		575	3/60				
WHR20HH-21	2 (1.5 kw)	230	1/60	2" (50.8 mm)	Manual	20' (6.1 m)	95 (43.1 kg)
WHR20HH-03		208	3/60				
WHR20HH-23		230	3/60				
WHR20HH-43		460	3/60				
WHR20HH-53		575	3/60				

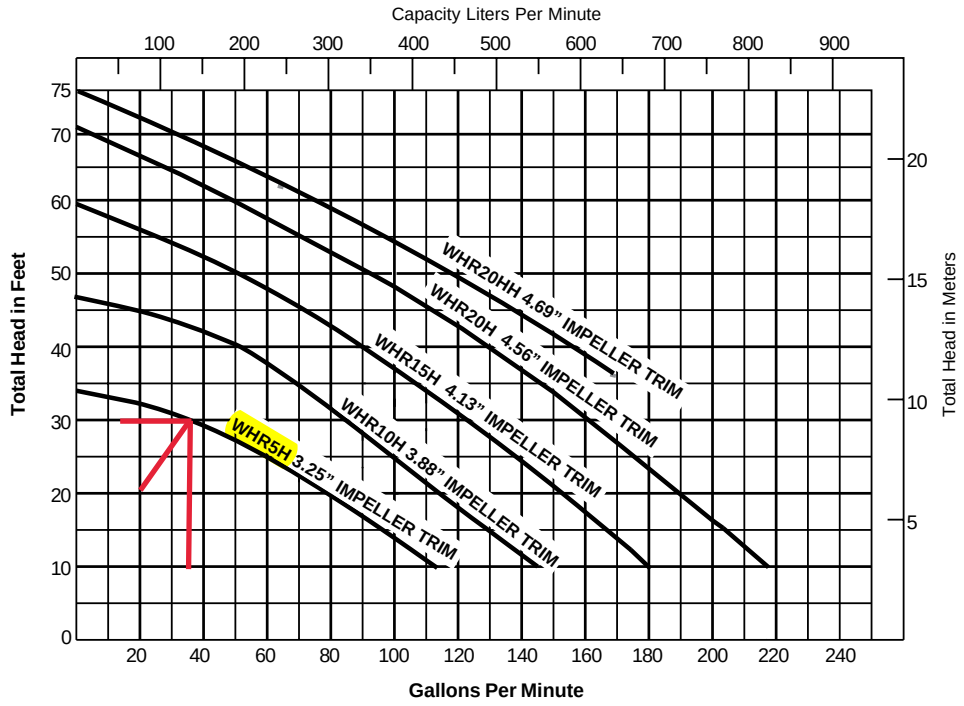
WHR20HH: Highest Head Series

DIMENSIONS





MYERS® WHR5H-WHR20HH



MOTOR ELECTRICAL DATA

MODEL NUMBER	HP	VOLTS	PHASE	HERTZ	START MAX AMPS	RUN AMPS	RUN KW	START KVA	NEC code KVA	LETTER
WHR5H-11	1/2	115	1	60	30.4	13.8	1.9	3.5	1.6	H
WHR5H-01	1/2	208	1	60	16.2	7.6	1.7	3.4	1.6	H
WHR5H-21	1/2	230	1	60	16.2	6.9	1.7	3.7	1.6	H
WHR5H-03	1/2	208	3	60	20.2	5.2	1.4	7.3	1.9	R
WHR5H-23	1/2	230	3	60	20.2	4.7	1.4	8.0	1.9	S
WHR5H-43	1/2	460	3	60	10.1	2.3	1.4	8.0	1.9	S
WHR5H-53	1/2	575	3	60	8.1	1.9	1.4	8.0	1.9	S
WHR10H-01	1	208	1	60	28.0	14.8	3.0	5.8	2.8	B
WHR10H-21	1	230	1	60	23.0	12.8	3.0	5.3	2.8	B
WHR10H-03	1	208	3	60	30.0	7.7	2.5	10.8	3.0	J
WHR10H-23	1	230	3	60	30.0	7.0	2.5	10.8	3.0	K
WHR10H-43	1	460	3	60	15.0	3.5	2.5	11.9	3.0	K
WHR10H-53	1	575	3	60	12.0	2.8	2.5	11.9	3.0	K
WHR15H-01	1-1/2	208	1	60	39.9	15.3	3.3	8.3	3.2	D
WHR15H-21	1-1/2	230	1	60	33.4	13.1	3.3	7.7	3.0	C
WHR15H-03	1-1/2	208	3	60	30.0	8.5	2.8	10.8	3.4	F
WHR15H-23	1-1/2	230	3	60	30.0	7.7	2.8	11.9	3.1	G
WHR15H-43	1-1/2	460	3	60	15.0	3.9	2.8	11.9	3.1	G
WHR15H-53	1-1/2	575	3	60	12.0	3.1	2.8	11.9	3.1	G
WHR20H-21	2	230	1	60	63.0	18.0	3.8	14.5	3.7	E
WHR20H-03	2	208	3	60	53.0	10.4	3.3	19.1	3.6	G
WHR20H-23	2	230	3	60	46.0	9.0	3.3	18.3	3.6	G
WHR20H-43	2	460	3	60	23.0	4.5	3.3	18.3	3.6	G
WHR20H-53	2	575	3	60	18.4	3.6	3.3	18.3	3.6	G
WHR20HH-21	2	230	1	60	63.0	18.0	3.8	14.5	3.7	E
WHR20HH-03	2	208	3	60	53.0	10.4	3.3	19.1	3.6	G
WHR20HH-23	2	230	3	60	46.0	9.0	3.3	18.3	3.6	G
WHR20HH-43	2	460	3	60	23.0	4.5	3.3	18.3	3.6	G
WHR20HH-53	2	575	3	60	18.4	3.6	3.3	18.3	3.6	G

MYERS® WHR5H-WHR20HH

SPECIFICATIONS

Sewage Pumps – Pump(s) shall be Myers WHR5H - WHR20HH series sewage pumps selected in accordance with the following design criteria:

Number of Pumps:	2
Primary Design Flow:	27 USGPM
Primary Design Head:	30' TDH
Minimum Shut-off Head:	
Motor Horsepower:	1/2 HP
Motor Speed:	3450 RPM
Electrical:	208/3/60

Pump – The pump shall be designed to handle raw sewage and be capable of passing 2 inch (50.8 mm) spherical solids. The pump shall be capable of handling liquids with temperatures to 140°F (60°C) intermittent and shall be capable of intermittently running dry without damage to the seals or bearings.

Motor – The pump motor shall be of the submersible type rated 1/2, 1, 1-1/2 or 2 hp as required. Motor shall operate at 3450 RPM and shall be for 115, 208 or 230 volts single phase, or 208, 230, 460, or 575 volts, 3 phase, 60 cycles. Single phase motors shall be of the permanent split capacitor type with no relays or starting switches. Three phase motors shall be squirrel cage induction type. Stator winding shall be of the open type with Class B insulation rated for 130°C maximum operating temperature. The winding housing will be filled with clean dielectric oil to lubricate bearings, seals, and transfer heat from the windings to the outer shell. The motor assembly shall be of the standard frame design and shall be secured in place by four threaded fasteners allowing for easy field serviceability.

The motor shall be capable of operating over the full range of the performance curve without overloading the motor and causing any objectionable noise or vibration. The common motor pump shaft shall be of 416 stainless steel and shall be heat shrunk into the die cast motor rotor. The motor shall have two bearings to support the rotor; an upper ball bearing to accommodate radial loads and a lower ball bearing to take thrust and radial loads. Ball bearings shall be designed for a B-10 life of 50,000 hours.

A heat sensor thermostat and overload shall be attached to the top end of the motor windings and shall be wired in series with the windings to stop the motor if the motor winding temperature reaches 266°F (130°C). The overload thermostat shall reset automatically when the motor cools to a safe operating temperature. Three phase motors shall be protected by 3 leg overload relay in control box. Overload shall be of the quick trip ambient compensated type and shall have manual reset button.

Power Cord – The motor power cord shall be SJOW/A for single phase and SOOW for three phase. The cable jacket shall be sealed at the motor entrance by means of a rubber compression washer and compression nut. A heat shrink tube filled with epoxy shall seal the outer cable jacket and the individual leads to prevent water from entering the motor housing.

Shaft Seal – The motor shall be protected by a rotating mechanical shaft seal. The seal shall have carbon and ceramic seal faces lapped to a tolerance of one light band. Metal parts and springs for seals shall be 300 series stainless steel.

Pump Impeller – The pump impeller shall be of the recessed vortex type. The impeller shall be constructed of ductile iron. The impeller shall be threaded onto the 416 stainless steel pump/motor shaft.

Pump and Motor Castings – All castings shall be of high tensile strength Class 30 gray cast iron. Castings shall be treated with phosphate rinse and painted with a high quality air dry alkyd enamel.

Fasteners – All exposed fasteners shall be of 300 series stainless steel.

PENTAIR

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CANADA
490 PINEBUSH ROAD, UNIT 4, CAMBRIDGE, ONTARIO, CANADA N1T 0A5
PH: 800-363-7867 ORDERS FAX: 888-606-5484

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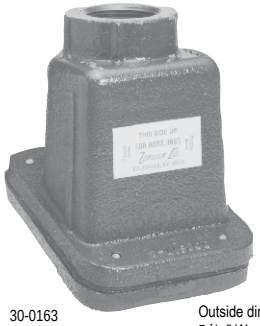
THE "FULL-FLOW" UNICHECKS

30-0163 1¼" CAST IRON NPT
30-0164 1½" CAST IRON NPT



30-0163
Pictured

Outside dimensions
5 1/16" W x 4" W x 6 ¼" H

POWDER COATED TOUGH™

- Vertical or horizontal installation
- Full-flow design, no restrictions
- Stops backflow of water
- Standard, 1¼", 1½", 2", 3" female NPT pipe
- Neoprene polyester reinforced flapper, smooth edge design with cast iron and noncorrosive metal backing plates & stainless steel fastener
- Corrosion-resistant powder coated epoxy finish
- Rated at 50 PSI (115 feet of head) at 130°F
- Stainless steel bolts
- 1 per carton
- Weight: 30-0163, 7.5 lbs.; 30-0164, 7.5 lbs.; 30-0152, 10 lbs.; 30-0160, 18 lbs.
- Suitable for installation below basin cover

30-0152 2" CAST IRON NPT
30-0160 3" CAST IRON NPT

30-0160
Pictured

Outside dimensions
6 5/8" W x 6 5/8" W x 8" H

30-0021 2" PLASTIC SLIP X SLIP UNIONS
30-0151 2" CAST IRON SLIP X SLIP UNIONS

- Full 2" flow design - meets BOCA (P.604.2) 2" full flow pump code
- Checks backflow of water and sewer gas
- Simple to install (no threading of pipe required). Save time & material costs
- Neoprene gasket and flapper, weighted with heavy stainless steel metal backing plates and rivet
- Can be installed on vertical or horizontal line
- Slips over PVC, steel pipe or copper piping
- Reduces motor and pump noise from plumbing system
- 6 per carton
- Flexible neoprene slip x slip union includes stainless steel clamps for low pressure systems. Avoid more than 10 ft. static head above the check valve. 4.3 PSI at 130°F
- Extra wide hinge to reduce hinge stress
- Plastic check has PVC body and can be installed with solvent welded couplings for pressure systems to 25 PSI, 57 ft. of head (P/N 30-0023)
- Model 30-0151 has corrosion-resistant powder coated epoxy finish.
- Plastic check individual rack pack Model 30-0022

Consult Factory or local representative for state approvals

30-0151
Cast Iron

30-0021
Pvc Plastic

30-0181 1¼" - 1½" SLIP X SLIP UNION
30-0200 1¼" - 1½" SLIP X SLIP UNION W/ SS SCREW & CLAMPS

- Flapper bends over a radius, no sharp 90° edges — lengthens life of flapper hinge
- PVC plastic check body, ultrasonically welded and can be solvent welded for rigid pressure rated piping systems to 25 PSI, 57 ft. of head at 130°F (30-0182)
- Slip x slip for 4.3 PSI, 10 ft. of head at 130°F. Avoid more than 10 ft. static head above the check valve.
- Vertical or horizontal installation
- Available in individual packages for pegboard display (30-0181)
- All stainless steel screws, nuts and clamps on model 30-0200 only
- Stainless steel clamps with zinc screws on model 30-0181 only
- Designed to reduce water hammer
- 10 per carton

30-0181
Pictured

30-0200
Pictured

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BALL VALVES

PVC BLOCKED TRUE UNION BALL VALVES

- Threads conform to ANSI/ASME B1.20.1
- Slip connections conform to ASTM D2466
- Working Temperature Range: 41°F to 122°F (5°C to 55°C)
- Max Pressure Rating: 150 PSI @ 73°F(22°C)

0924 Series 1/2" - 2" Threaded (FPT)

- Grey PVC body, suitable for both schedule 40 & 80 pipe
- Seal material: EPDM O-ring
- Seat material: PTFE
- Ends are blocked with bayonet style lock to prevent ball from being blown out
- Blue ABS handle is equipped with removable spanner device
- Shipped complete with both thread and slip interchangeable connections
- Double union/double block design permits in-line maintenance without disconnecting pipe

0925-NL Series 1/2" - 4" EPDM "O" Ring Seal
0926 Series 1/2" - 4" VITON "O" Ring Seal

- Seat material: PTFE
- Double union / double block design permits in-line maintenance without disconnecting pipe
- Ends are blocked with bayonet style lock to prevent ball from being blown out
- Blue (0925-NL) or Red (0926) ABS handle is equipped with removable spanner device
- NSF/ANSI Standard 61 & 372 Certified (0925-NL series only)
- Shipped complete with both thread and slip interchangeable connections

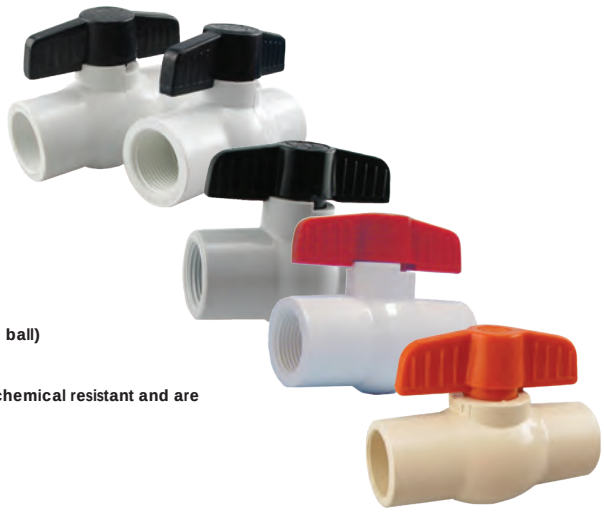
PVC SINGLE UNION BALL VALVES

0933 Series 1-1/2" - 2" Threaded (FPT)
0933S Series 1-1/2" - 2" Slip

- White PVC body, suitable for both schedule 40 & 80 pipe
- Seal material: EPDM O-ring
- Seat material: EPDM

MOLDED-IN-PLACE BALL VALVE

- Working Temperature Range 32°F to 122°F (0°C to 50°C)
- 150 PSI Working Pressure at 73°F (22°C)
- Suitable for both Schedule 40 and 80 PVC Pipe



0929 Series 1/2" - 4" Threaded (FPT)
0929S Series 1/2" - 4" Slip

- NSF/ANSI Standard 372 Certified

0921 Series 1/2" - 4" Threaded (FPT) NSF APPROVED 1/2" TO 2" ONLY
0921S Series 1/2" - 4" Slip NSF APPROVED 1/2" TO 2" ONLY
0923 Series 1/2" - 2" Threaded (FPT) NOT NSF APPROVED
0923S Series 1/2" - 2" Slip NOT NSF APPROVED

- Shock-resistant PVC body, ball and handle. **(2-1/2" - 4" have polypropylene ball)**
- NSF/ANSI Standard 61 & 372 Certified **(0921/0921S series only)**

NOTE: EPDM seats are recommended for most cold water system applications. PTFE seats are chlorine and chemical resistant and are recommended for most pool/spa applications.

CPVC HOT WATER SYSTEM BALL VALVES

0922CTS Series 1/2" - 2" Threaded (CTS x CTS)

- High heat resistance - Max. Service Temperature
  Continuous 32°F - 194°F (0°C - 90°C)
  Short hours 212°F (100°C)
- Test Pressure: 225 PSI
- Working Pressure: 150 PSI
- EPDM O-Ring
- PTFE (polytetrafluoroethylene) Seat
- CTS (Copper Tube size) Socket for CPVC pipe
- NSF/ANSI Standard 61 & 372 Certified

0929(S) SERIES PVC MOLDED-IN-PLACE BALL VALVES

Specification:

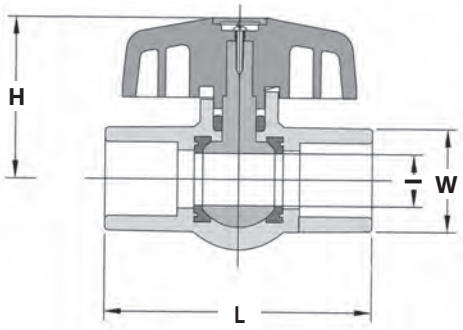
- Threads conform to ANSI/ASME B1.20.1
- Slip connections conform to ASTM D2466
- Working Temperature Range: 41°F to 122°F (5°C to 55°C)
- Max Pressure Rating: 150 PSI @ 73°F(22°C)
- White PVC body, suitable for both schedule 40 & 80 pipe
- Stem seal material: EPDM o-ring
- Seat material: EPDM
- Black ABS Handle

NO LEAD <0.25% Pb by weighted avg. | Third Party Certified to NSF / ANSI 372

Certification:

- NSF/ANSI Standard 372 Certified

MATERIAL LIST	
Name	**Material**
Screw	Steel
Cap	ABS
Handle	ABS
Ball	PVC
O-ring	EPDM
Body	PVC
Seat	EPDM



DIMENSIONS											
Part No. Threaded	**Part No. Slip**	**Nominal Size**	**I**		**W**		**H**		**L**		**Weight**
			inches	**mm**	**inches**	**mm**	**inches**	**mm**	**inches**	**mm**	**grams**
0929-05	0929S-05	1/2"	0.59	15.00	1.24	31.40	1.78	45.30	2.94	74.70	95
0929-07	0929S-07	3/4"	0.79	20.00	1.45	36.80	2.00	50.90	3.39	86.20	144
0929-10	0929S-10	1"	0.98	25.00	1.77	45.00	2.26	57.30	4.05	102.80	220
0929-12	0929S-12	1-1/4"	1.26	32.00	2.07	52.50	2.66	67.50	4.34	110.20	326
0929-15	0929S-15	1-1/2"	1.42	36.00	2.49	63.20	2.91	73.80	4.83	122.70	467
0929-20	0929S-20	2"	1.81	46.00	3.01	76.40	3.32	84.30	5.67	144.10	708
0929-25	0929S-25	2-1/2"	2.48	63.00	3.54	90.00	4.07	103.50	7.17	182.00	1120
0929-30	0929S-30	3"	3.15	80.00	4.25	107.90	4.47	113.50	9.25	235.00	2140
0929-40	0929S-40	4"	3.81	97.00	5.21	132.40	4.89	124.30	10.08	256.00	3030

Temperature Correction Factor for PVC Valves

As temperature increases, working pressure decreases. The optimal working pressure for PVC valves is 150 PSI @ 73°F (22°C)
If the temperature increases above 73°F (22°C), use the PVC correction factor to determine working pressure.
Multiply the maximum working pressure by the correction factor.

Temperature	73°F (22°C)	90°F (32°C)	100°F (38°C)	110°F (38°C)	120°F (49°C)	130°F (54°C)	140°F (60°C)
PVC Correction Factor	1.00	1.00	1.00	0.83	0.66	0.50	0.33

BOSHART INDUSTRIES
COMMITTED TO EXCELLENCE SINCE 1955

25 Whaley Avenue, PO Box 310, Milverton, ON CANADA N0K 1M0
Tel: 519-595-4444 Fax: 519-595-4380 Toll Free: 800-561-3164

www.boshart.com

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NWTC **36** YEARS IN SYSTEMS CONTROL DESIGN

LIQUID PROCESS & CONTROL SOLUTIONS FOR TOMORROWS TECHNOLOGIES

SIMPLEX AND DUPLEX PUMP CONTROLLER

An innovative Simplex / Duplex Pump Controller designed for:

Residential, Commercial, Municipal, and Industrial Sump and Sewage for Indoor and Outdoor Applications

"Over Thousands and Thousands Units Are Operating In Western Canada"

280 TO **600** VOLT - **THREE** PHASE FROM **½** TO **Unlimited** HP

3 or 4 Floats Operation

FEATURES:

- Modular Circuit Board PC 3000 / D
- Low Energy Output to Floats
- Automatic Alternations
- Hand-off Auto Switches
- LED Test / Alarm Silence / Systems Test Push Button
- Programmable Switch, Lead / Lag, or Alternate
- Motor RUN Indicator
- Power ON Indicator
- LED Float Level Indicators
- High Level Alarm (audible and visual)
- Low Level Protection
- High Peak Sonalert Alarm
- Remote Alarm (12 VDC output)
- Motor Contactor and Circuit Protector

Northwest Tech-Con System's model SCP and DCP panel are high quality simplex and duplex pump controller specially design for residential and commercial sump and sewage pump down applications. A low voltage control module is used to operate the starting, stopping and alternation of the pumps, with one pump operating to handle the normal flow. A second pump becomes operational in the event the water level continues to rise. A built-in alarm high level alarm in the control module will sound when the water level reaches a high level.

OPTION:

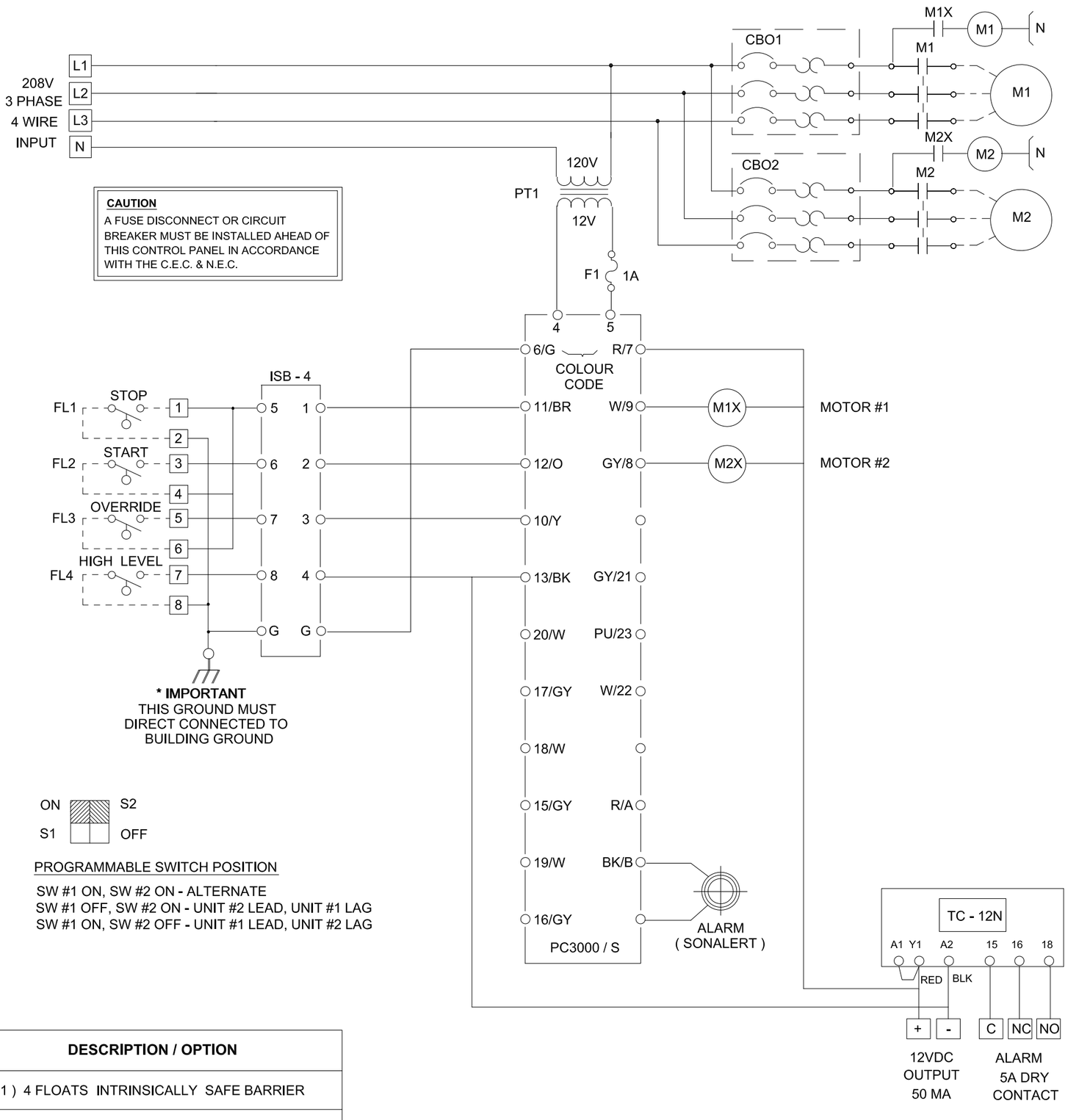
- 24 hour time clock (24HC)
- Battery backup HL alarm (BHA)
- Overload alarm (OLA)
- Dual input power (DP)
- Elapsed time (RTM)
- External panel top alarm light (STL)
- High motor temperature (HT)
- Intrinsic safe barrier (ISB)
- Low level alarm (redundant) (LLA)
- Panel heater c/w thermostat (CH)
- Panel main disconnect (MD)
- Phase monitor or surge arrester
- Pump seal fail alarm (SL)
- Pump start capacitor (LABOR ONLY)
- Remote annuciator (LOBBY-HWA12/L)
- TC-12N timer (TN)
- Vandal proof (for parkade) (VP)
- Communication by text message via internet
- Level Float (20"/30"/50")

REPERSENTATIVE:

Engineered Pump Systems Ltd.
1635 Industrial Ave, Port Coquitlam, BC
V3C 6M9
Email: sales@engineeredpump.com
Phone: 604-552-7900

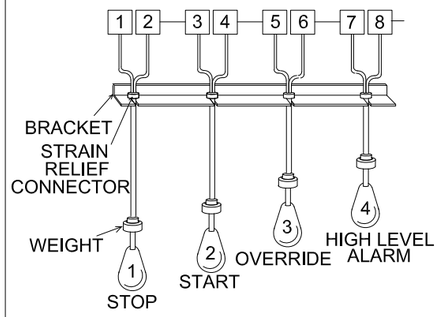
Unit 104 - 7450 Lowland Drive, Burnaby, British Columbia Canada V5J 5A4
Tel: (604) 439-1046 Fax: (604) 439-1079 Email: info@nwtc.ca Website: www.nwtc.ca

Intertek LISTED



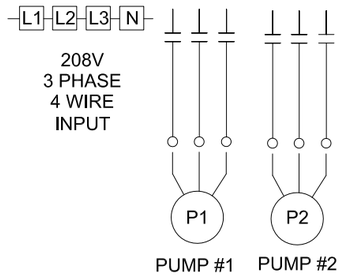
DESCRIPTION / OPTION
(1) 4 FLOATS INTRINSICALLY SAFE BARRIER

CONTROL CONNECTION



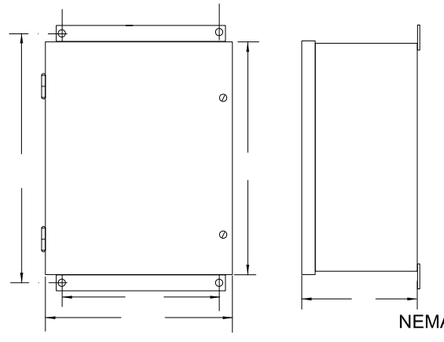
INPUT CONNECTION

PUMP POWER CONNECTION

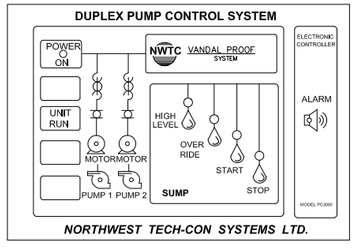


LEGEND :

ITEM	DESCRIPTION	PART NUMBER	MAKER
CBO1 - 2	CIRCUIT BREAKER OVERLOAD	MMA - 32	LG
M1 - 2	MOTOR CONTACTOR	GMC - XX	LG
PT1	TRANSFORMER 120 / 12	7450	NWTC
F1	FUSE RATE : 250V, 1 AMP	MDL - 1	BUSS
PC 3000	CONTROL MODULE	PC3000 / D	NWTC
ALM	REMOTE ALARM WITH TIMER	TC - 12N	NWTC
M1X, M2X	CONTROL AUX RELAY	G2R - 1 12VDC	OMRON
ISB - 4	INTRINSICALLY SAFE BARRIER	ISB - 4	NWTC
	VANDAL PROOF ENCLOSURE		



VIEW OF CONTROLLER FACE PLATE



CUSTOMER:
BC ROBINSON CO. LTD.

END USER:
THE ATRIUM

NORTHWEST TECH-CON SYSTEMS LTD.

NWTC

TEL: (604)439-1046 FAX: (604)439-1079

FUNCTION:
DCP 208 / IO
DUPLEX CONTROL PANEL

DESIGN: A. CHUNG

DATE: SEP., 2008

REF.FILE:

NUMBER: **50.7**

SJE MILLIAMPMASTER™ Control Switch

Mechanically-activated control switch designed to activate low current control panels and alarms.

This wide-angle or narrow-angle control switch offers reliable low current control for AC and DC applications in water, wastewater, and sewage. The internal switching mechanism has sealed gold cross-point contacts for reliable low current operation. Common applications include PLC (programmable logic controller) panels, IS panels with intrinsically safe barriers, low current solar applications, and other low current control panels and alarms applications.

The wide-angle version activates/deactivates approximately 4" (10.16 cm) above and below horizontal with a 3.5" (9 cm) tether. The narrow angle version activates/deactivates at approximately 1.5" (3.81 cm) above and below horizontal with a 3.5" (9 cm) tether. It is not sensitive to rotation.

Normally Open Model (high level)
The control switch turns on (closes) when the switch tips **above** horizontal signaling a high level, and turns off (opens) when the switch drops below horizontal.

Normally Closed Model (low level)
The control switch turns on (closes) when the switch drops **below** horizontal signaling a low level, and turns off (opens) when the switch tips above horizontal.

FEATURES

- Low current, non-arching applications down to 0.160 mA at 125 VAC.
- Mechanically-activated, snap action contacts.
- High impact, corrosion resistant polypropylene float housing.
- Not sensitive to rotation.
- Blue colored cap for easy identification of SJE MilliAmpMaster™ control switch.
- UL Listed for use in non-potable water and sewage.
- CSA Certified.
- Five-year limited warranty.

SSPMA MEMBER · LR54245 · LISTED 83N2 · Member of Hydraulic Institute

SPECIFICATIONS

CABLE: flexible 18 gauge, 2 conductor (UL,CSA) SJOW, water-resistant (CPE)

FLOAT: 2.74 inch diameter x 4.83 inch long (7.0 cm x 12.3 cm), high-impact, corrosion resistant, polypropylene housing for use in sewage and water up to 140°F (60°C)

MAXIMUM WATER DEPTH: 30 feet (9 meters), 13 PSI (90kPa)

ELECTRICAL:

125 VAC
Maximum Electrical Load: 1 amp
Minimum Electrical Load: 0.160 milliamps

30 VDC
Maximum Electrical Load: 0.1 amps
Minimum Electrical Load: 0.160 milliamps

5 VDC
Minimum Electrical Load: 1 milliamps

OPTIONS

This switch is available:

- for normally open (high level) applications or normally closed (low level) applications.
- with narrow or wide-angle pumping ranges.
- in standard cable lengths of ~~10, 15, 20, or 30 feet and 3, 5, 6, or 10~~ meters (longer lengths available). 50' (15.24m)
- with two mounting options that allow for flexibility in installation:

  Mounting Clamp: for applications where the switch can be attached to a discharge pipe or similar mounting device.

  Externally Weighted: for applications where the switch can be suspended from above.

California Prop 65 requires the following: ⚠ WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

SEE REVERSE SIDE FOR ORDERING INFORMATION.
SEE PRICE BOOK FOR LIST PRICE.

SJE RHOMBUS
1-888-DIAL-SJE • 1-218-847-1317
1-218-847-4617 Fax
email: customer.service@sjeinc.com
www.sjerhombus.com

SJE MILLIAMPMASTER™ Control Switch

Mechanically-activated control switch designed to activate low current control panels and alarms.

ORDERING INFORMATION

Narrow-Angle Versions

Normally Open		Normally Closed		Shipping Weight
Part #	Description	Part #	Description	
1018838	10MANPCNO	**1018839**	10MANPCNC	1.04 lbs.
1018840	10MANWENO	**1018841**	10MANWENC	2.16 lbs.
1018842	15MANPCNO	**1018843**	15MANPCNC	1.37 lbs.
1018844	15MANWENO	**1018845**	15MANWENC	2.45 lbs.
1018846	20MANPCNO	**1018847**	20MANPCNC	1.69 lbs.
1018848	20MANWENO	**1018849**	20MANWENC	2.70 lbs.
1018850	30MANPCNO	**1018851**	30MANPCNC	2.34 lbs.
1018852	~~30~~MANWENO	**1018853**	30MANWENC	3.43 lbs.

Wide-Angle Versions

Normally Open		Normally Closed		Shipping Weight
Part #	Description	Part #	Description	
1015725	10MAPCNO	**1016180**	10MAPCNC	1.04 lbs.
1016181	10MAWENO	**1016182**	10MAWENC	2.16 lbs.
1016184	15MAPCNO	**1016185**	15MAPCNC	1.37 lbs.
1016186	15MAWENO	**1016187**	15MAWENC	2.45 lbs.
1016211	20MAPCNO	**1016212**	20MAPCNC	1.69 lbs.
1016213	20MAWENO	**1016214**	20MAWENC	2.70 lbs.
1016215	30MAPCNO	**1016216**	30MAPCNC	2.34 lbs.
1016217	30MAWENO	**1016218**	30MAWENC	3.43 lbs.

PC = **P**ipe **C**lamp **WE** = **W**eighted **E**xternally **NO** = **N**ormally **O**pen **NC** = **N**ormally **C**losed
NOTE: Descriptions are grouped by cable length measured in feet (10, 15, 20, 30).
SEE PRICE BOOK FOR LIST PRICE.

OPTIONS

PACKAGING
Bagged - standard
Boxed - optional
Bulk - optional

ADDITIONAL CABLE
Longer cable lengths available. Please call for details.
50' (15.24m)

UL Listed for Water & Sewage

UL LISTED 83N2 — CSA LR54245

SSPMA MEMBER

SPECIFICATIONS

CABLE: flexible 18 gauge, 2 conductor (UL, CSA) SJOW, water-resistant (CPE) jacket

FLOAT: 2.74 inch diameter x 4.83 inch long (7.0 cm x 12.3 cm), high impact, corrosion resistant, polypropylene housing for use in sewage and water up to 140°F (60°C)

MAXIMUM WATER DEPTH: 30 feet (9 meters), 13 psi

ELECTRICAL:
125 VAC
Maximum Electrical Load:
1 amp
Minimum Electrical Load:
0.160 milliamps
30 VDC
Maximum Electrical Load:
0.1 amps
Minimum Electrical Load:
0.160 milliamps
5 VDC
Minimum Electrical Load:
1 milliamps

OTHER INFORMATION

NORMALLY OPEN (HIGH LEVEL) OPERATION
The control switch closes (turns on) when the float tips **above** horizontal signaling a high level, and opens (turns off) when the float drops **below** normal.

NORMALLY CLOSED (LOW LEVEL) OPERATION
The control switch closes (turns on) when the float drops **below** horizontal signaling a low level, and opens (turns off) when the float tips **above** horizontal.

Call or fax your order!
1-888-DIAL-SJE (1-888-342-5753) • Fax 218-847-4617

SJE RHOMBUS

www.sjerhombus.com
customer.service@sjeinc.com

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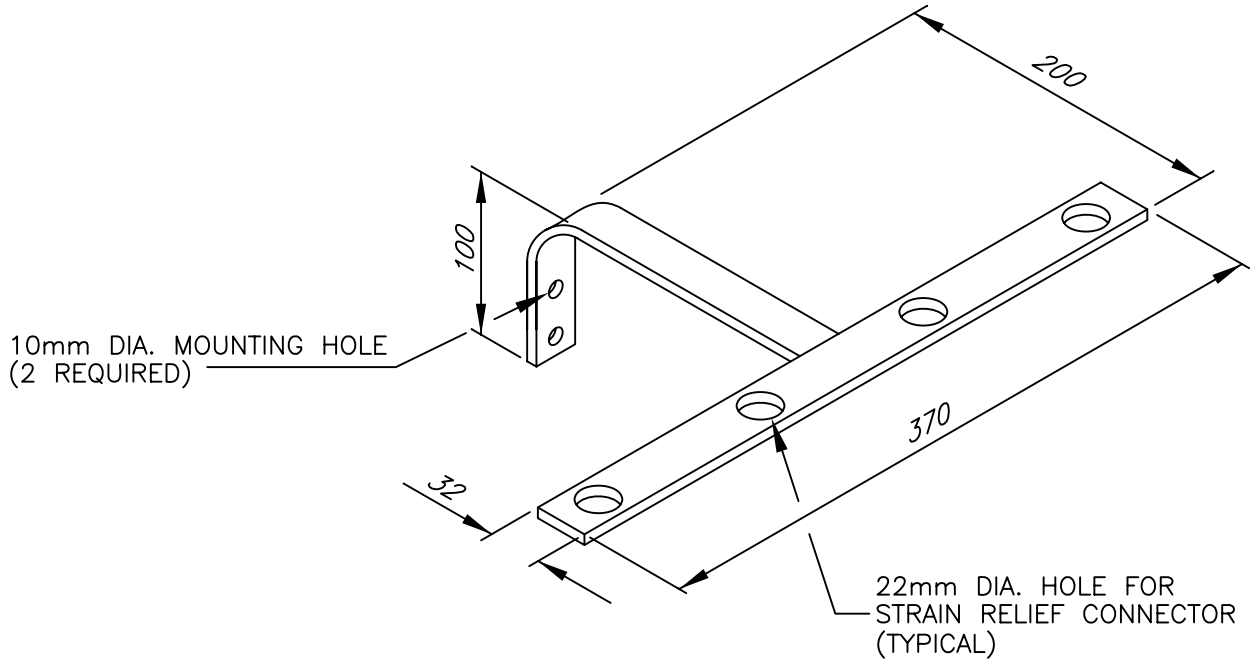
FOUR FLOAT BRACKET

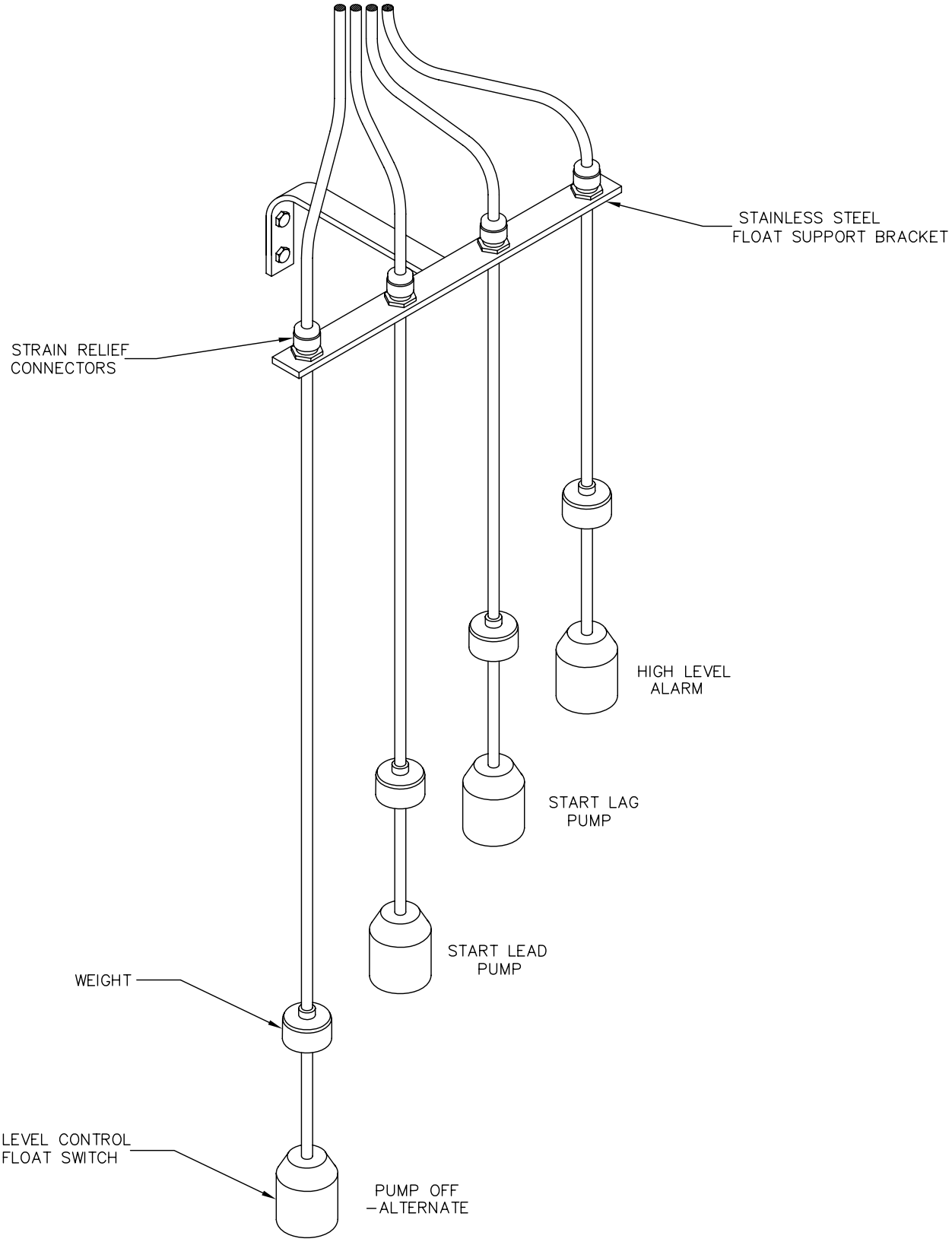


MATERIAL:
32mm X 4mm STAINLESS STEEL

ISSUE No	D/M/Y	DESCRIPTION	DR	CH	APP

SCALE: NTS	APPROVED BY:	DRAWN BY: JB
DATE: Sept/03		PROJECT:
FOUR FLOAT BRACKET		
engineered pump systems ltd.		DRAWING NUMBER: 4 Float Bracket

DUPLEX FLOAT CONTROL SYSTEM



ISSUE No	D M Y	DESCRIPTION	DR	CH	APP

SCALE: NTS	APPROVED BY:	DRAWN BY: JB
DATE: JUNE 16/95		PROJECT:
DUPLEX FLOAT CONTROL SYSTEM		
engineered pump systems ltd.		DRAWING NUMBER: FSB–4

Tag: DHWT-01/02/03

The new degree of comfort®

TRITON® – The Most Intelligent, High-Efficiency Commercial Gas Water Heater in the Market

Ideal for Replacements and New Construction Applications

THE TRITON ADVANTAGE

- Most accurate, all-inclusive leak detection and prevention system in the market
- Eliminate downtime with the ability to detect and prevent water heater problems
- Triple pass heat exchanger constructed of porcelain coated ASME grade steel
- Universal retrofit features make it easy to replace any water heater

SS EXCLUSIVE FEATURES

- **LeakGuard™** – All inclusive leak detection and prevention system with auto shut off valve limits water leakage outside the tank
- **Integrated BMS Connectivity Via BACnet (MS/TP)** – Built-in BACnet port easily connects to building management systems (BMS)
- **Energy & Water Usage Reports** – Track usage trends and manage energy and water consumption through the Rheem EcoNet app
- **Warranty** – 5-Year limited tank*

SS AND SU FEATURES

Built-In Intelligence

- **LeakSense™** – Intelligent leak detection system detect leaks as small as a grain of sand and provides real-time notifications that warn you before it becomes an emergency
- **EcoNet® Smart Monitoring Technology with Integrated WiFi**** – Rheem Exclusive! Provides performance updates and alerts via both mobile device and full-color LCD display
- **Systematic Health Checks** – Ongoing self-monitoring of Triton's most vital components and alerts of potential issues
- **Preventive Maintenance Alerts** – Maintenance reminders help to extend life of the tank

Easy Retrofit/Installation

- **Multiple Connection Points** – Multiple water connections at the top, side and bottom of the unit simplify installation for replacement of any model
- **Variety of Flexible Venting Options Including InnoFlue® Flex Venting** – Polypropylene, PVC, CPVC, InnoFlue® Flex Vent and ABS materials; venting 2, 3, 4 and 6 inch diameters
- **Built-In Condensate Neutralizer** – Reduces water acidity for safe drainage

Built to Last

- **Triple Pass Heat Exchanger** – Constructed with premium porcelain coated **ASME-grade steel** to minimize rust and corrosion for extended tank life and maximum thermal efficiency
- **Advanced Power Anodes** – Self-adjusting, non-sacrificial power anodes provide systematic monitoring of anode health and remaining tank life

Energy Efficient

- **Full Modulation** – Maximizes energy savings by optimizing BTU input for specific water heating demand
- **Scheduling Capability** – Adjust to heat water only during peak operating hours when your business needs it most

Plus

- Altitude certified up to 8,999 feet above sea level
- 3/4-Inch gas connection
- CSA/ASME rated T&P valve
- Meets 14 ng/J NOx requirements
- SCAQMD Rule 1146.2 compliant
- ENERGY STAR® rated
- NSF Rated
- Meets Massachusetts specifications
- Maximum temperature setting 185ºF
- **Warranty** – SU Model: 3-Year limited tank; SS Model: 5-Year limited tank*

*See Commercial Warranty Certificate for complete information.

**2.4 GHz WIFI broadband Internet connection required.

Triton SU **Triton SS**

Rheem Triton

80 and 100-Gallon Capacities
130,000-399,900 BTU/h
Sealed Combustion System
Up to 98% Thermal Efficiency
Ultra Low NOx
Porcelain Coated Tank Lining and Heat Exchanger
Natural and LP Gas

With Optional Kit

Low Lead Compliant

ASME (OPTIONAL)

PRINTED IN U.S.A. 12/20 WP FORM NO. RR102C-50 Rev. 9

BASE MODELS: SU = SMART UNIVERSAL	
80-GALLON	**100-GALLON**
GHE80SU-130(A)	GHE100SU-130(A)
GHE80SU-160(A)	GHE100SU-160(A)
GHE80SU-200(A)	GHE100SU-200(A)
GHE80SU-300(A)	GHE100SU-250(A)
	GHE100SU-300(A)
	GHE100SU-400(A)

PREMIUM MODELS: SS = SMART AUTO SHUTOFF VALVE	
80-GALLON	**100-GALLON**
GHE80SS-130(A)	GHE100SS-130(A)
GHE80SS-160(A)	GHE100SS-160(A)
GHE80SS-200(A)	GHE100SS-200(A)
GHE80SS-300(A)	GHE100SS-250(A)
	GHE100SS-300(A)
	GHE100SS-400(A)

A= ASME Option

Electrical Requirements: 110 Volt, 50 / 60 Hertz, 7.5 Max Breaker Amp Draw

RECOVERY CAPACITIES (Recovery in U.S. Gallons/Hr. (GPH) and Liters/Hr. (LPH) at various temperature rises)

MODEL NUMBER	INPUT (BTU/H) NAT. & LP	THERMAL EFF.	STANDBY LOSS (BTU/H)	UNITS	40°F *(22°C)*	50°F *(28°C)*	60°F *(33°C*	70°F *(39°C)*	80°F *(45°C)*	90°F *(50°C)*	100°F *(56°C)*	110°F *(61°C)*	120°F *(67°C)*	130°F *(75°C)*	140°F *(78°C)*
GHE80SU/SS-130(A)	130,000	98%	950.0	GPH	382	306	255	218	191	170	153	139	127	118	109
				LPH	*1448*	*1160*	*966*	*826*	*724*	*644*	*580*	*527*	*481*	*447*	*413*
GHE80SU/SS-160(A)	160,000	97%	980.0	GPH	465	372	310	266	233	207	186	169	155	143	133
				LPH	*1760*	*3305*	*1173*	*1007*	*882*	*784*	*704*	*640*	*587*	*541*	*503*
GHE80SU/SS-200(A)	199,900	95%	1001.0	GPH	576	461	384	329	288	256	230	209	192	177	165
				LPH	*2180*	*1745*	*1454*	*1245*	*1090*	*696*	*871*	*791*	*727*	*670*	*625*
GHE80SU/SS-300(A)	300,000	95%	1105.0	GPH	855	684	570	488	427	380	342	311	285	263	244
				LPH	*3237*	*2589*	*2158*	*1847*	*1616*	*1438*	*1295*	*1177*	*1079*	*996*	*924*
GHE100SU/SS-130(A)	130,000	97%	1050.0	GPH	382	306	255	218	191	170	153	139	127	118	109
				LPH	*1446*	*1158*	*965*	*825*	*723*	*634*	*579*	*526*	*481*	*447*	*413*
GHE100SU/SS-160(A)	160,000	97%	1080.0	GPH	470	376	314	269	235	209	188	171	157	145	134
				LPH	*1779*	*1423*	*1189*	*1018*	*890*	*791*	*712*	*647*	*594*	*549*	*507*
GHE100SU/SS-200(A)	199,900	97%	1100.0	GPH	582	465	388	332	291	259	233	212	194	179	166
				LPH	*2203*	*1760*	*1469*	*1257*	*1102*	*980*	*882*	*803*	*746*	*678*	*628*
GHE100SU/SS-250(A)	250,000	96%	1155.0	GPH	727	582	485	416	364	323	291	264	242	224	208
				LPH	*2752*	*2203*	*1836*	*1575*	*1378*	*1223*	*1102*	*999*	*916*	*848*	*787*
GHE100SU/SS-300(A)	300,000	96%	1210.0	GPH	873	698	582	499	436	388	349	317	291	269	249
				LPH	*3305*	*2642*	*2203*	*1889*	*1650*	*1469*	*1321*	*1200*	*1102*	*1018*	*943*
GHE100SU/SS-400(A)	399,900	95%	1310.0	GPH	1139	912	760	651	570	506	456	414	380	351	326
				LPH	*4312*	*3452*	*2877*	*2464*	*2158*	*1915*	*1726*	*1567*	*1438*	*1329*	*1234*

MAXIMUM DELIVERY (In U.S. Gallons and Liters – Includes useable storage and recover for indicated times)

MODEL NUMBER	INPUT (BTU/H) NAT. & LP	GAL.	LITERS	TEMP. RISE	UNITS	5 MIN.	10 MIN.	15 MIN.	20 MIN.	30 MIN.	45 MIN.	60 MIN.	120 MIN.	180 MIN.	MIN TO RECOVER CONTENTS
GHE80SU/SS-130(A)	130,000	80	*303*	100°F	GPH	69	81	94	107	132	171	209	362	515	31
				56°C	*LPH*	*260*	*308*	*357*	*405*	*501*	*646*	*791*	*1369*	*1948*	
GHE80SU/SS-160(A)	160,000	80	*303*	100°F	GPH	72	87	103	118	149	196	242	428	615	28
				56°C	*LPH*	*271*	*329*	*388*	*447*	*564*	*741*	*917*	*1622*	*2326*	
GHE80SU/SS-200(A)	199,900	80	*303*	100°F	GPH	75	94	114	133	171	229	286	517	747	21
				56°C	*LPH*	*285*	*357*	*430*	*503*	*648*	*866*	*1084*	*1956*	*2827*	
GHE80SU/SS-300(A)	300,000	80	*303*	100°F	GPH	84	113	141	170	227	312	398	740	1081	14
				56°C	*LPH*	*320*	*428*	*535*	*643*	*859*	*1182*	*1506*	*2800*	*4094*	
GHE100SU/SS-130(A)	130,000	100	*379*	100°F	GPH	83	95	108	121	146	185	223	376	529	39
				56°C	*LPH*	*313*	*361*	*410*	*458*	*554*	*699*	*844*	*1422*	*2001*	
GHE100SU/SS-160(A)	160,000	100	*379*	100°F	GPH	86	101	117	133	164	211	258	446	634	33
				56°C	*LPH*	*324*	*384*	*443*	*502*	*621*	*799*	*977*	*1689*	*2401*	
GHE100SU/SS-200(A)	199,900	100	*379*	100°F	GPH	89	109	128	148	186	245	303	535	768	26
				56°C	*LPH*	*338*	*412*	*485*	*559*	*705*	*926*	*1146*	*2027*	*2908*	
GHE100SU/SS-250(A)	250,000	100	*379*	100°F	GPH	94	118	143	167	215	288	361	652	943	21
				56°C	*LPH*	*357*	*449*	*540*	*632*	*816*	*1091*	*1366*	*2467*	*3569*	
GHE100SU/SS-300(A)	300,000	100	*379*	100°F	GPH	99	128	157	186	245	332	419	768	1117	18
				56°C	*LPH*	*375*	*485*	*595*	*705*	*926*	*1256*	*1586*	*2908*	*4229*	
GHE100SU/SS-400(A)	399,900	100	*379*	100°F	GPH	108	146	184	222	298	412	526	982	1437	13
				56°C	*LPH*	*409*	*553*	*696*	*840*	*1128*	*1559*	*1990*	*3715*	*5441*	

VENTING OPTIONS

POWER DIRECT VENT

MODEL NUMBER	MAX. VENT LENGTH (Eq. Ft.) PIPE DIAMETER							
	2" *(5 cm)*		3" *(8 cm)*		4" *(10 cm)*		6" *(15 cm)*	
	INLET	OUTLET	INLET	OUTLET	INLET	OUTLET	INLET	OUTLET
GHE80SU/SS-130(A)	20	35	60	75	120	135	X	X
GHE80SU/SS-160(A)	20	35	60	75	120	135	X	X
GHE80SU/SS-200(A)	X	X	60	75	120	135	X	X
GHE80SU/SS-300(A)	X	X	60	75	120	135	120	135
GHE100SU/SS-130(A)	20	35	60	75	120	135	X	X
GHE100SU/SS-160(A)	20	35	60	75	120	135	X	X
GHE100SU/SS-200(A)	X	X	60	75	120	135	X	X
GHE100SU/SS-250(A)	X	X	60	75	120	135	X	X
GHE100SU/SS-300(A)	X	X	60	75	120	135	120	135
GHE100SU/SS-400(A)	X	X	50	65	70	85	120	135

POWER VENT

MODEL NUMBER	MAX. VENT LENGTH (Eq. Ft.) PIPE DIAMETER							
	2" *(5 cm)*		3" *(8 cm)*		4" *(10 cm)*		6" *(15 cm)*	
	INLET	OUTLET	INLET	OUTLET	INLET	OUTLET	INLET	OUTLET
GHE80SU/SS-130(A)	–	35	–	135	–	185	–	X
GHE80SU/SS-160(A)	–	35	–	135	–	185	–	X
GHE80SU/SS-200(A)	–	X	–	135	–	185	–	X
GHE80SU/SS-300(A)	–	X	–	135	–	145	–	120
GHE100SU/SS-130(A)	–	35	–	135	–	185	–	X
GHE100SU/SS-160(A)	–	35	–	135	–	185	–	X
GHE100SU/SS-200(A)	–	X	–	135	–	185	–	X
GHE100SU/SS-250(A)	–	X	–	135	–	185	–	120
GHE100SU/SS-300(A)	–	X	–	135	–	185	–	120
GHE100SU/SS-400(A)	–	X	–	65	–	100	–	135

For each long radius sweep 90° elbow, reduce pipe length by five (5) feet.
For each standard sweep 90° elbow, reduce pipe by eight (8) feet.
For each 45° elbow, reduce pipe length by two and a half (2.5) feet.
Note: Vent pipe size should not be mixed for venting these units.
Use same diameter pipe for all venting of the unit.
3" Concentric = 60 ft. in, 75 ft. out
4" Concentric = 120 ft. in, 135 ft. out
See use and care manual for venting details.

Venting configurations are the same for SS Models. Vents with Polypropylene, ABS, CPVC or PVC.
NOTE: For Canadian installations, please use Polypropolene, ULC S636 PVC or CPVC.

Efficiency | All models tested according to ANSI test procedures, and meet or exceed the thermal efficiency and standby loss requirements of ASHRAE standard (EPact). Also exceeds energy efficiency codes of all states including California Energy Commission (CEC).

Safety and Construction | Design certified by CSA: For operation at 185 degrees; meets all safety and construction requirement of ANSI Z21.10.3; as an automatic storage or instantaneous water heater; as an automatic circulating tank water heater; and for operation on combustible floors and in alcove installations. **Certified for 150 PSI maximum working pressure (160 PSI for ASME models).**

Optional Construction | ASME construction is available on designated models. UL Sanitation (NSF5) compliant models are available when equipped with optional seal kit (Part No. AS42690).

DIMENSIONAL INFORMATIONS (Shown in English and Metric)

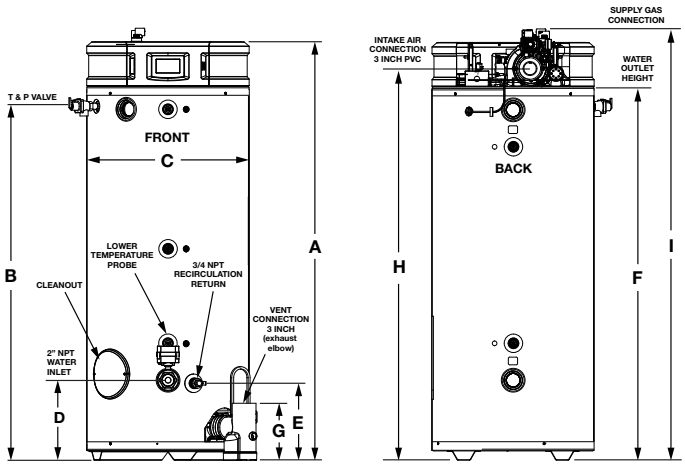
MODEL NUMBER	UNITS	A	B	C	D	E	F	G	H	I	VENT	SIDE WATER CONNECTION		TOP OUTLET	APPROX. SHIP. WT. (LB)*
												INLET	OUTLET		
GHE80SU/SS-130(A)	Inches	67-7/8	57.43	26-3/8	13	12-1/2	60-1/2	10-5/8	63-5/8	70-1/16	2", 3", 4"	2" NPT	2" NPT	1.5" NPT	600
	MM	*1724*	*1459*	*668*	*331*	*318*	*1537*	*270*	*1617*	*1780*					
GHE80SU/SS-160(A)	Inches	67-7/8	57.43	26-3/8	13	12-1/2	60-1/2	10-5/8	63-5/8	70-1/16	2", 3", 4"	2" NPT	2" NPT	1.5" NPT	600
	MM	*1724*	*1459*	*668*	*331*	*318*	*1537*	*270*	*1617*	*1780*					
GHE80SU/SS-200(A)	Inches	67-7/8	57.43	26-3/8	13	12-1/2	60-1/2	10-5/8	63-5/8	70-1/16	2", 3", 4"	2" NPT	2" NPT	1.5" NPT	650
	MM	*1724*	*1459*	*668*	*331*	*318*	*1537*	*270*	*1617*	*1780*					
GHE80SU/SS-300(A)	Inches	67-7/8	57.43	26-3/8	13	12-1/2	60-1/2	10-5/8	63-5/8	70-1/16	3", 4", 6"	2" NPT	2" NPT	1.5" NPT	650
	MM	*1724*	*1459*	*668*	*331*	*318*	*1537*	*270*	*1617*	*1780*					
GHE100SU/SS-130(A)	Inches	77	66-3/4	26-3/8	13	12-1/2	69.80	10-5/8	72-3/4	77-1/2	2", 3", 4"	2" NPT	2" NPT	1.5" NPT	725
	MM	*1956*	*1696*	*668*	*331*	*318*	*1773*	*270*	*1847*	*1969*					
GHE100SU/SS-160(A)	Inches	77	66-3/4	26-3/8	13	12-1/2	69.80	10-5/8	72-3/4	77-1/2	2", 3", 4"	2" NPT	2" NPT	1.5" NPT	725
	MM	*1956*	*1696*	*668*	*331*	*318*	*1773*	*270*	*1847*	*1969*					
GHE100SU/SS-200(A)	Inches	77	66-3/4	26-3/8	13	12-1/2	69.80	10-5/8	72-3/4	77-1/2	2", 3", 4"	2" NPT	2" NPT	1.5" NPT	775
	MM	*1956*	*1696*	*668*	*331*	*318*	*1773*	*270*	*1847*	*1969*					
GHE100SU/SS-250(A)	Inches	77	66-3/4	26-3/8	13	12-1/2	69.80	10-5/8	72-3/4	77-1/2	3", 4", 6"	2" NPT	2" NPT	1.5" NPT	775
	MM	*1956*	*1696*	*668*	*331*	*318*	*1773*	*270*	*1847*	*1969*					
GHE100SU/SS-300(A)	Inches	77	66-3/4	26-3/8	13	12-1/2	69.80	10-5/8	72-3/4	77-1/2	3", 4", 6"	2" NPT	2" NPT	1.5" NPT	775
	MM	*1956*	*1696*	*668*	*331*	*318*	*1773*	*270*	*1847*	*1969*					
GHE100SU/SS-400(A)	Inches	77	66-3/4	26-3/8	13	12-1/2	69.80	10-5/8	72-3/4	77-1/2	3", 4", 6"	2" NPT	2" NPT	1.5" NPT	775
	MM	*1956*	*1696*	*668*	*331*	*318*	*1773*	*270*	*1847*	*1969*					

*Weights listed are for non-ASME. Add 35 lbs. for ASME models.

0" CLEARANCE TO ALL COMBUSTIBLE SURFACES ON SIDES AND BACK; 6" FOR TOP.
(FOR CANADIAN INSTALLATIONS, PLEASE USE POLYPROPOLENE, ULC S636 PVC OR CPVC.)

	FLEX VENT LENGTHS POWER VENT ONLY AP19353 – 50' OF 3" PP FLEX PIPE AP19354 – 25' OF 3" PP FLEX PIPE
MODEL NUMBER	**PIPE DIAMETER 3"**
GHE80SU/SS-130(A)	60
GHE80SU/SS-160(A)	60
GHE80SU/SS-200(A)	60
GHE80SU/SS-300(A)	60
GHE100SU/SS-130(A)	60
GHE100SU/SS-160(A)	60
GHE100SU/SS-200(A)	60
GHE100SU/SS-250(A)	60
GHE100SU/SS-300(A)	60
GHE100SU/SS-400(A)	60

NOTE: Equivalent 60 Ft. with rigid & flexible pipe.



Recommended Specifications (for trade reference only)

Water heater(s) shall be Triton Model GHE100SU-200A # or equal, manufactured by Rheem, having a gas input of 199,900 BTU/h and recovery rate of 233 GPH at a 100°F temperature rise and tested and certified at a Min. of 95% thermal efficiency, with a maximum hydrostatic working pressure of 150 psi and minimum Inlet Gas Pressure 3.5" in WC. Water heater(s) shall 1.) Include a modulating gas burner that automatically adjusts the input based on demand. 2.) Have Power anodes that are non-sacrificial and maintenance free. 3.) Have a factory installed CSA/ASME rated temperature and pressure relief valve, meet SCAQMD rule 1146.2 and include the CSA seal of certification 4.) Have a wet-base design and furnished with a heat exchange system with both sides coated in high temperature porcelain enamel. 5.) Have 2" NPT front and rear, (1) 1-½" NPT Top water connection. 6.) Have a 3 year (SU) or 5-year (SS) standard warranty.

The control shall be an integrated 4.3" Color touch screen with the ability to 1.) Provide user advanced notice of any issues with health alerts on tank and combustion system. 2.) Give users advanced notice of catastrophic failure with Integrated LeakSense™ leak detection. 3.) Automatically turn off water in the event of a failure with Integrated LeakGuard™ Auto Shut-Off Valve (SS model only). 4.) Report water & energy usage reports via app or control. (SS model only) 5.) Connect to a cloud, and control & remote monitor the system via the EcoNet® app through integrated WiFi. 6.) Connect to a Building Management System without the need of any accessories using an integrated BacNet MS/TP connection. (SS model only).

For Standard power vent, water heater shall be suited 2", 3", 4" or 6" _____ pipe for a total maximum venting of 185 ft. For Power Direct Vent water heater shall be suited for 2", 3", 4" or 6" _____ pipe for a total maximum vent length, intake 120 ft, exhaust 135 ft. Water heater(s) shall be able to vent with the following materials: Polypropylene, PVC, CPVC, ABS, & InnoFlue® flex venting.

In keeping with its policy of continuous progress and product improvement, Rheem reserves the right to make changes without notice.

Rheem Water Heating • 1115 Northmeadow Parkway, Suite 100
Roswell, Georgia 30076 • www.rheem.com

Rheem Canada Ltd./Ltée • 125 Edgeware Road, Unit 1
Brampton, Ontario L6Y 0P5 • www.rheem.com

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Tag: ET-1

THERM-X-TROL®

Thermal Expansion Tanks: Diaphragm ST-C Series ASME

150 PSIG Working Pressure

Construction

Shell	ST-5C through ST-42VC: Deep Drawn Steel ST-60VC through ST-210VC: Steel Head & Shell
Diaphragm	Heavy Duty Butyl NSF/ANSI 61
Liner	Antimicrobial Polypropylene w/Anti-Legionella Protection
System Connection	Stainless Steel
Finish	Red Oxide Primer
Water Circulator	Turbulator™ (Deep Drawn Models)
Air Valve	Schrader Valve w/ EPDM Seat
Factory Precharge	55 PSIG (3.8 bar)

Performance

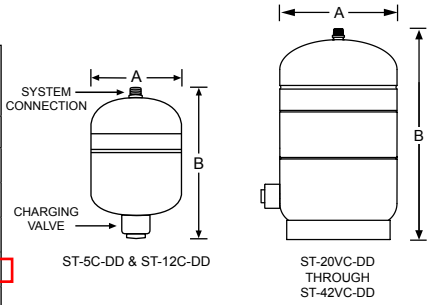
Maximum Operating Temperature	200°F (93°C)
Maximum Working Pressure	150 PSIG (10.3 bar)
Warranty	1-Year

Application

- For use in closed, domestic hot water systems to control pressure buildup.
- Fixed diaphragm construction.
- Designed and constructed per ASME Code Section VIII, Division 1.
- Tested to JIS Z 2801 for reduction of Legionella, Staphylococcus and E. coli.
- Follows ASHRAE 188 Anti-Legionella guidelines.
- All models available with optional sight glass.
- Seismic restraints available on stand models only.
- Deep drawn models are lighter, stronger and more compact than traditional head and shell construction.

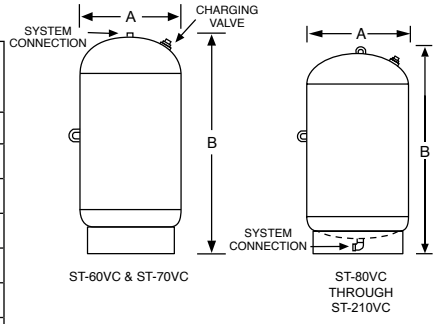
Deep Drawn In-Line & Stand Models

Model Number	Tank Volume		Max. Accept. Factor	A Tank Diameter		B Tank Height		System Conn. (NPTM)	Shipping Weight	
	Gal	Lit		In	mm	In	mm	In	Lbs	Kg
ST-5C-DD	2.0	8	.45	8	203	14	356	¾	10	5
ST-12C-DD	6.4	24	.50	12	305	18	457	¾	26	12
ST-20VC-DD	8.6	33	.37	12	305	22	559	¾	36	16
ST-30VC-DD	16.5	63	.68	15	381	25	636	¾	48	22
ST-42VC-DD	23.0	88	.49	15	381	33	838	¾	68	31



Head & Shell Stand Models

Model Number	Tank Volume		Max. Accept. Factor	A Tank Diameter		B Tank Height		System Conn. (NPTF)	Shipping Weight	
	Gal	Lit		In	mm	In	mm	In	Lbs	Kg
ST-60VC	25.0	95	.44	16	406	32	813	¾	85	39
ST-70VC	34.0	129	.32	16	406	45	1143	¾	99	45
ST-80VC	53.0	201	.66	24	610	37	940	1¼	224	102
ST-120VC	68.0	257	.51	24	610	44	1118	1¼	266	121
ST-180VC	77.0	291	.45	24	610	49	1245	1¼	285	129
ST-210VC	90.0	341	.39	24	610	57	1448	1¼	319	145



All dimensions and weights are approximate.

Job Name The Atrium

Engineer Smith + Andersen

Contractor Elegant Plumbing Ltd.

P.O. No. _____

Sales Rep. Robinson Supply

Model No. ST30VC-DD

Notes _____

188 AntiLegionella. Antimicrobial.

NSF Certified to NSF/ANSI/CAN 61

Turbulator DEEP DRAWN MODELS

ISO 9001:2015 CERTIFIED

LOW-LEAD IAPMO R&T

Worthington Industries Inc., 1400 Division Road, West Warwick, RI 02893 USA T: 401.884.6300 **www.amtrol.com**

MC4400 (01/21)

Tag: P-DHWR-01

E.2 SERIES CIRCULATORS

E14.2/E14.2B | SUBMITTAL

File No: 10.604
Date: JUNE 05, 2017
Supersedes: 10.604
Date: DECEMBER 2, 2014

Job: The Atrium
Representative: Robinson Supply
Order no.: _____ Date: _____
Engineer: Smith + Andersen
Submitted by: _____ Date: _____
Contractor: Elegant Plumbing Ltd.
Approved by: _____ Date: _____

QUANTITY	TAG NO.	PART NUMBER	FLOW (USgpm)	HEAD (FEET)	VOLTAGE	PHASE	COMMENTS
1	P-DHWR-01	182212-844	8	40	120V	1	

TECHNICAL DATA

Flow range: 0 to 52.0 USgpm (0 to 3.3 L/s)
Head range: 0 to 61.0 feet (0 to 18.6 m)
Max/Min fluid temp: 230°F/40°F (110°C/4°C)
Max. working pressure: 150 psi (1034 kPa)

MOTOR DATA

Voltage	120V	208V	240V	277V
Full load amp draw	4.8A	2.4A	2.4A	2.4A

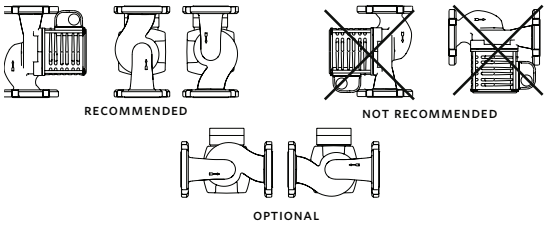
Nominal power: ⅔ hp (300W) **Frequency:** 60 Hz
Motor type: Two pole, Single phase ODP **Speed:** 3300 rpm

MATERIALS OF CONSTRUCTION

Pump body: Cast iron (closed sytems)
Bronze (lead free for open systems)

Face plate: Stainless steel **Shaft:** Stainless steel
Impeller: 30% Glass-filled noryl **Volute gasket:** EPDM
Bearings: Permanently lubricated stainless steel
Seal: Silicon carbide enviroseal c/w viton elastomer
All Bronze Circulators are NSF – 372 rated

MOUNTING ORIENTATION FOR INDOOR USE ONLY



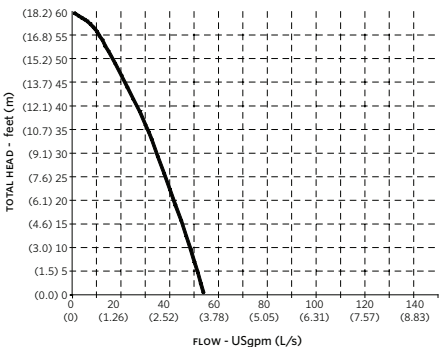
PART NUMBER

	120V	240V
E14.2	182212-843	182212-802
E14.2B	182212-844	182212-803

E14.2/E14.2B ACCESSORIES

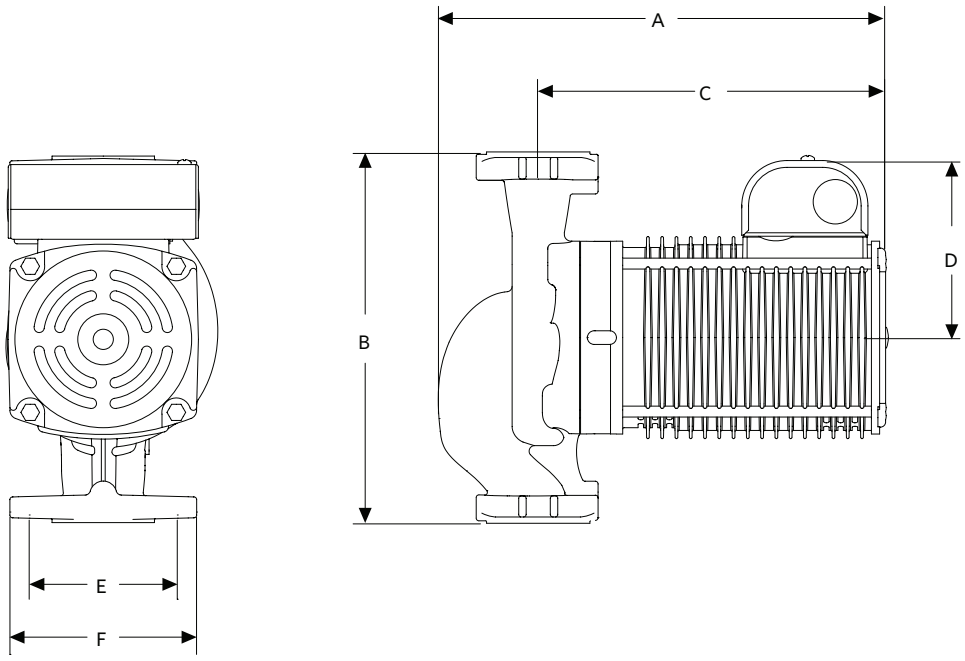
- ¾" Flange kits
- 1" Flange kits
- 1¼" Flange kits
- 1½" Flange kits
- Timer
- Aquastat

PERFORMANCE CURVE



Performance curves are for reference only. Confirm current performance data with Armstrong ACE ONLINE selection software.

DIMENSIONS inches (mm)									SHIP. WEIGHT
MODEL	**BODY**	**A**	**B**	**C**	**D**	**E**	**F**	**CONNECTION TYPE & SIZE**	**lbs (kgs)**
E14.2	Cast iron	9.30 (235)	6.40 (164)	7.80 (197)	4.00 (101)	3.20 (81)	4.20 (107)	1.25" diameter 2-bolt flanges	17.8 (8.07)
E14.2B	Bronze	9.30 (235)	6.40 (164)	7.80 (197)	4.00 (101)	3.20 (81)	4.20 (107)	1.25" diameter 2-bolt flanges	18.4 (8.35)



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THE ATRIUM

19945 BRYDON CRESCENT, LANGLEY

OPERATION AND MAINTENANCE INFORMATION

engineered pump systems ltd.

June 8, 2021
EPSL File No: 21-0211

THE ATRIUM
19945 BRYDON CRESCENT, LANGLEY
OPERATION AND MAINTENANCE INFORMATION

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SECTION 2:

OPERATION AND MAINTENANCE MECHANICAL INFORMATION

THE ATRIUM
19945 BRYDON CRESCENT, LANGLEY

As an owner / operator of a pump station, it is important that you keep your system in good running order to insure the operation of the system for a long period. To do this it is important that you understand the operation of the system, even if you are hiring out the maintenance of the station.

Regular inspection and preventative maintenance ensure continued, reliable operation of the entire submersible pumping system. All stations, pumps and operating equipment should be inspected at least once a year, and more frequently under severe operating conditions. One of the major advantages of a submersible station is the ability of the service technician to handle most maintenance and service onsite, without entering the wet well. This material should be read carefully, filed and consulted whenever servicing is required.

Safety Precautions:

Pump Stations, by their design, are confined spaces. They can accumulate dangerous, invisible, sometimes odor free, gasses that can quickly disable or even kill a worker. Entry to the station is prohibited to any worker that has not been trained and certified in confined space as per WorkSafeBC Regulations.

Replacement Parts & Service:

E.P. Engineered Pump Systems Ltd.
1635 Industrial Avenue
Port Coquitlam, BC V3C 6M9
Phone: 604 552 7900 (Office)
www.engineeredpump.com

PRODUCT	MODEL	SPECIFICATIONS
P-SAN 01/02: SANITARY		
Submersible Pump	Myers WHR10H-03	1 HP, 208/3/60
Control Panel	NWTC DCP208.VP.ISB.TC12	NEMA 1 Indoor Enclosure
Sensor Float	SJE 50MANWENO	(4) Required
P-SAN 03/04: SANITARY		
Submersible Pump	Myers WHR10H-03	1 HP, 208/3/60
Control Panel	NWTC DCP208.VP.ISB.TC12	NEMA 1 Indoor Enclosure
Sensor Float	SJE 50MANWENO	(4) Required
P-STM 01/02: STORM		
Submersible Pump	Myers 4VX50M4-03	5 HP, 208/3/60
Control Panel	NWTC DCP208.VP.ISB.HSSL.TC12	NEMA 1 Indoor Enclosure
Sensor Float	SJE 50MANWENO	(4) Required
P-STM 03/04: STORM		
Submersible Pump	Myers WHR5H-03	1/2 HP, 208/3/60
Control Panel	NWTC DCP208.VP.ISB.TC12	NEMA 1 Indoor Enclosure
Sensor Float	SJE 50MANWENO	(4) Required
P-STM 05/06: STORM		
Submersible Pump	Myers WHR10H-03	1 HP, 208/3/60
Control Panel	NWTC DCP208.VP.ISB.TC12	NEMA 1 Indoor Enclosure
Sensor Float	SJE 50MANWENO	(4) Required

Dear Client:

Please be advised that your building is connected to a Sanitary Pump Station. The pumps are an expensive part of your utility operation and each individual is affected by their operation and maintenance. A valid effort is required by each to help reduce costly repair and maintenance costs.

Please take this into consideration when disposing of the following:

a) Dental floss
b) Feminine products, condoms, any fabric hygienic products
c) Paper towels
d) Diapers, baby wipes
e) Any material (i.e. cleaning rags) or articles of clothing
f) Disposable Wipes (of any kind, even those labeled "flushable")
g) Cooking grease

Items “a” through “f” should only be disposed of through the garbage. To dispose of them discretely wrap in toilet paper and place in garbage.

Item “f” (cooking grease) when disposed through the kitchen sink with hot water will liquefy the grease but as it cools in the building pipes and in the gravity main pipe to the pump station the grease will solidify and attach itself to the pipes and pump station and start to collect, eventually causing blockages. When it reaches the pump station it will actually attach to anything in the sump and potentially cause the floats to be impeded from functioning correctly and causing damage to the pumps by plugging with excessive amounts of grease in the operating components of the pumps. All operations of pumps will be affected potentially causing a failure to which levels in the tank will rise and sewage back up will result.

To reiterate…please do NOT flush or dispose of any above stated products down toilets, sinks or tubs as eventually the sewage pump system **will** be affected and at some point will not function and cause pump and float control operation failure.

Thank you for your consideration regarding this matter.

STORE IT, DON'T POUR IT!

Did you know that hot water and soap do not wash away the fats, oils and grease you pour down your drain? In fact, they solidify in your pipes, clog your sewer lines, and cause sewage backup in your home and in the neighborhood. The result is time, trouble and expense for you, your neighbours and your municipality.

My we suggest Residents to "Store it, don't pour it". Residents are asked to store fats and grease in a disposable container. Used cooking oil should be cooled and put into a covered plastic bottle, labeled and put out for garbage collection.

****

FOG: FATS, OILS & GREASE - PROMOTING CLEAN, GREEN DRAINS

TRAP IT! **Trap cooling oil, salad dressing and sauces using paper towels and discard in designated waste containers.**

TRASH IT! **Trash solid foods – like leftovers from a plate – into the garbage or green waste recycling before placing dishes in a sink or dishwasher. This includes foods like coffee grounds and tea leaves.**

STRAIN IT! **Strain the drain – placing a strainer in the sink will prevent any solids from being washed down the drain.**

Trash It, Don't Splash It!

As society uses more convenient, disposable products, municipalities are dealing more and more with sewer clogs caused by items that were never meant to be disposed of in the sewer system.

Some of the items being discovered in sewers are listed below. Public Works calls these items "unflushables." Even those items that claim to be flushable on the packaging usually aren't. Unflushables cause sewer and pump blockages resulting in backups that can be costly for homeowners and municipalities.

We sencourage all residents to "Trash it, don't splash it."

Items allowed to be flushed:

- human waste (urine, feces, vomit)
- toilet paper

Some items not allowed to be flushed (unflushables):

- rags
- disposable wipes
- diapers
- feminine products (including tampons)
- hair
- condoms
- dental floss
- batteries
- needles

engineered pump systems ltd.

Trouble Shooting Chart

This "TROUBLE SHOOTING" chart has been prepared to guide in the general determination of pump problems and their solutions. Each manufacturer normally provides a description of warranty conditions. Some pump warranties are immediately voided if the unit is disassembled. Be sure to thoroughly read the owner's manual and warranty.

WARNING: Unplug pump from power source before handling. Failure to do so could result in severe personal injury or death when touching the pump or discharge piping.

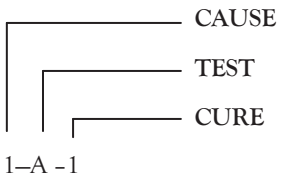
SAFETY INSTRUCTION:

1. For your safety, read the owner's manual carefully. Learn the pump's application and limitations as well as specific hazards peculiar to this pump.
2. If pump repair is required, take the pump to the manufacturer's authorized service station.

EXPLANATION OF THE CODE SYSTEM:

1. Determine trouble symptoms of pump.
   Example: **PUMP FAILS TO OPERATE**
2. Read and perform operations indicated by code listed under **CAUSE-TEST-CURE** at right of Trouble Symptom.

EXAMPLE: 1-A-1



Read No. 1 under POSSIBLE **CAUSE OF PROBLEM.**

Perform Test A under **TESTS**

Perform corrective action No. 1 under **CORRECTIONS.**

3. If No. 1-A-1 does not solve the problem, continue down Code list until problem is solved.

SSPMA Certified PUMP

CAUTION: **Always disconnect pump from power when working on or testing any portion of pump or discharge piping**

TROUBLE SYMPTOM	CAUSE—TEST—CURE
PUMP FAILS TO OPERATE (Motor does not run)	1-A- 1 5-E- 7 26- K-13 1-A- 2 5-E- 8 27- T-13 2-B- 4 6-H-13 28- K-13 2-B- 5 6-H-31 29- P-13 2-B- 7 7-H-31 31- J– 9 2-C- 4 9-E- 6 31- J-31 2-C- 5 9-E- 7 40- Z-32 3-H- 4 9-E- 8 41-AA-33 3-H- 5 10-J- 9 42- P-34 3-H- 7 10-J-31 42- P-35 4-E- 6 14-J-10 42- P-36 4-E- 7 14-J-11 42- P-37 5-D- 3 14-J-31 43- P-38 5-D- 6 16-L-27 44- P-39 5-D–31 16-S-27 45- Z-40
PUMP OPERATES BUT FAILS TO DELIVER WATER OR DELIVERS INSUFFICIENT AMOUNT OF WATER	11-J-23 23-V-25 12-W– 9 24-U-26 12-W-31 30-J-22 17-S-12 32-N-15 17-S-16 32-N-16 18-P-14 32-N-17 19-H-20 33-J-31 20-P-21 38-O-30 21-P-18 39-S-16
PUMP OPERATES FOR SHORT TIME THEN STOPS (Does not stop at normal turn off	5-D– 3 13-J-31 5-D– 7 15-J-11 7-H-31 15-J-31 8-E– 8 16-L-27
PUMP OPERATES CONTINUOUSLY (Does not turn off at normal turn off level, and continues to operate after all water is evacuated.)	6-I-31 23-V-25 11-J-23 24-U-26 12-W– 9 27-T-13 12-W-31 28-K-13 17-S-12 29-T-13 17-S-16 30-J-22 18-P-14 32-N-16 19-H-20 32-N-17 20-P-21 33-J-31 21-P-18 39-S-16
PUMP CYCLES TOO FREQUENTLY (Cycles on and off more than once a	17-S-12 25-P-24 23-R-25 28-K-13 23-V-25 34-M-19
PUMP OPERATION VERY NOISY (Squealing, hammering, grinding or excessive noise transmitted thru piping.)	11-J-23 35-P-28 13-J-31 35-P-29 15-P-11 36-F-28 30-J-22 37-O-30
PUMP TURN ON & TURN OFF POINTS HAVE CHANGED	27-K-13 44-P-39 29-T-13 36-F-28 40-Z-32

POSSIBLE CAUSE OR PROBLEM

1. Pump power cord not connected to power receptacle or making poor contact
2. Branch circuit not connected. Defective circuit breaker. Branch circuit open or faulty.
3. Branch circuit fuse blown or circuit breaker tripped.
4. Branch circuit wiring too small to carry pump load.
5. Pump motor overload tripped.
6. Automatic liquid level control switch defective.
7. Internal motor defect (open motor winding, thermal overload defective, power cord open or damaged, centrifugal switch or relay defective or moisture in motor.)
8. Exceptionally high voltage.
9. Exceptionally low voltage.
10. Impeller blocked or bound.
11. Impeller loose on shaft.
12. Clogged or damaged impeller.
13. Impeller rubbing inlet plate or pump housing.
14. Bearing frozen.
15. Worn out or defective pump or motor bearings.
16. Water temperature too high.
17. Water inflow excessive.
18. Clogged screen or pump inlet.
19. Air locked or air bound pump.
20. Air bleed hole blocked.
21. Pipe discharge closed by obstruction or ice.
22. Inadequate discharge pipe diameter.
23. Defective or inoperative check valve.
24. Check valve installed in wrong direction.
25. No check valve in high head installations.
26. Water level not sufficiently high to actuate control switch
27. Float operation obstructed or restrained.
28. Floats or weights improperly adjusted.
29. Float rod bent or obstructed by debris.
30. Loose shaft coupling.
31. Obstructed rotating parts.
32. Too high a static and friction head.
33. Motor running backwards.
34. Sump size too small.
35. Discharge plumbing connected directly to floor joists.
36. Pump not positioned firmly on bottom of sump.
37. Gravel or stones on bottom of sump.
38. Sump bottom soft and muddy.
39. Improperly sized pump.
40. Diaphragm control skirt lost trapped air.
41. Breather tube in power cord obstructed.
42. Moisture in breather tube.
43. Passage from control skirt to diaphragm obstructed.
44. Compression fittings retaining pressure tube between control skirt and control are loose.
45. Defective control switch.

CAUTION: **Always disconnect pump from power when working on or testing any portion of pump or discharge piping**

TESTS	CORRECTIONS
A. Check pump cord cap prongs for tightness and corrosion.	1. Replace plug or clean plug prongs with abrasive paper.
B. Test for power with light bulb.	2. Have electrical receptacle replaced.
C. Check fuses and breaker.	3. Have electrician or power company check branch circuit voltage.
D. Allow pump to cool for 5-10 minutes and reconnect, if overload trips again take corrective action.	4. Replace fuse. Note size recommended by pump manufacturer and pump nameplate rating. Use slow-blow type to withstand starting load.
E. Have line voltage checked and compare with manufacturer's specifications.	5. Reset breaker.
F. Disconnect power and check pump for stability.	6. Have pump connected to separate branch circuit.
G. Check number of other devices on branch circuit.	7. Call electrician to repair circuit.
H. Remove pump, disconnect power, connect to rated voltage and actuate control switch.	8. Call power company.
I. Manually operate control.	9. Clean volute and impeller and remove blockage.
J. Disconnect power, remove pump from sump and observe for freedom of impeller and shaft rotation.	10. Free and lubricate lower bearing of column pump.
K. Add water to sump and observe turn-on.	11. Replace pump bearing.
L. Add cold water to sump and test.	12. Have larger sump and pump installed.
M. Measure sump width and depth and compare with manufacturer's specifications.	13. Readjust control floats or weights.
N. Measure vertical portion of discharge pipe (over 15 feet is excessive). If discharge pipe length is extremely long, the friction losses may exceed pump capacity. Observe number of pipe fittings and reducing bushings.	14. Clean screen.
O. Evacuate sump.	15. Have installed larger diameter discharge piping.
P. Examine and observe.	16. Have larger pump installed.
Q. Check rotation of impeller.	17. Remove any reducing pipe fittings and elbows.
R. Observe backflow of water from discharge.	18. Clean or snake discharge line.
S. Observe source and amount of water in-rush.	19. Install larger sump.
T. Observe and check float or weight freedom	20. Drill 1/8" or 3/16" air bleed hole between pump discharge and check valve.
U. Observe arrow on check valve indicating direction of flow.	21. Clean out air bleed hole.
V. Check gate of gate valve.	22. Tighten coupling and set screws.
W. Remove screen and observe condition.	23. Tighten fasteners, replace key.
X. Measure discharge pipe and compare with manufacturer's suggested diameter (Should be no smaller than pump discharge).	24. Install check valve.
Y. Measure water temperature .	25. Clean gate of check valve.
Z. Manually override control to check pump operations, if override is provided by manufacturer.	26. Install check valve in opposite direction.
AA. Visually inspect power cord for sharp twists or tape over breather tube at cord cap end.	27. Install high temperature pump or reduce temperature of incoming water.
	28. Readjust discharge piping and pump.
	29. Replace portion of discharge with rubber hose.
	30. Clean sump.
	31. Return to Authorized Service Center.
	32. Lift pump above fluid level in sump. Then holding pump straight and vertical, place pump back into sump to re-trap air in control skirt.
	33. Straighten cord or remove tape from breather tube.
	34. Return to Authorized Service Center for corrective action.
	35. Return pump to service center for new power cord.
	36. Plug cord into receptacle upside down to prevent moisture from entering breather tube.
	37. Remove source of moisture such as dripping pipes, washing machine discharge splash etc., or protect power cord plug from dripping or splashing water.
	38. Clean passage way
	39. Tighten fittings. Then lift pump above fluid level in sump and holding pump straight and vertical, place pump back into sump to re-trap air in control skirt.
	40. If override control operates pump, but pump fails to function automatically, return pump to a service center.
	41. If override does not operate pump, motor is defective. Return to pump service center.

FOCUS ON: SAFETY

Confined spaces: the devil's snare

By Verne R. Brown, Enmet Corp, Ann Arbor, MI

On March 8, 1994 two workers entered a 66in. diameter sewer line that was under construction. Their mission: to refuel a gasoline-engine-powered pump, which was being used to remove water from the line. The pump was about a half mile from where the workers had entered. One of the workers died from carbon monoxide poisoning; the coworker escaped. But a state inspector who entered from another point along the sewer line died in a rescue attempt.

Sadly, this sort of event happens too often. And the vast majority of such events within the water and wastewater fields occur among companies having fewer than 100 people. It painfully demonstrates a lack of regard within small to moderate-sized utilities for one or more of the following cardinal rules for averting the death and mishaps that lurk in confined spaces:

Sadly, [small-water-utility worker death in confined spaces] happens too often...[and] painfully demonstrates a lack of regard...for one or more cardinal rules

- Identify confined spaces for what they are.
- Never enter a confined space without being authorized, suitably trained and equipped
- Never, ever, attempt to rescue someone from a confined space without suitable backup.

Recognizing confined spaces

There is no standard definition of a confined space. But, by consensus, a confined space is one that is not intended for continuous employee occupancy and that presents one or more of the following hazards:

- The potential for contaminated air
- Difficult egress or ingress
- The risk of engulfment
- The risk of entrapment

Confined spaces include manholes and storage tanks-even tanks without covers. A space is deemed *"confined"* because the person(s) who enters loses (at least some) ability to respond to or avoid or escape danger. The primary danger in a confined space is asphyxiation, but mechanical hazards and the potential for explosion are others.

Taking Notice

Only a fool underestimates the kill potential of a confined space. Consider: (according to data gathered in the late '70s and early '80s) 65 percent of those who die in confined spaces have no concept of the danger they face. More than half who die in confined spaces are would-be rescuers; more than one-third of confined space fatalities occur after the space has tested safe for entry.

No one entering or having entered a confined space should forget the precariousness of the situation. There's no room for horseplay, chance taking, or "over-staying your welcome."

The U.S. Occupational Safety and Health Administration (OSHA) in its proposed confined space standard of 1989 identifies two types of confined spaces: high-and-low hazard permit spaces. The difference between the two is that low-hazard spaces present little danger from asphyxiation, combustion, or engulfment.

OSHA's confined space regs would have employers inventory their workplaces, and (except for those that are construction areas) identify "permit spaces." These spaces would then be permanently blocked or posted with signs that warn the employee from entering. Before asking any employee to enter, employers would have to develop a written program for identifying the hazards in that permit space, restricting access only to authorized personnel, and controlling the hazards. In addition, for high hazard spaces, the employer would be required to provide an attendant to monitor workers while they are entering, occupying, and leaving the space.

A present danger for the person entering a confined space is an inadequately tested space

Dealing with confined spaces

The safest way of dealing with a confined space is not to enter it. Certainly, employees with no business in confined spaces should never enter one, and education, permitting procedures, signs, and electric lockouts can reduce unauthorized, inadvertent, or foolhardy entry.

There are, however, times when entering a confined space is unavoidable. For these situations, the most that can (and should) be done is to maximumly reduce the danger through procedures and rigorous training.

Conditions should be made as favorable as possible for the employee before the employee attempts to enter. No employee in poor health should be authorized for entry. No employee without the proper training should be authorized for entry. All employees authorized for entry should have received suitable vaccinations (against tetanus, hepatitis, rabies, and other diseases that one might contract from the confined space). All employees authorized for entry should be suitably equipped for entry, including protective clothing, safety gear, functional (and functioning) gas detectors, and communications equipment. The space should hold fail-safe warning devices (to, for example, audibly warn of ventilation failure). The area around the confined space should be cleared for any objects that conceivably could topple into the space. Trenches should be suitably shored. The space should be electrically secured to ensure against sparked-caused fire or explosion.

Entry into a confined space should be by permit only. The permit should specify the type of work and where it is to be done, list known and suspected hazards and remedies or countermeasures, and be signed by a qualified supervisor.

Physical hazards

The physical hazards in confined spaces include falling, bumping, drowning, touching hot or otherwise dangerous objects (such as moving equipment), and getting hit by falling objects. The use of suitable gear (hoists and harnesses) and the wearing of suitable garments (hard hats, steel-lined boots, protective eye wear, earmuffs, gloves, and other gear as the situation warrants) can go a long way to reducing punctures, scrapes, and contusions. Awareness and prudent care (in following safe work practices) can help minimize other physical injury. This includes standing clear when tools are being lowered (in a bucket) into the confined space. The employee entering a confined space via its ladder should look for handrails and be alert for loose, deteriorated, or missing rungs or possible clutter on any rung. If the employee is to be lowered into the confined space, all parts of the safety harness should be checked for integrity and functionality. The worker's lifeline should be able to take the tension applied to it during the rapid evacuation for the worker turned victim.

Atmospheric danger

Only the senseless trust to their own senses. Confined-space-atmosphere dangers are far from obvious. Where they are, reaction time may be insufficient. Noses can't substitute for gas detectors. (Most gases that water or wastewater employees are likely to encounter are odorless; and the nose quickly desensitizes to those gases that do have odor).

The greatest danger facing the person entering a confined space is a lack of oxygen. Several breaths of an atmosphere holding less than 6 percent oxygen can disable in seconds and can kill in minutes. Either the volume percent of oxygen can be too little(less than 19.5) or other gases (such as carbon monoxide) in the confined space may interfere with the body's uptake of an otherwise sufficient supply. Oxygen deficiency can also debilitate sensors: Thus a space with vary low oxygen levels can't be tested for combustible gases since standard instruments for this purpose require oxygen to function. (The sensor actually attempts to ignite a sample of the atmosphere and can't do so when the fuel/oxygen ratio is too high.)

A present danger for the person entering a confined space is an inadequately tested space: Gases may drift from the area where one would expect them to be. Heavier-than-air gases, which settle, may elude detection until they are agitated and dispersed by someone in the space. The tester may give less time than needed (which often may be more than a minute) to draw samples from the space and into the detector. The gas detector may be inadequate because it is wrong (antiquated or mismatched) for the job, improperly calibrated or used, undercharged, or too "numbed" by the cold or radio interference. (Use of instruments with plastic cases is ill-advised where radio waves abound. Mixing tubes and pumps from manufactures of different tube type detectors can skew readings. And contrary to conventional wisdom, keeping detectors on or near-constant trickle charge for long periods can hobble performance.)

Gas detectors than serve to give a running account of confined-space air quality should provide continual readings of oxygen content, lower explosive limit (LEL), carbon monoxide, and one other gas (depending on the other gas likely to be present). Instruments that test for one or two contaminants are passé. An acceptable instrument should offer fail-safe readings, be rugged and simple, and be cost effective.

The importance of order

It's important to establish the safety of a confined space atmosphere in a deliberate, routinized way. The first gas to check for is oxygen; it should constitute 19.5 to 23 percent of the atmosphere, by volume. A bit too little oxygen can effect a worker's ability to concentrate. Too little can cause dysfunction. Much too little can cause death- in seconds. On the other hand, too much oxygen can create on overly flammable situations.

The only safe assumption about a confined space is that Murphy's law prevails. (Whatever can go wrong will.)

Where the oxygen level is less than the acceptable lower bound, ventilate. Where ventilation doesn't do the job, provide workers with a separate source of clean, safe air.

Next, check for combustible gases. Most gases are combustible; however, many such as carbon monoxide and hydrogen sulfide are toxic at levels well below those required for combustion.

Next, check for carbon monoxide or hydrogen sulfide if either is likely to be in the space.

Last, test for other suspected gases or vapors that may be associated with the space.

During all gas testing, samples should be taken at all levels of the confined space and at all areas within it for a time that is sufficient to ensure accurate sampling.

Testing for the atmosphere cannot be a once-a-day or once-a-shift practice. More than a third of all worker confined space deaths has been caused by toxic gas, despite the atmosphere's having been certified safe prior to entry into the confined space at the start of the work shift.

Something's amiss when 60 percent of confined space fatalities occur during rescue missions. Mostly this statistic suggests that rescue is a knee-jerk, desperate reaction to an emergency situation when it should be a well-conceived, coolly executed exercise undertaken only by experienced professionals.

Rescue procedures should be established before entry and should be specific for each type of confined space. No procedure can be written to contend with every contingency, so although procedures should be thorough, they should leave room for best-judgment calls by the rescue crew chief. However, no rescue should ever be attempted by anyone who is not authorized, trained, and well-drilled in the rescue procedures; who is not properly equipped for the task (lifeline, self-contained breathing apparatus, etc.); or who is not suitably backed by others remaining outside the space.

OSHA would limit rescue efforts to teams who have been briefed with regard to the potential dangers in the space and who are properly trained and suitably equipped for the task. In addition, those supervising the entry into confined spaces must be trained to distinguish between acceptable and unacceptable conditions and recognize conditions for which occupancy should be terminated.

Remember

Only the naive assume conditions regarding a confined space. The only safe assumption about a confined space is that Murphy's law prevails. (Whatever can go wrong will.) Workers should never assume that the space that has tested safe will remain safe. Nor should they assume the reliability or worthiness of their safety equipment. Workers who lack an understanding of their equipment's operation and effectiveness are gravely disadvantaged. Without proper selection, strict maintenance, attention, and proper use, gas detectors can give false or deceptive readings; breathing apparatus can perform below rated capacity; and safety harnesses can become deadly shackles. Confined spaces deserve respect.

Standard operating procedures for working in confined spaces

Although only part of a total program for protecting workers in confined spaces, standard operating procedures (SOPs) help ensure worker safety. A checklist of SOPs to follow when preparing for, entering, and working in confined spaces should be developed for each confined space and should

- Identify the hazards of the confined space, listing all that are known or are conceivable-such as: "the floor is very slippery," or "air-quality conditions change rapidly die to flows that cannot be secured."
- Explain each step needed to isolate the confined space from: flows, moving machinery, potential gas sources, etc.
- List all: (1) valves that are to be locked out and chained; (2) breakers that need to be locked out and tagged; (3) any other devices that must be secured.
- Cover each step required to flush, ventilate, or otherwise ensure that all proper precautions have been taken for safe entry into, and for safe work in, the confined space.
- Identify all equipment and the methods used to test and monitor conditions before and during entry into and while working in the confined space.
- List the emergency or support services to be called, explaining how the communications are made and maintained with a third party.
- List all safety equipment required at the work site - and at the plant site, if needed.
- Identify the minimum safety equipment that each worker in the confined space and the top-side attendant must wear.
- Explain how the worker in the confined space and the attendant(s) will maintain effective communications - whether by visual means, by radio or by other methods.
- Provide any other information whose inclusion is necessary to ensure employee safety. Examples are: time of day or week during which entry is permitted, mechanical-ventilation requirements, who-needs-to-know information, etc.

As earlier stated, the development of SOPs that take workers through the step-by-step process of securing their safety in confined spaces in only one of several key elements needed to address a comprehensive confined-space plan. Others include a common understanding by management and labor of the definition of terms; the writing of a manifest that identifies each confined space and any associate concerns that each may create; the development of an entry permit; and the training of employees with regard to handing standard and emergency situations.

These procedures were taken from the 1991 Pacific Northwest Pollution Control Assn. meeting presentation, "Confined Space Management Plan," by Owen Boe of EOS, Vancouver, WA.

SECTION 1

SHOP DRAWING SUBMISSION

THE ATRIUM

THE ATRIUM
19945 BRYDON CRESCENT, LANGLEY
P-SAN 01/02: SANITARY – 20 USGPM @ 40’ TDH
P-SAN 03/04: SANITARY – 50 USGPM @ 30’ TDH
P-STM 05/06: STORM – 60 USGPM @ 30’ TDH
EACH SYSTEM C/W THE FOLLOWING EQUIPMENT

MYERS® WHR5H-WHR20HH

The Myers WHR5H-WHR20HH series vortex pumps are designed for use in light commercial sewage and effluent applications.

The series passes 2 inch solids and the WHR20HH pumps are available to deliver higher head conditions. Recessed impeller is standard allowing the pump to handle stringy waste without plugging the impeller.

SPECIFICATIONS

Shut-off Head – Up to 75' (22.9 m)
Solids Handling – 2" (50.8 mm)
Liquids Handling – Raw sewage and sewage effluent
Intermittent Liquid Temperature – Up to 140°F (60°C)
Motor/Electrical Data – 1/2 HP, 115V, 1Ø; 1/2, 1, 1-1/2 and 2 HP, 3450 RPM, 208/230V, 1Ø, 60 Hz, PSC; 208/230/460V/575v, 3Ø, 60Hz
Acceptable pH Range – 6-9
Discharge, NPT – Discharge, NPT – 2" (50.8 mm), Optional 3" (76.2 mm)
Housing – Cast iron
Power Cord – 20' (6.1 m), 16/3, SJOW/SJOW-A, 1Ø; ~~20' (6.1 m),~~ 16/4, SJOW/SJOW-A, 3Ø 50' (15.24m)
Impeller – Ductile iron, recessed
Volute Case – Cast iron
Shaft Seal – Type 21, carbon and ceramic
Minimum Sump Diameter – Simplex: 24" (610 mm); Duplex: 30" (762 mm)

FEATURES

Tough Against Corrosion
All cast iron construction resists the most extreme corrosive environments

Runs Cooler
Oil-filled motor for bearing lubrication and maximum heat dissipation

Flow to Meet Demand
Higher head performance for demanding sewage and effluent applications

Powerful Starts
High-torque, permanent split capacitor (PSC) motor; no starting switches or relays to wear out

Thermal Protection
Heat sensor overload protection with automatic reset when motor cools to a safe operating temperature

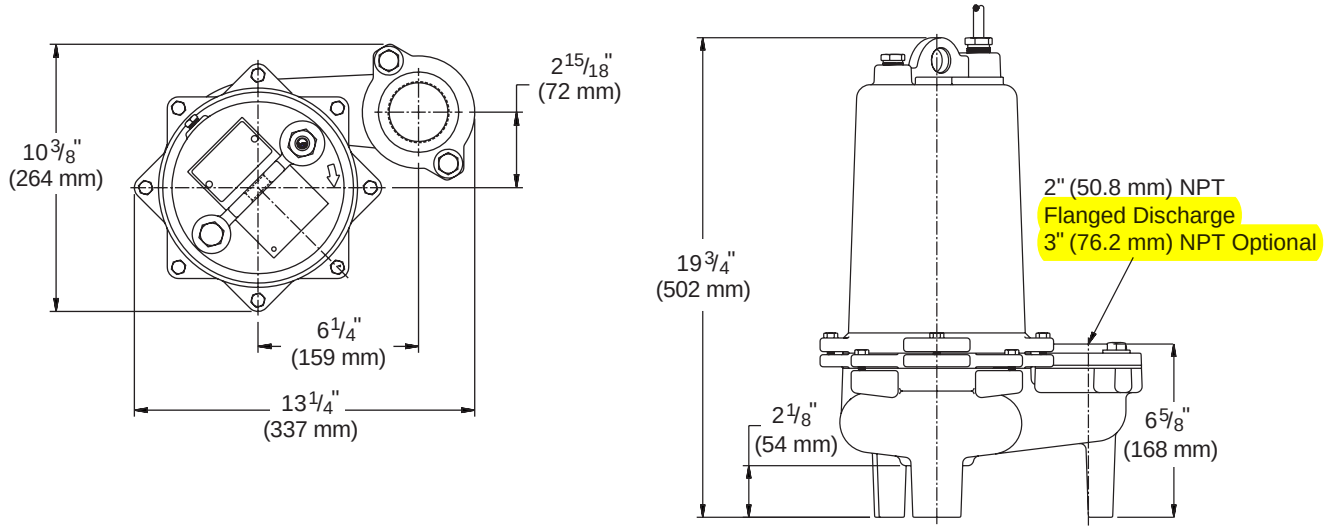
MYERS® WHR5H-WHR20HH

ORDERING INFORMATION

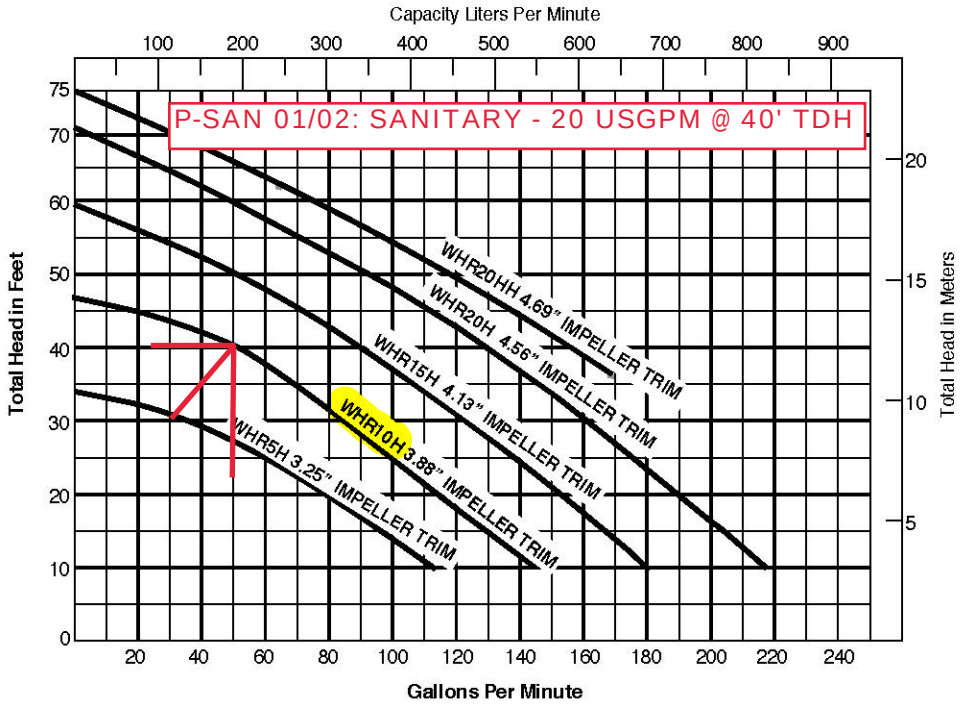
MODEL NUMBER	HP	VOLTS	PHASE/CYCLES	DISCHARGE SIZE	SWITCH TYPE	CORD LENGTH	WEIGHT LBS.
WHR5H-11	1/2 (0.37 kw)	115	1/60	2" (50.8 mm)	Manual	20' (6.1 m)	75 (34 kg)
WHR5H-01		208	1/60				
WHR5H-21		230	1/60				
WHR5H-03		208	3/60				
WHR5H-23		230	3/60				
WHR5H-43		460	3/60				
WHR5H-53		575	3/60				
WHR10H-01	1 (0.75 kw)	208	1/60	2" 3" (50.8 mm) (75mm)	Manual	20' 50' (6.1 m) (15.24m)	79 (35.8 kg)
WHR10H-21		230	1/60				
WHR10H-03		208	3/60				
WHR10H-23		230	3/60				
WHR10H-43		460	3/60				
WHR10H-53		575	3/60				
WHR15H-01	1-1/2 (1.1 kw)	208	1/60	2" (50.8 mm)	Manual	20' (6.1 m)	85 (38.6 kg)
WHR15H-21		230	1/60				
WHR15H-03		208	3/60				
WHR15H-23		230	3/60				
WHR15H-43		460	3/60				
WHR15H-53		575	3/60				
WHR20H-21	2 (1.5 kw)	230	1/60	2" (50.8 mm)	Manual	20' (6.1 m)	95 (43.1 kg)
WHR20H-03		208	3/60				
WHR20H-23		230	3/60				
WHR20H-43		460	3/60				
WHR20H-53		575	3/60				
WHR20HH-21	2 (1.5 kw)	230	1/60	2" (50.8 mm)	Manual	20' (6.1 m)	95 (43.1 kg)
WHR20HH-03		208	3/60				
WHR20HH-23		230	3/60				
WHR20HH-43		460	3/60				
WHR20HH-53		575	3/60				

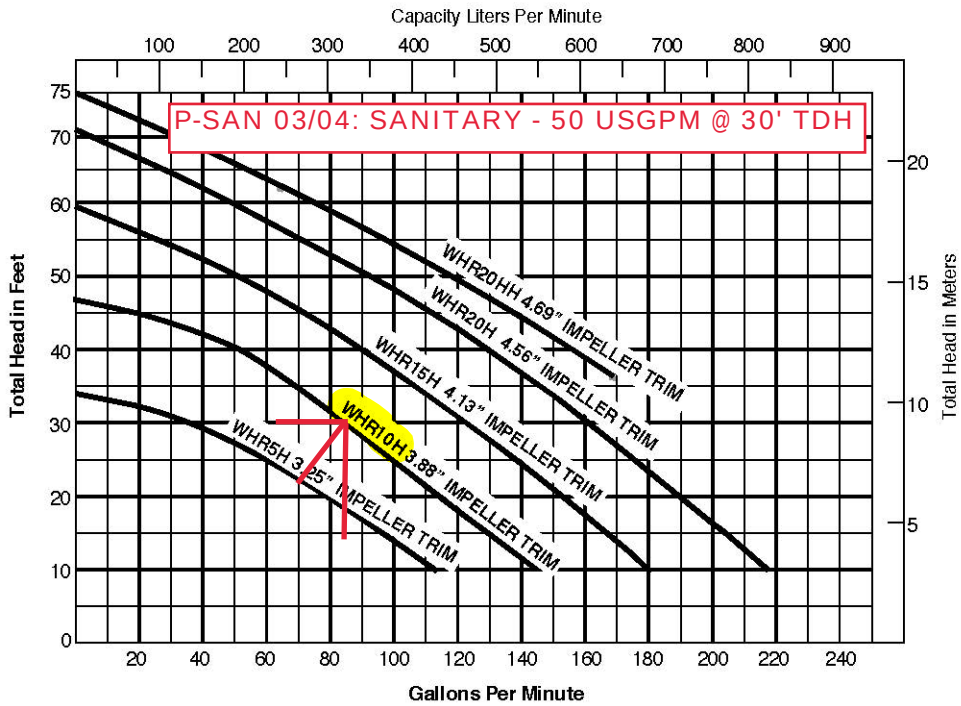
WHR20HH: Highest Head Series

DIMENSIONS

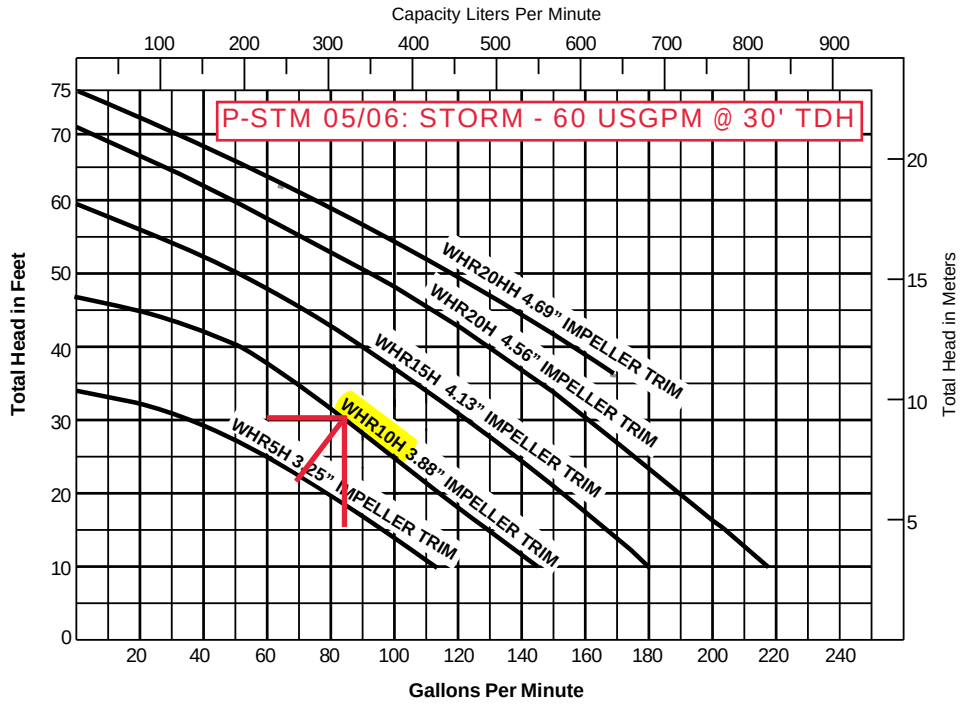


MYERS® WHR5H-WHR20HH





MYERS® WHR5H-WHR20HH



MOTOR ELECTRICAL DATA

MODEL NUMBER	HP	VOLTS	PHASE	HERTZ	START MAX AMPS	RUN AMPS	RUN KW	START KVA	NEC code KVA	LETTER
WHR5H-11	1/2	115	1	60	30.4	13.8	1.9	3.5	1.6	H
WHR5H-01	1/2	208	1	60	16.2	7.6	1.7	3.4	1.6	H
WHR5H-21	1/2	230	1	60	16.2	6.9	1.7	3.7	1.6	H
WHR5H-03	1/2	208	3	60	20.2	5.2	1.4	7.3	1.9	R
WHR5H-23	1/2	230	3	60	20.2	4.7	1.4	8.0	1.9	S
WHR5H-43	1/2	460	3	60	10.1	2.3	1.4	8.0	1.9	S
WHR5H-53	1/2	575	3	60	8.1	1.9	1.4	8.0	1.9	S
WHR10H-01	1	208	1	60	28.0	14.8	3.0	5.8	2.8	B
WHR10H-21	1	230	1	60	23.0	12.8	3.0	5.3	2.8	B
WHR10H-03	1	208	3	60	30.0	7.7	2.5	10.8	3.0	J
WHR10H-23	1	230	3	60	30.0	7.0	2.5	10.8	3.0	K
WHR10H-43	1	460	3	60	15.0	3.5	2.5	11.9	3.0	K
WHR10H-53	1	575	3	60	12.0	2.8	2.5	11.9	3.0	K
WHR15H-01	1-1/2	208	1	60	39.9	15.3	3.3	8.3	3.2	D
WHR15H-21	1-1/2	230	1	60	33.4	13.1	3.3	7.7	3.0	C
WHR15H-03	1-1/2	208	3	60	30.0	8.5	2.8	10.8	3.4	F
WHR15H-23	1-1/2	230	3	60	30.0	7.7	2.8	11.9	3.1	G
WHR15H-43	1-1/2	460	3	60	15.0	3.9	2.8	11.9	3.1	G
WHR15H-53	1-1/2	575	3	60	12.0	3.1	2.8	11.9	3.1	G
WHR20H-21	2	230	1	60	63.0	18.0	3.8	14.5	3.7	E
WHR20H-03	2	208	3	60	53.0	10.4	3.3	19.1	3.6	G
WHR20H-23	2	230	3	60	46.0	9.0	3.3	18.3	3.6	G
WHR20H-43	2	460	3	60	23.0	4.5	3.3	18.3	3.6	G
WHR20H-53	2	575	3	60	18.4	3.6	3.3	18.3	3.6	G
WHR20HH-21	2	230	1	60	63.0	18.0	3.8	14.5	3.7	E
WHR20HH-03	2	208	3	60	53.0	10.4	3.3	19.1	3.6	G
WHR20HH-23	2	230	3	60	46.0	9.0	3.3	18.3	3.6	G
WHR20HH-43	2	460	3	60	23.0	4.5	3.3	18.3	3.6	G
WHR20HH-53	2	575	3	60	18.4	3.6	3.3	18.3	3.6	G

MYERS® WHR5H-WHR20HH

SPECIFICATIONS

Sewage Pumps – Pump(s) shall be Myers WHR5H - WHR20HH series sewage pumps selected in accordance with the following design criteria:

	P-SAN 01/02: SANITARY	P-SAN 03/04: SANITARY	P-STM 05/06: STORM
Number of Pumps:	2	2	2
Primary Design Flow:	20 USGPM	50 USGPM	60 USGPM
Primary Design Head:	40' TDH	30' TDH	30' TDH
Minimum Shut-off Head:			
Motor Horsepower:	1 HP	1 HP	1 HP
Motor Speed:	3450 RPM	3450 RPM	3450 RPM
Electrical:	208/3/60	208/3/60	208/3/60

Pump – The pump shall be designed to handle raw sewage and be capable of passing 2 inch (50.8 mm) spherical solids. The pump shall be capable of handling liquids with temperatures to 140°F (60°C) intermittent and shall be capable of intermittently running dry without damage to the seals or bearings.

Motor – The pump motor shall be of the submersible type rated 1/2, 1, 1-1/2 or 2 hp as required. Motor shall operate at 3450 RPM and shall be for 115, 208 or 230 volts single phase, or 208, 230, 460, or 575 volts, 3 phase, 60 cycles. Single phase motors shall be of the permanent split capacitor type with no relays or starting switches. Three phase motors shall be squirrel cage induction type. Stator winding shall be of the open type with Class B insulation rated for 130°C maximum operating temperature. The winding housing will be filled with clean dielectric oil to lubricate bearings, seals, and transfer heat from the windings to the outer shell. The motor assembly shall be of the standard frame design and shall be secured in place by four threaded fasteners allowing for easy field serviceability.

The motor shall be capable of operating over the full range of the performance curve without overloading the motor and causing any objectionable noise or vibration. The common motor pump shaft shall be of 416 stainless steel and shall be heat shrunk into the die cast motor rotor. The motor shall have two bearings to support the rotor; an upper ball bearing to accommodate radial loads and a lower ball bearing to take thrust and radial loads. Ball bearings shall be designed for a B-10 life of 50,000 hours.

A heat sensor thermostat and overload shall be attached to the top end of the motor windings and shall be wired in series with the windings to stop the motor if the motor winding temperature reaches 266°F (130°C). The overload thermostat shall reset automatically when the motor cools to a safe operating temperature. Three phase motors shall be protected by 3 leg overload relay in control box. Overload shall be of the quick trip ambient compensated type and shall have manual reset button.

Power Cord – The motor power cord shall be SJOW/A for single phase and SOOW for three phase. The cable jacket shall be sealed at the motor entrance by means of a rubber compression washer and compression nut. A heat shrink tube filled with epoxy shall seal the outer cable jacket and the individual leads to prevent water from entering the motor housing.

Shaft Seal – The motor shall be protected by a rotating mechanical shaft seal. The seal shall have carbon and ceramic seal faces lapped to a tolerance of one light band. Metal parts and springs for seals shall be 300 series stainless steel.

Pump Impeller – The pump impeller shall be of the recessed vortex type. The impeller shall be constructed of ductile iron. The impeller shall be threaded onto the 416 stainless steel pump/motor shaft.

Pump and Motor Castings – All castings shall be of high tensile strength Class 30 gray cast iron. Castings shall be treated with phosphate rinse and painted with a high quality air dry alkyd enamel.

Fasteners – All exposed fasteners shall be of 300 series stainless steel.

PENTAIR

USA
293 WRIGHT STREET, DELAVAN, WI 53115 WWW.FEMEYERS.COM
PH: 888-987-8677 ORDERS FAX: 800-426-9446

CANADA
490 PINEBUSH ROAD, UNIT 4, CAMBRIDGE, ONTARIO, CANADA N1T 0A5
PH: 800-363-7867 ORDERS FAX: 888-606-5484

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Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.

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Zoeller Family of Water Solutions™

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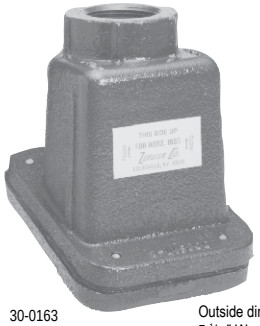
THE "FULL-FLOW" UNICHECKS

30-0163 1¼" CAST IRON NPT
30-0164 1½" CAST IRON NPT



30-0163
Pictured

Outside dimensions
5 1/16" W x 4" W x 6 ¼" H

POWDER COATED TOUGH™

- Vertical or horizontal installation
- Full-flow design, no restrictions
- Stops backflow of water
- Standard, 1¼", 1½", 2", 3" female NPT pipe
- Neoprene polyester reinforced flapper, smooth edge design with cast iron and noncorrosive metal backing plates & stainless steel fastener
- Corrosion-resistant powder coated epoxy finish
- Rated at 50 PSI (115 feet of head) at 130°F
- Stainless steel bolts
- 1 per carton
- Weight: 30-0163, 7.5 lbs.; 30-0164, 7.5 lbs.; 30-0152, 10 lbs.; 30-0160, 18 lbs.
- Suitable for installation below basin cover

30-0152 2" CAST IRON NPT
30-0160 3" CAST IRON NPT

30-0160
Pictured

Outside dimensions
6 5/8" W x 6 5/8" W x 8" H

30-0021 2" PLASTIC SLIP X SLIP UNIONS
30-0151 2" CAST IRON SLIP X SLIP UNIONS

- Full 2" flow design - meets BOCA (P.604.2) 2" full flow pump code
- Checks backflow of water and sewer gas
- Simple to install (no threading of pipe required). Save time & material costs
- Neoprene gasket and flapper, weighted with heavy stainless steel metal backing plates and rivet
- Can be installed on vertical or horizontal line
- Slips over PVC, steel pipe or copper piping
- Reduces motor and pump noise from plumbing system
- 6 per carton
- Flexible neoprene slip x slip union includes stainless steel clamps for low pressure systems. Avoid more than 10 ft. static head above the check valve. 4.3 PSI at 130°F
- Extra wide hinge to reduce hinge stress
- Plastic check has PVC body and can be installed with solvent welded couplings for pressure systems to 25 PSI, 57 ft. of head (P/N 30-0023)
- Model 30-0151 has corrosion-resistant powder coated epoxy finish.
- Plastic check individual rack pack Model 30-0022

Consult Factory or local representative for state approvals

30-0151
Cast Iron

30-0021
Pvc Plastic

30-0181 1¼" - 1½" SLIP X SLIP UNION
30-0200 1¼" - 1½" SLIP X SLIP UNION W/ SS SCREW & CLAMPS

- Flapper bends over a radius, no sharp 90° edges — lengthens life of flapper hinge
- PVC plastic check body, ultrasonically welded and can be solvent welded for rigid pressure rated piping systems to 25 PSI, 57 ft. of head at 130°F (30-0182)
- Slip x slip for 4.3 PSI, 10 ft. of head at 130°F. Avoid more than 10 ft. static head above the check valve.
- Vertical or horizontal installation
- Available in individual packages for pegboard display (30-0181)
- All stainless steel screws, nuts and clamps on model 30-0200 only
- Stainless steel clamps with zinc screws on model 30-0181 only
- Designed to reduce water hammer
- 10 per carton

30-0181
Pictured

30-0200
Pictured

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BALL VALVES

PVC BLOCKED TRUE UNION BALL VALVES

- Threads conform to ANSI/ASME B1.20.1
- Slip connections conform to ASTM D2466
- Working Temperature Range: 41°F to 122°F (5°C to 55°C)
- Max Pressure Rating: 150 PSI @ 73°F(22°C)

0924 Series 1/2" - 2" Threaded (FPT)

- Grey PVC body, suitable for both schedule 40 & 80 pipe
- Seal material: EPDM O-ring
- Seat material: PTFE
- Ends are blocked with bayonet style lock to prevent ball from being blown out
- Blue ABS handle is equipped with removable spanner device
- Shipped complete with both thread and slip interchangeable connections
- Double union/double block design permits in-line maintenance without disconnecting pipe

0925-NL Series 1/2" - 4" EPDM "O" Ring Seal
0926 Series 1/2" - 4" VITON "O" Ring Seal

- Seat material: PTFE
- Double union / double block design permits in-line maintenance without disconnecting pipe
- Ends are blocked with bayonet style lock to prevent ball from being blown out
- Blue (0925-NL) or Red (0926) ABS handle is equipped with removable spanner device
- NSF/ANSI Standard 61 & 372 Certified (0925-NL series only)
- Shipped complete with both thread and slip interchangeable connections

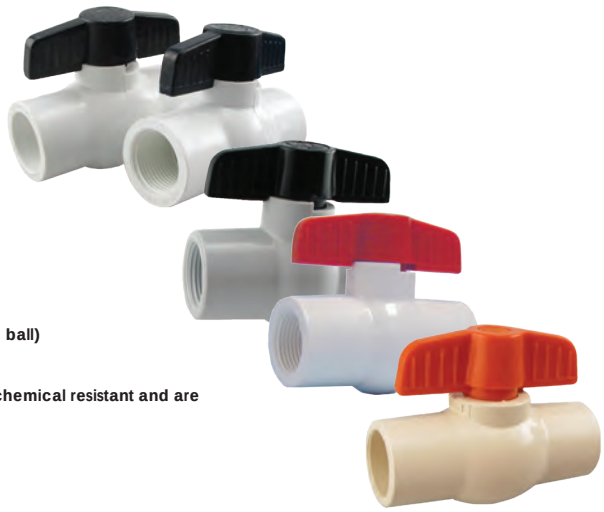
PVC SINGLE UNION BALL VALVES

0933 Series 1-1/2" - 2" Threaded (FPT)
0933S Series 1-1/2" - 2" Slip

- White PVC body, suitable for both schedule 40 & 80 pipe
- Seal material: EPDM O-ring
- Seat material: EPDM

MOLDED-IN-PLACE BALL VALVE

- Working Temperature Range 32°F to 122°F (0°C to 50°C)
- 150 PSI Working Pressure at 73°F (22°C)
- Suitable for both Schedule 40 and 80 PVC Pipe



0929 Series 1/2" - 4" Threaded (FPT)
0929S Series 1/2" - 4" Slip

- NSF/ANSI Standard 372 Certified

0921 Series 1/2" - 4" Threaded (FPT) NSF APPROVED 1/2" TO 2" ONLY
0921S Series 1/2" - 4" Slip NSF APPROVED 1/2" TO 2" ONLY
0923 Series 1/2" - 2" Threaded (FPT) NOT NSF APPROVED
0923S Series 1/2" - 2" Slip NOT NSF APPROVED

- Shock-resistant PVC body, ball and handle. **(2-1/2" - 4" have polypropylene ball)**
- NSF/ANSI Standard 61 & 372 Certified **(0921/0921S series only)**

NOTE: EPDM seats are recommended for most cold water system applications. PTFE seats are chlorine and chemical resistant and are recommended for most pool/spa applications.

CPVC HOT WATER SYSTEM BALL VALVES

0922CTS Series 1/2" - 2" Threaded (CTS x CTS)

- High heat resistance - Max. Service Temperature
  Continuous 32°F - 194°F (0°C - 90°C)
  Short hours 212°F (100°C)
- Test Pressure: 225 PSI
- Working Pressure: 150 PSI
- EPDM O-Ring
- PTFE (polytetrafluoroethylene) Seat
- CTS (Copper Tube size) Socket for CPVC pipe
- NSF/ANSI Standard 61 & 372 Certified

0929(S) SERIES PVC MOLDED-IN-PLACE BALL VALVES

Specification:

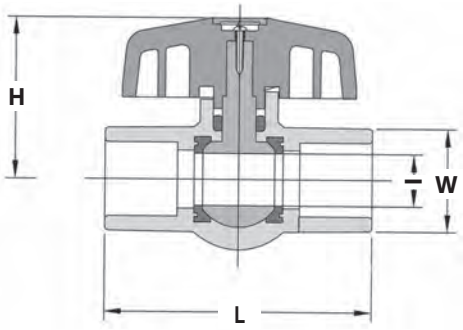
- Threads conform to ANSI/ASME B1.20.1
- Slip connections conform to ASTM D2466
- Working Temperature Range: 41°F to 122°F (5°C to 55°C)
- Max Pressure Rating: 150 PSI @ 73°F(22°C)
- White PVC body, suitable for both schedule 40 & 80 pipe
- Stem seal material: EPDM o-ring
- Seat material: EPDM
- Black ABS Handle

NO LEAD <0.25% Pb by weighted avg. | Third Party Certified to NSF / ANSI 372

Certification:

- NSF/ANSI Standard 372 Certified

MATERIAL LIST	
Name	**Material**
Screw	Steel
Cap	ABS
Handle	ABS
Ball	PVC
O-ring	EPDM
Body	PVC
Seat	EPDM



DIMENSIONS											
Part No. Threaded	Part No. Slip	Nominal Size	I		W		H		L		Weight
			inches	mm	inches	mm	inches	mm	inches	mm	grams
0929-05	0929S-05	1/2"	0.59	15.00	1.24	31.40	1.78	45.30	2.94	74.70	95
0929-07	0929S-07	3/4"	0.79	20.00	1.45	36.80	2.00	50.90	3.39	86.20	144
0929-10	0929S-10	1"	0.98	25.00	1.77	45.00	2.26	57.30	4.05	102.80	220
0929-12	0929S-12	1-1/4"	1.26	32.00	2.07	52.50	2.66	67.50	4.34	110.20	326
0929-15	0929S-15	1-1/2"	1.42	36.00	2.49	63.20	2.91	73.80	4.83	122.70	467
0929-20	0929S-20	2"	1.81	46.00	3.01	76.40	3.32	84.30	5.67	144.10	708
0929-25	0929S-25	2-1/2"	2.48	63.00	3.54	90.00	4.07	103.50	7.17	182.00	1120
0929-30	0929S-30	3"	3.15	80.00	4.25	107.90	4.47	113.50	9.25	235.00	2140
0929-40	0929S-40	4"	3.81	97.00	5.21	132.40	4.89	124.30	10.08	256.00	3030

Temperature Correction Factor for PVC Valves

As temperature increases, working pressure decreases. The optimal working pressure for PVC valves is 150 PSI @ 73°F (22°C)
If the temperature increases above 73°F (22°C), use the PVC correction factor to determine working pressure.
Multiply the maximum working pressure by the correction factor.

Temperature	73°F (22°C)	90°F (32°C)	100°F (38°C)	110°F (38°C)	120°F (49°C)	130°F (54°C)	140°F (60°C)
PVC Correction Factor	1.00	1.00	1.00	0.83	0.66	0.50	0.33

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COMMITTED TO EXCELLENCE SINCE 1955

25 Whaley Avenue, PO Box 310, Milverton, ON CANADA N0K 1M0
Tel: 519-595-4444 Fax: 519-595-4380 Toll Free: 800-561-3164

www.boshart.com

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NWTC **36** YEARS IN SYSTEMS CONTROL DESIGN

LIQUID PROCESS & CONTROL SOLUTIONS FOR TOMORROWS TECHNOLOGIES

SIMPLEX AND DUPLEX PUMP CONTROLLER

An innovative Simplex / Duplex Pump Controller designed for:

Residential, Commercial, Municipal, and Industrial Sump and Sewage for Indoor and Outdoor Applications

"Over Thousands and Thousands Units Are Operating In Western Canada"

280 TO **600** VOLT - **THREE** PHASE FROM **½** TO **Unlimited** HP

3 or 4 Floats Operation

FEATURES:

- Modular Circuit Board PC 3000 / D
- Low Energy Output to Floats
- Automatic Alternations
- Hand-off Auto Switches
- LED Test / Alarm Silence / Systems Test Push Button
- Programmable Switch, Lead / Lag, or Alternate
- Motor RUN Indicator
- Power ON Indicator
- LED Float Level Indicators
- High Level Alarm (audible and visual)
- Low Level Protection
- High Peak Sonalert Alarm
- Remote Alarm (12 VDC output)
- Motor Contactor and Circuit Protector

Northwest Tech-Con System's model SCP and DCP panel are high quality simplex and duplex pump controller specially design for residential and commercial sump and sewage pump down applications. A low voltage control module is used to operate the starting, stopping and alternation of the pumps, with one pump operating to handle the normal flow. A second pump becomes operational in the event the water level continues to rise. A built-in alarm high level alarm in the control module will sound when the water level reaches a high level.

OPTION:

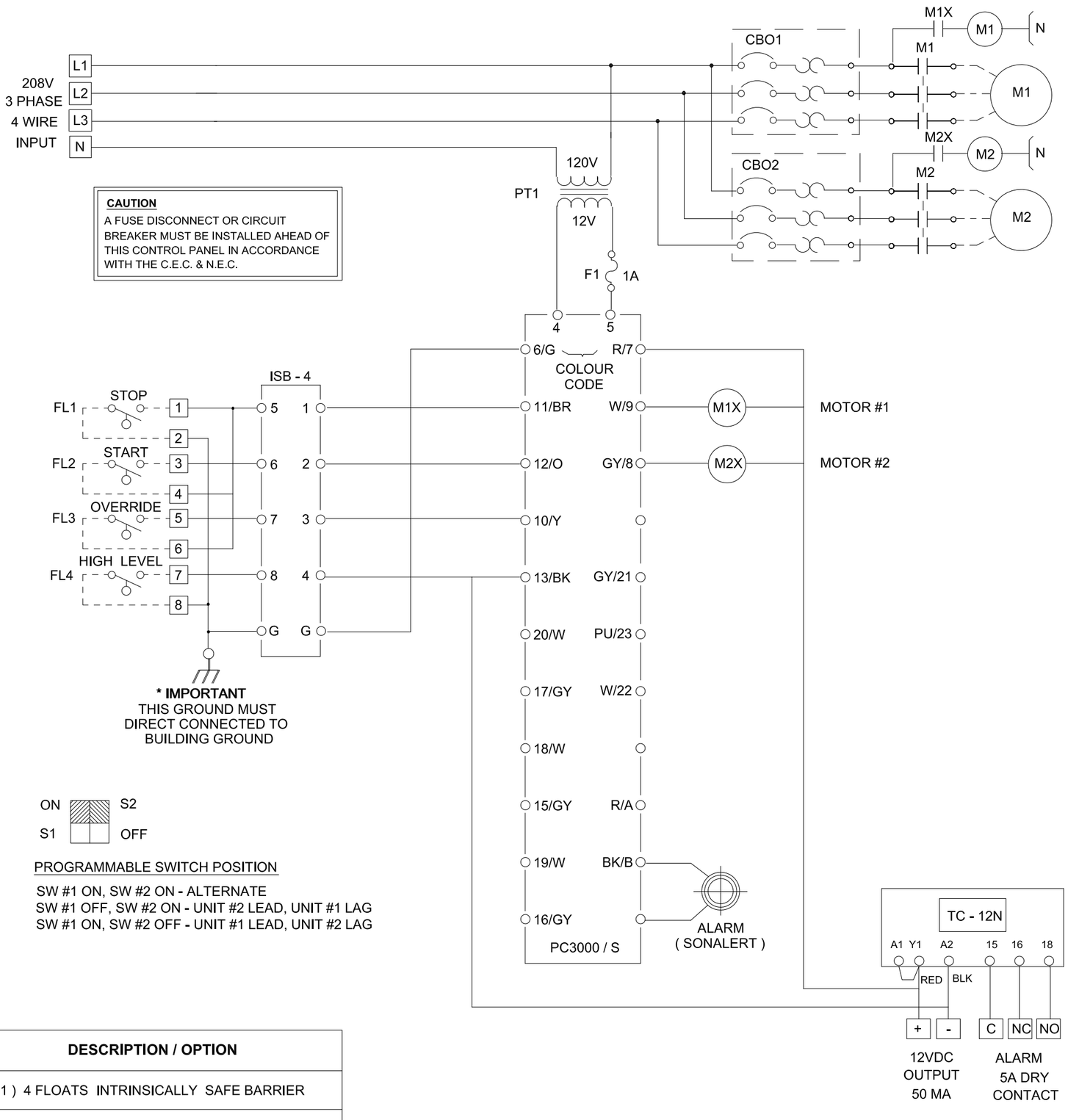
- 24 hour time clock (24HC)
- Battery backup HL alarm (BHA)
- Overload alarm (OLA)
- Dual input power (DP)
- Elapsed time (RTM)
- External panel top alarm light (STL)
- High motor temperature (HT)
- Intrinsic safe barrier (ISB)
- Low level alarm (redundant) (LLA)
- Panel heater c/w thermostat (CH)
- Panel main disconnect (MD)
- Phase monitor or surge arrester
- Pump seal fail alarm (SL)
- Pump start capacitor (LABOR ONLY)
- Remote annuciator (LOBBY-HWA12/L)
- TC-12N timer (TN)
- Vandal proof (for parkade) (VP)
- Communication by text message via internet
- Level Float (20"/30"/50")

REPERSENTATIVE:

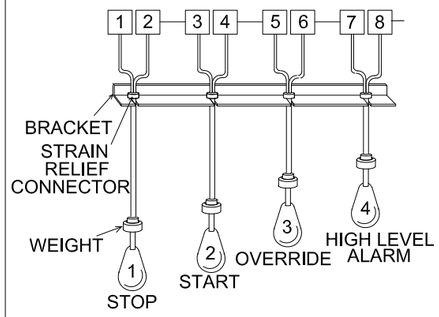
Engineered Pump Systems Ltd.
1635 Industrial Ave, Port Coquitlam, BC
V3C 6M9
Email: sales@engineeredpump.com
Phone: 604-552-7900

Unit 104 - 7450 Lowland Drive, Burnaby, British Columbia Canada V5J 5A4
Tel: (604) 439-1046 Fax: (604) 439-1079 Email: info@nwtc.ca Website: www.nwtc.ca

Intertek LISTED

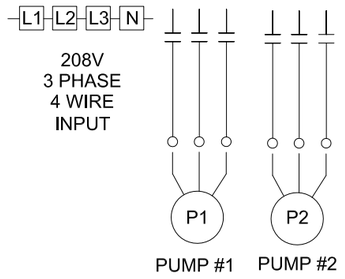


CONTROL CONNECTION



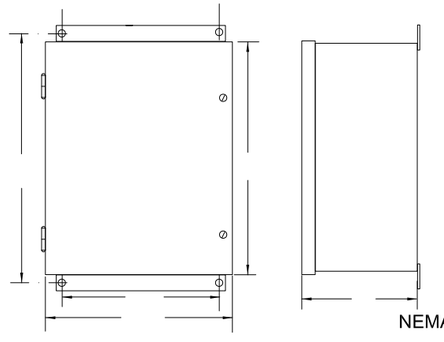
INPUT CONNECTION

PUMP POWER CONNECTION

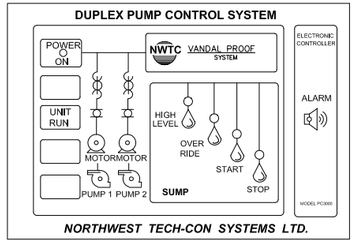


LEGEND :

ITEM	DESCRIPTION	PART NUMBER	MAKER
CBO1 - 2	CIRCUIT BREAKER OVERLOAD	MMA - 32	LG
M1 - 2	MOTOR CONTACTOR	GMC - XX	LG
PT1	TRANSFORMER 120 / 12	7450	NWTC
F1	FUSE RATE : 250V, 1 AMP	MDL - 1	BUSS
PC 3000	CONTROL MODULE	PC3000 / D	NWTC
ALM	REMOTE ALARM WITH TIMER	TC - 12N	NWTC
M1X, M2X	CONTROL AUX RELAY	G2R - 1 12VDC	OMRON
ISB - 4	INTRINSICALLY SAFE BARRIER	ISB - 4	NWTC
	VANDAL PROOF ENCLOSURE		



VIEW OF CONTROLLER FACE PLATE



DESCRIPTION / OPTION
(1) 4 FLOATS INTRINSICALLY SAFE BARRIER

CUSTOMER:
BA ROBINSON CO. LTD.

END USER:
THE ATRIUM

NORTHWEST TECH-CON SYSTEMS LTD.

NWTC

TEL: (604)439-1046 FAX: (604)439-1079

FUNCTION:
DCP 208 / IO
DUPLEX CONTROL PANEL

DESIGN: A. CHUNG

DATE: SEP., 2008

REF.FILE:

NUMBER: **50.7**

SJE MILLIAMPMASTER™ Control Switch

Mechanically-activated control switch designed to activate low current control panels and alarms.

This wide-angle or narrow-angle control switch offers reliable low current control for AC and DC applications in water, wastewater, and sewage. The internal switching mechanism has sealed gold cross-point contacts for reliable low current operation. Common applications include PLC (programmable logic controller) panels, IS panels with intrinsically safe barriers, low current solar applications, and other low current control panels and alarms applications.

The wide-angle version activates/deactivates approximately 4" (10.16 cm) above and below horizontal with a 3.5" (9 cm) tether. The narrow angle version activates/deactivates at approximately 1.5" (3.81 cm) above and below horizontal with a 3.5" (9 cm) tether. It is not sensitive to rotation.

Normally Open Model (high level)
The control switch turns on (closes) when the switch tips **above** horizontal signaling a high level, and turns off (opens) when the switch drops below horizontal.

Normally Closed Model (low level)
The control switch turns on (closes) when the switch drops **below** horizontal signaling a low level, and turns off (opens) when the switch tips above horizontal.

FEATURES

- Low current, non-arching applications down to 0.160 mA at 125 VAC.
- Mechanically-activated, snap action contacts.
- High impact, corrosion resistant polypropylene float housing.
- Not sensitive to rotation.
- Blue colored cap for easy identification of SJE MilliAmpMaster™ control switch.
- UL Listed for use in non-potable water and sewage.
- CSA Certified.
- Five-year limited warranty.

LR54245 LISTED 83N2

SPECIFICATIONS

CABLE: flexible 18 gauge, 2 conductor (UL,CSA) SJOW, water-resistant (CPE)

FLOAT: 2.74 inch diameter x 4.83 inch long (7.0 cm x 12.3 cm), high-impact, corrosion resistant, polypropylene housing for use in sewage and water up to 140°F (60°C)

MAXIMUM WATER DEPTH: 30 feet (9 meters), 13 PSI (90kPa)

ELECTRICAL:

125 VAC
Maximum Electrical Load: 1 amp
Minimum Electrical Load: 0.160 milliamps

30 VDC
Maximum Electrical Load: 0.1 amps
Minimum Electrical Load: 0.160 milliamps

5 VDC
Minimum Electrical Load: 1 milliamps

OPTIONS

This switch is available:

- for normally open (high level) applications or normally closed (low level) applications.
- with narrow or wide-angle pumping ranges.
- in standard cable lengths of ~~10, 15, 20, or 30 feet and 3, 5, 6, or 10~~ meters (longer lengths available). 50' (15.24m)
- with two mounting options that allow for flexibility in installation:

  Mounting Clamp: for applications where the switch can be attached to a discharge pipe or similar mounting device.

  Externally Weighted: for applications where the switch can be suspended from above.

California Prop 65 requires the following: ⚠ WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

SEE REVERSE SIDE FOR ORDERING INFORMATION.
SEE PRICE BOOK FOR LIST PRICE.

SJE RHOMBUS
1-888-DIAL-SJE • 1-218-847-1317
1-218-847-4617 Fax
email: customer.service@sjeinc.com
www.sjerhombus.com

SJE MILLIAMPMASTER™ Control Switch

Mechanically-activated control switch designed to activate low current control panels and alarms.

ORDERING INFORMATION

Narrow-Angle Versions

Normally Open		Normally Closed		Shipping Weight
Part #	Description	Part #	Description	
1018838	10MANPCNO	**1018839**	10MANPCNC	1.04 lbs.
1018840	10MANWENO	**1018841**	10MANWENC	2.16 lbs.
1018842	15MANPCNO	**1018843**	15MANPCNC	1.37 lbs.
1018844	15MANWENO	**1018845**	15MANWENC	2.45 lbs.
1018846	20MANPCNO	**1018847**	20MANPCNC	1.69 lbs.
1018848	20MANWENO	**1018849**	20MANWENC	2.70 lbs.
1018850	30MANPCNO	**1018851**	30MANPCNC	2.34 lbs.
1018852	~~30~~MANWENO	**1018853**	30MANWENC	3.43 lbs.

Wide-Angle Versions

Normally Open		Normally Closed		Shipping Weight
Part #	Description	Part #	Description	
1015725	10MAPCNO	**1016180**	10MAPCNC	1.04 lbs.
1016181	10MAWENO	**1016182**	10MAWENC	2.16 lbs.
1016184	15MAPCNO	**1016185**	15MAPCNC	1.37 lbs.
1016186	15MAWENO	**1016187**	15MAWENC	2.45 lbs.
1016211	20MAPCNO	**1016212**	20MAPCNC	1.69 lbs.
1016213	20MAWENO	**1016214**	20MAWENC	2.70 lbs.
1016215	30MAPCNO	**1016216**	30MAPCNC	2.34 lbs.
1016217	30MAWENO	**1016218**	30MAWENC	3.43 lbs.

PC = **P**ipe **C**lamp **WE** = **W**eighted **E**xternally **NO** = **N**ormally **O**pen **NC** = **N**ormally **C**losed
NOTE: Descriptions are grouped by cable length measured in feet (10, 15, 20, 30).
SEE PRICE BOOK FOR LIST PRICE.

OPTIONS

PACKAGING
Bagged - standard
Boxed - optional
Bulk - optional

ADDITIONAL CABLE
Longer cable lengths available. Please call for details.
50' (15.24m)

UL Listed for Water & Sewage

LISTED 83N2 LR54245

SSPMA MEMBER

SPECIFICATIONS

CABLE: flexible 18 gauge, 2 conductor (UL, CSA) SJOW, water-resistant (CPE) jacket

FLOAT: 2.74 inch diameter x 4.83 inch long (7.0 cm x 12.3 cm), high impact, corrosion resistant, polypropylene housing for use in sewage and water up to 140°F (60°C)

MAXIMUM WATER DEPTH: 30 feet (9 meters), 13 psi

ELECTRICAL:
125 VAC
Maximum Electrical Load:
1 amp
Minimum Electrical Load:
0.160 milliamps
30 VDC
Maximum Electrical Load:
0.1 amps
Minimum Electrical Load:
0.160 milliamps
5 VDC
Minimum Electrical Load:
1 milliamps

OTHER INFORMATION

NORMALLY OPEN (HIGH LEVEL) OPERATION
The control switch closes (turns on) when the float tips **above** horizontal signaling a high level, and opens (turns off) when the float drops **below** normal.

NORMALLY CLOSED (LOW LEVEL) OPERATION
The control switch closes (turns on) when the float drops **below** horizontal signaling a low level, and opens (turns off) when the float tips **above** horizontal.

Call or fax your order!
1-888-DIAL-SJE (1-888-342-5753) • Fax 218-847-4617

SJE RHOMBUS

www.sjerhombus.com
customer.service@sjeinc.com

Product offering and pricing are subject to change without notice.
*Please visit **www.sjerhombus.com** for the most current information.*

9500117E 10/18
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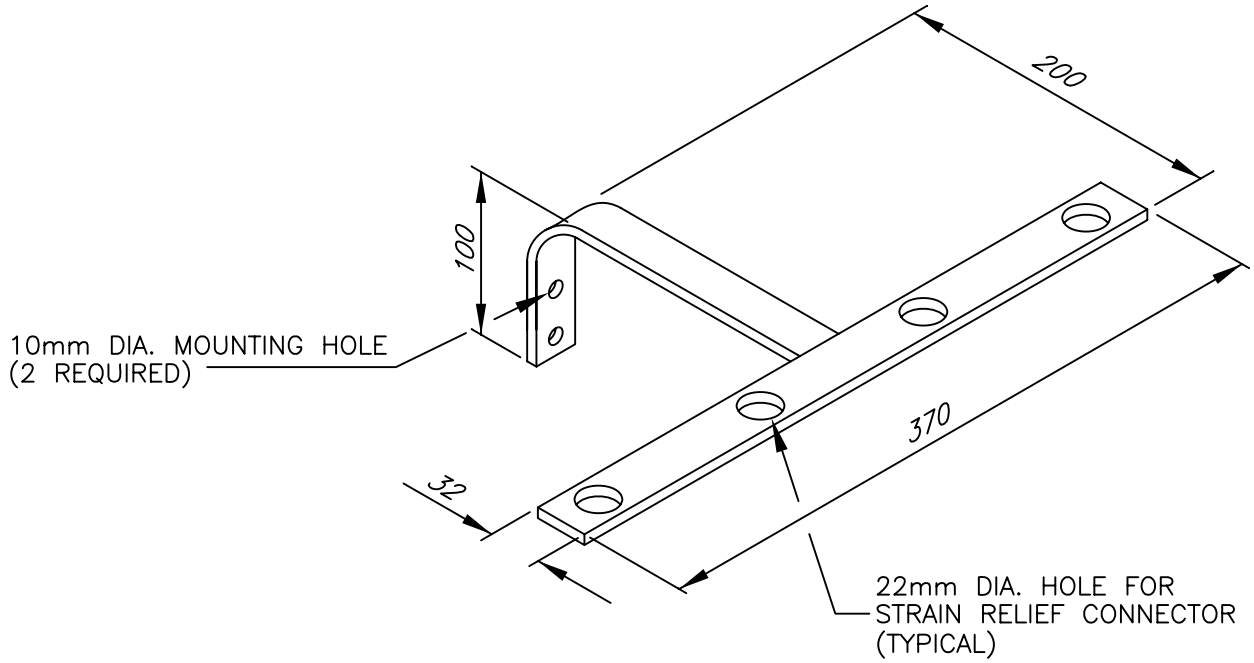
FOUR FLOAT BRACKET

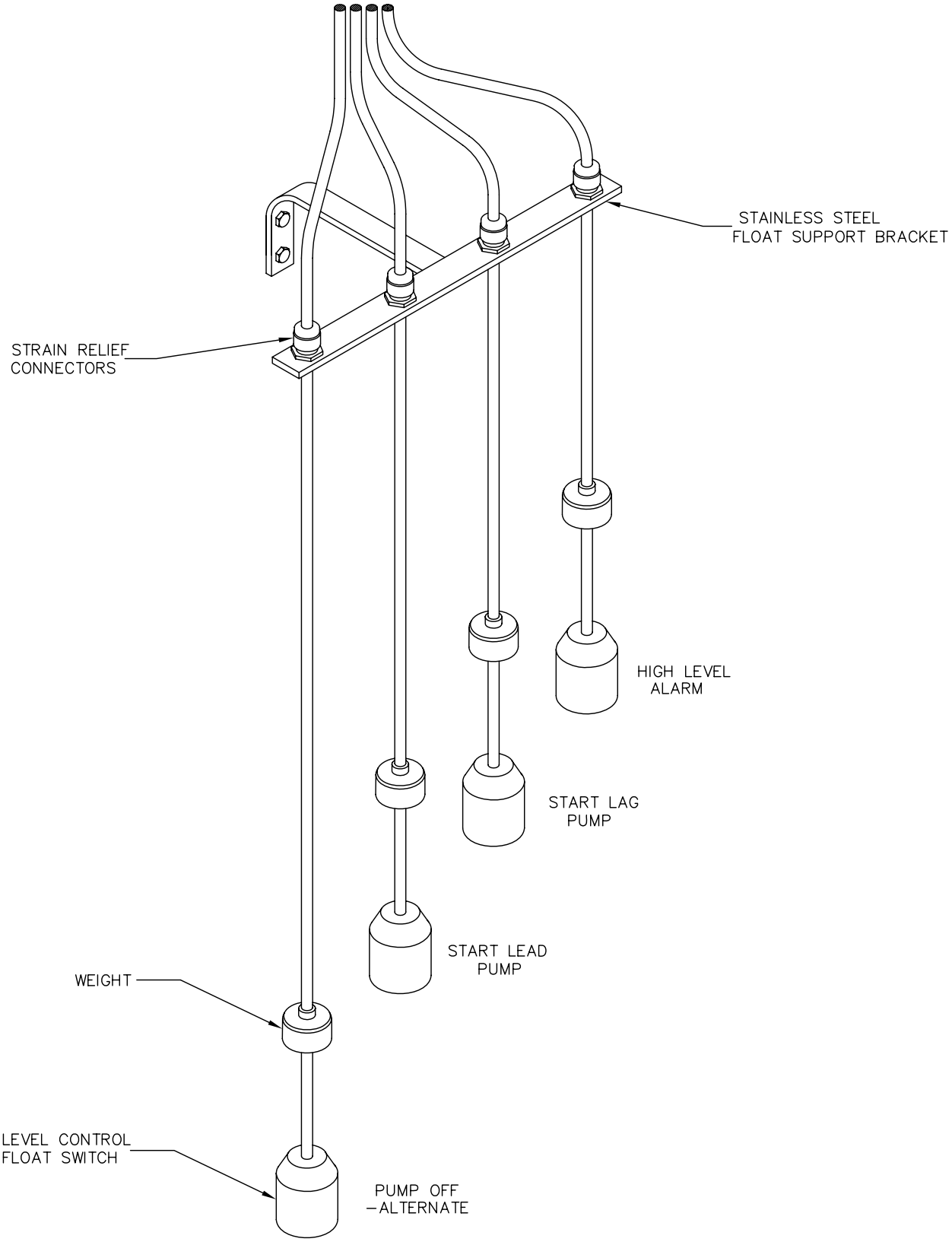


MATERIAL:
32mm X 4mm STAINLESS STEEL

ISSUE No	D/M/Y	DESCRIPTION	DR	CH	APP

SCALE: NTS	APPROVED BY:	DRAWN BY: JB
DATE: Sept/03		PROJECT:
FOUR FLOAT BRACKET		
engineered pump systems ltd.		DRAWING NUMBER: 4 Float Bracket

DUPLEX FLOAT CONTROL SYSTEM



ISSUE No	D M Y	DESCRIPTION	DR	CH	APP

SCALE: NTS	APPROVED BY:	DRAWN BY: JB
DATE: JUNE 16/95		PROJECT:
DUPLEX FLOAT CONTROL SYSTEM		
engineered pump systems ltd.		DRAWING NUMBER: FSB–4

THE ATRIUM
19945 BRYDON CRESCENT, LANGLEY
P-STM 01/02: STORM – 300 USGPM @ 30’ TDH

PENTAIR

Shown with optional leg kit

MYERS®

MODELS 4V AND 4VX

SOLIDS HANDLING WASTEWATER PUMPS

STANDARD (4V) AND HAZARDOUS LOCATION (4VX) CONSTRUCTION

FM APPROVED

WWW.FEMYERS.COM

MYERS® MODELS 4V AND 4VX
Solids Handling Wastewater Pumps

The Right Choice

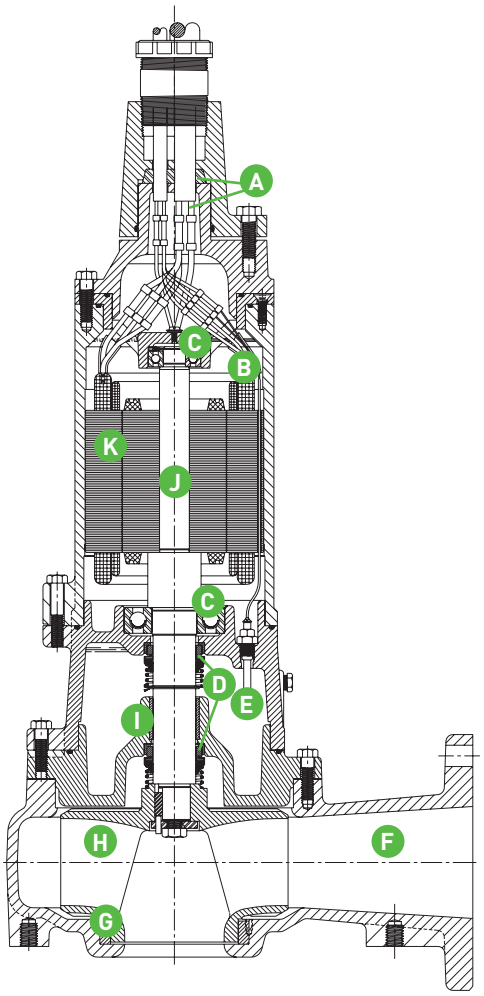
The 4V and 4VX (hazardous location) submersible wastewater pumps pass a full 3" spherical solid and are the ideal choice when selecting a pump for your next application. Myers® rounded port, 2-vane, enclosed impellers prevent solids from binding or clogging and offer high operating efficiencies to cut your pumping costs. The 4V series modified constant velocity volute case provides smooth operation over an extended portion of the performance curve for longer seal and bearing life. For use in municipal lift stations, treatment plants and industrial waste applications. Myers offers a complete line of wastewater pumps, lift-out rail assemblies, controls and accessories to meet your needs.

Product Capabilities		
Capacities To	715 gpm	45.1 lps
Heads To	59 ft.	17.9 m
Solids Handling (dia.)	3 in.	76 mm
Liquid Handling	raw unscreened sewage, effluent, storm water	
Intermittent Liquid Temp.	up to 140°F	up to 60°C
Winding Insulation Temp. (Class F)	311°F	155°C
Motor Electrical Data (Single phase motors are capacitor start type. Myers control panels or capacitor kits are required for proper operation and warranty.)	1750 RPM 3–5 HP, 230V, 1Ø, 60 Hz 3–10 HP, 208/230/460/575V 3Ø, 60 Hz 1150 RPM 1–2 HP, 208/230V, 1Ø, 60 Hz and 208/230/460/575V 3Ø, 60 Hz	
Std. Third Party Approvals Optional Approvals	CSA CSA & FM Class 1, Group D (4VX only)	
Acceptable pH Range	6 – 9	
Specific Gravity	.9 – 1.1	
Viscosity	28 – 35 SSU	
Discharge, Flanged Ceterline (Horizontal)	4 in. 125 lb. ANSI	101.6 mm

Construction Materials	
Motor Housing, Seal Housing, Cord Cap and Volute Case	cast iron, Class 30, ASTM A48
Enclosed 2-Vane Impeller	ductile iron, Class 65 ASTM A536
Power Cord	SOOW, W 50' (15.24m)
Control Cord	SOOW 50' (15.24m)
Mechanical Seals Standard Optional	double tandem, type 21 carbon and ceramic lower tungsten, carbide
Pump, Motor Shaft	416 SST
Fasteners	300 Series SST
Volute Wear Ring	brass

Note: Consult factory for applications outside these recommendations.

Pump Features and Applications



A. Cable Entry System

Provides double seal protection.
Cable jacket sealed by compression grommet.
Individual wires sealed by epoxy potting.

B. Heat Sensor on Motor Winding

Protect motor from burnout due to excessive heat from any overload condition. Automatically resets when motor has cooled.

C. Ball Bearings

Upper and lower ball bearings support shaft and rotor and take axial and radial loads.

D. Shaft Seals

Double tandem mechanical shaft seals protect motor. Oil-filled seal chamber provides continuous lubrication.

E. Seal Leak Probe

Detects water in seal housing. Activates warning light in control panel.
(Test resistor on FM listed models.)

F. Volute Case

Modified constant velocity volute handles 3" solids. 4" ANSI 125 lb. flange.

G. Brass Wear Ring

Prevents rust buildup and reduces leakage and wear. Replaceable to restore original running clearance and pump efficiencies.

H. High Efficiency Impeller

2-vane with rounded port. (Optional single vane.) Handles 3" solids. Pump-out vanes help keep trash from seal; reduce pressure at seal faces.

I. Sleeve Bearing

Takes radial shock load;
provides flame path.

J. Heavy 416 SST Shaft

Corrosion resistant.

K. Motor Stator

Press fit for optimal alignment and heat transfer. Oil-filled for continuous lubrication of bearings and seals.

High efficiency hydraulic design cuts pumping costs and extends life of fluid end components.

- Two-vane, rounded port, enclosed type impellers handle 3" solids with ease at high operating efficiencies.
- Modified constant velocity volute offers quiet operation, low radial loads over extended portion of performance curve.

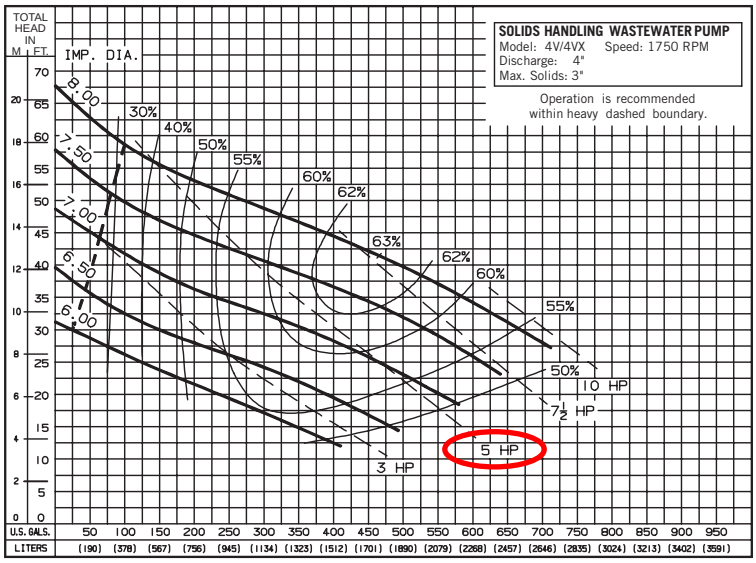
Durable motor will deliver many years of reliable service.

- Oil-filled motor for maximum heat dissipation and constant bearing lubrication.
- Heat sensor thermostats embedded in windings protect motor from overheat conditions.
- Seal leak probe in seal chamber warns of moisture entry; helps prevent costly motor burnout.
- Double tandem shaft seals prevent sewage from entering motor.
- Power and control cables are double sealed with epoxy and compression grommet.

Available With Optional CSA & FM Approval For Use In Class 1, Group D Hazardous Locations (4VX Only).

Performance Data

1750 RPM



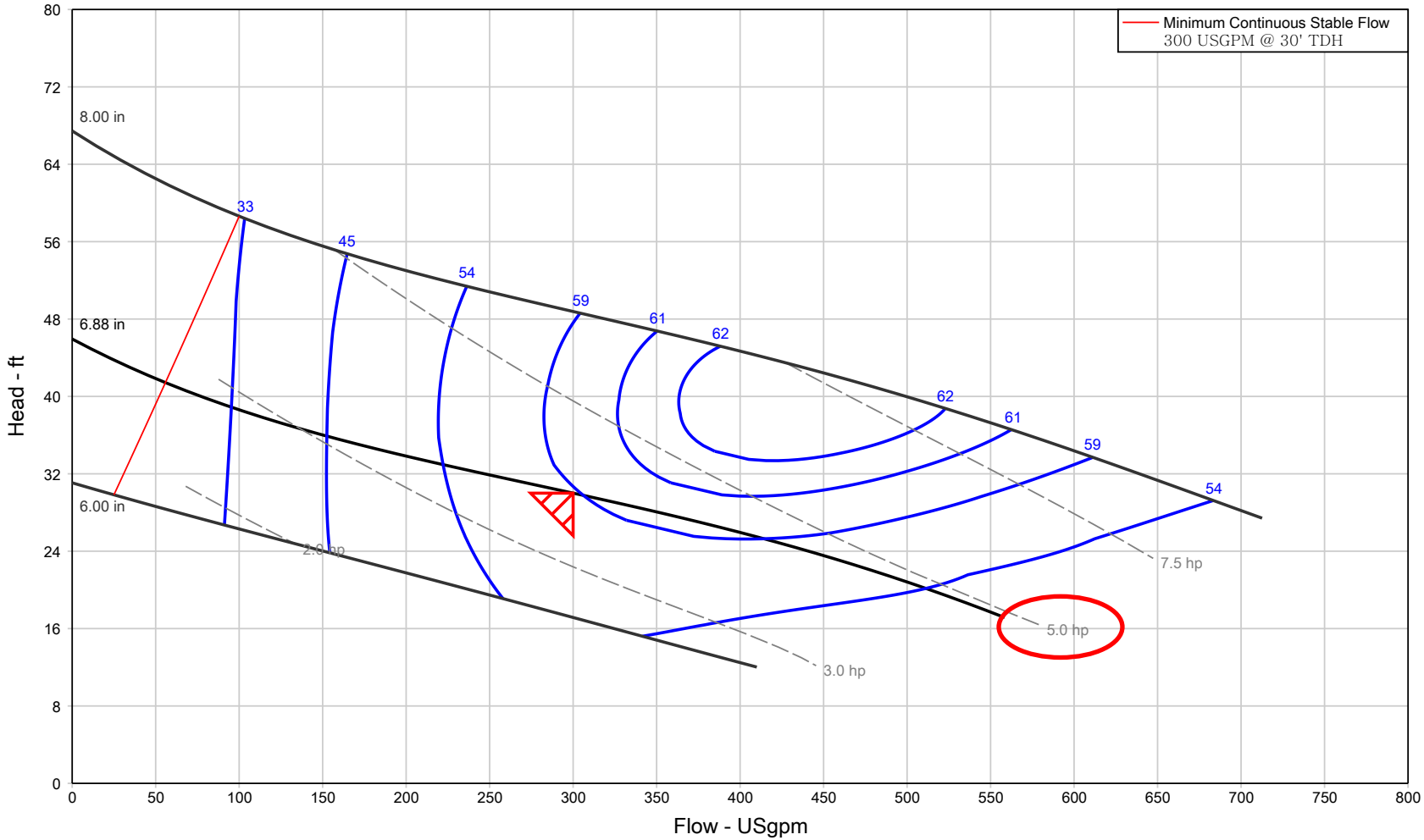
SEE PERFORMANCE CURVE NEXT PAGE

Available Models		Motor Electrical Data											
Standard	Hazardous Location	HP	Volts	Phase	Hertz	Start Amps	Full Load Amps	Service Factor Amps	Full Load kW	Start KVA	Full Load KVA	NEC Code Letter	Service Factor
4V30M4-21	4VX30M4-21	3	230	1	60	106	17.5	21	4.5	24.4	4.8	K	1.2
4V30M4-03	4VX30M4-03	3	208	3	60	86	15	18	5.0	30.9	5.4	M	1.2
4V30M4-23	4VX30M4-23	3	230	3	60	52	12	14.4	4.6	20.1	4.8	H	1.2
4V30M4-43	4VX30M4-43	3	460	3	60	26	6	7.2	4.5	20.1	4.8	H	1.2
4V30M4-53	4VX30M4-53	3	575	3	60	25	5	6	4.6	25.1	5.0	K	1.2
4V50M4-21	4VX50M4-21	5	230	1	60	153	34	41	6.7	35.2	7.8	H	1.2
4V50M4-03	4VX50M4-03	5	208	3	60	140	21.6	26	8.0	50.4	8.6	M	1.2
4V50M4-23	4VX50M4-23	5	230	3	60	125	18	21.6	7.6	49.7	8.4	L	1.2
4V50M4-43	4VX50M4-43	5	460	3	60	62	9	10.8	7.6	49.3	8.4	L	1.2
4V50M4-53	4VX50M4-53	5	575	3	60	45	7.2	8.6	7.6	44.8	8.4	K	1.2
4V75M4-03	4VX75M4-03	7.5	208	3	60	221	32.2	37	10.2	79.5	11.6	M	1.2
4V75M4-23	4VX75M4-23	7.5	230	3	60	164	28	32	9.7	65.3	11.1	K	1.2
4V75M4-43	4VX75M4-43	7.5	460	3	60	82	14	16	9.7	65.3	11.1	K	1.2
4V75M4-53	4VX75M4-53	7.5	575	3	60	75	11.2	13	7.6	74.6	11.1	L	1.2
4V100M4-03		10	208	3	60	221	37	37	12.7	79.5	13.9	J	1.0
4V100M4-23		10	230	3	60	164	32	32	12.0	65.3	13.0	H	1.0
4V100M4-43		10	460	3	60	82	16	16	12.0	65.3	13.0	H	1.0
4V100M4-53		10	575	3	60	75	13	13	11.7	74.6	13.7	J	1.0

Motor Efficiencies and Power Factor									
		Motor Efficiency %				Power Factor %			
HP	Phase	Service Factor Load	100% Load	75% Load	50% Load	Service Factor Load	100% Load	75% Load	50% Load
3	1	73	73	70	63	88	85	80	70
3	3	74	73.5	69.5	61.5	73	70.5	62.5	52
5	1	67.5	68	65	56	83	81	73	62.5
5	3	75	76	76	71	86	83	76	65
7.5	3	75	75	72.5	65	77	72	62	49.5
10	3	75	75	75	71	79	79	72	58

Pump Performance Curve

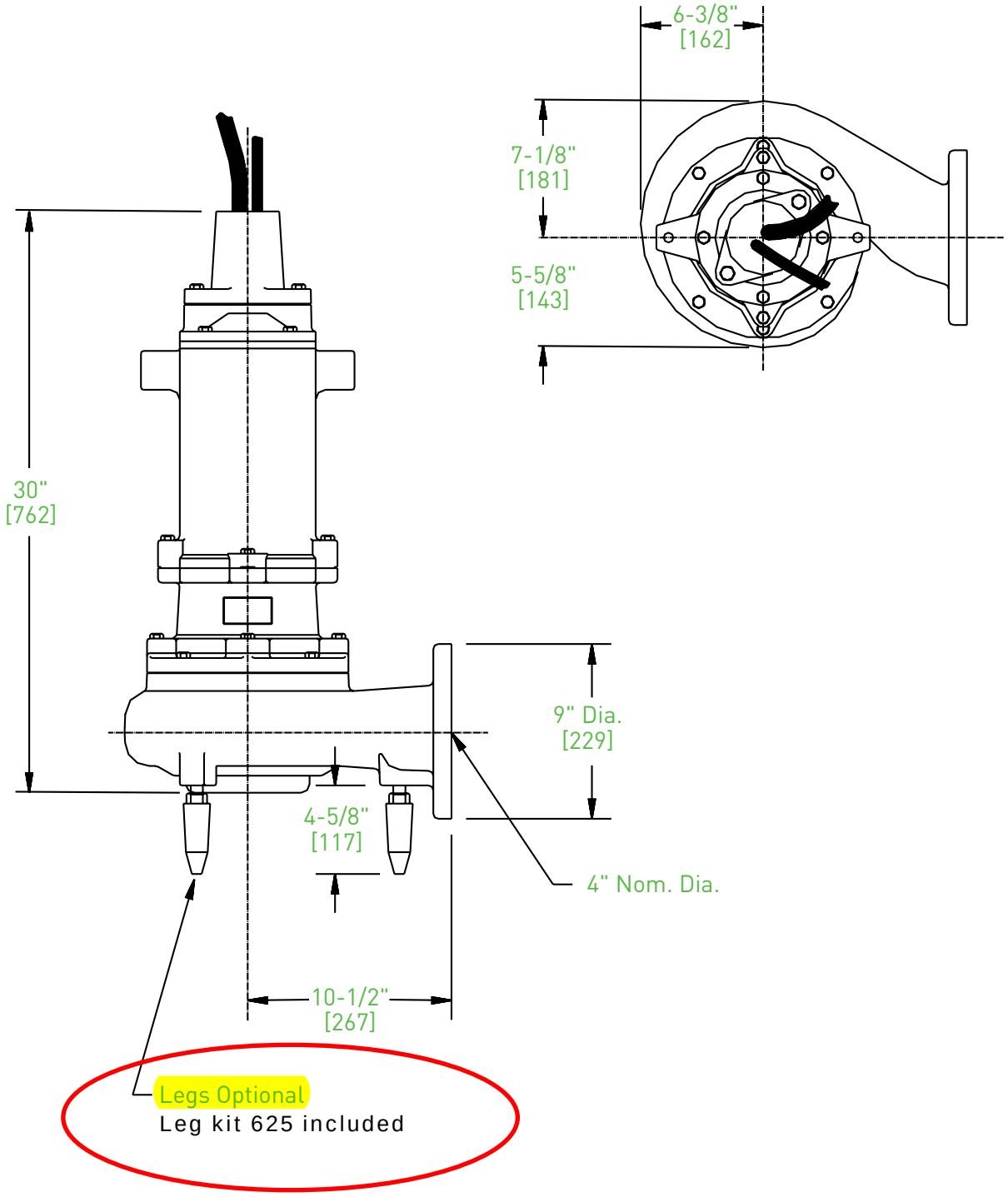
Encompass 2.0 - 21.1.4



Item number	: Default	Size	: Myers - 4V/4VX	Flow, rated	: 300.0 USgpm
Service	:	Stages	: 1	Differential head / pressure, rated	: 30.00 ft
Quantity	: 1	Speed, rated	: 1750 rpm	NPSH required	: -
Quote number	:	Based on curve number	: SUB_S_E_AH_00023_B_4 Rev 2012-03-23	Fluid density, rated / max	: 1.000 / 1.000 SG
Date last saved	: 08 Jun 2021 1:21 PM			Viscosity	: 1.00 cP
		Efficiency	: 58.81 %	Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
		Power, rated	: 3.86 hp		

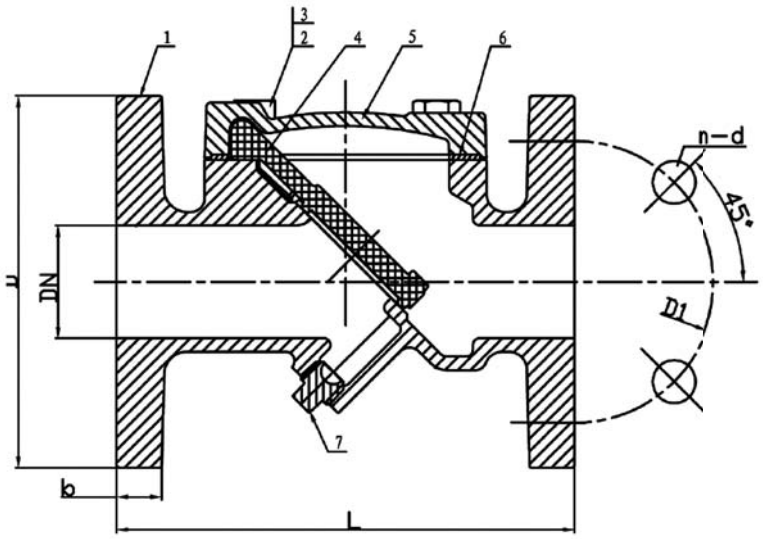
Dimensions

[Dimensions in inches, [ ] Dimensions in mm]



Rubber Disk Full Flow Pump Check Valve
W30-A-(EP/NP)FF-F
AWWA C 508

NSF/ANSI 61 NSF/ANSI 372



- Connection Ends: Flange to ASME B16.1 CL 125
- Meets Applicable AWWA C508 Standard
- Working Pressure: 300PSI
- Temperature Range: 0°C- 100°C
- Coating: Fusion Bonded Epoxy Coating in accordance with ANSI/AWWA C550 / 10 mil minimum
- Sizes: NPS 14 and over (B - 250PSI)

MATERIAL SPECIFICATION

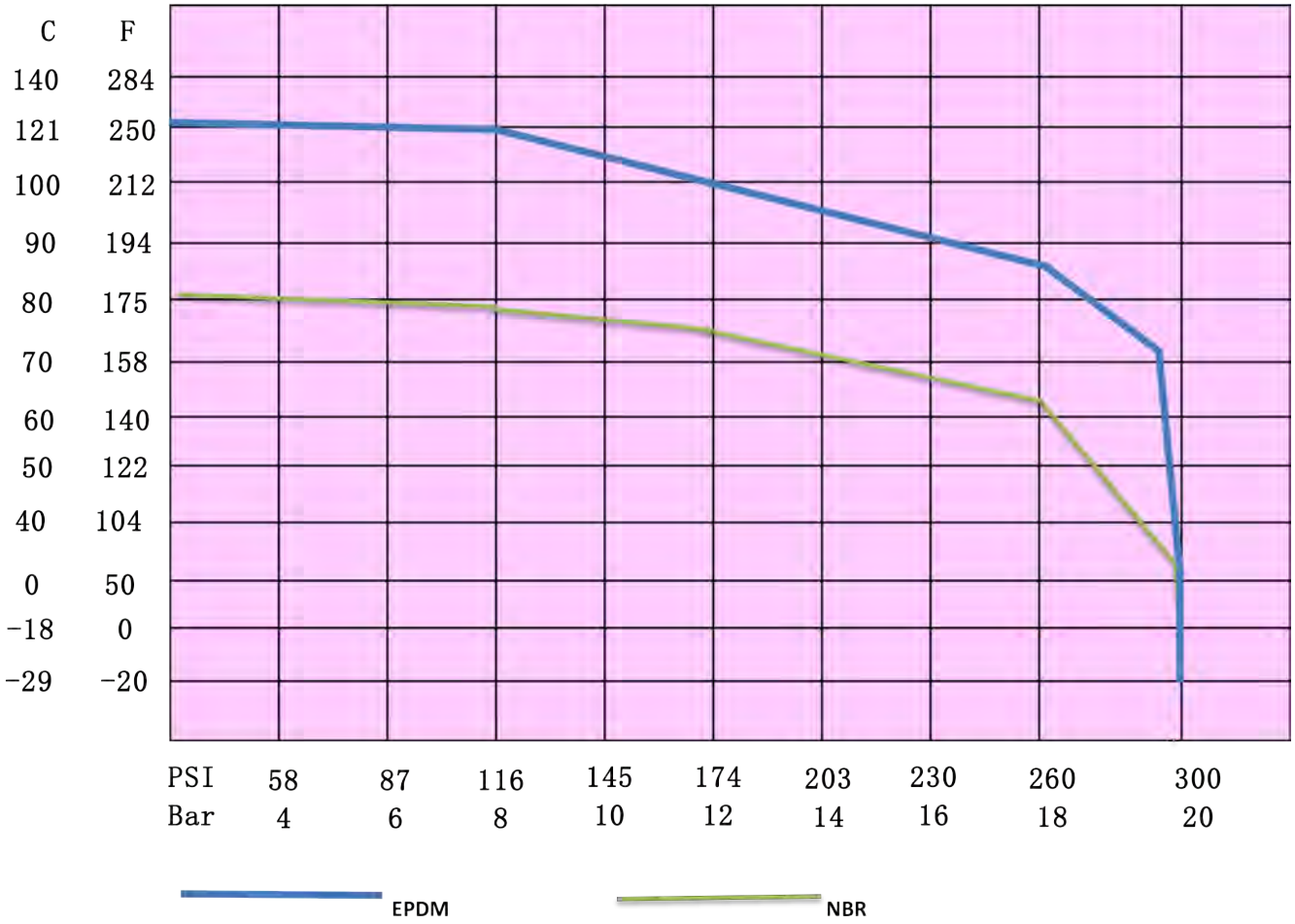
Part No.	Part	Standard Specification	Options
1	Valve Body	ASTM A536, 65-45-12	
2	Bolt	AISI 304	AISI 316
3	Washer	AISI 304	AISI 316
4	Disc	Carbon Steel + NBR	Carbon Steel + EPDM
5	Bonnet	ASTM A536, 65-45-12	
6	Bonnet Gasket	EPDM	
7	Plug	Bronze ASTM B584	

Note: For special material request other than standard specification, please indicate clearly on the inquiry or order list.

DN		Dimensions(mm)				
Inch	mm	L	D	D1	b	n-Φd
2"	50	203	152	120.5	16	4-Φ19.1
2.5"	65	216	178	139.5	17.5	4-Φ19.1
3"	80	241	191	152.5	19	4-Φ19.1
4"	100	292	229	190.5	24	8-Φ19.1
5"	125	330	254	216	24	8-Φ22.2
6"	150	356	279	241.5	25.5	8-Φ22.2
8"	200	495	343	298.5	28.5	8-Φ22.2
10"	250	622	406	362	30.5	12-Φ25.4
12"	300	698	483	432	32	12-Φ25.4

M. A. Stewart & Sons Ltd.
VALVES AND FITTINGS

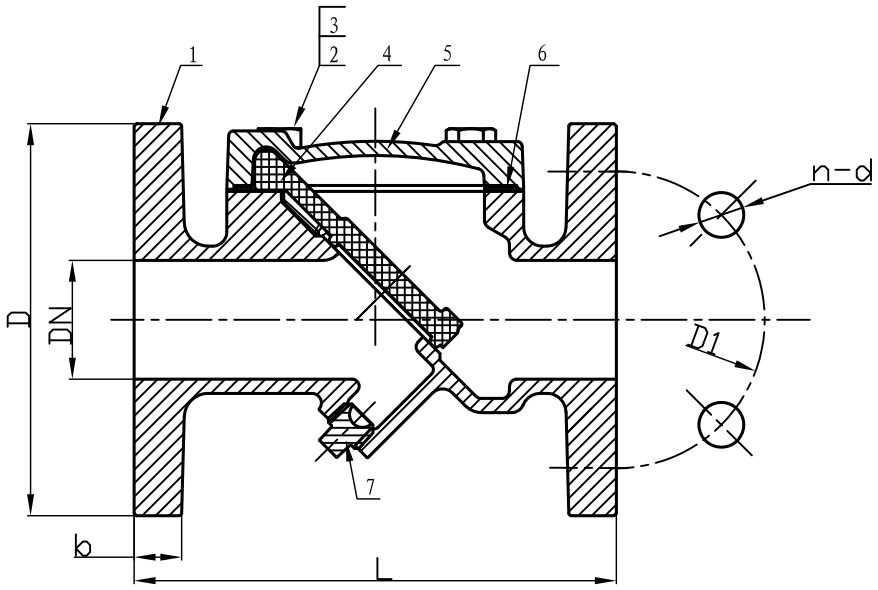
W Series Pressure / Temperature
EPDM & NBR Materials.



Note: Not recommended for steam service.

FM APPROVED c UL us LISTED NSF/ANSI 61 NSF/ANSI 372

RELEASE NO.



DN		PN (PSI)	L (mm)	D (mm)	D1 (mm)	b (mm)	n-d (mm)
in	mm						
2"	50	300	203	152	120.5	16	4-19.1
21/2"	65	300	216	178	139.5	17.5	4-19.1
3"	80	300	241	191	152.5	19	4-19.1
4"	100	300	292	229	190.5	24	8-19.1
5"	125	300	330	254	216	24	8-22.2
6"	150	300	356	279	241.5	25.5	8-22.2
8"	200	300	495	343	298.5	28.5	8-22.2
10"	250	300	622	406	362	30.5	12-25.4
12"	300	300	698	483	432	32	12-25.4

NOTES:
1.Flange specification:ASME B16.1 Class125;
2.Design standards AWWA C508;
3.Working Pressure: 300PSI;
4.Working temperature: NBR DISC,≤80℃.MAX:-12℃~82℃;
5.Testing Specification:API 598;
6.Coating:Fusion Bonded Epoxy Costing Complies with ANSI/AWWA C550/10 Mil Minimum;
7.Applications:Potable Water,Water Distribution Service & Feed lines, Sewage Disposal,Irrigation and Fire Protection Pipe System etc;
8.NSF61/372 .

Part No.	Part&size	MATERIAL
7	Plug	ASTM B584
6	Bonnet Gasket	NBR
5	Bonnet	ASTM A536,65-45-12
4	Disc	Carbon Steel and NBR
3	Washer	SS304
2	Bolt	SS304
1	Valve Body	ASTM A536,65-45-12

DATE	REVISION	BY	MATERIAL:	DRAWN BY Mu Jiyuan	DRAWING# W30-A-NP-FF-F	TITLE FIG# W30-A-NP-FF-F Rubber Swing Check Valve Flanged Joint Ends	
				CHECKED BY Ma Qingbo	APPROVED BY Zhang Yanqing		
			FINISH:	SCALE	ISSUE DATE 03-01-18		REV.0

SERIES 120

Eccentric Plug Valve

For over 120 years Homestead® has been building a reputation of dependability, reliability, safety and uncompromising quality.

120 YEARS of Dependability

HOMESTEAD®
WATER PRODUCTS

120 years of quality is built into every Homestead®

Dependable Valves for Water, Wastewater & HVAC Service

SERIES 120

FEATURES & BENEFITS

BODY: The Homestead eccentric body casting is in ASTM A126 Class B cast iron. Flange thickness, diameter and drilling fully conform to ANSI B16.1 Class 125. Alternative mechanical joint ends are available. A wide range of high quality epoxy coatings can be applied externally and internally to protect the casting integrity and assure long, trouble-free performance.

SEAT: Homestead's eccentric valve seat has been geometrically optimized for low torque operation and extended life. A welded seat of 95% minimum nickel content is incorporated to resist the effects of corrosion and erosion.

STEM SEAL: Homestead's fully adjustable seals assure stem sealing in even the most demanding applications.

BEARINGS: Permanently self lubricated radial bearings are utilized to assure long trouble-free operation.

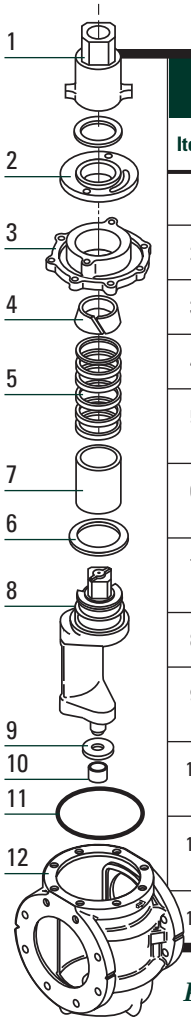
PLUG: Single piece plug/stem is designed for a quick lift camming motion to provide both low torque and reduced wear of the plug face elastomer. A wide range of plug elastomers are available to assure complete fluid compatibility.

BONNET: The high stresses associated with compression gasketing have been eliminated by incorporating high quality o-rings into our bonnet design.

FLOW: Valve ports have been enlarged and tapered to reduce pressure drop and provide enhanced handling of municipal sludges.

POSITION INDICATORS: Travel stops are integral for full travel indication in both directions. Intermediate positions are indicated in 10 degree increments. Positive indication is given on lever and gear operated valves.

- Designed and tested in accordance with AWWA-C517, latest revision
- Exclusive TRUE bi-directional design
- CAD Design
- Unequaled craftsmanship
- Advanced manufacturing procedures



MATERIALS OF CONSTRUCTION

Item	Component	Material	Specification
1	Stop Collar	Cast Iron	A126 Class B
2	Memory Plate	Cast Iron	A126 Class B
3	Bonnet	Cast Iron	A126 Class B
4	Brake Ring	Teflon®	PTFE
5	V-Ring Packing	Neoprene, Buna-N, EPDM	
6	Upper Thrust Washer	Teflon®	PTFE
7	Upper Radial Bearing	Permanently self lubricated	316SS
8	Plug	Cast Iron/Ductile Iron	A126 Class B
9	Lower Thrust Washer	Teflon®	PTFE
10	Lower Radial Bearing	Permanently self lubricated	316SS
11	O-Ring	Neoprene, Buna-N, EPDM	
12	Body	Cast Iron	A126 Class B

Plug Facing Materials

Standard: Neoprene, Buna-N, EPDM **Optional:** Viton

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Eccentric Plug Valve — The Eccentric of Choice.

Large diameter stem/actuator connection gives added strength for heavy slurry and automation applications.

Large diameter stem/plug is designed for superior (trouble-free) operation in throttling or other services experiencing line vibration.

Resilient coated plug resists corrosion and sustains a bubble-tight seal when activated against the welded nickel seat.

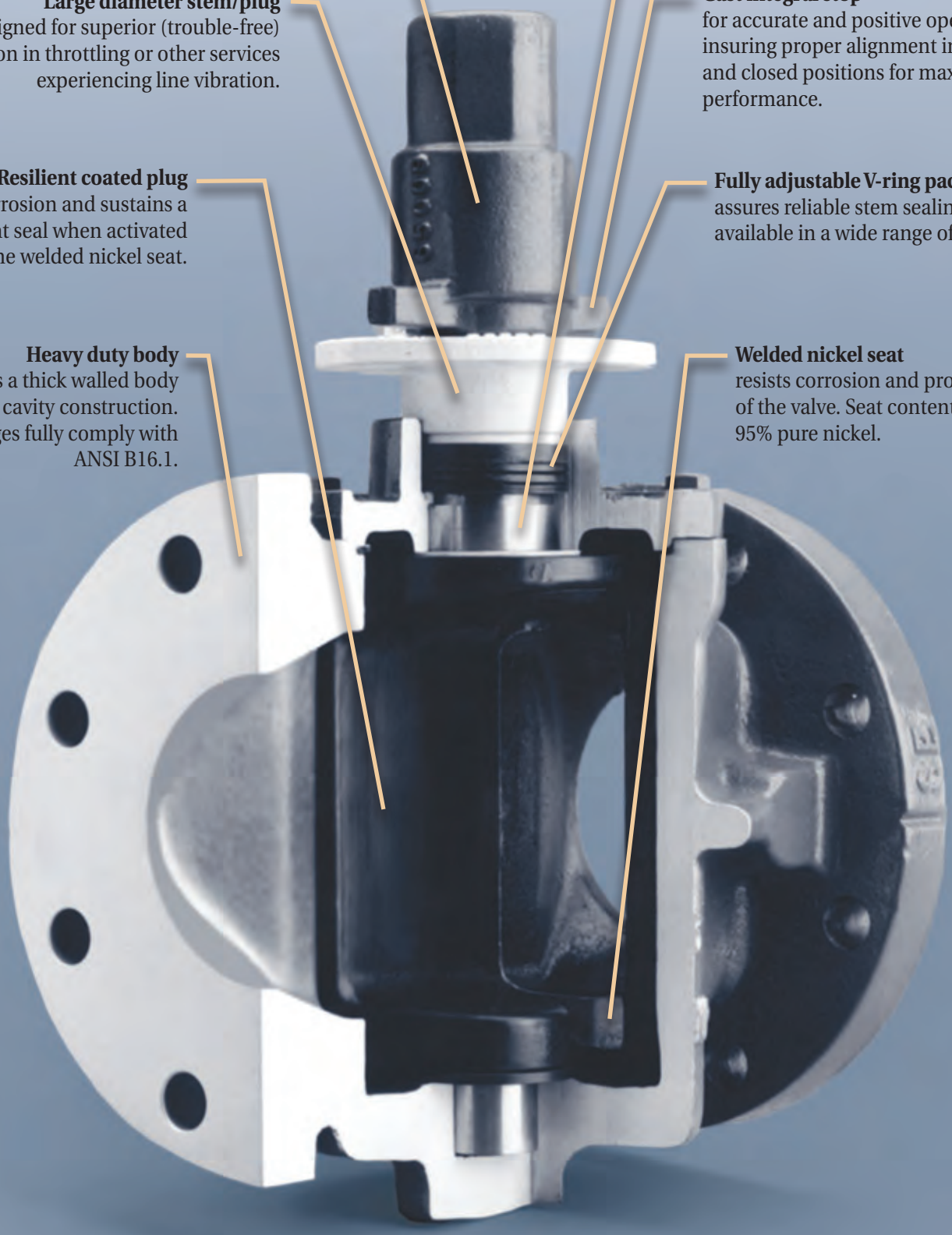
Heavy duty body features a thick walled body cavity construction. Flanges fully comply with ANSI B16.1.

Low friction corrosion-resistant shaft and thrust bearings create smooth lower torque operation and assure long trouble-free operation.

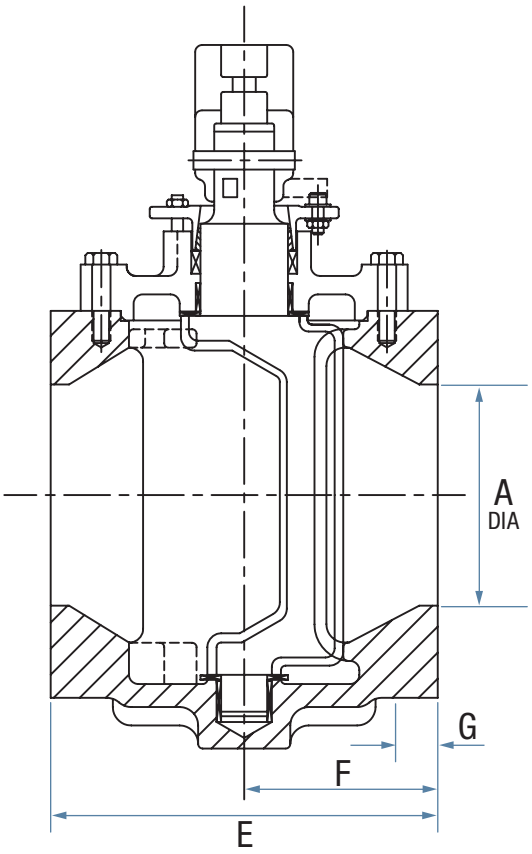
Cast integral stop for accurate and positive operation by insuring proper alignment in the open and closed positions for maximum performance.

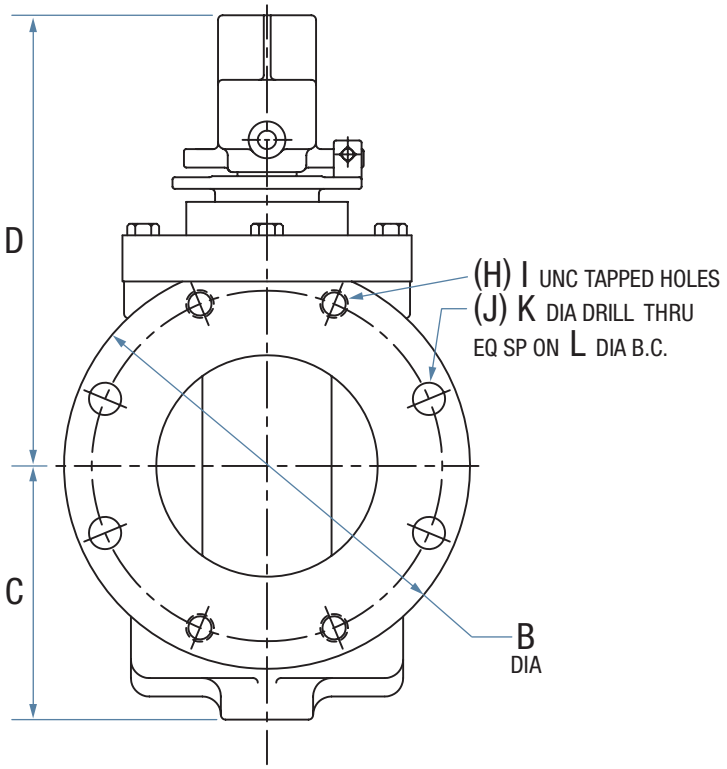
Fully adjustable V-ring packing assures reliable stem sealing and is available in a wide range of materials.

Welded nickel seat resists corrosion and prolongs life of the valve. Seat content is minium 95% pure nickel.



3"– 8" HAND OPERATED **FLANGED VALVE**



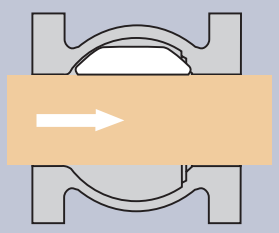


NOTE: Drawings are for illustrative purposes only.
Please request certified drawings for preparing layout and piping diagrams.

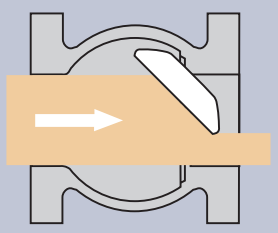
Dimensions (inches)

Size	A	B	C	D	E	F	G	H	I	J	K	L	Wt.
3	3.00	7.50	4.28	9.53	8.00	4.00	.75	–	–	4	.750	6.00	55
4	4.00	9.00	5.18	10.38	9.00	4.50	.94	–	–	8	.750	7.50	74
5	5.00	10.00	5.18	10.38	10.00	5.00	.94	–	–	8	.875	8.50	105
6	6.00	11.00	6.88	12.21	10.50	5.25	1.00	4	.75-10	4	.875	9.50	119
8	8.00	13.50	9.14	16.93	11.50	5.75	1.12	4	.75-10	4	.875	11.75	270

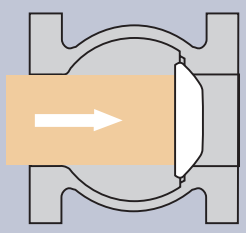
The Homestead Eccentric Operation



In the open position, the Homestead eccentric allows maximum straight-through flow thus minimizing pressure drop.



The Homestead eccentric plug opens and closes freely, without scraping the body walls, therefore there is no plug binding. Flow remains straight making this eccentric ideal for gases, liquids, and slurries.



Simple quarter-turn operation achieves positive shut-off in either direction. The long-lasting resilient plug remains in full contact with the eccentric raised seat. Pressure and flow assist in producing an even tighter seal when flow is in the direction shown above.

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SERIES 120

SERIES 120 ECCENTRIC PLUG VALVES

SUGGESTED SPECIFICATIONS

- Valve design shall conform to AWWA C517 – Latest revision.
- Bodies, bonnets and 3"-8" plugs shall be made from Gray Iron castings, ASTM A-126, Class B per AWWA C517, Section 4.4.1.5. Plugs 10" and larger shall be made from Ductile Iron castings, ASTM A-536 65-45-12 per AWWA C517-09, Section 4.4.3.1. Body wall thickness shall meet AWWA C517, Section 4.4.1.4.
- Plug elastomers shall be bonded in accordance with ASTM D429, method B per AWWA C517, Section 4.4.5.
- End flanges shall be integral with the valve body. Flange drilling and thickness shall conform to ANSI B16.1 (Cast Iron Pipe Flanges and Flanged Fittings) for pressure Class 125. Flanges shall be finished in accordance with MSS SP-6 (Finishes for Contact Faces of Connecting End Flanges of Ferrous Valves and Fittings).
- Mechanical joint ends shall conform to ANSI/AWWA C111/A21.11.
- Face-to-Face dimensions of flanged end valves shall conform to ANSI B16.10 up to and including 12" size.
- Valves shall be rated for 175 psi CWP for sizes 3" through 12"; 150 psi CWP for valves 14" through 72".
- Valves shall conform to MSS SP-108 (Resilient Seated-Eccentric Cast Iron Plug Valves)
- Port areas of valves 24" and smaller shall be not less than 80% of pipe area; valves 30" and larger shall be not less than 70% of pipe area.
- Upper and lower bearings shall be replaceable, permanently self lubricated.
- Welded seats shall be a minimum 1/8" thick 95% minimum nickel content.
- Stem seals shall be gland type multiple V-ring packing, field adjustable and replaceable without valve disassembly, conforming to AWWA C517, Section 4.4.7.

HOMESTEAD® WATER PRODUCTS

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120 YEARS of Dependability

©2015 Olson Technologies, Inc.

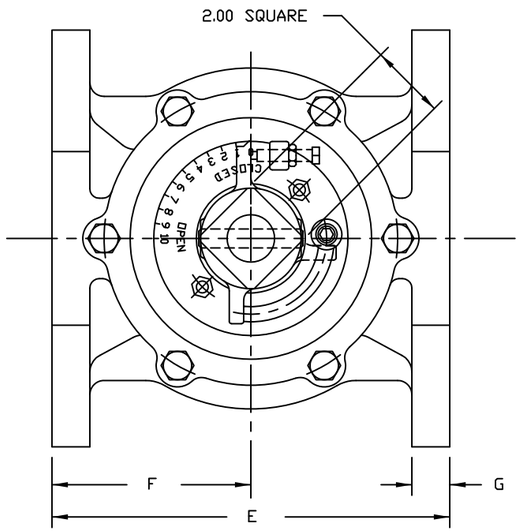
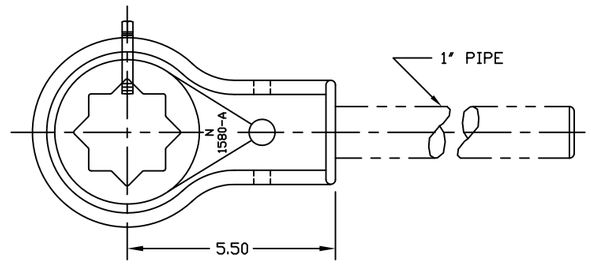


TABLE OF DIMENSIONS (INCHES)															
VALVE SIZE	NEOPRENE PART NO.	NITRILE PART NO.	EPDM PART NO.	A	B	C	D	E	F	G	H	I	J	K	L
3.00	1261870030	1262670030	1269770030	3.00	7.50	4.28	9.53	8.00	4.00	.75	–	–	4	.750	6.00
4.00	1261870040	1262670040	1269770040	4.00	9.00	5.18	10.38	9.00	4.50	.94	–	–	8	.750	7.50
5.00	1261870050	1262670050	1269770050	5.00	10.00	5.18	10.38	10.00	5.00	.94	–	–	8	.875	8.50
6.00	1261870060	1262670060	1269770060	6.00	11.00	6.88	12.21	10.50	5.25	1.00	4	.75–10	4	.875	9.50

△B

△C



"N" WRENCH SOLD SEPARATELY WITHOUT PIPE HANDLE

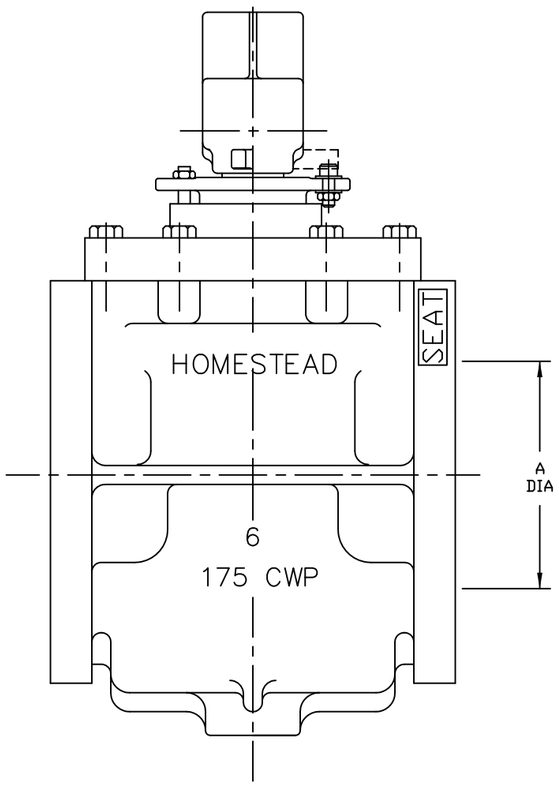
NOTES:

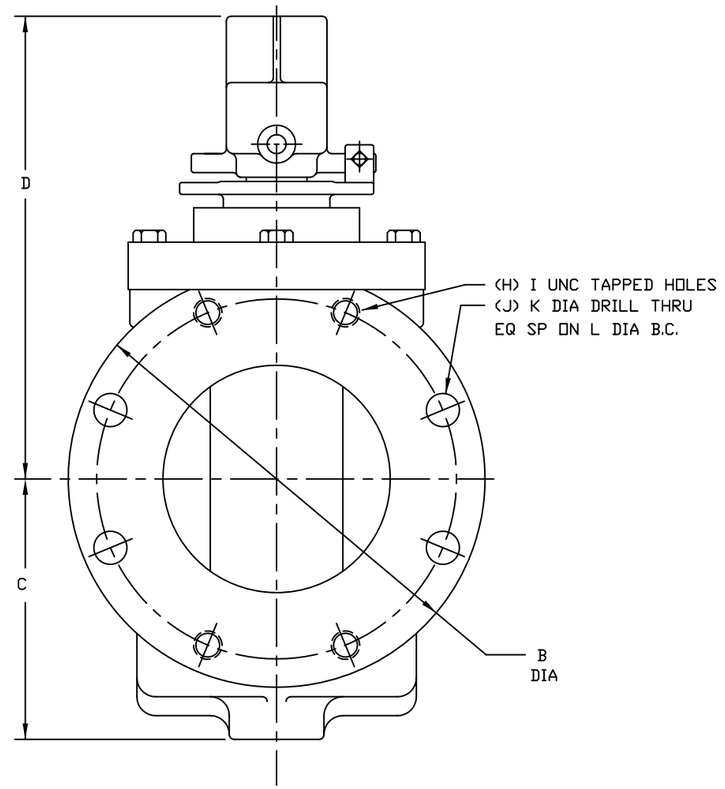
△D 1. VALVES ARE MANUFACTURED IN ACCORDANCE WITH ANSI/AWWA C517-09, "RESILIENT-SEATED CAST IRON ECCENTRIC PLUG VALVES."

2. END FLANGE DIMENSIONS AND DRILLING ARE IN ACCORDANCE WITH ASME/ANSI B16.1, CLASS 125, "CAST IRON PIPE FLANGES AND FLANGE FITTINGS."

△F 3. PAINT: BLUE – SEMI-GLOSS METAL PRIMER

4. ELASTOMERS AVAILABLE IN NITRILE, EPDM, NEOPRENE, VITON





NO.	PART NAME	MATERIAL
21	PIPE PLUG	A126 CLB
20	STOP BOLT	STEEL, ZINC PLATED
19	CAP SCREW	STEEL, ZINC PLATED
18	FLAT WASHER	STEEL, ZINC PLATED
17	JAM NUT	STEEL, ZINC PLATED
16	MEMORY BOLT	STEEL
15	PIN	STAINLESS STEEL
14	STOP COLLAR	A126 CLB
13	SEAL	SEE NOTE 4
12	BRAKE RING	POLYMER
△E 11	JAM NUT	STEEL, ZINC PLATED
10	STUD	STEEL, ZINC PLATED
9	MEMORY PLATE	A126 CLB
8	PACKING	V-RING/SEE NOTE 4
7	RADIAL BEARING	PERM. LUBRICATED 316SS
△F 6	THRUST BEARING	PTFE
5	THRUST BEARING	PTFE
4	RADIAL BEARING	PERM. LUBRICATED 316SS
3	COVER PLATE	A126 CLB
2	PLUG	A126 CLB/ SEE NOTE 4
1	BODY	A126 CLB/NICKEL SEAT

PARTS LIST

HOMESTEAD® VALVES
A DIVISION OF OLSON TECHNOLOGIES, INC.
160 WALNUT ST. ALLENTOWN, PA. 18102 (610) 770-1100

REV	ISSUE	BY	APPR	DATE
F	S1600	RH		9/10/14
E	S1421	RH	DED	5/10/12
D	S1122	RH	DED	5/18/09
C	S331	RH	DED	6/20/02

TITLE: 3"-6" ECCENTRIC PLUG VALVE w/ 2" SQ NUT

NUMBER: SK-4034

3x

NWTC **36** YEARS IN SYSTEMS CONTROL DESIGN

LIQUID PROCESS & CONTROL SOLUTIONS FOR TOMORROWS TECHNOLOGIES

SIMPLEX AND DUPLEX PUMP CONTROLLER

An innovative Simplex / Duplex Pump Controller designed for:

Residential, Commercial, Municipal, and Industrial Sump and Sewage for Indoor and Outdoor Applications

"Over Thousands and Thousands Units Are Operating In Western Canada"

280 TO **600** VOLT - **THREE** PHASE FROM **½** TO **Unlimited** HP

3 or 4 Floats Operation

FEATURES:

- Modular Circuit Board PC 3000 / D
- Low Energy Output to Floats
- Automatic Alternations
- Hand-off Auto Switches
- LED Test / Alarm Silence / Systems Test Push Button
- Programmable Switch, Lead / Lag, or Alternate
- Motor RUN Indicator
- Power ON Indicator
- LED Float Level Indicators
- High Level Alarm (audible and visual)
- Low Level Protection
- High Peak Sonalert Alarm
- Remote Alarm (12 VDC output)
- Motor Contactor and Circuit Protector

Northwest Tech-Con System's model SCP and DCP panel are high quality simplex and duplex pump controller specially design for residential and commercial sump and sewage pump down applications. A low voltage control module is used to operate the starting, stopping and alternation of the pumps, with one pump operating to handle the normal flow. A second pump becomes operational in the event the water level continues to rise. A built-in alarm high level alarm in the control module will sound when the water level reaches a high level.

OPTION:

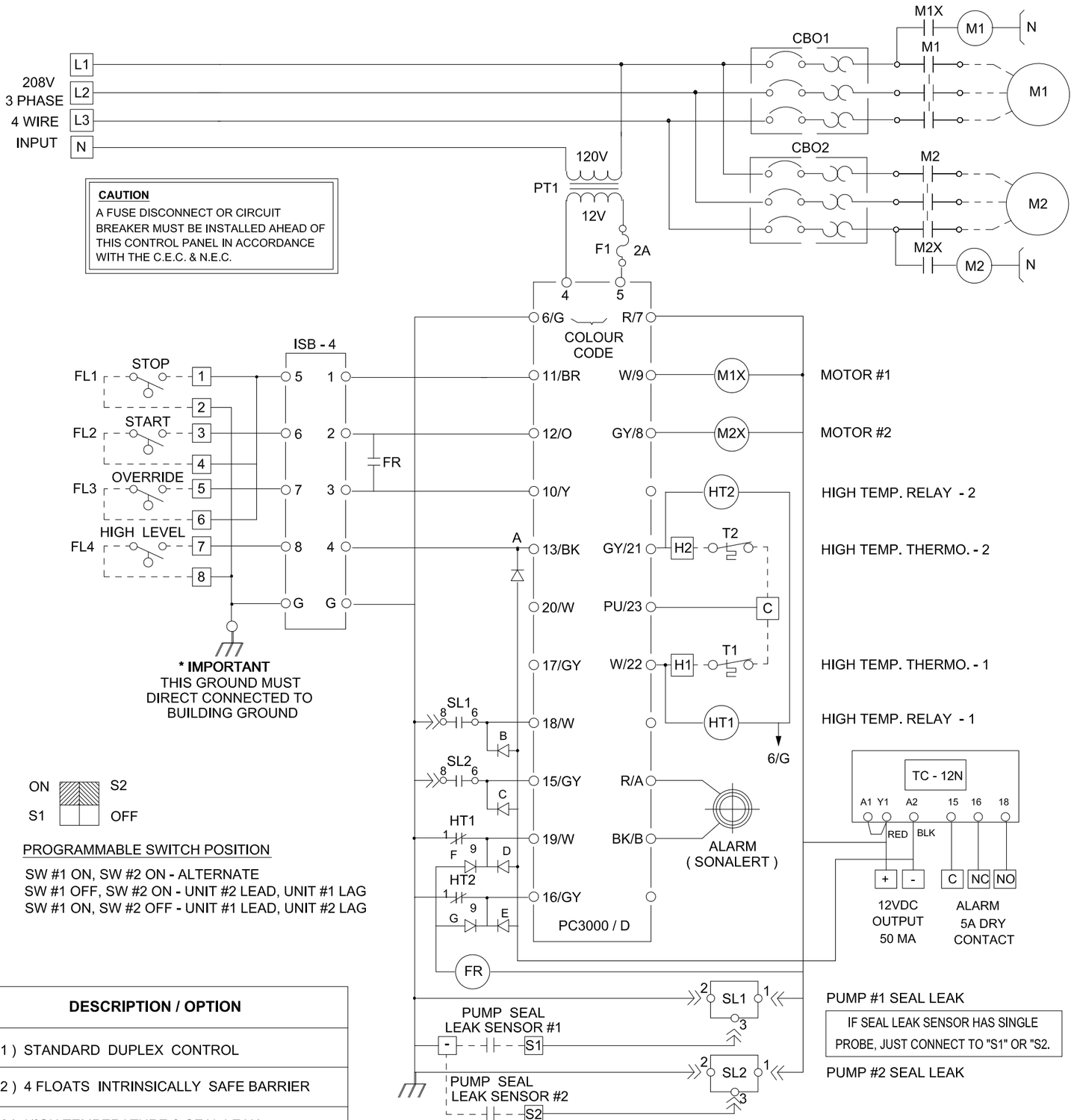
- 24 hour time clock (24HC)
- Battery backup HL alarm (BHA)
- Overload alarm (OLA)
- Dual input power (DP)
- Elapsed time (RTM)
- External panel top alarm light (STL)
- High motor temperature (HT)
- Intrinsic safe barrier (ISB)
- Low level alarm (redundant) (LLA)
- Panel heater c/w thermostat (CH)
- Panel main disconnect (MD)
- Phase monitor or surge arrester
- Pump seal fail alarm (SL)
- Pump start capacitor (LABOR ONLY)
- Remote annuciator (LOBBY-HWA12/L)
- TC-12N timer (TN)
- Vandal proof (for parkade) (VP)
- Communication by text message via internet
- Level Float (20"/30"/50")

REPERSENTATIVE:

Engineered Pump Systems Ltd.
1635 Industrial Ave, Port Coquitlam, BC
V3C 6M9
Email: sales@engineeredpump.com
Phone: 604-552-7900

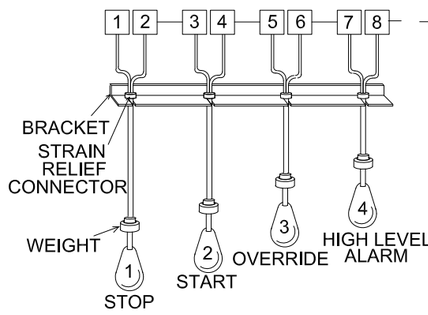
Unit 104 - 7450 Lowland Drive, Burnaby, British Columbia Canada V5J 5A4
Tel: (604) 439-1046 Fax: (604) 439-1079 Email: info@nwtc.ca Website: www.nwtc.ca

Intertek LISTED

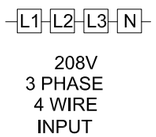


DESCRIPTION / OPTION
(1) STANDARD DUPLEX CONTROL
(2) 4 FLOATS INTRINSICALLY SAFE BARRIER
(3) HIGH TEMPERATURE & SEAL LEAK

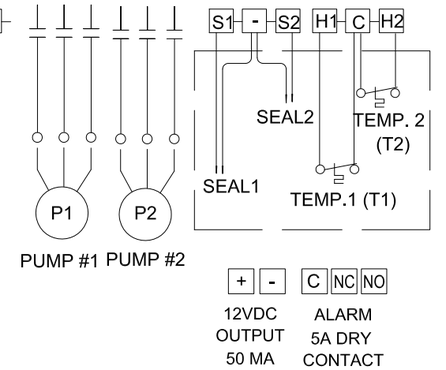
CONTROL CONNECTION



POWER CONNECTION

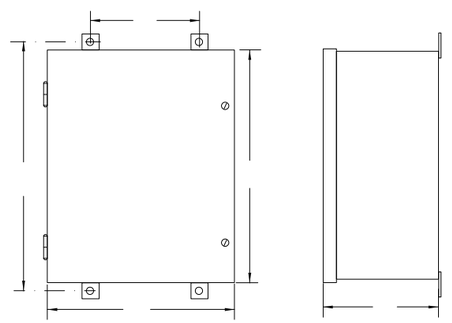


SEAL LEAK & TEMP. THERMO. CONNECTION



LEGEND :

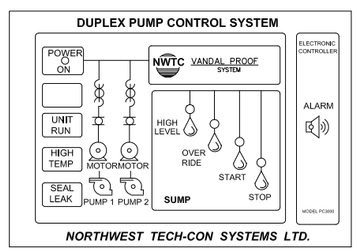
ITEM	DESCRIPTION	PART NUMBER	MAKER
CBO1, CBO2	MANUAL MOTOR STARTER	MMS - 32	LG
M1, M2	MOTOR CONTACTOR	GMC - XX	LG
PT1	TRANSFORMER 120 / 12	7450	NWTC
F1	FUSE RATE : 250V, 2 AMP	MDL-2	BUSS
PC 3000	CONTROL MODULE	PC3000 / D	NWTC
ALM	REMOTE ALARM C/W TIMER	TC - 12N	NWTC
M1X, M2X	CONTROL AUX RELAY 12VDC	G2R - 1 12VDC	OMRON
ISB - 4	INTRINSICALLY SAFE BARRIER	ISB - 4	NWTC
FR	FAIL RELAY 12VDC	G2R - 1 - T	OMRON
SL1, SL2	SEAL LEAK	WS - 12	NWTC
HT1, HT2	HIGH TEMPERATURE RELAY 12VDC	G2R - 1 - T	OMRON



VANDAL PROOF ENCLOSURE

NEMA 1

VIEW OF CONTROLLER FACE PLATE



CUSTOMER:
BC ROBINSON CO. LTD.

END USER:
THE ATRIUM

NORTHWEST TECH-CON SYSTEMS LTD.

NWTC

TEL: (604)439-1046 FAX: (604)439-1079

FUNCTION:
DCP 208 / I O
DUPLEX CONTROL PANEL

DESIGN: A. CHUNG

DATE: SEP., 2008

REF.FILE:

NUMBER: **55.6**

SJE MILLIAMPMASTER™ Control Switch

Mechanically-activated control switch designed to activate low current control panels and alarms.

This wide-angle or narrow-angle control switch offers reliable low current control for AC and DC applications in water, wastewater, and sewage. The internal switching mechanism has sealed gold cross-point contacts for reliable low current operation. Common applications include PLC (programmable logic controller) panels, IS panels with intrinsically safe barriers, low current solar applications, and other low current control panels and alarms applications.

The wide-angle version activates/deactivates approximately 4" (10.16 cm) above and below horizontal with a 3.5" (9 cm) tether. The narrow angle version activates/deactivates at approximately 1.5" (3.81 cm) above and below horizontal with a 3.5" (9 cm) tether. It is not sensitive to rotation.

Normally Open Model (high level)
The control switch turns on (closes) when the switch tips **above** horizontal signaling a high level, and turns off (opens) when the switch drops below horizontal.

Normally Closed Model (low level)
The control switch turns on (closes) when the switch drops **below** horizontal signaling a low level, and turns off (opens) when the switch tips above horizontal.

FEATURES

- Low current, non-arching applications down to 0.160 mA at 125 VAC.
- Mechanically-activated, snap action contacts.
- High impact, corrosion resistant polypropylene float housing.
- Not sensitive to rotation.
- Blue colored cap for easy identification of SJE MilliAmpMaster™ control switch.
- UL Listed for use in non-potable water and sewage.
- CSA Certified.
- Five-year limited warranty.

LR54245 LISTED 83N2

SPECIFICATIONS

CABLE: flexible 18 gauge, 2 conductor (UL,CSA) SJOW, water-resistant (CPE)

FLOAT: 2.74 inch diameter x 4.83 inch long (7.0 cm x 12.3 cm), high-impact, corrosion resistant, polypropylene housing for use in sewage and water up to 140°F (60°C)

MAXIMUM WATER DEPTH: 30 feet (9 meters), 13 PSI (90kPa)

ELECTRICAL:
125 VAC
Maximum Electrical Load: 1 amp
Minimum Electrical Load: 0.160 milliamps
30 VDC
Maximum Electrical Load: 0.1 amps
Minimum Electrical Load: 0.160 milliamps
5 VDC
Minimum Electrical Load: 1 milliamps

OPTIONS

This switch is available:

- for normally open (high level) applications or normally closed (low level) applications.
- with narrow or wide-angle pumping ranges.
- in standard cable lengths of ~~10, 15, 20, or 30 feet and 3, 5, 6, or 10~~ meters (longer lengths available). 50' (15.24m)
- with two mounting options that allow for flexibility in installation:

  Mounting Clamp: for applications where the switch can be attached to a discharge pipe or similar mounting device.

  Externally Weighted: for applications where the switch can be suspended from above.

California Prop 65 requires the following: ⚠ WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

SEE REVERSE SIDE FOR ORDERING INFORMATION.
SEE PRICE BOOK FOR LIST PRICE.

SJE RHOMBUS
1-888-DIAL-SJE • 1-218-847-1317
1-218-847-4617 Fax
email: customer.service@sjeinc.com
www.sjerhombus.com

SJE MILLIAMPMASTER™ Control Switch

Mechanically-activated control switch designed to activate low current control panels and alarms.

ORDERING INFORMATION

Narrow-Angle Versions

Normally Open		Normally Closed		Shipping Weight
Part #	Description	Part #	Description	
1018838	10MANPCNO	**1018839**	10MANPCNC	1.04 lbs.
1018840	10MANWENO	**1018841**	10MANWENC	2.16 lbs.
1018842	15MANPCNO	**1018843**	15MANPCNC	1.37 lbs.
1018844	15MANWENO	**1018845**	15MANWENC	2.45 lbs.
1018846	20MANPCNO	**1018847**	20MANPCNC	1.69 lbs.
1018848	20MANWENO	**1018849**	20MANWENC	2.70 lbs.
1018850	30MANPCNO	**1018851**	30MANPCNC	2.34 lbs.
1018852	~~30~~MANWENO	**1018853**	30MANWENC	3.43 lbs.

Wide-Angle Versions

Normally Open		Normally Closed		Shipping Weight
Part #	Description	Part #	Description	
1015725	10MAPCNO	**1016180**	10MAPCNC	1.04 lbs.
1016181	10MAWENO	**1016182**	10MAWENC	2.16 lbs.
1016184	15MAPCNO	**1016185**	15MAPCNC	1.37 lbs.
1016186	15MAWENO	**1016187**	15MAWENC	2.45 lbs.
1016211	20MAPCNO	**1016212**	20MAPCNC	1.69 lbs.
1016213	20MAWENO	**1016214**	20MAWENC	2.70 lbs.
1016215	30MAPCNO	**1016216**	30MAPCNC	2.34 lbs.
1016217	30MAWENO	**1016218**	30MAWENC	3.43 lbs.

PC = **P**ipe **C**lamp **WE** = **W**eighted **E**xternally **NO** = **N**ormally **O**pen **NC** = **N**ormally **C**losed
NOTE: Descriptions are grouped by cable length measured in feet (10, 15, 20, 30).
SEE PRICE BOOK FOR LIST PRICE.

OPTIONS

PACKAGING
Bagged - standard
Boxed - optional
Bulk - optional

ADDITIONAL CABLE
Longer cable lengths available. Please call for details.
50' (15.24m)

UL Listed for Water & Sewage

LISTED 83N2 LR54245

SSPMA MEMBER

SPECIFICATIONS

CABLE: flexible 18 gauge, 2 conductor (UL, CSA) SJOW, water-resistant (CPE) jacket

FLOAT: 2.74 inch diameter x 4.83 inch long (7.0 cm x 12.3 cm), high impact, corrosion resistant, polypropylene housing for use in sewage and water up to 140°F (60°C)

MAXIMUM WATER DEPTH: 30 feet (9 meters), 13 psi

ELECTRICAL:
125 VAC
Maximum Electrical Load:
1 amp
Minimum Electrical Load:
0.160 milliamps
30 VDC
Maximum Electrical Load:
0.1 amps
Minimum Electrical Load:
0.160 milliamps
5 VDC
Minimum Electrical Load:
1 milliamps

OTHER INFORMATION

NORMALLY OPEN (HIGH LEVEL) OPERATION
The control switch closes (turns on) when the float tips **above** horizontal signaling a high level, and opens (turns off) when the float drops **below** normal.

NORMALLY CLOSED (LOW LEVEL) OPERATION
The control switch closes (turns on) when the float drops **below** horizontal signaling a low level, and opens (turns off) when the float tips **above** horizontal.

Call or fax your order!
1-888-DIAL-SJE (1-888-342-5753) • Fax 218-847-4617

SJE RHOMBUS

www.sjerhombus.com
customer.service@sjeinc.com

Product offering and pricing are subject to change without notice.
*Please visit **www.sjerhombus.com** for the most current information.*

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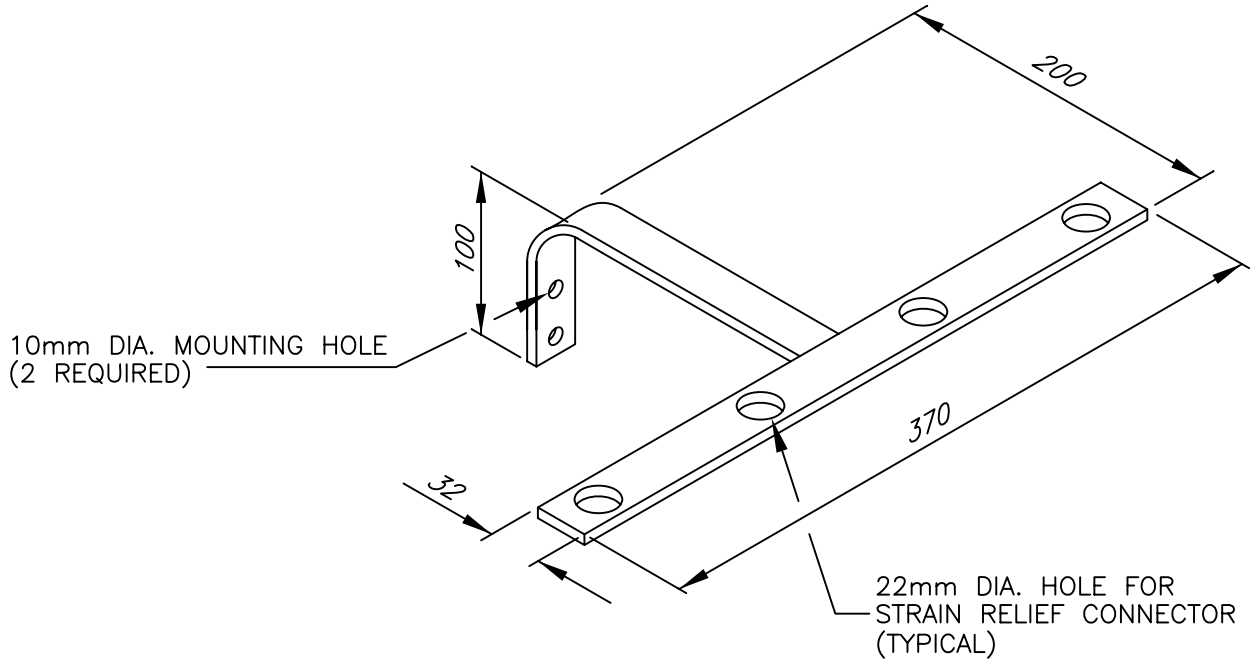
FOUR FLOAT BRACKET

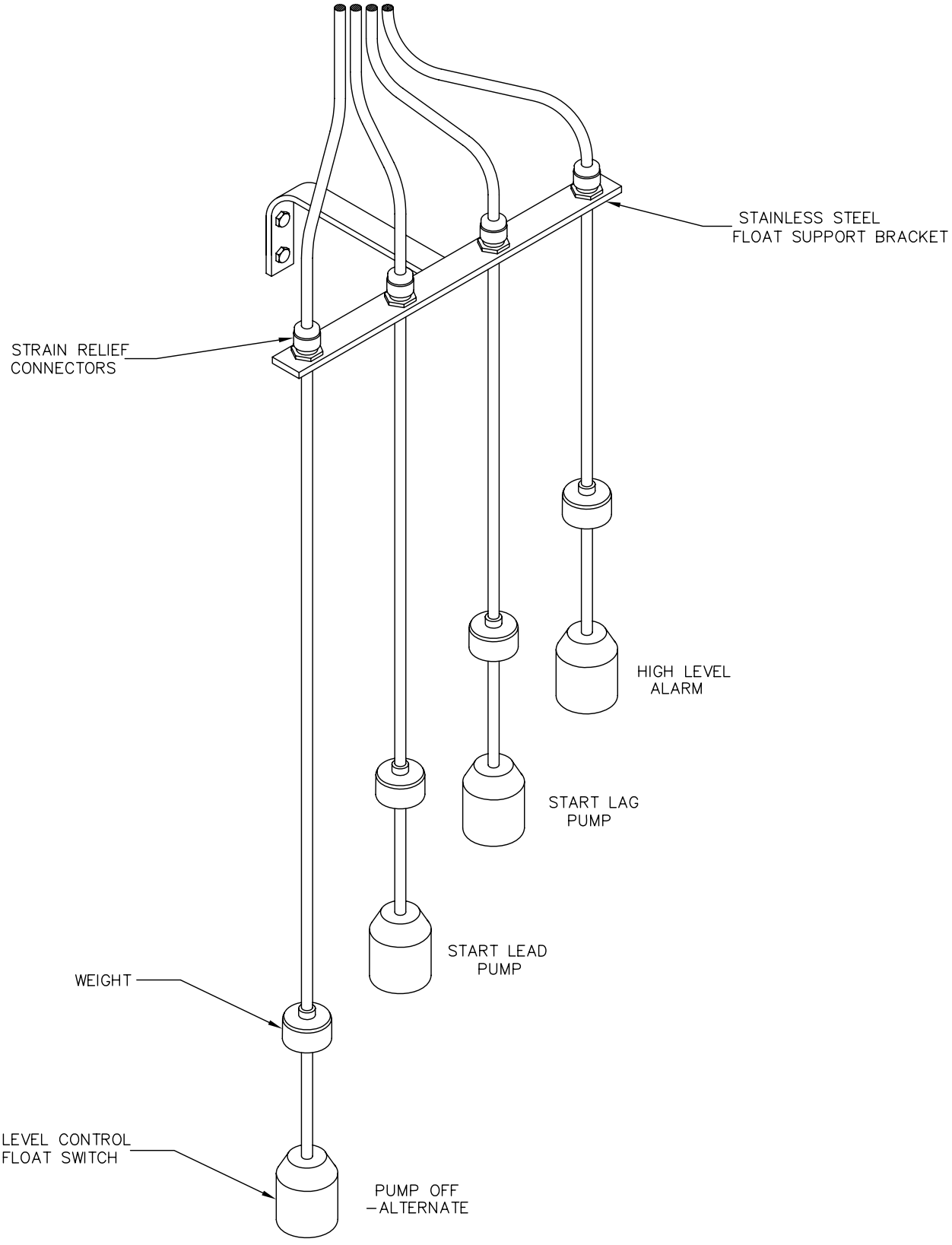


MATERIAL:
32mm X 4mm STAINLESS STEEL

ISSUE No	D/M/Y	DESCRIPTION	DR	CH	APP

SCALE: NTS	APPROVED BY:	DRAWN BY: JB
DATE: Sept/03		PROJECT:
FOUR FLOAT BRACKET		
engineered pump systems ltd.		DRAWING NUMBER: 4 Float Bracket

DUPLEX FLOAT CONTROL SYSTEM



ISSUE No	D M Y	DESCRIPTION	DR	CH	APP

SCALE: NTS	APPROVED BY:	DRAWN BY: JB
DATE: JUNE 16/95		PROJECT:
DUPLEX FLOAT CONTROL SYSTEM		
engineered pump systems ltd.		DRAWING NUMBER: FSB–4

THE ATRIUM
19945 BRYDON CRESCENT, LANGLEY
P-STM 03/04: STORM – 27 USGPM @ 30’ TDH

MYERS® WHR5H-WHR20HH

The Myers WHR5H-WHR20HH series vortex pumps are designed for use in light commercial sewage and effluent applications.

The series passes 2 inch solids and the WHR20HH pumps are available to deliver higher head conditions. Recessed impeller is standard allowing the pump to handle stringy waste without plugging the impeller.

SPECIFICATIONS

Shut-off Head – Up to 75' (22.9 m)
Solids Handling – 2" (50.8 mm)
Liquids Handling – Raw sewage and sewage effluent
Intermittent Liquid Temperature – Up to 140°F (60°C)
Motor/Electrical Data – 1/2 HP, 115V, 1Ø; 1/2, 1, 1-1/2 and 2 HP, 3450 RPM, 208/230V, 1Ø, 60 Hz, PSC; 208/230/460V/575v, 3Ø, 60Hz
Acceptable pH Range – 6-9
Discharge, NPT – Discharge, NPT – 2" (50.8 mm), Optional 3" (76.2 mm)
Housing – Cast iron
Power Cord – 20' (6.1 m), 16/3, SJOW/SJOW-A, 1Ø; ~~20' (6.1 m), 16/4, SJOW/SJOW-A, 3Ø~~ 50' (15.24m)
Impeller – Ductile iron, recessed
Volute Case – Cast iron
Shaft Seal – Type 21, carbon and ceramic
Minimum Sump Diameter – Simplex: 24" (610 mm); Duplex: 30" (762 mm)

FEATURES

Tough Against Corrosion
All cast iron construction resists the most extreme corrosive environments

Runs Cooler
Oil-filled motor for bearing lubrication and maximum heat dissipation

Flow to Meet Demand
Higher head performance for demanding sewage and effluent applications

Powerful Starts
High-torque, permanent split capacitor (PSC) motor; no starting switches or relays to wear out

Thermal Protection
Heat sensor overload protection with automatic reset when motor cools to a safe operating temperature

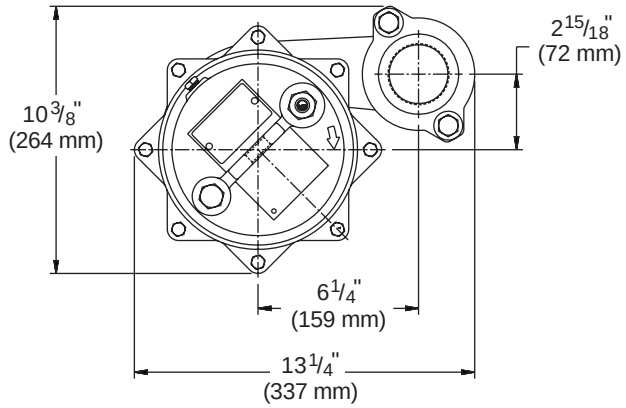
MYERS® WHR5H-WHR20HH

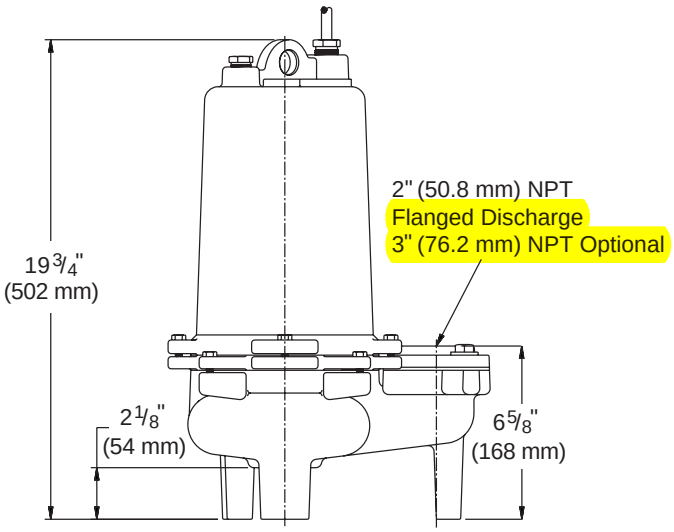
ORDERING INFORMATION

MODEL NUMBER	HP	VOLTS	PHASE/CYCLES	DISCHARGE SIZE	SWITCH TYPE	CORD LENGTH	WEIGHT LBS.
WHR5H-11	1/2 (0.37 kw)	115	1/60	~~2"~~ 3" ~~(50.8 mm)~~ (75mm)	Manual	~~20'~~ 50' ~~(6.1 m)~~ (15.24m)	75 (34 kg)
WHR5H-01		208	1/60				
WHR5H-21		230	1/60				
WHR5H-03		208	3/60				
WHR5H-23		230	3/60				
WHR5H-43		460	3/60				
WHR5H-53		575	3/60				
WHR10H-01	1 (0.75 kw)	208	1/60	2" (50.8 mm)	Manual	20' (6.1 m)	79 (35.8 kg)
WHR10H-21		230	1/60				
WHR10H-03		208	3/60				
WHR10H-23		230	3/60				
WHR10H-43		460	3/60				
WHR10H-53		575	3/60				
WHR15H-01	1-1/2 (1.1 kw)	208	1/60	2" (50.8 mm)	Manual	20' (6.1 m)	85 (38.6 kg)
WHR15H-21		230	1/60				
WHR15H-03		208	3/60				
WHR15H-23		230	3/60				
WHR15H-43		460	3/60				
WHR15H-53		575	3/60				
WHR20H-21	2 (1.5 kw)	230	1/60	2" (50.8 mm)	Manual	20' (6.1 m)	95 (43.1 kg)
WHR20H-03		208	3/60				
WHR20H-23		230	3/60				
WHR20H-43		460	3/60				
WHR20H-53		575	3/60				
WHR20HH-21	2 (1.5 kw)	230	1/60	2" (50.8 mm)	Manual	20' (6.1 m)	95 (43.1 kg)
WHR20HH-03		208	3/60				
WHR20HH-23		230	3/60				
WHR20HH-43		460	3/60				
WHR20HH-53		575	3/60				

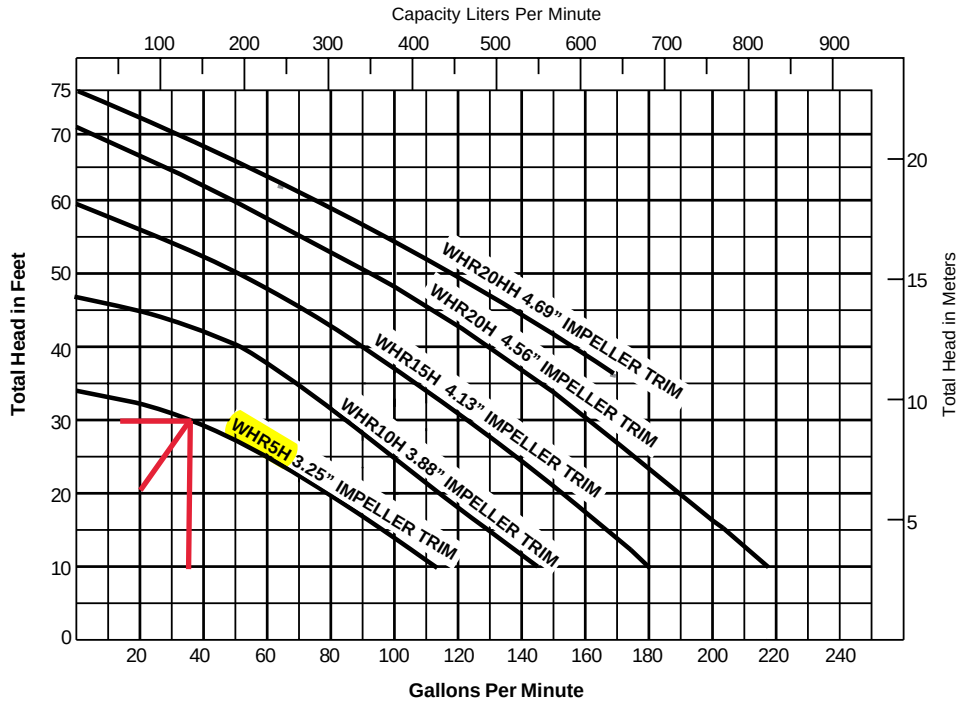
WHR20HH: Highest Head Series

DIMENSIONS





MYERS® WHR5H-WHR20HH



MOTOR ELECTRICAL DATA

MODEL NUMBER	HP	VOLTS	PHASE	HERTZ	START MAX AMPS	RUN AMPS	RUN KW	START KVA	NEC code KVA	LETTER
WHR5H-11	1/2	115	1	60	30.4	13.8	1.9	3.5	1.6	H
WHR5H-01	1/2	208	1	60	16.2	7.6	1.7	3.4	1.6	H
WHR5H-21	1/2	230	1	60	16.2	6.9	1.7	3.7	1.6	H
WHR5H-03	1/2	208	3	60	20.2	5.2	1.4	7.3	1.9	R
WHR5H-23	1/2	230	3	60	20.2	4.7	1.4	8.0	1.9	S
WHR5H-43	1/2	460	3	60	10.1	2.3	1.4	8.0	1.9	S
WHR5H-53	1/2	575	3	60	8.1	1.9	1.4	8.0	1.9	S
WHR10H-01	1	208	1	60	28.0	14.8	3.0	5.8	2.8	B
WHR10H-21	1	230	1	60	23.0	12.8	3.0	5.3	2.8	B
WHR10H-03	1	208	3	60	30.0	7.7	2.5	10.8	3.0	J
WHR10H-23	1	230	3	60	30.0	7.0	2.5	10.8	3.0	K
WHR10H-43	1	460	3	60	15.0	3.5	2.5	11.9	3.0	K
WHR10H-53	1	575	3	60	12.0	2.8	2.5	11.9	3.0	K
WHR15H-01	1-1/2	208	1	60	39.9	15.3	3.3	8.3	3.2	D
WHR15H-21	1-1/2	230	1	60	33.4	13.1	3.3	7.7	3.0	C
WHR15H-03	1-1/2	208	3	60	30.0	8.5	2.8	10.8	3.4	F
WHR15H-23	1-1/2	230	3	60	30.0	7.7	2.8	11.9	3.1	G
WHR15H-43	1-1/2	460	3	60	15.0	3.9	2.8	11.9	3.1	G
WHR15H-53	1-1/2	575	3	60	12.0	3.1	2.8	11.9	3.1	G
WHR20H-21	2	230	1	60	63.0	18.0	3.8	14.5	3.7	E
WHR20H-03	2	208	3	60	53.0	10.4	3.3	19.1	3.6	G
WHR20H-23	2	230	3	60	46.0	9.0	3.3	18.3	3.6	G
WHR20H-43	2	460	3	60	23.0	4.5	3.3	18.3	3.6	G
WHR20H-53	2	575	3	60	18.4	3.6	3.3	18.3	3.6	G
WHR20HH-21	2	230	1	60	63.0	18.0	3.8	14.5	3.7	E
WHR20HH-03	2	208	3	60	53.0	10.4	3.3	19.1	3.6	G
WHR20HH-23	2	230	3	60	46.0	9.0	3.3	18.3	3.6	G
WHR20HH-43	2	460	3	60	23.0	4.5	3.3	18.3	3.6	G
WHR20HH-53	2	575	3	60	18.4	3.6	3.3	18.3	3.6	G

MYERS® WHR5H-WHR20HH

SPECIFICATIONS

Sewage Pumps – Pump(s) shall be Myers WHR5H - WHR20HH series sewage pumps selected in accordance with the following design criteria:

Number of Pumps:	2
Primary Design Flow:	27 USGPM
Primary Design Head:	30' TDH
Minimum Shut-off Head:	
Motor Horsepower:	1/2 HP
Motor Speed:	3450 RPM
Electrical:	208/3/60

Pump – The pump shall be designed to handle raw sewage and be capable of passing 2 inch (50.8 mm) spherical solids. The pump shall be capable of handling liquids with temperatures to 140°F (60°C) intermittent and shall be capable of intermittently running dry without damage to the seals or bearings.

Motor – The pump motor shall be of the submersible type rated 1/2, 1, 1-1/2 or 2 hp as required. Motor shall operate at 3450 RPM and shall be for 115, 208 or 230 volts single phase, or 208, 230, 460, or 575 volts, 3 phase, 60 cycles. Single phase motors shall be of the permanent split capacitor type with no relays or starting switches. Three phase motors shall be squirrel cage induction type. Stator winding shall be of the open type with Class B insulation rated for 130°C maximum operating temperature. The winding housing will be filled with clean dielectric oil to lubricate bearings, seals, and transfer heat from the windings to the outer shell. The motor assembly shall be of the standard frame design and shall be secured in place by four threaded fasteners allowing for easy field serviceability.

The motor shall be capable of operating over the full range of the performance curve without overloading the motor and causing any objectionable noise or vibration. The common motor pump shaft shall be of 416 stainless steel and shall be heat shrunk into the die cast motor rotor. The motor shall have two bearings to support the rotor; an upper ball bearing to accommodate radial loads and a lower ball bearing to take thrust and radial loads. Ball bearings shall be designed for a B-10 life of 50,000 hours.

A heat sensor thermostat and overload shall be attached to the top end of the motor windings and shall be wired in series with the windings to stop the motor if the motor winding temperature reaches 266°F (130°C). The overload thermostat shall reset automatically when the motor cools to a safe operating temperature. Three phase motors shall be protected by 3 leg overload relay in control box. Overload shall be of the quick trip ambient compensated type and shall have manual reset button.

Power Cord – The motor power cord shall be SJOW/A for single phase and SOOW for three phase. The cable jacket shall be sealed at the motor entrance by means of a rubber compression washer and compression nut. A heat shrink tube filled with epoxy shall seal the outer cable jacket and the individual leads to prevent water from entering the motor housing.

Shaft Seal – The motor shall be protected by a rotating mechanical shaft seal. The seal shall have carbon and ceramic seal faces lapped to a tolerance of one light band. Metal parts and springs for seals shall be 300 series stainless steel.

Pump Impeller – The pump impeller shall be of the recessed vortex type. The impeller shall be constructed of ductile iron. The impeller shall be threaded onto the 416 stainless steel pump/motor shaft.

Pump and Motor Castings – All castings shall be of high tensile strength Class 30 gray cast iron. Castings shall be treated with phosphate rinse and painted with a high quality air dry alkyd enamel.

Fasteners – All exposed fasteners shall be of 300 series stainless steel.

PENTAIR

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CANADA
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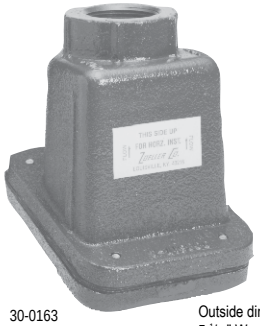
THE "FULL-FLOW" UNICHECKS

30-0163 1¼" CAST IRON NPT
30-0164 1½" CAST IRON NPT



30-0163
Pictured

Outside dimensions
5 1/16" W x 4" W x 6 ¼" H

POWDER COATED TOUGH™

- Vertical or horizontal installation
- Full-flow design, no restrictions
- Stops backflow of water
- Standard, 1¼", 1½", 2", 3" female NPT pipe
- Neoprene polyester reinforced flapper, smooth edge design with cast iron and noncorrosive metal backing plates & stainless steel fastener
- Corrosion-resistant powder coated epoxy finish
- Rated at 50 PSI (115 feet of head) at 130°F
- Stainless steel bolts
- 1 per carton
- Weight: 30-0163, 7.5 lbs.; 30-0164, 7.5 lbs.; 30-0152, 10 lbs.; 30-0160, 18 lbs.
- Suitable for installation below basin cover

30-0152 2" CAST IRON NPT
30-0160 3" CAST IRON NPT

30-0160
Pictured

Outside dimensions
6 5/8" W x 6 5/8" W x 8" H

30-0021 2" PLASTIC SLIP X SLIP UNIONS
30-0151 2" CAST IRON SLIP X SLIP UNIONS

- Full 2" flow design - meets BOCA (P.604.2) 2" full flow pump code
- Checks backflow of water and sewer gas
- Simple to install (no threading of pipe required). Save time & material costs
- Neoprene gasket and flapper, weighted with heavy stainless steel metal backing plates and rivet
- Can be installed on vertical or horizontal line
- Slips over PVC, steel pipe or copper piping
- Reduces motor and pump noise from plumbing system
- 6 per carton
- Flexible neoprene slip x slip union includes stainless steel clamps for low pressure systems. Avoid more than 10 ft. static head above the check valve. 4.3 PSI at 130°F
- Extra wide hinge to reduce hinge stress
- Plastic check has PVC body and can be installed with solvent welded couplings for pressure systems to 25 PSI, 57 ft. of head (P/N 30-0023)
- Model 30-0151 has corrosion-resistant powder coated epoxy finish.
- Plastic check individual rack pack Model 30-0022

Consult Factory or local representative for state approvals

30-0151
Cast Iron

30-0021
Pvc Plastic

30-0181 1¼" - 1½" SLIP X SLIP UNION
30-0200 1¼" - 1½" SLIP X SLIP UNION W/ SS SCREW & CLAMPS

- Flapper bends over a radius, no sharp 90° edges — lengthens life of flapper hinge
- PVC plastic check body, ultrasonically welded and can be solvent welded for rigid pressure rated piping systems to 25 PSI, 57 ft. of head at 130°F (30-0182)
- Slip x slip for 4.3 PSI, 10 ft. of head at 130°F. Avoid more than 10 ft. static head above the check valve.
- Vertical or horizontal installation
- Available in individual packages for pegboard display (30-0181)
- All stainless steel screws, nuts and clamps on model 30-0200 only
- Stainless steel clamps with zinc screws on model 30-0181 only
- Designed to reduce water hammer
- 10 per carton

30-0181
Pictured

30-0200
Pictured

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BALL VALVES

PVC BLOCKED TRUE UNION BALL VALVES

- Threads conform to ANSI/ASME B1.20.1
- Slip connections conform to ASTM D2466
- Working Temperature Range: 41°F to 122°F (5°C to 55°C)
- Max Pressure Rating: 150 PSI @ 73°F(22°C)

0924 Series 1/2" - 2" Threaded (FPT)

- Grey PVC body, suitable for both schedule 40 & 80 pipe
- Seal material: EPDM O-ring
- Seat material: PTFE
- Ends are blocked with bayonet style lock to prevent ball from being blown out
- Blue ABS handle is equipped with removable spanner device
- Shipped complete with both thread and slip interchangeable connections
- Double union/double block design permits in-line maintenance without disconnecting pipe

0925-NL Series 1/2" - 4" EPDM "O" Ring Seal
0926 Series 1/2" - 4" VITON "O" Ring Seal

- Seat material: PTFE
- Double union / double block design permits in-line maintenance without disconnecting pipe
- Ends are blocked with bayonet style lock to prevent ball from being blown out
- Blue (0925-NL) or Red (0926) ABS handle is equipped with removable spanner device
- NSF/ANSI Standard 61 & 372 Certified (0925-NL series only)
- Shipped complete with both thread and slip interchangeable connections

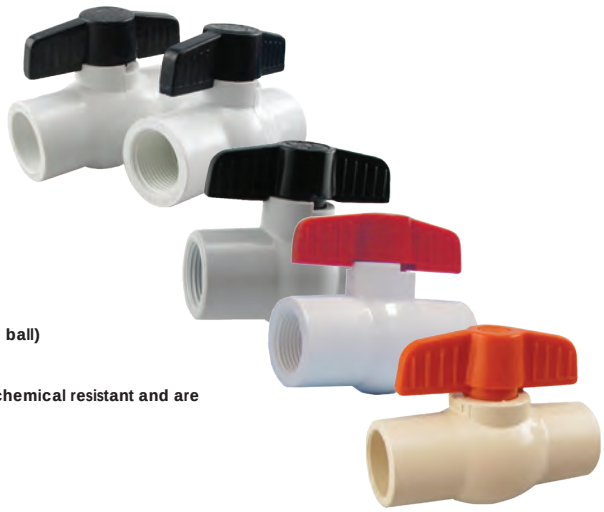
PVC SINGLE UNION BALL VALVES

0933 Series 1-1/2" - 2" Threaded (FPT)
0933S Series 1-1/2" - 2" Slip

- White PVC body, suitable for both schedule 40 & 80 pipe
- Seal material: EPDM O-ring
- Seat material: EPDM

MOLDED-IN-PLACE BALL VALVE

- Working Temperature Range 32°F to 122°F (0°C to 50°C)
- 150 PSI Working Pressure at 73°F (22°C)
- Suitable for both Schedule 40 and 80 PVC Pipe



0929 Series 1/2" - 4" Threaded (FPT)
0929S Series 1/2" - 4" Slip

- NSF/ANSI Standard 372 Certified

0921 Series 1/2" - 4" Threaded (FPT) NSF APPROVED 1/2" TO 2" ONLY
0921S Series 1/2" - 4" Slip NSF APPROVED 1/2" TO 2" ONLY
0923 Series 1/2" - 2" Threaded (FPT) NOT NSF APPROVED
0923S Series 1/2" - 2" Slip NOT NSF APPROVED

- Shock-resistant PVC body, ball and handle. **(2-1/2" - 4" have polypropylene ball)**
- NSF/ANSI Standard 61 & 372 Certified **(0921/0921S series only)**

NOTE: EPDM seats are recommended for most cold water system applications. PTFE seats are chlorine and chemical resistant and are recommended for most pool/spa applications.

CPVC HOT WATER SYSTEM BALL VALVES

0922CTS Series 1/2" - 2" Threaded (CTS x CTS)

- High heat resistance - Max. Service Temperature
  Continuous 32°F - 194°F (0°C - 90°C)
  Short hours 212°F (100°C)
- Test Pressure: 225 PSI
- Working Pressure: 150 PSI
- EPDM O-Ring
- PTFE (polytetrafluoroethylene) Seat
- CTS (Copper Tube size) Socket for CPVC pipe
- NSF/ANSI Standard 61 & 372 Certified

0929(S) SERIES PVC MOLDED-IN-PLACE BALL VALVES

Specification:

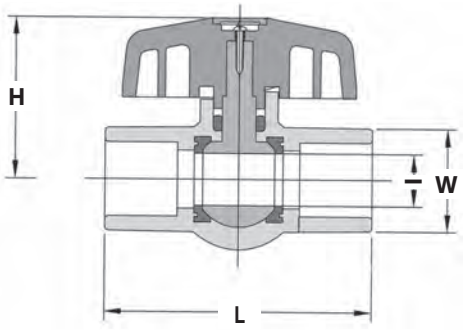
- Threads conform to ANSI/ASME B1.20.1
- Slip connections conform to ASTM D2466
- Working Temperature Range: 41°F to 122°F (5°C to 55°C)
- Max Pressure Rating: 150 PSI @ 73°F(22°C)
- White PVC body, suitable for both schedule 40 & 80 pipe
- Stem seal material: EPDM o-ring
- Seat material: EPDM
- Black ABS Handle

NO LEAD <0.25% Pb by weighted avg. | Third Party Certified to NSF / ANSI 372

Certification:

- NSF/ANSI Standard 372 Certified

MATERIAL LIST	
Name	**Material**
Screw	Steel
Cap	ABS
Handle	ABS
Ball	PVC
O-ring	EPDM
Body	PVC
Seat	EPDM



DIMENSIONS											
Part No. Threaded	**Part No. Slip**	**Nominal Size**	**I**		**W**		**H**		**L**		**Weight**
			inches	**mm**	**inches**	**mm**	**inches**	**mm**	**inches**	**mm**	**grams**
0929-05	0929S-05	1/2"	0.59	15.00	1.24	31.40	1.78	45.30	2.94	74.70	95
0929-07	0929S-07	3/4"	0.79	20.00	1.45	36.80	2.00	50.90	3.39	86.20	144
0929-10	0929S-10	1"	0.98	25.00	1.77	45.00	2.26	57.30	4.05	102.80	220
0929-12	0929S-12	1-1/4"	1.26	32.00	2.07	52.50	2.66	67.50	4.34	110.20	326
0929-15	0929S-15	1-1/2"	1.42	36.00	2.49	63.20	2.91	73.80	4.83	122.70	467
0929-20	0929S-20	2"	1.81	46.00	3.01	76.40	3.32	84.30	5.67	144.10	708
0929-25	0929S-25	2-1/2"	2.48	63.00	3.54	90.00	4.07	103.50	7.17	182.00	1120
0929-30	0929S-30	3"	3.15	80.00	4.25	107.90	4.47	113.50	9.25	235.00	2140
0929-40	0929S-40	4"	3.81	97.00	5.21	132.40	4.89	124.30	10.08	256.00	3030

Temperature Correction Factor for PVC Valves

As temperature increases, working pressure decreases. The optimal working pressure for PVC valves is 150 PSI @ 73°F (22°C)
If the temperature increases above 73°F (22°C), use the PVC correction factor to determine working pressure.
Multiply the maximum working pressure by the correction factor.

Temperature	73°F (22°C)	90°F (32°C)	100°F (38°C)	110°F (38°C)	120°F (49°C)	130°F (54°C)	140°F (60°C)
PVC Correction Factor	1.00	1.00	1.00	0.83	0.66	0.50	0.33

BOSHART INDUSTRIES
COMMITTED TO EXCELLENCE SINCE 1955

25 Whaley Avenue, PO Box 310, Milverton, ON CANADA N0K 1M0
Tel: 519-595-4444 Fax: 519-595-4380 Toll Free: 800-561-3164

www.boshart.com

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NWTC **36** YEARS IN SYSTEMS CONTROL DESIGN

LIQUID PROCESS & CONTROL SOLUTIONS FOR TOMORROWS TECHNOLOGIES

SIMPLEX AND DUPLEX PUMP CONTROLLER

An innovative Simplex / Duplex Pump Controller designed for:

Residential, Commercial, Municipal, and Industrial Sump and Sewage for Indoor and Outdoor Applications

"Over Thousands and Thousands Units Are Operating In Western Canada"

280 TO **600** VOLT - **THREE** PHASE FROM **½** TO **Unlimited** HP

3 or 4 Floats Operation

FEATURES:

- Modular Circuit Board PC 3000 / D
- Low Energy Output to Floats
- Automatic Alternations
- Hand-off Auto Switches
- LED Test / Alarm Silence / Systems Test Push Button
- Programmable Switch, Lead / Lag, or Alternate
- Motor RUN Indicator
- Power ON Indicator
- LED Float Level Indicators
- High Level Alarm (audible and visual)
- Low Level Protection
- High Peak Sonalert Alarm
- Remote Alarm (12 VDC output)
- Motor Contactor and Circuit Protector

Northwest Tech-Con System's model SCP and DCP panel are high quality simplex and duplex pump controller specially design for residential and commercial sump and sewage pump down applications. A low voltage control module is used to operate the starting, stopping and alternation of the pumps, with one pump operating to handle the normal flow. A second pump becomes operational in the event the water level continues to rise. A built-in alarm high level alarm in the control module will sound when the water level reaches a high level.

OPTION:

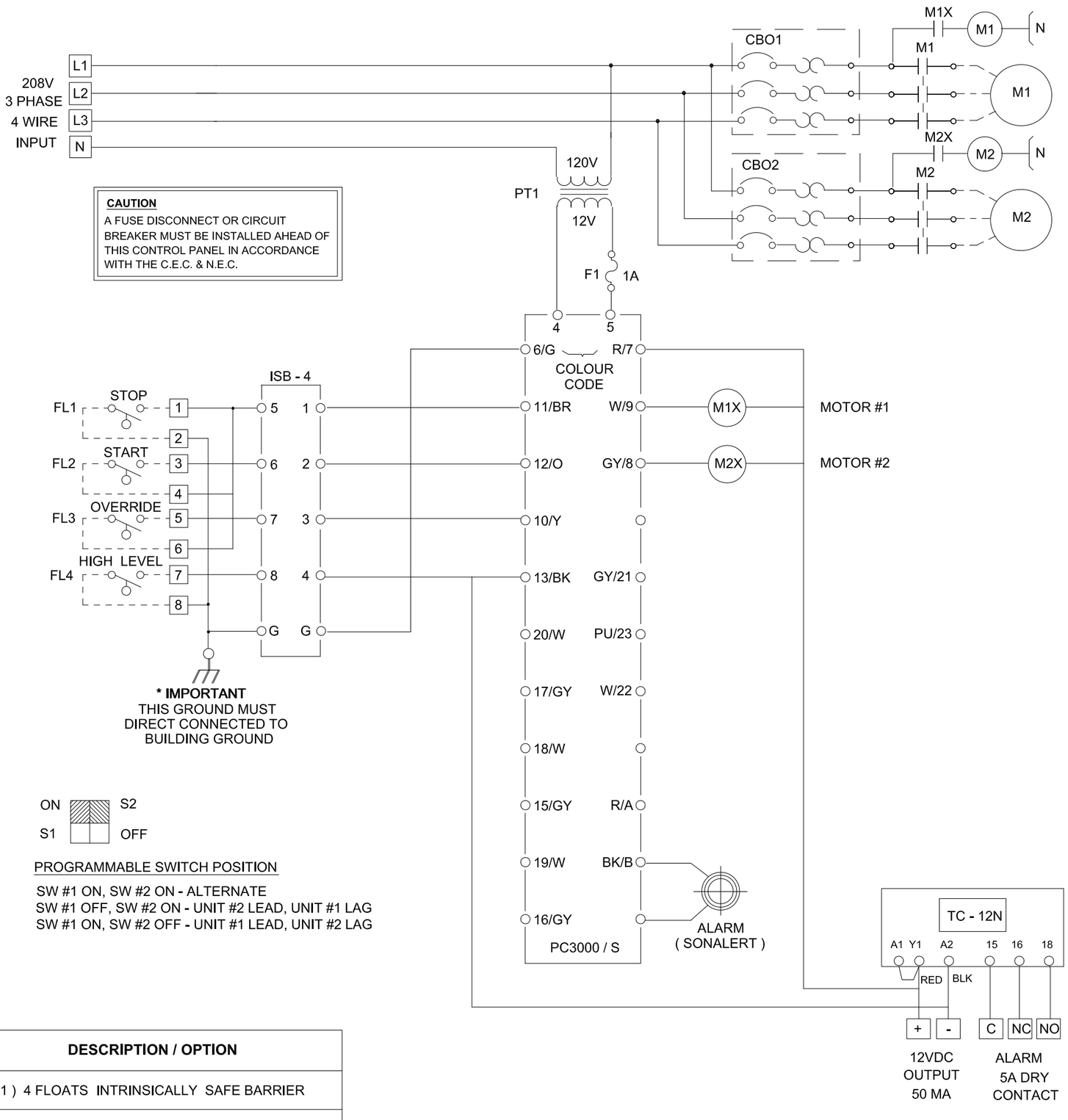
- 24 hour time clock (24HC)
- Battery backup HL alarm (BHA)
- Overload alarm (OLA)
- Dual input power (DP)
- Elapsed time (RTM)
- External panel top alarm light (STL)
- High motor temperature (HT)
- Intrinsic safe barrier (ISB)
- Low level alarm (redundant) (LLA)
- Panel heater c/w thermostat (CH)
- Panel main disconnect (MD)
- Phase monitor or surge arrester
- Pump seal fail alarm (SL)
- Pump start capacitor (LABOR ONLY)
- Remote annuciator (LOBBY-HWA12/L)
- TC-12N timer (TN)
- Vandal proof (for parkade) (VP)
- Communication by text message via internet
- Level Float (20"/30"/50")

REPERSENTATIVE:

Engineered Pump Systems Ltd.
1635 Industrial Ave, Port Coquitlam, BC
V3C 6M9
Email: sales@engineeredpump.com
Phone: 604-552-7900

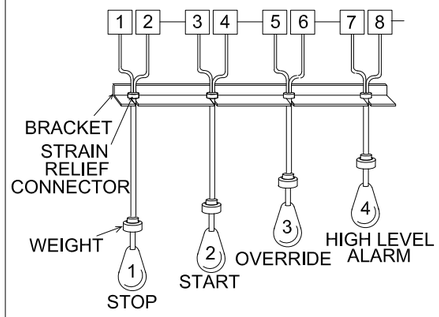
Unit 104 - 7450 Lowland Drive, Burnaby, British Columbia Canada V5J 5A4
Tel: (604) 439-1046 Fax: (604) 439-1079 Email: info@nwtc.ca Website: www.nwtc.ca

Intertek LISTED



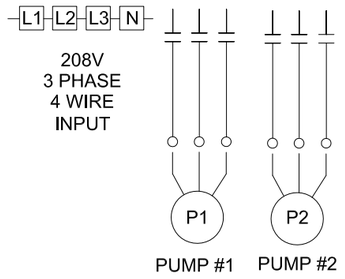
DESCRIPTION / OPTION
(1) 4 FLOATS INTRINSICALLY SAFE BARRIER

CONTROL CONNECTION



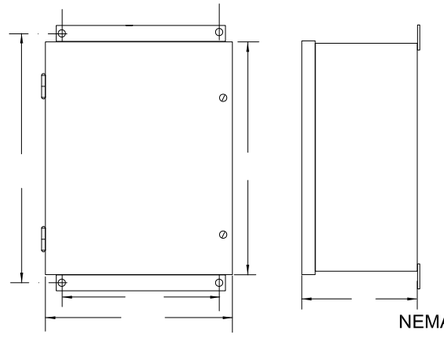
INPUT CONNECTION

PUMP POWER CONNECTION

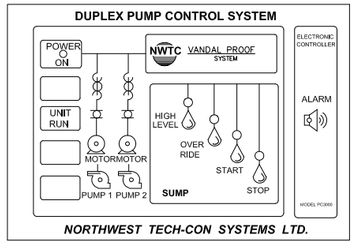


LEGEND :

ITEM	DESCRIPTION	PART NUMBER	MAKER
CBO1 - 2	CIRCUIT BREAKER OVERLOAD	MMA - 32	LG
M1 - 2	MOTOR CONTACTOR	GMC - XX	LG
PT1	TRANSFORMER 120 / 12	7450	NWTC
F1	FUSE RATE : 250V, 1 AMP	MDL - 1	BUSS
PC 3000	CONTROL MODULE	PC3000 / D	NWTC
ALM	REMOTE ALARM WITH TIMER	TC - 12N	NWTC
M1X, M2X	CONTROL AUX RELAY	G2R - 1 12VDC	OMRON
ISB - 4	INTRINSICALLY SAFE BARRIER	ISB - 4	NWTC
	VANDAL PROOF ENCLOSURE		



VIEW OF CONTROLLER FACE PLATE



CUSTOMER:
BC ROBINSON CO. LTD.

END USER:
THE ATRIUM

NORTHWEST TECH-CON SYSTEMS LTD.

NWTC

TEL: (604)439-1046 FAX: (604)439-1079

FUNCTION:
DCP 208 / IO
DUPLEX CONTROL PANEL

DESIGN: A. CHUNG

DATE: SEP., 2008

REF.FILE:

NUMBER: **50.7**

SJE MILLIAMPMASTER™ Control Switch

Mechanically-activated control switch designed to activate low current control panels and alarms.

This wide-angle or narrow-angle control switch offers reliable low current control for AC and DC applications in water, wastewater, and sewage. The internal switching mechanism has sealed gold cross-point contacts for reliable low current operation. Common applications include PLC (programmable logic controller) panels, IS panels with intrinsically safe barriers, low current solar applications, and other low current control panels and alarms applications.

The wide-angle version activates/deactivates approximately 4" (10.16 cm) above and below horizontal with a 3.5" (9 cm) tether. The narrow angle version activates/deactivates at approximately 1.5" (3.81 cm) above and below horizontal with a 3.5" (9 cm) tether. It is not sensitive to rotation.

Normally Open Model (high level)
The control switch turns on (closes) when the switch tips **above** horizontal signaling a high level, and turns off (opens) when the switch drops below horizontal.

Normally Closed Model (low level)
The control switch turns on (closes) when the switch drops **below** horizontal signaling a low level, and turns off (opens) when the switch tips above horizontal.

FEATURES

- Low current, non-arching applications down to 0.160 mA at 125 VAC.
- Mechanically-activated, snap action contacts.
- High impact, corrosion resistant polypropylene float housing.
- Not sensitive to rotation.
- Blue colored cap for easy identification of SJE MilliAmpMaster™ control switch.
- UL Listed for use in non-potable water and sewage.
- CSA Certified.
- Five-year limited warranty.

SSPMA MEMBER · LR54245 · LISTED 83N2 · Member of Hydraulic Institute

SPECIFICATIONS

CABLE: flexible 18 gauge, 2 conductor (UL,CSA) SJOW, water-resistant (CPE)

FLOAT: 2.74 inch diameter x 4.83 inch long (7.0 cm x 12.3 cm), high-impact, corrosion resistant, polypropylene housing for use in sewage and water up to 140°F (60°C)

MAXIMUM WATER DEPTH: 30 feet (9 meters), 13 PSI (90kPa)

ELECTRICAL:

125 VAC
Maximum Electrical Load: 1 amp
Minimum Electrical Load: 0.160 milliamps

30 VDC
Maximum Electrical Load: 0.1 amps
Minimum Electrical Load: 0.160 milliamps

5 VDC
Minimum Electrical Load: 1 milliamps

OPTIONS

This switch is available:

- for normally open (high level) applications or normally closed (low level) applications.
- with narrow or wide-angle pumping ranges.
- in standard cable lengths of ~~10, 15, 20, or 30 feet and 3, 5, 6, or 10~~ meters (longer lengths available). 50' (15.24m)
- with two mounting options that allow for flexibility in installation:

  Mounting Clamp: for applications where the switch can be attached to a discharge pipe or similar mounting device.

  Externally Weighted: for applications where the switch can be suspended from above.

California Prop 65 requires the following: ⚠ WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

SEE REVERSE SIDE FOR ORDERING INFORMATION.
SEE PRICE BOOK FOR LIST PRICE.

SJE RHOMBUS
1-888-DIAL-SJE • 1-218-847-1317
1-218-847-4617 Fax
email: customer.service@sjeinc.com
www.sjerhombus.com

SJE MILLIAMPMASTER™ Control Switch

Mechanically-activated control switch designed to activate low current control panels and alarms.

ORDERING INFORMATION

Narrow-Angle Versions

Normally Open		Normally Closed		Shipping Weight
Part #	Description	Part #	Description	
1018838	10MANPCNO	**1018839**	10MANPCNC	1.04 lbs.
1018840	10MANWENO	**1018841**	10MANWENC	2.16 lbs.
1018842	15MANPCNO	**1018843**	15MANPCNC	1.37 lbs.
1018844	15MANWENO	**1018845**	15MANWENC	2.45 lbs.
1018846	20MANPCNO	**1018847**	20MANPCNC	1.69 lbs.
1018848	20MANWENO	**1018849**	20MANWENC	2.70 lbs.
1018850	30MANPCNO	**1018851**	30MANPCNC	2.34 lbs.
1018852	~~30~~MANWENO	**1018853**	30MANWENC	3.43 lbs.

Wide-Angle Versions

Normally Open		Normally Closed		Shipping Weight
Part #	Description	Part #	Description	
1015725	10MAPCNO	**1016180**	10MAPCNC	1.04 lbs.
1016181	10MAWENO	**1016182**	10MAWENC	2.16 lbs.
1016184	15MAPCNO	**1016185**	15MAPCNC	1.37 lbs.
1016186	15MAWENO	**1016187**	15MAWENC	2.45 lbs.
1016211	20MAPCNO	**1016212**	20MAPCNC	1.69 lbs.
1016213	20MAWENO	**1016214**	20MAWENC	2.70 lbs.
1016215	30MAPCNO	**1016216**	30MAPCNC	2.34 lbs.
1016217	30MAWENO	**1016218**	30MAWENC	3.43 lbs.

PC = **P**ipe **C**lamp **WE** = **W**eighted **E**xternally **NO** = **N**ormally **O**pen **NC** = **N**ormally **C**losed
NOTE: Descriptions are grouped by cable length measured in feet (10, 15, 20, 30).
SEE PRICE BOOK FOR LIST PRICE.

OPTIONS

PACKAGING
Bagged - standard
Boxed - optional
Bulk - optional

ADDITIONAL CABLE
Longer cable lengths available. Please call for details.
50' (15.24m)

UL Listed for Water & Sewage

UL LISTED 83N2 — CSA LR54245

SSPMA MEMBER

SPECIFICATIONS

CABLE: flexible 18 gauge, 2 conductor (UL, CSA) SJOW, water-resistant (CPE) jacket

FLOAT: 2.74 inch diameter x 4.83 inch long (7.0 cm x 12.3 cm), high impact, corrosion resistant, polypropylene housing for use in sewage and water up to 140°F (60°C)

MAXIMUM WATER DEPTH: 30 feet (9 meters), 13 psi

ELECTRICAL:
125 VAC
Maximum Electrical Load:
1 amp
Minimum Electrical Load:
0.160 milliamps
30 VDC
Maximum Electrical Load:
0.1 amps
Minimum Electrical Load:
0.160 milliamps
5 VDC
Minimum Electrical Load:
1 milliamps

OTHER INFORMATION

NORMALLY OPEN (HIGH LEVEL) OPERATION
The control switch closes (turns on) when the float tips **above** horizontal signaling a high level, and opens (turns off) when the float drops **below** normal.

NORMALLY CLOSED (LOW LEVEL) OPERATION
The control switch closes (turns on) when the float drops **below** horizontal signaling a low level, and opens (turns off) when the float tips **above** horizontal.

Call or fax your order!
1-888-DIAL-SJE (1-888-342-5753) • Fax 218-847-4617

SJE RHOMBUS

www.sjerhombus.com
customer.service@sjeinc.com

Product offering and pricing are subject to change without notice.
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9500117E 10/18
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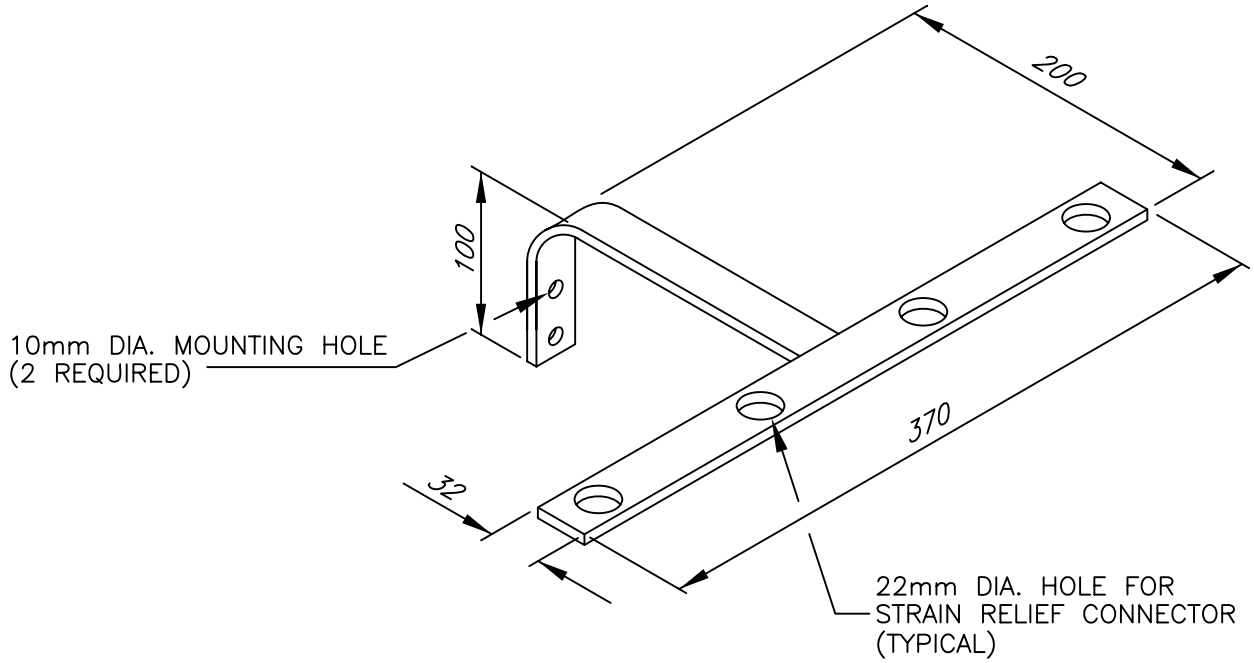
FOUR FLOAT BRACKET

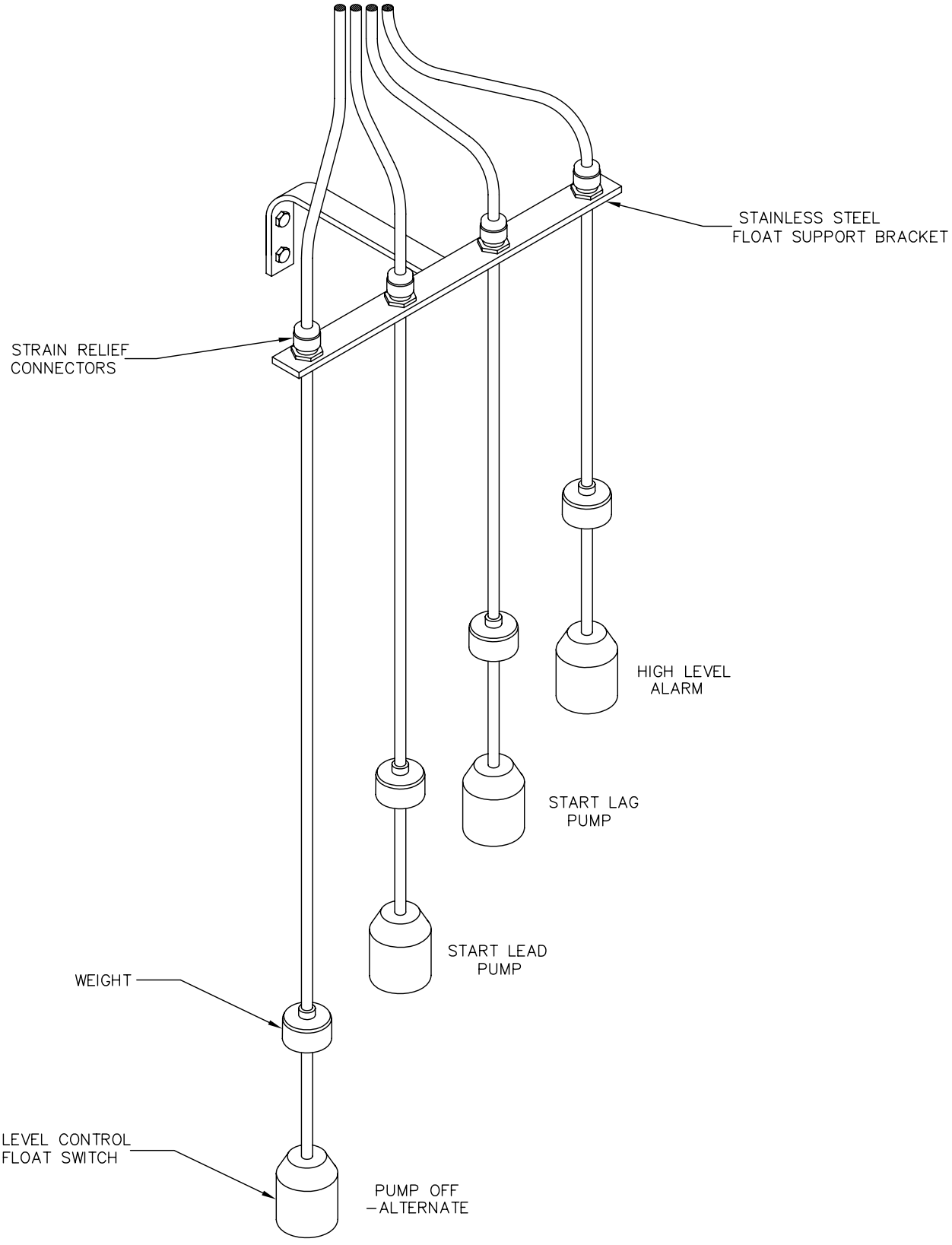


MATERIAL:
32mm X 4mm STAINLESS STEEL

ISSUE No	D/M/Y	DESCRIPTION	DR	CH	APP

SCALE: NTS	APPROVED BY:	DRAWN BY: JB
DATE: Sept/03		PROJECT:
FOUR FLOAT BRACKET		
engineered pump systems ltd.		DRAWING NUMBER: 4 Float Bracket

DUPLEX FLOAT CONTROL SYSTEM



ISSUE No	D M Y	DESCRIPTION	DR	CH	APP

SCALE: NTS	APPROVED BY:	DRAWN BY: JB
DATE: JUNE 16/95		PROJECT:
DUPLEX FLOAT CONTROL SYSTEM		
engineered pump systems ltd.		DRAWING NUMBER: FSB–4

SECTION 2

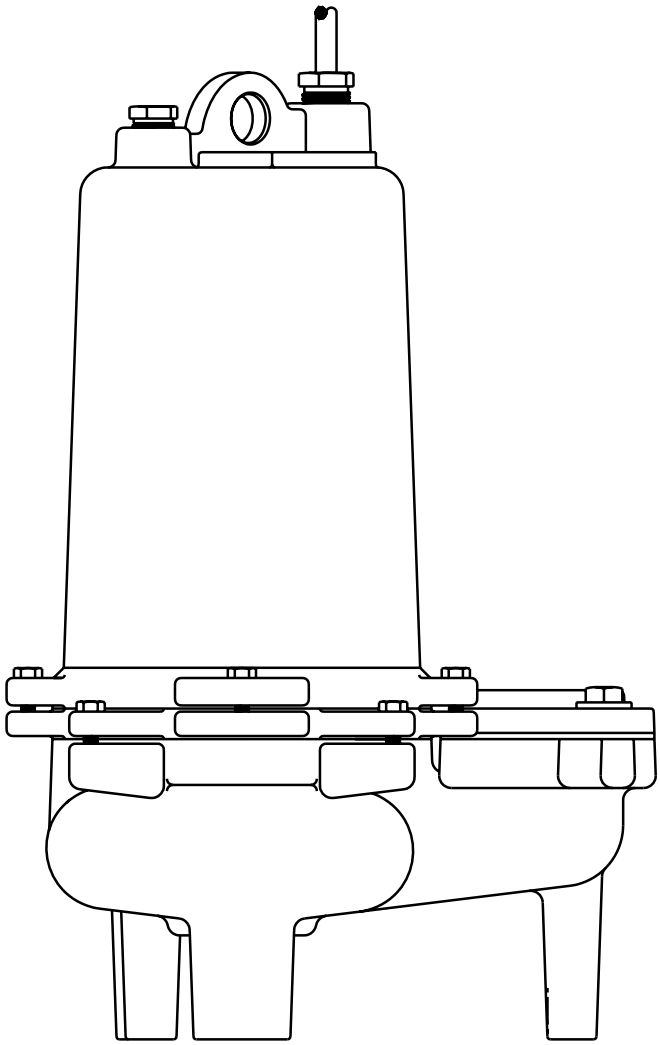
OPERATION AND MAINTENANCE INFORMATION

PENTAIR

MYERS®

INSTALLATION AND SERVICE MANUAL

WHR5H, 10H, 15H, 20H Series Submersible Sewage Pumps



293 WRIGHT STREET, DELAVAN, WI 53115 WWW.FEMYERS.COM
PH: 888-987-8677

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23833A551 (09/23/13)

SAFETY WARNINGS

Before Installation: This manual contains important information for the safe use of this product. Read this manual completely and follow the instructions carefully. Reasonable care and safe methods relating to the installation and operation of this product should be practiced. Check local codes and requirements before installation.

⚠ DANGER Risk of electrical shock and fire. May result in serious injury, death or fire hazard. Disconnect all electrical sources prior to installation, handling or servicing. Only qualified personnel may install this system. NFPA 70/National Electric Code (NEC) or local codes must be followed. System must be properly grounded according to NEC. Do not lift pump by power cord.

⚠ DANGER Biohazard Risk. Once wastewater source has been connected to system, Biohazard Risk exists. Installer(s) and/or service personnel must use proper Personal Protective Equipment and follow handling procedures per OSHA 29 CFR 1910.1030 when handling equipment after wastewater source has been connected to system.

⚠ DANGER Risk of Asphyxiation. Installer(s) and/or service personnel must use proper Personal Protective Equipment and follow OSHA 29 CFR 1910.146 or OSHA 29 CFR 1926. Pump may be installed in a location classified by OSHA as a confined space.

⚠ DANGER Risk of Fire or Explosion. Do not smoke or use open flames in or around this system. This system is not intended for use in hazardous locations per NFPA 70 National Electric Code. Do not pump flammable liquids.

⚠ DANGER Cutting Risk. Risk of serious cutting or amputation exists. Disconnect all power sources prior to servicing pump. Pump may start without warning.

⚠ DO NOT modify the cord and plug. When using the cord and plug, plug into a grounded outlet only. When wiring to a system control, connect the pump ground lead to the system ground.

⚠ DO NOT run the pump dry. Dry running can overheat the pump (causing burns to anyone handling it) and will void the warranty.

⚠ The pump normally runs hot. To avoid burns, allow it to cool for 30 minutes after shutdown before handling it.

⚠ Submersible sewage pumps are not approved for use in swimming pools, recreational water installations, decorative fountains or any installation where human contact with the pumped fluid is common. Pump is designed to be installed in a sump or wet location where drainage collects.

DO NOT THROW AWAY OR LOSE THIS MANUAL. Keep it in a safe place so that you may refer to it often for the continued safe operation of the product.

⚠ CAUTION Single phase pumps with automatic heat sensor reset will restart without warning as the motor cools. Therefore, never do service work on the pump unless power supply is disconnected.

⚠ DANGER Risk of electric shock. Pumps without seal leak detectors are supplied with a grounding connector and grounding-type attachment plug on the power cord. To reduce the risk of electric shock, be certain that it is connected only to a properly grounded, grounding-type receptacle. DO NOT cut off ground pin or use an adapter fitting. DO NOT use an extension cord with this pump. Entire plug may be cut off if a control panel is used.

When wiring this pump follow all local electrical and safety codes and ordinances as well as the most recent National Electric Code (NEC-ANSI/NFPA 70).

All pumps have a GROUND WIRE that is connected to a screw in the metal motor housing. This wire goes to the receptacle or control box which must be connected to an NEC approved ground.

California Proposition 65 Warning

⚠ WARNING This product and related accessories contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

GENERAL DESCRIPTION AND USES

The WHR Series are solids handling pumps that can be used to pump RAW SEWAGE for COMMERCIAL and DOMESTIC use, but are not intended to handle large rags, mop heads or strings. All pumps can be used for normal sewage duty where extra capacity is required.

RECESSED IMPELLERS

All of the pumps are of the recessed impeller type that provides a clear volute passage for solids as no solids pass through the impeller.

All of the pumps listed can be used to pump septic tank EFFLUENT or GROUND sewage as used in some pressure sewer systems.

⚠ WARNING THESE PUMPS ARE NOT APPROVED FOR, AND SHOULD NOT BE USED IN SWIMMING POOLS OR FOUNTAINS.

AIR LOCKING

A sewage pump is air locked if water traps air in the pump and it cannot get out, thus preventing the pump from operating.

In installations of this type a 1/8" hole should be drilled in the discharge pipe below the check valve. The check valve should be 12 to 18 inches above pump discharge. Do not put check valve directly into pump discharge opening.

LEVEL CONTROLS

All pumps must use certified level control switches for automatic operation. Level control rating must be at least equal to the horsepower rating of the pump.

Plug-in cords can be used on all the single phase pumps without seal leak detector. This cord has a GROUND pin that plugs into a grounded receptacle. The grounded receptacle cannot be used in the wet sump or basin due to DANGER of current leakage.

Sealed junction boxes must be used in wet sumps or basins to make connections to motor cord.

MOTOR TYPES

All single phase pump motors have internal capacitors.

Automatic reset overload switches are attached directly to the motor windings on single phase pumps.

Three phase pump motors are squirrel cage induction type.

INSTALLATION

Pumps can be installed inside sealed basins with proper venting for either simplex or duplex systems. Simplex or duplex basin systems are available.

Basins are not intended for use with home septic systems. They are for use in office buildings and small industrial buildings and factories.

If raw sewage must be pumped from the home's sewage system, use outside basins that connect with pressure sewer mains or gravity sewers, or run to septic tanks.

Basins can be used inside the home where extra capacity sump pumps are required for water softeners and wash water.

If an inside basin is used, it is usually installed at the time of pouring the concrete basement floor.

Pumps can be installed in a compartment of septic tanks for pumping to pressure sewer mains, gravity sewers, leach fields, or evaporation mounds.

PROPER VENTING FOR BASINS INSTALLED INSIDE

All inside sealed basins must have a 2" or 3" vent pipe installed in accordance with local codes. Basins for handling softener water, wash or drainage water do not have to be sealed or vented.

Outside basins are usually of fiberglass and from 4 to 8 feet deep and have a sealed cover. Pump is usually installed with a lift-out rail system so that pump can be removed without disturbing the discharge piping. The check valve comes out with pump for servicing. Complete lift-out systems mounted in fiberglass basins are available to meet customer specifications.

⚠WARNING Basin must be vented in accordance with local plumbing codes. These pumps are not designed for and CANNOT be installed in locations classified as hazardous in accordance with the National Electric Code.

PIPING

Pumps are fitted with 2" or 3" female threaded pipe flange. Galvanized or PVC plastic pipe can be used. Plastic pipe is preferred for raw sewage or septic tank effluent.

CHECK VALVES AND SHUT-OFF VALVES

All pumps must have check valves and shut-off valves in the discharge line. Check valves must be flapper type with outside spring or ball type. Shut-off valves can be ball or gate type. Plastic construction for both check and shut-off valves is preferred.

HOW TO SET CONTROLS FOR SIMPLEX SYSTEMS

1. Automatic systems — These systems have the float switches mounted on the pump, so pump is installed in the basin and motor cord is plugged into GROUNDED receptacle. For sealed basin cover, power cord is brought through a split rubber plug in the basin cover.

2. Where 2 float controls are used, the turn-on control is set 3" to 6" above top of motor, and the turn-off control is set about 6" to 8" above bottom of basin. If a high level alarm control is used, it is set about 6" above upper control. If basin depth will not allow these settings, closer spacing can be used.

HOW TO START SIMPLEX SYSTEMS

1. For single-phase pumps with plug cords piggyback into receptacle and run water into basin until pump starts. Allow pump to make several on/off cycles. Leave power cord plugged in.

   If pump runs but does not pump it may be air locked. Unplug cord and crack union in the discharge line, then restart pump. This should vent off any trapped air. Retighten union.

2. With 2 float controls turn on power at the control box and run water into basin. When level gets above top control, pump should start and continue to pump until level drops to lower control, stopping pump. Run pump through several cycles. If pump runs but does not pump, turn off power and check for an air lock. Leave power on for automatic operation.

For all cases if motor does not start when water level is up, check for proper plug-in or that start switch is on, or if fuse is blown.

ALWAYS HAVE ELECTRICIAN MAKE ELECTRICAL CHECKS.

STARTING PUMP PIGGYBACK (AUTOMATIC) USING MECHANICAL SWITCH WITH SERIES PLUG –

SIMPLEX SYSTEM

1. These pumps have a mechanical (mercury-free) float switch with a 20 ft. cord and a 115 volt or 230 volt series piggyback plug on 1/2 HP with switch mounted to the pump. On 3/4, 1, and 2 HP, it requires 20 ft. cord and 230 volt only.
2. Plug the switch cord plug into a proper voltage, properly grounded outlet.
3. Plug the pump power cord into the back of the switch cord series plug.
4. Tape the cords to the discharge pipe every 12".
5. Run water into basin until pump starts. Be sure discharge line valve is open.
6. Allow pump to operate through several on/off cycles.

HOW TO SET CONTROLS AND START DUPLEX SYSTEMS

CONTROL BOX MUST BE USED ON ALL DUPLEX SYSTEMS

1. Four float controls are used for duplex systems. Set turn-on control 6" to 8" above pumps. Set turn-off control 8" to 10" above bottom of basin. Set override control 6" to 8" above turn-on control. Set high level alarm control about 6" to 8" above override control. Mark all control cords so that they can be connected correctly in the control box.
2. Turn Hand-Off-Auto switches to OFF position and close circuit breaker.
3. Turn both H-O-A switches to the AUTO position and run water into basin. When level rises and activates the turn-on switch, one pump should start and run. Pump will continue to run until lower control is exposed, stopping pump.
4. Run water into sump again and when water level raises the turn-on control, opposite pump will start and run until level drops exposing lower control, stopping pump.
5. Run this test several times to be sure pumps are alternating properly.
6. To check high level alarm, again turn both switches to OFF and fill basin until level is above the alarm control. Turn switches to AUTO position and alarm buzzer should sound and alarm light should come on. When level drops below the alarm, control buzzer should stop.
7. If pumps operate as described, then set both H-O-A to AUTO and pumps are ready to operate automatically.

⚠ CAUTION NEVER WORK ON PUMPS OR CONTROL BOXES UNTIL CIRCUIT BREAKERS ARE TURNED OFF. Always have a qualified electrician make electrical connections and service checks.

SPECIAL INSTRUCTIONS FOR 3-PHASE PUMPS

1. **⚠ WARNING Only qualified persons shall service and install this pump. The pump must be wired by a qualified electrician, using an approved starter box and switching device.**

   ⚠ WARNING Risk of electric shock. Do not remove cord and strain relief. Do not connect conduit to pump.

2. Three phase pumps are always installed with control boxes having magnetic starters with 3-leg overload protection. **DO NOT TRY TO RUN THREE PHASE PUMPS DIRECTLY ACROSS THE LINE.**
3. **To Connect Pump:** Run wire from pump to the bottom of control box or appropriate junction box suitable for enclosing splice connections. A hole must be cut into the control box for the wires. With power to control box off, connect green (ground) line to ground lug. Connect black (power) wires to power lead terminals. Make sure that all wires are inside control box and not in a position to be pinched or shorted when the door is closed.
4. All three phase motors can run either direction. Rotation can be changed by interchanging any two line leads at magnetic starter. **BE SURE CIRCUIT BREAKER IS OFF BEFORE MAKING THIS CHANGE.**

   To find if rotation is correct, operate pumps and check delivery operation. If flow and head are low, the rotation is wrong. With duplex pumps check operation of both pumps.
5. All pump impellers either single or three phase must turn counterclockwise when looking into pump inlet. If uncertain of rotation, **TURN OFF POWER** and lift pump from basin USING THE LIFTING RING (with cord connected) and lay pump on side so impeller can be seen. Turn on power and start pump using hand position of H-O-A switch. Turn on and off fast, so that coast of impeller can be seen.

⚠ DANGER RISK OF AMPUTATION WHEN PUMP STARTS. Never put hand or fingers on the impeller. Interchange any two line leads at the magnetic starter to change rotation.

TROUBLESHOOTING

1. Pump does not run or start when water is up in tank.

a. Check for blown fuse or tripped circuit breaker.

b. Check for defective level switch.

c. Where control panel is used be sure H-O-A switch is in the AUTO position. If it does not run, turn switch to the HAND position and if the pump runs then the trouble is in the automatic electrical system. Have an electrician make electrical checks.

d. Check for burned-out motor. Occasionally lightning can damage a motor even with lightning protection.

e. Where plug-in cords are used be sure contact blades are clean and making good contact. DO NOT USE PLUG-IN CORDS INSIDE A BASIN OR WET WELL.

2. Pump runs but does not deliver flow.

a. Check for airlock. Start and stop pump several times. If this does not help it may be necessary to loosen a union in the discharge line to relieve airlock.

b. Check valve may be installed backward. Check flow arrow on valve body. Check shut-off valve. It may be closed.

c. Check vertical elevation of discharge pipe. It may be higher than pump can support.

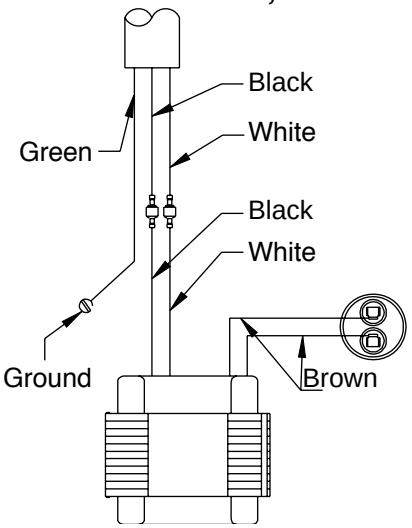
d. Pump inlet may be plugged. Remove pump to check.

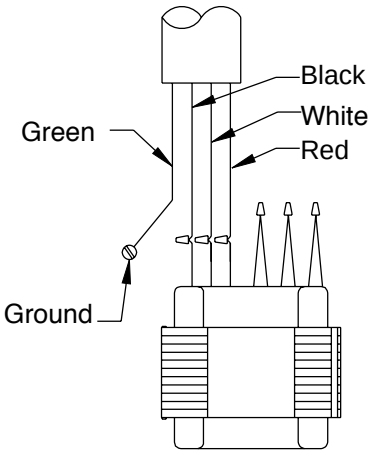
e. Level control ball or weight may be stuck on side of basin. Be sure it floats freely.

⚠ WARNING RISK OF ELECTRICAL SHOCK. Always unplug power cords or turn off all main and branch circuit breakers before doing any work on the pump. If control panel is remote from pump, disconnect lead wires to motor so that no one can turn the circuit breaker back on.

WIRING DIAGRAMS

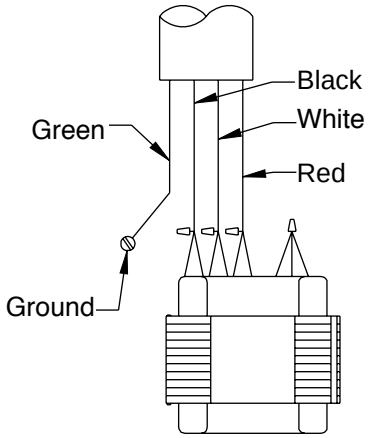
115V, 200V or 230V
1 Phase, P.S.C.

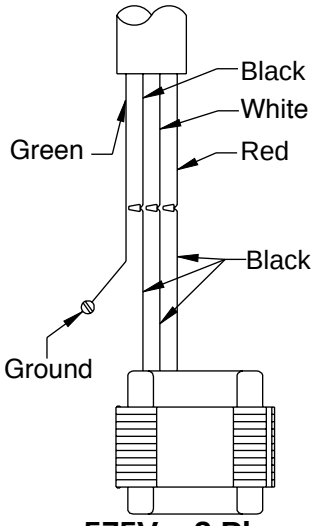




460V – 3 Phase

230V – 3 Phase
208V – 3 Phase (1–2 HP)





575V – 3 Phase
200V – 3 Phase

REPAIR PARTS LIST*

Ref.	Description	Qty.	Part Number
1	Cord, Power	1	See Chart
2	Housing Motor	1	25327D000P
4	Oil, Transformer (5 gal.)	.8-1 gal	RTF
5&6	Stator, Rotor shaft with shell	1	See Chart
6A	Connectors (3 ph only)	3-6	15781A001
7	Seal, shaft	1	25370A000
8	Plate, brg & seal	1	25367D000
9	Screw, cap, 5/16 x 1-1/4	8	19100A012
10	Flange, 2" CI	8	002080002
10	Flange, 3" CI alternate	8	002070002
11	Screw, cap, 1/2-13 x 1-1/2	2	19103A043
12	Gasket, rubber	1	003240011
13	Case, volute	1	27195E000

Ref.	Description	Qty.	Part Number
14	Impeller, DI (std. series)	1	See Chart
15	Screw, Machine #10 x 3/8	1	06106A042
16	Sealant (Grade 271 Loctite®)	1	14550A001
17	Washer, Impeller Retainer	1	05030A262
18	Gasket, tetraseal, 7x6-3/4x1/8	1	05014A181
22	Capacitor (1 ph only)	1	See Chart
23	Plug, 1/4" pipe	1	05022A092
24	Washer, 3/32" Thk.	1	05030A235
25	Gasket, rubber	1	05014A193
26	Washer, 1/32" Thk.	1	05030A234
27	Nut, cord plug, solid	1	25341A002

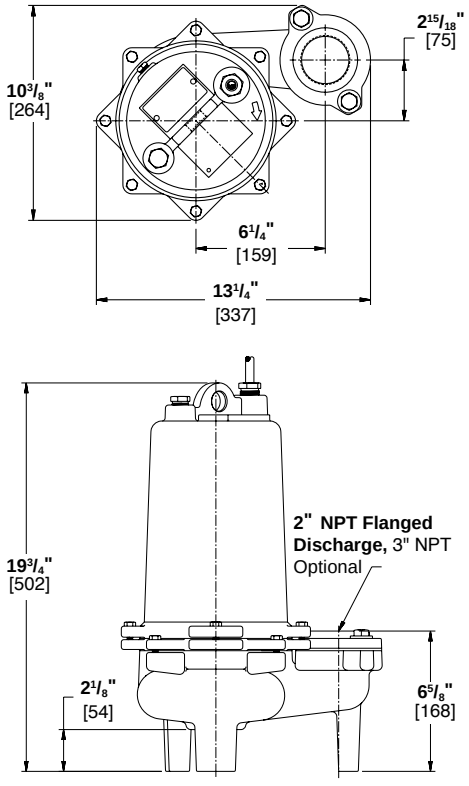
*For units manufactured before Aug-2007, contact factory for parts.

VARIABLE PARTS CHART

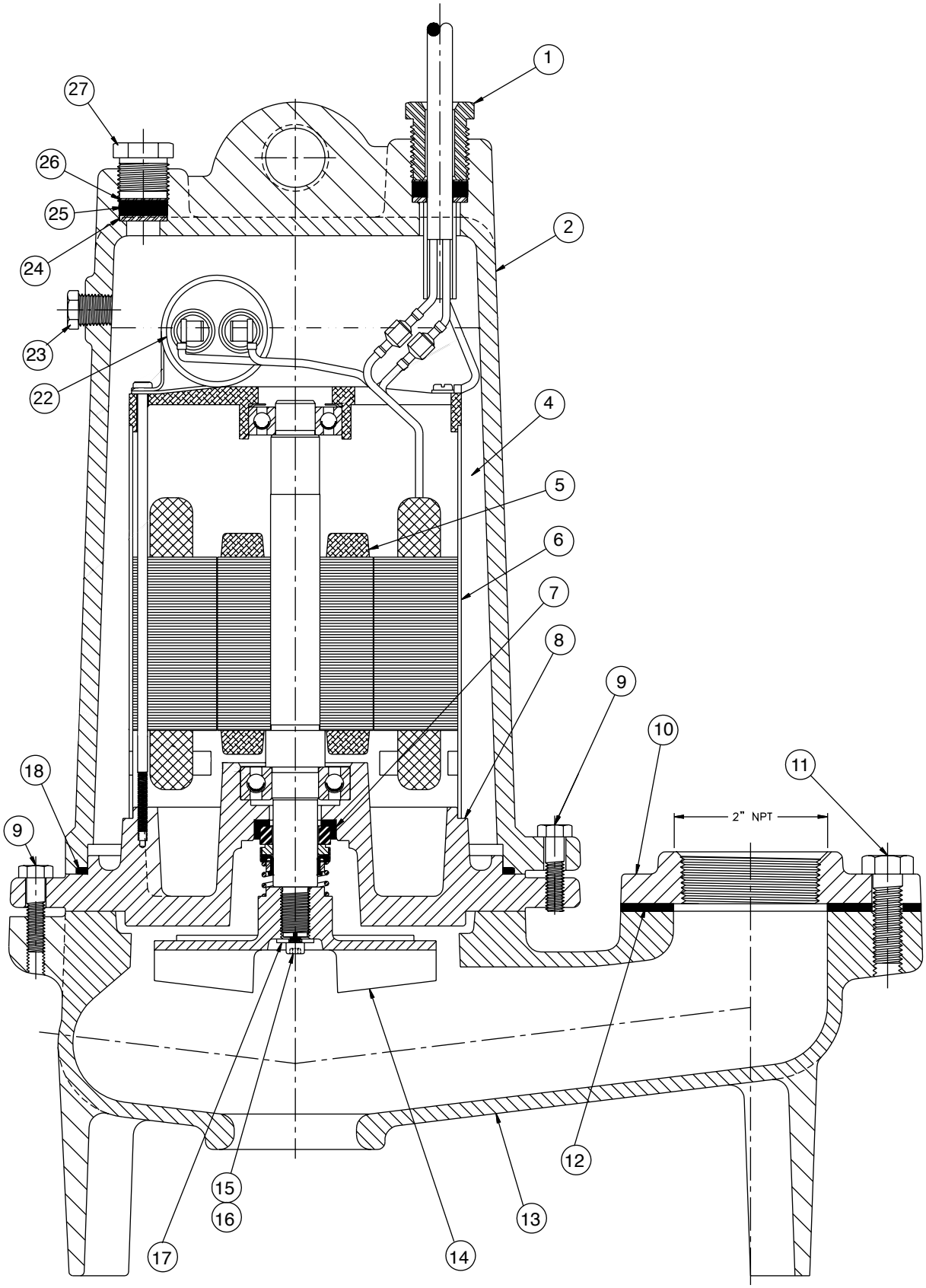
HP	Volts	ph	Power Cord w/ Plug	Power Cord No Plug	Cap.	Stator Rotor and Shaft Assembly	WHRH Impeller DI
1/2	115	1	25338B004	25338B006	23839A000	25484D100	27194C002
1/2	208	1		25338B006	23839A000	25484D101	27194C002
1/2	230	1	25338B005	25338B006	23839A000	25484D101	27194C002
1/2	208	3		25338B003		25484D102	27194C002
1/2	230	3		25338B003		25484D102	27194C002
1/2	460	3		25338B003		25484D102	27194C002
1/2	575	3		25338B003		25484D103	27194C002
1	208	1		25338B002	23838A000	25484D104	27194C001
1	230	1	25338B001	25338B002	23838A000	25484D105	27194C001
1	208	3		25338B003		25484D106	27194C001
1	230	3		25338B003		25484D106	27194C001
1	460	3		25338B003		25484D106	27194C001
1	575	3		25338B003		25484D107	27194C001
1-1/2	208	1		25338B002	23838A000	25484D104	27194C004
1-1/2	230	1	25338B001	25338B002	23838A000	25484D105	27194C004
1-1/2	208	3		25338B003		25484D106	27194C004
1-1/2	230	3		25338B003		25484D106	27194C004
1-1/2	460	3		25338B003		25484D106	27194C004
1-1/2	575	3		25338B003		25484D107	27194C004
2	208	1		25338B009	23839A000	25484D108	27194C011
2	230	1		25338B009	26520A000	25484D109	27194C011
2	208	3		25338B008		25484D111	27194C011
2	230	3		25338B008		25484D111	27194C011
2	460	3		25338B003		25484D111	27194C011
2	575	3		25338B003		25484D112	27194C011

DIMENSIONS

[dimensions in mm]



TYPICAL SECTION DRAWING



Limited Warranty

F.E. MYERS warrants to the original consumer purchaser ("Purchaser" or "You") of the products listed below, that they will be free from defects in material and workmanship for the Warranty Period shown below.

Product	Warranty Period
Jet pumps, small centrifugal pumps, submersible pumps and related accessories	*whichever occurs first:* 12 months from date of original installation, or 18 months from date of manufacture
Fibrewound Tanks	5 years from date of original installation
Steel Pressure Tanks	5 years from date of original installation
Sump/Sewage/Effluent Products	12 months from date of original installation, or 24 months from date of manufacture

Our warranty will not apply to any product that, in our sole judgement, has been subject to negligence, misapplication, improper installation, or improper maintenance. Without limiting the foregoing, operating a three phase motor with single phase power through a phase converter will void the warranty. Note also that three phase motors must be protected by three-leg, ambient compensated, extra-quick trip overload relays of the recommended size or the warranty is void.

Your only remedy, and F.E. MYERS's only duty, is that F.E. MYERS repair or replace defective products (at F.E. MYERS's choice). You must pay all labor and shipping charges associated with this warranty and must request warranty service through the installing dealer as soon as a problem is discovered. No request for service will be accepted if received after the Warranty Period has expired. This warranty is not transferable.

F.E. MYERS SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, OR CONTINGENT DAMAGES WHATSOEVER.

THE FOREGOING LIMITED WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE FOREGOING LIMITED WARRANTIES SHALL NOT EXTEND BEYOND THE DURATION PROVIDED HEREIN.

Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on the duration of an implied warranty, so the above limitations or exclusions may not apply to You. This warranty gives You specific legal rights and You may also have other rights which vary from state to state.

This Limited Warranty is effective June 1, 2011 and replaces all undated warranties and warranties dated before June 1, 2011.

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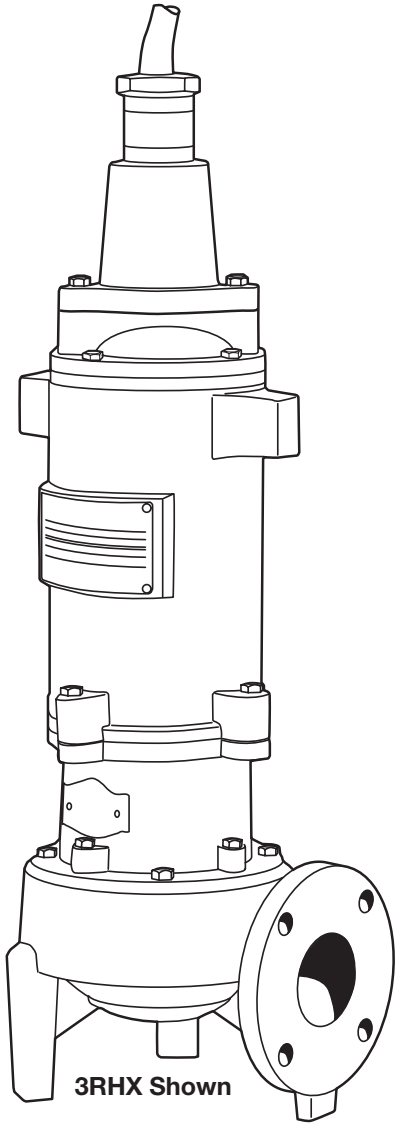
PENTAIR

MYERS®



MODELS 3V(X)*, 3R(X)*, 3RH(X)*, 4V(X)* and 4R(X)*

*Used in Hazardous Locations Class I, Division 1, Groups C & D

SUBMERSIBLE SOLIDS HANDLING PUMPS

INSTALLATION AND SERVICE MANUAL

For use with product built with Regal motor.

*FM APPROVED

NOTE! To the installer: Please make sure you provide this manual to the owner of the equipment or to the responsible party who maintains the system.

Part # 23833A659 | © 2012 Pentair Pump Group, Inc. | 12/13/12

CAUTION!

Read these safety warnings first before installing, servicing, or operating any pump.

CALIFORNIA PROPOSITION 65 WARNING:

⚠WARNING This product and related accessories contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

GENERAL

1. Most accidents can be avoided by using ***COMMON SENSE.***
2. Read the operation and maintenance instruction manual supplied with the pump.
3. Do not wear loose clothing that can become entangled in the impeller or other moving parts.
4. This pump is designed to handle materials that could cause illness or disease through direct exposure.

   Wear adequate protective clothing when working on the pump or piping.

ELECTRICAL

5. To reduce the risk of electrical shock, pump must be properly grounded in accordance with the National Electric Code and all applicable state and local codes and ordinances.
6. To reduce risk of electrical shock, disconnect the pump from the power source before handling or servicing.
7. Any wiring to be done on pumps should be done by a qualified electrician.
8. Never operate a pump with a power cord that has frayed or brittle insulation.
9. Never let cords or plugs lie in water.
10. Never handle connected power cords with wet hands.

PUMPS

11. Pump builds up heat and pressure during operation; allow time for pump to cool before handling or servicing.
12. Only qualified personnel should install, operate or repair pump.
13. Keep clear of suction and discharge openings. **DO NOT** insert fingers in pump with power connected.
14. Do not pump hazardous material not recommended for pump (flammable, caustic, etc.).
15. Make sure lifting handles are securely fastened each time before lifting.
16. Do not lift pump by the power cord.
17. Do not exceed manufacturer's recommendation for maximum performance, as this could cause the motor to overheat.
18. Secure the pump in its operating position so it cannot tip over, fall or slide.
19. Keep hands and feet away from impeller when power is connected.
20. Submersible solids handling pumps are not approved for use in swimming pools, recreational water installations, decorative fountains or any installation where human contact with the pumped fluid is common.
21. Do not operate pump without safety devices in place.

IMPORTANT! Myers is not responsible for losses, injury or death resulting from a failure to observe these safety precautions, misuse or abuse of pumps or equipment.

GENERAL INFORMATION:

Pump Models: These instructions cover the installation and service of the Myers pumps as listed on the front cover. The hazardous location models are Factory Mutual approved and listed hazardous location for hazardous sewage locations Class 1, Division 1, Groups C,D.

Motor HP & Voltages: These pumps are offered in a three phase wiring configuration only. Voltages will vary according to the application.

Electrical Controls: All of these pump models must be used with a control panel. Myers built control panels are designed to supply the correct electrical controls, motor starting equipment and include the circuitry for moisture and heat sensors. It is recommended that a Myers built control panel be used so that all warranties apply.

General Construction: The motor construction is designed to meet Factory Mutual's requirements for Class 1, Division 1, Groups C,D sewage applications. The hazardous location models are certified and nameplated with this approval. The motor chamber and seal chamber are filled with a high dielectric type oil for improved lubrication and heat transfer of the bearings and motor. Since the bearings have been designed for 50,000 hours of life, the oil should never require replacement under normal operating conditions. An air space above the oil level in both the seal and motor chambers is provided to allow for the expansion of the oil when at operating temperature. The power and control lines are sealed and strain relieved by grommet in the cord cap, and internally through the use of a dielectric potting resin surrounding the electrical wires. All of the pump fasteners and shafts are made from corrosion resistant stainless steel, while the pump castings are made of ASTM A-48 Class 30 cast iron.

General Installation: Various configurations and methods of plumbing this series of solids handling pumps may be used; however, for ease of installation and service a Myers 3" or 4" rail lift-out system is recommended.

Note: If the hazardous location pumps are used in conjunction with a rail lift-out system, it must be an FM approved nonsparking, hazardous location system. The Myers approved lift-out models are:

3" Liftout	4" Liftout
SRAX3030	SRAX4040
SRAX33HH	SRAX44HH

If these guidelines are not followed, the Factory Mutual approval is void.

Hazardous Location Service: These pumps are to be used for handling sewage, wastewater and storm water only. Do not use in other hazardous locations. These pumps must be repaired and serviced only at Myers authorized service centers or at the Myers factory. Any unauthorized field repair voids warranty, hazardous location rating and Factory Mutual approval.

CAUTION: After the pump is installed and sewage has entered the basin there are methane and hydrogen sulfide gases, which are poisonous. Never enter a wet well unless the cover is open for a sufficient period of time to allow fresh air into the basin. Myers recommends using the rail lift-out system so that no service is required inside the basin.

Motor: Each motor is provided with heat sensor thermostats attached directly to the motor windings. The thermostats open if the motor windings see excessive heat and, in turn, open the motor contactor in the control panel, breaking the power to the pump. When the motor is stopped due to an overheated condition, it will not start until the motor has cooled and the heat sensor reset button is manually pushed on the front of the Myers control panel. This circuitry is provided in the Myers control panel designs.

Thermostats are set to open at a temperature of 248°F (120°C). The maximum contact rating is 18 amps at 115 VAC and 12 amps at 230 VAC. Motor winding insulation is good for Class F (311°F, 155°C).

Note: Failure to use proper circuitry and to connect the motor overheat protection in the control panel would negate all warranties and FM approval.

Motor Seal Failure Warning: The seal chamber is oil filled and provided with moisture sensing probes to detect water leakage through the lower shaft seal. The probes can also detect moisture present in the upper motor housing.

The presence of water energizes a red seal leak warning light at the control panel. This is a *warning light only*, and does not stop the motor. It indicates a leak has occurred and the pump must be repaired. Normally, this indicates the outboard seal has leaked. Allowing the unit to operate after the warning could cause upper seal leakage along with motor failure.

The resistance across the moisture sensing (seal failure) probes should be checked after a seal leak warning light has lit. This can be done by disconnecting the red and orange control wires from the control panel, and measuring the resistance with an ohmmeter between the wires. If the measured values are below specification, the pump may have a lower seal failure and require service.

On the Myers hazardous location control panels the seal leak test switch tests the seal leak circuit continuity. When pushed, the seal leak test bulb should light. If the test bulb does not light it means either the wiring circuitry to the seal leak probes has been broken or the bulb has burned out.

Note: Myers built control panels supply the correct circuitry for moisture and heat sensor connections. Failure to install the correct circuitry with proper connection would negate warranty and FM approval.

Motor Power Cord, Control Cord and Cord Cap Assembly: Each motor power cord has 4 conductors: white, black, red and green. For a three phase motor the red, black and white conductors connect to the three line leads, and the green is connected to a good ground. Interchanging any two line leads will reverse the rotation of the motor.

Note: Rotation should be clockwise when observed from the top of the pump. This can be checked by noting which direction the pump torque is up on initial starting. A properly rotating pump will torque counterclockwise upon start.

The control cable has 5 conductors: black, white, red, orange and green. White and black connect to the heat sensor terminals in the control panels; red and orange connect to the seal failure terminals in the control panel; and the green connects to the ground in the control panel.

The cord cap is epoxy potted. The cord cap provides for a sealed wire connection. This allows the cord cap, with cords, to be removed from the motor. An approved hazardous location junction box is required for hazardous locations. ***The control and power cables cannot be spliced!***

Note: Each cable has a green ground wire and must be properly grounded per the National Electric Code and local codes.

Electrical Motor Controls: All electrical controls and motor starting equipment should be as specified in these instructions. Consult factory for any acceptable alternatives. For hazardous locations the controls and control panel must be installed outside the hazardous area, or approved hazardous location controls that are intrinsically safe must be used.

Junction Box: If a junction box is used in a hazardous location, it must be a hazardous location approved type with hazardous location cord connectors. Wires from the junction box must pass through a hazardous location seal connector.

Level Sensing Controls: Intrinsically safe type float controls are recommended for all applications and required for hazardous location service. An intrinsically safe control panel relay will limit the current and voltage to the level controls. A Myers control panel can be supplied with this type circuitry.

The float level controls maintain the basin sewage water level by controlling pump turn-on and turn-off levels.

1. The lower turn-off control should be set so that the pump stops at approximately the top of the pump. Consult the factory for any settings below this point.
2. The upper turn-on control should be set above the lower turn-off control. The exact height between the two controls is determined by the number of pump starts desired and the depth of the basin. A maximum of 10 starts per hour should not be exceeded.
3. The override control is set at a specified height above the upper turn-on control.
4. The alarm control is set about 6" to 12" above the override control.
5. No control should be set above the inlet invert.

Electrical Connections: All electrical wiring must be in accordance with local code and only qualified electricians should make the installations. All wires should be checked for shorts to ground with an ohmmeter or megger after the connections are made. This is important, as one grounded wire can cause failure of the pump, control panel or personal injury.

WARNING: Disconnect pump from power source before servicing or handling pump.

Disassembly

1. With the pump located in a secure place, remove the bolts fastening the seal housing to the volute. The motor and impeller can now be removed as a unit.
2. Lay the unit down on its side. If the lower seal is to be removed, it is recommended that the oil in the seal chamber be drained. This can be done by removing the lower seal chamber plug and draining the oil into a holding container.
3. To remove the impeller: Using a proper wrench, the impeller retaining bolt and washer must be removed. This may require a piece of wood placed between the vanes to keep the impeller from rotating while removing the bolt. Once the bolt has been removed, tap lightly with a hammer around the outside diameter of the impeller to loosen from shaft and key. After removing impeller, the seal retainer needs to be removed to expose seal.

   Caution: The impeller is large and heavy and will need to be supported.
4. If the lower seal needs removed, first remove the compression spring that rides between the impeller and the seal assembly. Next take a pair of screwdrivers and remove the compression ring that surrounds the rubber bellows on the rotating portion of the seal assembly. Again using the screwdrivers, pry the remaining portion of the rotating seal assembly off the shaft. The ceramic stationary can be removed by placing a screwdriver between the rubber and the ceramic face, and then prying, working around the entire diameter. Note, these parts should be discarded and a new seal assembly installed.
5. If the oil in the seal chamber was drained, examine the contents to determine if the upper seal has been damaged. Signs of grit or other abrasive material may indicate that the upper seal has also been damaged. Pressurizing the motor housing assembly between 7 and 10 psi and observing any drop in pressure will indicate if the upper seal is functioning properly.

   Note: Upper seal repairs must be done at a Myers authorized service center or at the Myers factory. Any unauthorized field repair voids warranty and the hazardous location approval on the Factory Mutual listed pump.
6. The wear ring can be removed from the volute for repair or replacement. First remove the retaining screws from the wear ring. With a soft mallet the wear ring can be tapped out of the volute case.

Reassembly

1. Remove the ceramic portion of the new seal from the package. Brush new dielectric oil or glycerine around the rubber portion of the stationary assembly and into the pocket in the seal housing. Note, keep the oil off the seal face. Without scratching the seal face, press the ceramic stationary portion into the seal housing using a Myers seal pusher. With clean cloth, lightly wipe the face of the seal surface to make sure it is dirt free. Remove the rotating portion of the seal from the package and lubricate the inside diameter of the rubber bellows and the outside diameter of the shaft. Place the seal over the shaft (make sure the key is removed). Evenly press on the body of the rotational assembly and slide it down the shaft

until the seal faces meet. Once the seal assembly is in position, place the spring over the register on the rotational portion of the seal.

2. Before placing impeller on shaft, the seal spring retainer should be placed on shaft with stepped end toward seal spring. Position the key into the seat in the shaft. Align the impeller onto the shaft, making sure that the seal spring is registered properly onto the back side of the impeller. Insert the bolt and washer assembly into the shaft and tighten to 43 ft.-lbs.
3. Fill the seal chamber with new dielectric oil. An air gap of 10–15% volume must be left for the expansion of the oil when it is at operating temperature.
4. The brass wear ring can be aligned with the retaining holes and tapped into place with a soft mallet. The proper Loctite® should be applied to the bolts. Install and tighten.
5. The motor and impeller assembly can be installed into the volute. Make sure that the impeller aligns properly with the volute. Install the volute retaining bolts and tighten.
6. Air tends to trap in the pump case when water rises in the sump or when the pump is lowered into the water after service. To vent off this air, a small hole is drilled into the volute casing. **Be sure this vent hole is clean after any service work on pump.** Air venting is not a problem after initial start.

CHECK LIST IF PUMP DOES NOT OPERATE PROPERLY

Checking for Moisture in Motor: Use an ohm-meter or a megger and set on highest scale. Readings on the large power cord between any of the conductors red, black or white to the green conductor or to the motor housing should be greater than 1,000,000 ohms (1 megohm). Service work should be done only at an authorized service station. Note, readings should be taken with line leads disconnected from the control panel.

Resistance of Windings: Every motor winding has a fixed resistance. The windings must check close to specification values. Verification of the proper wiring of a dual voltage motor can also be checked by measuring the motor winding resistance.

CONDITION	PROBABLE CAUSE
Red light comes on at control box.	This indicates some water has leaked past the lower seal and has entered the seal chamber and made contact with the electrode probe. Pump must be removed for replacement of lower seal. This preventive repair will save an expensive motor.
Overload trips at control box and alarm buzzer or flashing red light comes on due to high water level in basin.	1. Push in on red reset button to reset overload. If overload trips again after short run, pump has some damage and must be removed from basin for checking. 2. Trouble may be from clogged impeller causing motor to overload or could be from failed motor. 3. Trouble may be from faulty component in control box. Always check control box before removing pump.
Yellow run light stays on continuously.	1. Indicates H-O-A switch may be in the hand position. 2. Level control switch may have failed causing pump to continue to operate when water is below lower control. 3. Impeller may be partially clogged causing pump to operate at very reduced capacity. 4. Gate valve or check valve may be clogged causing low pump flow. 5. Pump may be air locked.

CONDITION	PROBABLE CAUSE
Circuit breaker trips.	1. Reset breaker by pushing completely down on handle then back to ON position. If breaker trips again in a few seconds it indicates excessive load probably caused by a short in the motor or control box. Check out instructions given with control box before pulling pump. 2. If this condition happens after an electrical storm, motor or control box may be damaged by lightning. 3. Resistance reading of the motor with lead wires disconnected from the control box can determine if trouble is in motor or control box.
Pump is noisy and pump rate is low.	1. Impeller may be partially clogged with some foreign objects causing noise and overload on the motor. 2. Impeller may be rubbing on wear ring due to bent shaft or misalignment. 3. Pump may be operating too close to shut-off. Check head.
Grease and solids have accumulated around pump and will not pump out of basin.	1. Lower control switch may be set too high. 2. Run pump on hand operation for several minutes with small amount of water running into basin to clean out solids and grease. This allows pump to break suction and surge which will break up the solids. If level switch is set properly this condition generally will not occur. 3. Trash and grease may have accumulated around floats causing pump to operate erratically.

MOTOR SPECIFIC PARTS LISTS

3R/3RX

2 POLE		5HP	5HP	5HP	5HP	5HP	7.5HP	7.5HP	7.5HP
		230/1	200/3	230/3	460/3	575/3	230/3	460/3	575/3
	MPG	27695P388	27695P389	27695P390	27695P391	27695P392	27695P348	27695P349	27695P450
A1	STATOR	22574C200	22574C201	22574C202	22574C202	22574C204	22574C216	22574C216	22574C217
A2	ROTOR/SHAFT	22846C111	22846C112	22846C112	22846C112	22846C112	22846C111	22846C111	22846C111
A3	BEARING	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022
A4	BEARING	08565A023	08565A023	08565A023	08565A023	08565A023	08565A023	08565A023	08565A023
A5	SHAFT SEAL	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1

3RH/3RHX

2 POLE		3 HP	3 HP	3 HP	3 HP	5 HP	5 HP	5 HP	5 HP	7.5 HP	7.5 HP	7.5 HP
		230/1	200/3	230-460/3	575/3	230/1	200/3	230-460/3	575/3	200/3	230-460/3	575/3
A1	STATOR	22574C210	22574C211	22574C212	22574C214	22574C200	22574C201	22574C202	22574C204	22574C215	22574C216	22574C217
A2	ROTOR	26124C000	26124C001	26124C001	26124C001	26124C002	26124C003	26124C003	26124C003	26124C002	26124C002	26124C002
A3	BEARING	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022
A4	BEARING	25833A003	25833A003	25833A003	25833A003	25833A003	25833A003	25833A003	25833A003	25833A003	25833A003	25833A003
A5	SHAFT SEAL	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1

3V/3VX

4 POLE		1/1.5 HP	1/1.5 HP	1/1.5 HP	1/1.5 HP	2 HP	2 HP	2 HP	2 HP	3 HP	3 HP	3 HP	3 HP
		230/1	200/3	230-460/3	575/3	230/1	200/3	230-460/3	575/3	230/1	200/3	230-460/3	575/3
A1	STATOR	24407C241	24407C242	24407C243	24407C244	24407C245	24407C246	24407C247	24407C248	24407C200	24407C201	24407C202	24407C203
A2	ROTOR	22875C108	22875C115	22875C115	22875C115	22875C110	22875C107	22875C107	22875C107	22875C105	22875C105	22875C105	22875C105
A3	BEARING	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022
A4	BEARING	08565A027	08565A027	08565A027	08565A027	08565A027	08565A027	08565A027	08565A027	08565A027	08565A027	08565A027	08565A027
A5	SHAFT SEAL	009200011	009200011	009200011	009200011	009200011	009200011	009200011	009200011	009200011	009200011	009200011	009200011

4V/4VX

4 POLE		3 HP	3 HP	3 HP	3 HP	5 HP	5 HP	5 HP	5 HP	7.5 HP	7.5 HP	7.5 HP
		230/1	200/3	230-460/3	575/3	230/1	200/3	230-460/3	575/3	200/3	230-460/3	575/3
A1	STATOR	24407C200	24407C201	24407C202	24407C203	24407C204	24407C205	24407C206	24407C207	24407C208	24407C209	24407C210
A2	ROTOR	22875C105	22875C105	22875C105	22875C105	22875C105	22875C105	22875C105	22875C105	22875C105	22875C105	22875C105
A3	BEARING	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022
A4	BEARING	08565A027	08565A027	08565A027	08565A027	08565A027	08565A027	08565A027	08565A027	08565A027	08565A027	08565A027
A5	SHAFT SEAL	009200011	009200011	009200011	009200011	009200011	009200011	009200011	009200011	009200011	009200011	009200011

3R/3RX / 4R/4RX

4 POLE		2HP	2HP	2HP	2HP	3 HP	3 HP	3 HP	3 HP
		230/1	200/3	230-460/3	575/3	230/1	200/3	230-460/3	575/3
A1	STATOR	24407C245	24407C246	24407C247	24407C248	24407C200	24407C201	24407C202	24407C203
A2	ROTOR	22846C098	22846C099	22846C099	22846C099	22846C100	22846C100	22846C100	22846C100
A3	BEARING	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022
A4	BEARING	08565A023	08565A023	08565A023	08565A023	08565A023	08565A023	08565A023	08565A023
A5	SHAFT SEAL	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1

3R/3RX / 4R/4RX

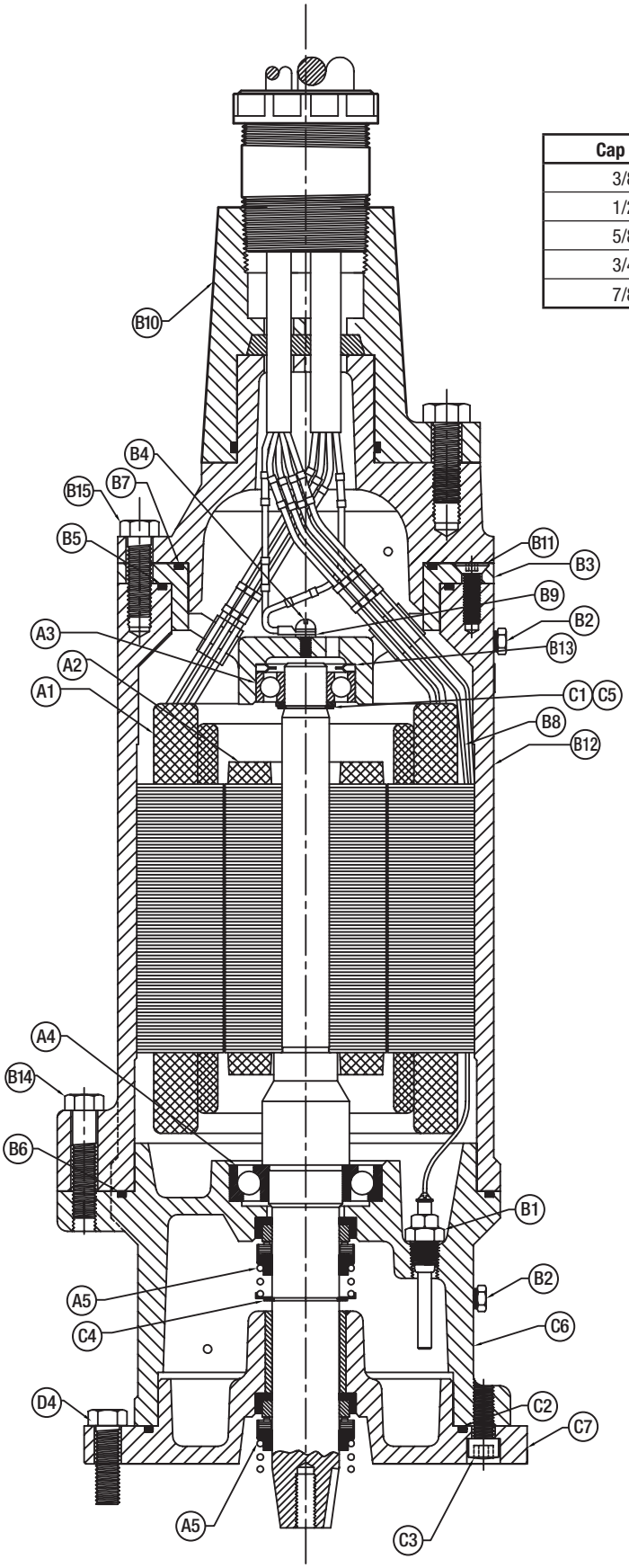
4 POLE		5 HP	5 HP	5 HP	5 HP	7.5 HP	7.5 HP	7.5 HP
		230/1	200/3	230-460/3	575/3	200/3	230-460/3	575/3
A1	STATOR	24407C204	24407C205	24407C206	24407C207	24407C208	24407C209	24407C210
A2	ROTOR	22846C100	22846C100	22846C100	22846C100	22846C100	22846C100	22846C100
A3	BEARING	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022
A4	BEARING	08565A023	08565A023	08565A023	08565A023	08565A023	08565A023	08565A023
A5	SHAFT SEAL	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1

4R/4RX

6 POLE		1 HP	1 HP	1 HP	1 HP	1.5 HP	1.5 HP	1.5 HP	1.5 HP	2 HP	2 HP	2 HP	2 HP
		230/1	200/3	230-460/3	575/3	230/1	200/3	230-460/3	575/3	230/1	200/3	230-460/3	575/3
A1	STATOR	24407C223	24407C224	24407C225	24407C226	24407C227	24407C228	24407C229	24407C226	24407C231	24407C232	24407C233	24407C234
A2	ROTOR	22846C105	22846C104	22846C104	22846C104	22846C110	22846C102	22846C102	22846C104	22846C100	22846C100	22846C102	22846C102
A3	BEARING	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022	08565A022
A4	BEARING	08565A023	08565A023	08565A023	08565A023	08565A023	08565A023	08565A023	08565A023	08565A023	08565A023	08565A023	08565A023
A5	SHAFT SEAL	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1	04916-000-1

MOTOR END PARTS

Cap Screw	Torque Value
3/8-16	20 ft.-lbs.
1/2-13	43 ft.-lbs.
5/8-11	93 ft.-lbs.
3/4-10	128 ft.-lbs.
7/8-14	193 ft.-lbs.



COMMON PARTS LIST

For use with product built with Regal motor.

Ref.	Part Number	Description	Qty.
B1	25343A100	PROBE; SEAL LEAK FOR 3-20HP	2
B2	05022A092	PLUG; PIPE ST GALV 1/4 HEX HD w/LOCTITE 513 COATING	2
B3*	22590B000 (x)	CAP, BEARING; UPPER 5HP GRINDER PUMP CI	1
B4	05434A043	SCREW; MACH ST 10-24UNC x 3/8 LG	1
B5	05876A112	RING, O; 5-1/2 OD x 5-1/4 ID x 1/8	1
B6	05876A114	RING, O; 7 OD x 6-3/4 ID x 1/8	1
B7	05876A123	RING, O; 4-7/8 OD x 4-5/8 ID x 1/8	1
B8	22578A100	WIRE; ELECTRODE FOR 3-20HP	2
B9	06107A015	WASHER; LOCK SHKPRF INTERNAL ST NO 10	1
B10	22569B104	35' CORD ASSEMBLY 14-4 – ORDINARY LOCATION	1
	22569B031	35' CORD ASSEMBLY 10-4 – ORDINARY LOCATION	1
	22569B032	35' CORD ASSEMBLY 8-4 SOOW – ORDINARY LOCATION	1
	22569B102	35' CORD ASSEMBLY 8-4 W – ORDINARY LOCATION	1

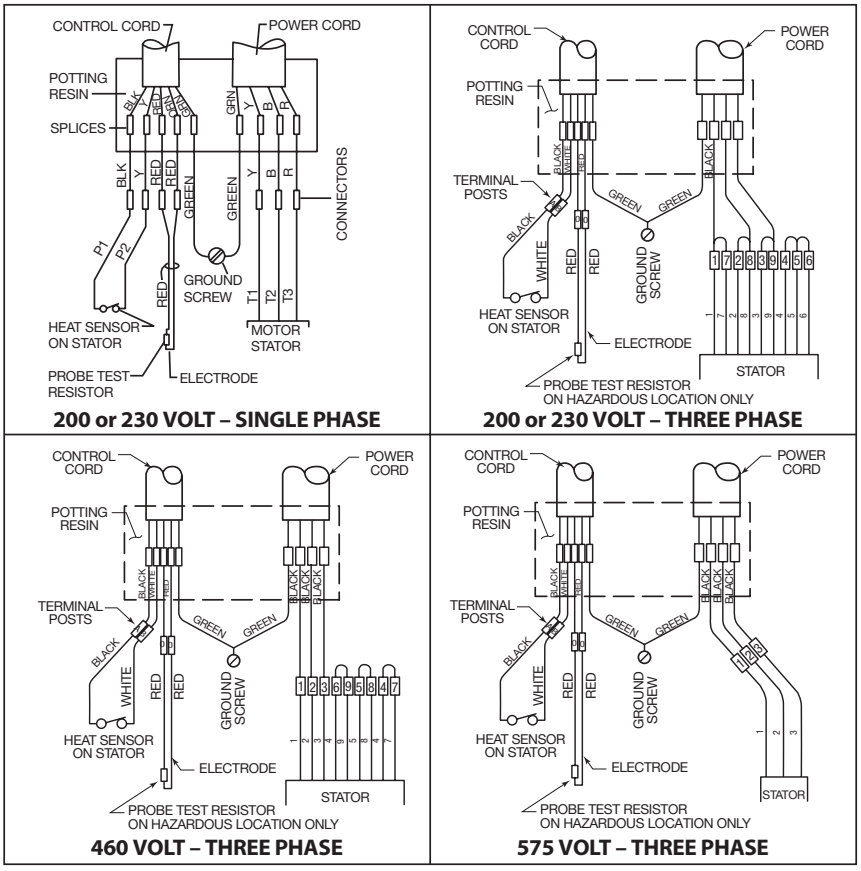
Ref.	Part Number	Description	Qty.
B10	22569B702	35' CORD ASSEMBLY 14-4 – HAZARDOUS LOCATION	1
	22569B631	35' CORD ASSEMBLY 10-4 – HAZARDOUS LOCATION	1
	22569B632	35' CORD ASSEMBLY 8-4 SOOW – HAZARDOUS LOCATION	1
	22569B700	35' CORD ASSEMBLY 8-4 W – HAZARDOUS LOCATION	1
B11	07597A017	SCREW; MACH FLT HD HEX SKT SST 5/16-18UNC-3A x 1LG	2
B12*	22571D000 (x)	HOUSING; MOTOR 5HP GRINDER PUMP CI	1
B13	19331A006	WASHER; SPRING FINGER 1.189 ID x 1.830 OD	2
B14	19102A023	SCREW; CAP HEX SST 302 7/16-14NC x 2-1/4	4
B15	19102A006	SCREW; CAP HEX 7/16-14 UNC SST 1-1/2	4

MODEL SPECIFIC PARTS LIST

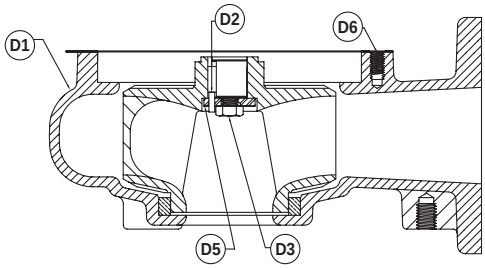
Ref.	Description	Qty.	3RH/3RHX	3V/4V/3VX/4VX	3R/3RX/4R/4RX
C1	WASHER; SUPPORT ST 1.1/1.09 x .789/.799	1	05030A215	--	--
C2	O-RING	1	05876A113	05876A127	05876A113
C3	SCREW; CAP SKT HD SST 3/8-16UNC-3A x 1LG	4	06106A028	19102A006	06106A028
C4	RING; RET EXTERNAL SST 1-1/4 SHAFT	1	12558A008	12558A018	12558A008
C5	RING; RET EXTERNAL ST .7874 SHAFT	1	12558A025	--	--
C6*	UPPER SEAL HOUSING	1	22576D010 (x)	22709D010 (x)	22576D010 (x)
C7*	LOWER SEAL HOUSING	1	22638C000 (x)	22710C000 (x)	22853C000 (x)

*Note: Hazardous location pumps require replacement parts be designated with x where noted.

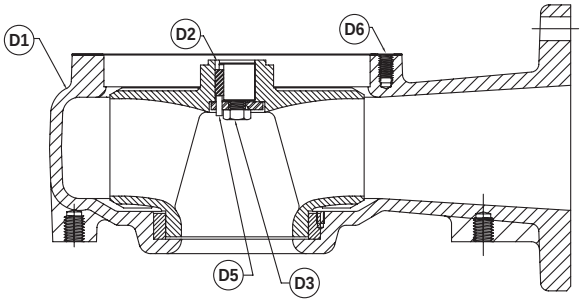
WIRING DIAGRAMS



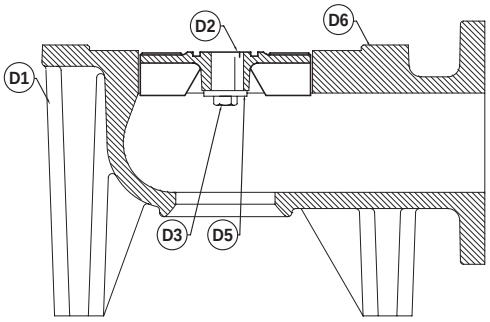
3V/3VX



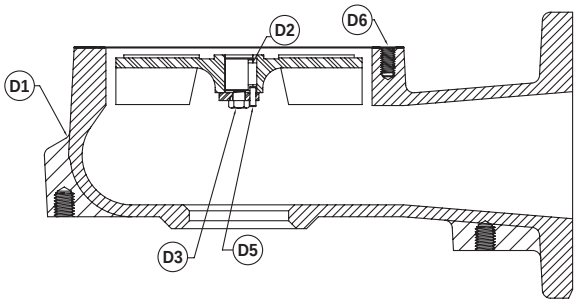
4V/4VX



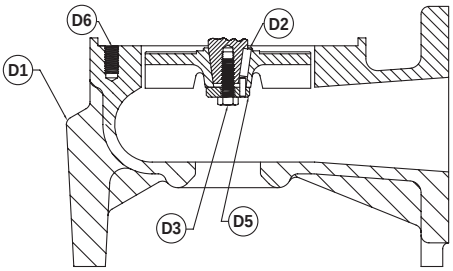
3R/3RX



4R/4RX



3RH/3RHX



WET END PARTS

For use with product built with Regal motor.

3V/3VX

Ref.	Description	Part Number	Qty.
D1	CASE; VOLUTE	22945D050	1
D2	KEY; SQ SST 1/4 x 1/4 13/16	05818A066	1
D3	SCREW; CAP HEX SST 3/8-16 x 1 LG	19103A052	1
D4	SCREW; CAP HEX SST 7/16 x 1-1/4 LG (PG. 12)	23609A002	4
D5	WASHER; RETAINER, W/PIN	19102A006	1
D6	GASKET; VELLUMOID 10-3/8 x 8-7/16 x 1/32	05231A079	1

4V/4VX

Ref.	Description	Part Number	Qty.
D1	CASE; VOLUTE	22712D000	1
D2	KEY; SQ SST 1/4 x 1/4 13/16	05818A066	1
D3	SCREW; CAP HEX SST 300 1/2-13UNC x 1-1/4 LG	19103A052	1
D4	SCREW; CAP HEX SST 7/16 x 1-1/2 LG (PG. 12)	19102A006	4
D5	WASHER; RETAINER, W/PIN	23609A002	1
D6	GASKET; VELLUMOID 10-3/8 x 8-7/16 x 1/32	05231A079	1

3R/3RX

Ref.	Description	Part Number	Qty.
D1	CASE; VOLUTE 2 POLE	27705D010	1
	CASE; VOLUTE 4 POLE	27706D010	1
D2	KEY; SQ SST 1/4 x 1/4 11/16	05818A074	1
D3	SCREW; CAP HEX SST 3/8-16 x 1 LG	19101A010	1
D4	SCREW; CAP HEX SST 7/16 x 1-1/2 LG (PG. 12)	19102A006	4
D5	WASHER; RETAINER, W/PIN	23609A001	1
D6	GASKET; VELLUMOID 10-3/8 x 8-7/16 x 1/32	05231A079	1

4R/4RX

Ref.	Description	Part Number	Qty.
D1	CASE; VOLUTE	22854D000	1
D2	KEY; SQ SST 1/4 x 1/4 11/16	05818A074	1
D3	SCREW; CAP HEX SST 3/8-16 x 1 LG	19101A010	1
D4	SCREW; CAP HEX SST 7/16 x 1-1/2 LG (PG. 12)	19102A006	4
D5	WASHER; RETAINER, W/PIN	23609A001	1
D6	GASKET; VELLUMOID 10-3/8 x 8-7/16 x 1/32	05231A079	1

3RH/3RHX

Ref.	Description	Part Number	Qty.
D1	CASE; VOLUTE	25984D000	1
D2	KEY; SQ SST 1/4 x 1/4 13/16	05818A066	1
D3	SCREW; CAP HEX SST 3/8-16 x 1 LG	19101A010	1
D4	SCREW; CAP HEX SST 7/16 x 1-1/4 LG (PG. 12)	19102A020	4
D5	WASHER; RETAINER, W/PIN	23609A001	1
D6	GASKET; VELLUMOID 10-3/8 x 8-7/16 x 1/32	–	1

IMPELLER CHART

Pump	RPM	HP	Trim	Impeller
3V/3VX10M4-21	1750	1	5.0	22946C565
3V/3VX10M4-03	1750	1	5.0	22946C565
3V/3VX10M4-23	1750	1	5.0	22946C565
3V/3VX10M4-43	1750	1	5.0	22946C565
3V/3VX10M4-53	1750	1	5.0	22946C565
3V/3VX15M4-21	1750	1.5	5.5	22946C561
3V/3VX15M4-03	1750	1.5	5.5	22946C561
3V/3VX15M4-23	1750	1.5	5.5	22946C561
3V/3VX15M4-43	1750	1.5	5.5	22946C561
3V/3VX15M4-53	1750	1.5	5.5	22946C561
3V/3VX20M4-21	1750	2	5.75	22946C559
3V/3VX20M4-03	1750	2	5.75	22946C559
3V/3VX20M4-23	1750	2	5.75	22946C559
3V/3VX20M4-43	1750	2	5.75	22946C559
3V/3VX20M4-53	1750	2	5.75	22946C559
3V/3VX30M4-21	1750	3	6.25	22946C555
3V/3VX30M4-03	1750	3	6.25	22946C555
3V/3VX30M4-23	1750	3	6.25	22946C555
3V/3VX30M4-43	1750	3	6.25	22946C555
3V/3VX30M4-53	1750	3	6.25	22946C555
3V/3VX50M4-21	1750	5	6.75	22946C551
3V/3VX50M4-03	1750	5	6.75	22946C551
3V/3VX50M4-23	1750	5	6.75	22946C551
3V/3VX50M4-43	1750	5	6.75	22946C551
3V/3VX50M4-53	1750	5	6.75	22946C551

Pump	RPM	HP	Trim	Impeller
3RH/3RHX30M2-01	3450	3	3.50	25983B501
3RH/3RHX30M2-21	3450	3	3.50	25983B501
3RH/3RHX30M2-03	3450	3	3.50	25983B501
3RH/3RHX30M2-23	3450	3	3.50	25983B501
3RH/3RHX30M2-43	3450	3	3.50	25983B501
3RH/3RHX30M2-53	3450	3	3.50	25983B501
3RH/3RHX50M2-01	3450	5	4.25	25983B507
3RH/3RHX50M2-21	3450	5	4.25	25983B507
3RH/3RHX50M2-03	3450	5	4.25	25983B507
3RH/3RHX50M2-23	3450	5	4.25	25983B507
3RH/3RHX50M2-43	3450	5	4.25	25983B507
3RH/3RHX50M2-53	3450	5	4.25	25983B507
3RH/3RHX75M2-03	3450	7.5	4.75	25983B511
3RH/3RHX75M2-23	3450	7.5	4.75	25983B511
3RH/3RHX75M2-43	3450	7.5	4.75	25983B511
3RH/3RHX75M2-53	3450	7.5	4.75	25983B511

Note: Standard non-overloading impeller diameters shown.

Pump	RPM	HP	Trim	Impeller
3R/3RX30M2-01	3450	3	3.75	27708B012
3R/3RX30M2-21	3450	3	3.75	27708B012
3R/3RX30M2-03	3450	3	3.75	27708B012
3R/3RX30M2-23	3450	3	3.75	27708B012
3R/3RX30M2-43	3450	3	3.75	27708B012
3R/3RX30M2-53	3450	3	4.75	27708B010
3R/3RX50M2-21	3450	5	4.75	27708B010
3R/3RX50M2-03	3450	5	4.75	27708B010
3R/3RX50M2-23	3450	5	4.75	27708B010
3R/3RX50M2-43	3450	5	4.75	27708B010
3R/3RX50M2-53	3450	5	4.75	27708B010
3R/3RX20M4-01	1750	2	5.25	22855C519
3R/3RX20M4-21	1750	2	5.25	22855C519
3R/3RX20M4-03	1750	2	5.25	22855C519
3R/3RX20M4-23	1750	2	5.25	22855C519
3R/3RX20M4-43	1750	2	5.25	22855C519
3R/3RX20M4-53	1750	2	5.25	22855C519
3R/3RX30M4-01	1750	3	6	22855C517
3R/3RX30M4-21	1750	3	6	22855C517
3R/3RX30M4-03	1750	3	6	22855C517
3R/3RX30M4-23	1750	3	6	22855C517
3R/3RX30M4-43	1750	3	6	22855C517
3R/3RX30M4-53	1750	3	6	22855C517
3R/3RX50M4-21	1750	5	6.75	22855C511
3R/3RX50M4-03	1750	5	6.75	22855C511
3R/3RX50M4-23	1750	5	6.75	22855C511
3R/3RX50M4-43	1750	5	6.75	22855C511
3R/3RX50M4-53	1750	5	6.75	22855C511

Pump	RPM	HP	Trim	Impeller
4R/4RX30M4-21	1750	3	6.0	22855C517
4R/4RX30M4-03	1750	3	6.0	22855C517
4R/4RX30M4-23	1750	3	6.0	22855C517
4R/4RX30M4-43	1750	3	6.0	22855C517
4R/4RX30M4-53	1750	3	6.0	22855C517
4R/4RX50M4-21	1750	5	6.75	22855C511
4R/4RX50M4-03	1750	5	6.75	22855C511
4R/4RX50M4-23	1750	5	6.75	22855C511
4R/4RX50M4-43	1750	5	6.75	22855C511
4R/4RX50M4-53	1750	5	6.75	22855C511
4R/4RX75M4-03	1750	7.5	7.5	22855C505
4R/4RX75M4-23	1750	7.5	7.5	22855C505
4R/4RX75M4-43	1750	7.5	7.5	22855C505
4R/4RX75M4-53	1750	7.5	7.5	22855C505

4R/4RX10M6-21	1150	1	6.0	22855C517
4R/4RX10M6-03	1150	1	6.0	22855C517
4R/4RX10M6-23	1150	1	6.0	22855C517
4R/4RX10M6-43	1150	1	6.0	22855C517
4R/4RX10M6-53	1150	1	6.0	22855C517
4R/4RX15M6-21	1150	1.5	6.75	22855C511
4R/4RX15M6-03	1150	1.5	6.75	22855C511
4R/4RX15M6-23	1150	1.5	6.75	22855C511
4R/4RX15M6-43	1150	1.5	6.75	22855C511
4R/4RX15M6-53	1150	1.5	6.75	22855C511
4R/4RX20M6-21	1150	2	7.25	22855C507
4R/4RX20M6-03	1150	2	7.25	22855C507
4R/4RX20M6-23	1150	2	7.25	22855C507
4R/4RX20M6-43	1150	2	7.25	22855C507
4R/4RX20M6-53	1150	2	7.25	22855C507

Pump	RPM	HP	Trim	Impeller
4V/4VX30M4-21	1750	3	6.0	22711C518
4V/4VX30M4-03	1750	3	6.0	22711C518
4V/4VX30M4-23	1750	3	6.0	22711C518
4V/4VX30M4-43	1750	3	6.0	22711C518
4V/4VX30M4-53	1750	3	6.0	22711C518
4V/4VX50M4-21	1750	5	7.0	22711C510
4V/4VX50M4-03	1750	5	7.0	22711C510
4V/4VX50M4-23	1750	5	7.0	22711C510
4V/4VX50M4-43	1750	5	7.0	22711C510
4V/4VX50M4-53	1750	5	7.0	22711C510
4V/4VX75M4-03	1750	7.5	7.5	22711C506
4V/4VX75M4-23	1750	7.5	7.5	22711C506
4V/4VX75M4-43	1750	7.5	7.5	22711C506
4V/4VX75M4-53	1750	7.5	7.5	22711C506

4V/4VX10M6-21	1150	1	6.0	22711C518
4V/4VX10M6-03	1150	1	6.0	22711C518
4V/4VX10M6-23	1150	1	6.0	22711C518
4V/4VX10M6-43	1150	1	6.0	22711C518
4V/4VX10M6-53	1150	1	6.0	22711C518
4V/4VX15M6-21	1150	1.5	7.0	22711C510
4V/4VX15M6-03	1150	1.5	7.0	22711C510
4V/4VX15M6-23	1150	1.5	7.0	22711C510
4V/4VX15M6-43	1150	1.5	7.0	22711C510
4V/4VX15M6-53	1150	1.5	7.0	22711C510
4V/4VX20M6-21	1150	2	7.5	22711C506
4V/4VX20M6-03	1150	2	7.5	22711C506
4V/4VX20M6-23	1150	2	7.5	22711C506
4V/4VX20M6-43	1150	2	7.5	22711C506
4V/4VX20M6-53	1150	2	7.5	22711C506

STANDARD LIMITED WARRANTY

Myers warrants its products against defects in material and workmanship for a period of 12 months from the date of shipment from Myers or 18 months from the manufacturing date, whichever occurs first - provided that such products are used in compliance with the requirements of the Myers catalog and technical manuals for use in pumping raw sewage, municipal wastewater or similar, abrasive free non-corrosive liquids.

During the warranty period and subject to the conditions set forth, Myers, at its discretion, will repair or replace to the original user, the parts which prove defective in materials and workmanship. Myers reserves the right to change or improve its products or any portions thereof without being obligated to provide such a change or improvement for prior sold and/or shipped units.

Start-up reports and electrical schematics may be required to support warranty claims. Submit at the time of start up through the Myers website: **http://forms.pentairliterature.com/startupform/startupform.asp?type=m**. Warranty is effective only if Myers authorized control panels are used. All seal fail and heat sensing devices must be hooked up, functional and monitored or this warranty will be void. Myers will only cover the lower seal and labor thereof for all dual seal pumps. Under no circumstance will Myers be responsible for the cost of field labor, travel expenses, rented equipment, removal/reinstallation costs or freight expenses to and from the factory or an authorized Myers service facility.

This limited warranty will not apply: (a) to defects or malfunctions resulting from failure to properly install, operate or maintain the unit in accordance with the printed instructions provided; (b) to failures resulting from abuse, accident or negligence; (c) to normal maintenance services and parts used in connection with such service; (d) to units which are not installed in accordance with applicable local codes, ordinances and good trade practices; (e) if the unit is moved from its original installation location; (f) if unit is used for purposes other than for what it is designed and manufactured; (g) to any unit which has been repaired or altered by anyone other than Myers or an authorized Myers service provider; (h) to any unit which has been repaired using non factory specified/OEM parts.

Warranty Exclusions: MYERS MAKES NO EXPRESS OR IMPLIED WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. MYERS SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE.

Liability Limitation: IN NO EVENT SHALL MYERS BE LIABLE OR RESPONSIBLE FOR CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES RESULTING FROM OR RELATED IN ANY MANNER TO ANY MYERS PRODUCT OR PARTS THEREOF. PERSONAL INJURY AND/OR PROPERTY DAMAGE MAY RESULT FROM IMPROPER INSTALLATION. MYERS DISCLAIMS ALL LIABILITY, INCLUDING LIABILITY UNDER THIS WARRANTY, FOR IMPROPER INSTALLATION. MYERS RECOMMENDS INSTALLATION BY PROFESSIONALS.

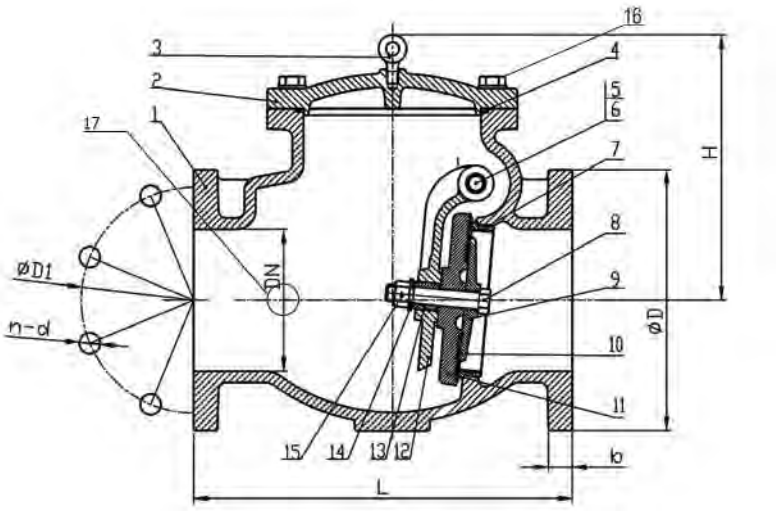
Some states do not permit some or all of the above warranty limitations or the exclusion or limitation of incidental or consequential damages and therefore such limitations may not apply to you. No warranties or representations at any time made by any representatives of Myers shall vary or expand the provision hereof.

740 East 9th Street
Ashland, Ohio 44805-1969
419-289-1144
www.femyers.com

M. A. Stewart & Sons Ltd.
VALVES AND FITTINGS

Flanged Resilient Swing Check Valve
W30-A-RD-FF
UL/FM Approved AWWA C 508

IOM



I. General Introduction

Thank you for choosing our check valve products. Check valve as one of the pressure equipment may lead to huge damage because of excessive pressure and leakage. The instruction should be read before using the valves for customers.

II.Property Specifications

Design Standard ANSI/AWWA C508
Face to Face ANSI/AWWA C508
Valves Test API598
Connection Ends ASME B16.1 Class125
Rated Working Pressure 300PSI
Working Temperature 0~100°C
Coating Fusion Bonded Epoxy Coating in accordance with ANSI/AWWA C550
Certification UL/FM/NSF61/NSF372

IV. Maintenance

a) Should not a person beat, stand on the working valve.
b) Finish using, valves should be checked regularly:
1) Check valve seat sealing and the abrasion of the disc seats;
2) Check the body corrosion.
c) If the above situation is discovered, valves should be repaired or replaced in time. We suggest maintain the valves every three months or in accordance with local rules and regulations.
d) After maintenance, valves should be tested for shell strength and sealing according to standard API598
e) O-rings, bolts, nuts and gaskets of same size and material same as the original ones should be used in maintenance. These parts can be ordered as spares for replacement.
f) Should not open the valve cover or take replacement of bolts and nuts when valve is under pressure.
g) After parts replacement, press test should be made. After testing, the valves can be used.
h) The maintenance can be done by users, but after repair tests shall be carried out according to standard. Then the valves are qualified to use.
i) Valve internal parts should be replaced rather than repaired in maintenance. Should the parts supplied by manufacturers are be used, if damage occurs due to the use of other parts not supplied by manufactures and the manufacturer do not assume responsibility.
j) Parts under pressure are not recommended to be repaired rather than replaced timely when safety defects are found after a long time usage.
k) Welding the working valves is not allowed.

MATERIAL SPECIFICATION

Part No.	Part	Standard Specification	Options
1	Valve Body	ASTM A536, 65-45-12	
2	Bonnet	ASTM A536, 65-45-12	
3	Eye Bolt	Carbon Steel Zinc Plated	
4	O-Ring	NBR	EPDM
5	Hinge Pin	ASTM 276/420	
6	Hinge Bushing	Brass ASTM B16	
7	Seat Ring	Bronze ASTM B62 (Pressed Fit)	AISI 304, AISI 316 PressedFit or Threaded
8	Disc Seat Bolt	AISI 304	
9	Retainer Washer	Bronze ASTM B62 C83600	
10	Disc Sealing Ring	EPDM	AISI 304, AISI 316, Bronze ASTM B62
11	Disc	ASTM A536, 65-45-12	
12	Clapper Arm	ASTM A536, 65-45-12	
13	Stud Bushing	Brass ASTM B16 C36000	
14	O-Ring	NBR	EPDM
15	Nut	AISI 316	
16	Bolt	AISI 304	AISI 316
17	Plug (2)	Tin Bronze	

Note: For special material request other than standard specification, please indicate clearly on the inquiry or order list.

DN		Dimensions(mm)					
IN	mm	L	D	D1	b	n-Φd	H
2"	50	203	152	120.5	16	4-Φ19.1	133
2.5"	65	216	178	139.5	17.5	4-Φ19.1	150
3"	80	241	191	152.5	19	4-Φ19.1	150z
4"	100	292	229	190.5	24	8-Φ19.1	218
6"	150	356	279	241.5	25.5	8-Φ22.2	290
8"	200	495	343	298.5	28.5	8-Φ22.2	330
10"	250	622	406	362	30.5	12-Φ25.4	350
12"	300	698	483	432	32	12-Φ25.4	376

FM APPROVED c UL us LISTED NSF/ANSI 61 NSF/ANSI 372

Possible Problems	Possible Causes	Proposed Solutions
Leakage through the sealing surface	The seal face with sundries	Clear away the sundries
	Sealing surface damage	Change the wedge
	Seal ring damage	Seal ring damage
Valves blocked	Clapper arm crooked	Stop the medium, remove the valve and repair or replace the parts
	Joint wearing out	
	Arm distorted or broken	
Damage of valve body and bonnet	The water hammer broken valve	In the early fatigue defects, valve used beyond life expectancy should be replaced
	Fatigue damage	
	Frost crack	Water medium should be ruled out in the winter when the valves are not used
Leakage through the jointing of valve body and bonnet	Bolts and nuts are not fully or evenly tightened	Tighten the bolts properly
	Eal ring damage	Change the seal ring

VI. Quality assurance

a) The valve quality is guaranteed for 18 months since valves are shipped out of factory. Manufacturer is responsible for the material defects and quality issue happens in normal operation and using conditions and not for the improper installation, maintenance, and modification.
b) When quality problems are found, should inform manufacturers, manufacturers maintain the rights of investigating these issues.
c) What should the manufacturers ensure are limited to the following conditions:
- material repair costs
- replacing parts and material cost
- to compensate users purchasing cost
d) Manufacturer is not liable of the damages caused by unexpected natural disasters such as earthquake, typhoon, etc. beyond the valve itself defects.
e) Beyond the limits of other guarantee, agreed by the user and the manufacturer.

VII.Service

a) If stipulated in the contract, the factory can provide on-site installation and debugging.
b) Quality tracking should be provided by the manufacturer and other services should also be offered according to customers' requirements.

Series 120 Eccentric Plug Valves

Installation, Operation and Maintenance

October 2011

SP-120-IOM-1011A

Series 120 Eccentric Plug Valves

Installation, Operation and Maintenance

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Series 120 Eccentric Plug Valves

Installation, Operation and Maintenance

GENERAL

The Homestead Series 120 Eccentric Plug Valve is asymmetrical in design and will better seal against higher pressures when the line pressure is applied from the end opposite the seat end of the valve. If sealing against pressure applied from the seat end is critical (i.e. head pressure in HVAC systems), valves tested for this condition should be used.

UNLOADING

Improper lifting of the valve may cause damage. Do not lift the valve using the actuator, plug stem or body opening. Use eye bolts or rods through the flange holes and attach slings or chain.

STORAGE

Valves are shipped in the open position and should be stored in this position until ready for installation.

Flange end protectors, if supplied, should be kept on the valves until they are ready for installation. Mechanical joint ends should be protected to prevent damage to the pipe seating area.

Valves should be stored in a manner where foreign material is prevented from entering the inside of the valve. Exposure to direct sunlight on the plug elastomer should be avoided.

Series 120 Eccentric Plug Valves

Installation, Operation and Maintenance

STORAGE (continued)

Electric, pneumatic and hydraulic valve actuators should be cared for in accordance with the storage recommendations of the actuator manufacturer.

CONNECTIONS

Mating flanges must comply with ASME/ANSI B16.1, Class 125 or ASME/ANSI B16.5, Class 150. Mechanical joint connections must comply with ANSI A21.11/AWWA C111.

ORIENTATION

Although the valves are designed to operate in any position, it is recommended that the valve be installed as follows:

- Liquids & Gases Service:
  Install the valve with the seat end downstream of the greater pressure.
- Pump Discharge Service:
  Install the valve with the seat end towards the pump.
- Suspended Solids Service:
  - Vertical Pipeline – install the valve with the plug in the horizontal position, with the seat end at the top.
  - Horizontal Pipeline – install the valve with the plug in the horizontal position, opening in the upward direction.

Series 120 Eccentric Plug Valves

Installation, Operation and Maintenance

ORIENTATION (continued)

Note:
The word “Seat” is cast on the outside of the flange on the seat end of the valve.

INSTALLATION

1. Prior to installation, all foreign material that could damage the resilient seat should be removed from the valve, adjacent pipe areas and pipeline.
2. Prepare the faces of the mating flanges by thoroughly cleaning with a suitable solvent.
3. Position the valve between the mating flanges of the pipeline.
4. Align the upstream gasket to the body holes and the corresponding bolt holes of the pipeline flange.
5. Insert (2) bolts at the bottom of the flange to aid in supporting and aligning the valve.
6. Insert the remaining bolts around the flange and lightly tighten.
7. Repeat this procedure on the downstream flange.
8. Final tightening of all bolts should be done by tightening those bolts opposite each other in alternate sequence.

Series 120 Eccentric Plug Valves

Installation, Operation and Maintenance

OPERATION – MANUAL ACTUATION

Verify that the valve is operating properly by manually cycling. The valve plug should operate freely. If the valve is electrically, pneumatically or hydraulically actuated, use the manual override system to perform this operation. The normal rotational direction of the valve is “clockwise to close”.

OPERATION – POWER ACTUATION

Check the source of supply and verify that all necessary pneumatic or electrical connections are compatible with the actuator requirements. After connection of the actuator power supply, cycle the valve several times to determine whether the connections are correct and that the valve is performing properly. All stops, limit switches and torque switches are set at the factory and should require no adjustment.

MAINTENANCE

The Homestead Series 120 valve has been designed for long service life. Outside of periodic adjustment or replacement of the packing, this valve does not require routine maintenance. The manual gear units are factory lubricated with grease and also should not require maintenance. If relubrication is required, a lithium based grease should be used.

Series 120 Eccentric Plug Valves

Installation, Operation and Maintenance

PACKING REPLACEMENT

1. Remove the packing gland nuts from the studs.
2. Slide the packing gland up the plug stem.
3. Completely remove the old packing from the chamber in the bonnet. Be careful not to score the surface of the plug stem or the packing chamber as this may create a leak path.
4. Cut each new packing ring in one spot diagonally with a sharp knife.
5. Place new packing rings one at a time around the plug stem and into the packing chamber. Be certain that the male base ring is installed first, followed by the inner rings, then the female top ring. Be certain to stagger the cut joints.
6. Slide the packing gland down into the packing chamber on top of the new rings.
7. Replace the packing gland nuts on the studs. Tighten slowly until they engage the packing gland, then tighten one more turn. Be certain that each nut is tightened evenly.
8. Restore the pipeline pressure and check for leakage. If needed, tighten each packing nut evenly until the leakage stops. Do not over-tighten.

Series 120 Eccentric Plug Valves

Installation, Operation and Maintenance

REMOVING VALVE

1. Improper lifting of the valve may cause damage. Do not lift the valve using the actuator, plug stem or body opening. Use eye bolts or rods through the flange holes and attach slings or chain.
2. Support the valve before removing flange or mechanical joint connections, then remove valve from pipeline.

DISASSEMBLY

1. Relieve the pipeline pressure and close the valve.
2. If power actuated, disconnect the air or electric supply.
3. Remove the actuator assembly.
4. Mark the body, plug stem and bonnet positions to help with alignment during reassembly.
5. Remove the bonnet bolts and remove bonnet.
6. Remove the packing gland and packing.
7. Remove the plug.
8. Remove the upper and lower bearings.

Series 120 Eccentric Plug Valves

Installation, Operation and Maintenance

REASSEMBLY

1. Insert the lower bearing into the valve body.
2. Lubricate the lower plug stem journal with Mobilgrease FM 101 or equal.
3. Insert the plug into the valve body placing the lower journal into the lower bearing.
4. Insert the upper bearing into the valve bonnet.
5. Lubricate the upper plug stem journal with Mobilgrease FM 101 or equal.
6. Place the bonnet on the valve using the alignment marks.
7. Turn plug to the closed position using the alignment marks.
8. Tighten the bonnet bolts
9. Install the packing and packing gland. Tighten gland nuts until they contact the gland, then turn one additional turn.
10. Install the actuator.
11. Restore the pipeline pressure and check for leaks.
12. If required, tighten the packing gland nuts only until the leaks stop. Do not over tighten.

Series 120 Eccentric Plug Valves

Installation, Operation and Maintenance

TROUBLE SHOOTING

Problem	Possible Cause	Solution
Valve will not open	Obstruction in line	Remove obstruction
Valve will not close	Excessive line pressure	Reduce line pressure
"	Plug elastomer damage	Replace plug
Valve leaks through	Improper stop adjustment	Adjust closed stop
"	Obstruction in line	Remove obstruction
"	Excessive line pressure	Reduce line pressure
"	Plug elastomer damage	Replace plug
Valve leaks at stem	Improper packing adjustment	Tighten packing rings
"	Damaged packing	Replace packing

SPARE PARTS

Item	Qty per Valve
Set v-ring packing	1
Radial bearings	2
Thrust bearings	2
O-ring seal	1
Plug	1

NORTHWEST TECH-CON SYSTEMS LTD.

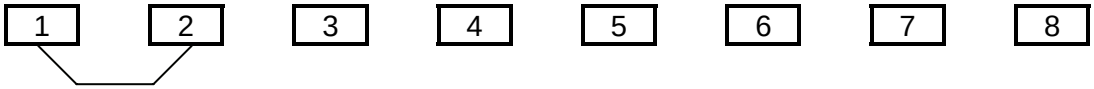
TROUBLE SHOOTING "B" – INTRINSIC SAFE SYSTEM

1. Confirm power to control panel. Power light should be indicated (amber)

2. Remove all float wires from terminal strip

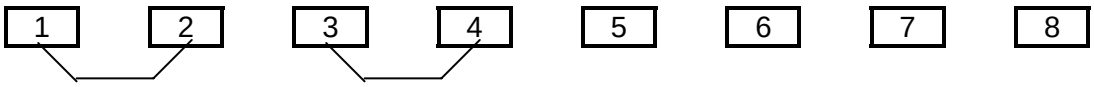
3. Turn both switches to automatic position

4. To simulate stop float closed, use a small wire jumper to connect terminals 1 and 2, (prepare 4 short wire jumpers)



5. Jumper terminal 1 & 2. Stop float indication light (green) at front faceplate should be "ON"

6. With above terminals still jumpered, add wire jumper between terminals 3 & 4. This simulates "START" float. The lead pump should now be running.



7. (A) Stop float light "ON"
   (B) Start float light "ON"
   (C) Lead pump (unit run) "ON"
   (D) One pump will start to run

8. To simulate start float open, release wire jumper from terminal 3 & 4
   To simulate stop float open, release wire jumper from terminal 1 & 2

9. Pump will stop

10. Repeat item 4-9 for duplex system, lag pump will run (alternate)

11. Wire jumper terminal 5 & 6 (with above wire jumpers still in place) simulates override lag pump (motor) will run (both pumps are running)

12. Wire jumper terminal 7 & 8, high water alarm indicator "ON" (red) and visual alarm activated. (Note: Terminals 7 & 8 jumpered, with no other terminals jumpered, should bring on both pumps and high level alarm, while jumpered.)

13. Release all jumpers, motor(s) will stop.

Note: "A" If control system is functioning correctly, check all floats and external system connections (refer to drawing)

"B" If pumps are provided with high temperature alarm, check high temperature wire from pumps to panel. Make sure wire circuit is closed.

DUPLEX & SIMPLEX SYSTEMS
FRONT GRAPHIC LABEL
CONTROL DESCRIPTION

ALARM SILENCE (3 FUNCTIONS IN ONE PUSH BUTTON)
IN THE EVENT OF SYSTEM MALFUNCTION, THE MALFUNCTION WILL CAUSE A MOTOR OVERLOAD , SEAL LEAKAGE, HIGH MOTOR TEMPERATURE, HIGH WATER LEVEL, LOW WATER LEVEL, ALARM WILL SOUND.
PUSH SWITCH TO SILENCE ALARM

LED TEST
PUSH SWITCH ALL LEDS ARE LIT

SYSTEM TEST:
WHEN WATER REACHES TO THE STOP LEVEL, PUSH SYSTEM TEST SWITCH, PUMPS WILL RUN UNTIL THE WATER DROPS TO STOP LEVEL

HAND OFF AUTO SWITCHES

- HAND POSITION
  (SYSTEM WILL NOT FUNCTION UNLESS THE STOP FLOAT IS TIPPED (LOW LEVEL SAFETY))
  TO OPERATE THE PUMPS START MANUALLY WITHOUT TIPPING THE STOP FLOAT
  A. TURN SWITCH TO HAND POSITION
  B. PUSH SYSTEM TEST BUTTON
  C. PUMPS WILL START
  D. IF SYSTEM BUTTON RELEASE PUMP WILL STOP
  E. IF STOP FLOAT TIPPED, PUMPS WILL KEEP RUNNING UNTIL WATER DROPS BELOW THE STOP FLOAT. PUMP WILL STOP
- OFF POSITION
  BOTH PUMPS ARE STOP
- AUTOMATIC POSITION
  PUMPS ARE CONTROLLED BY FLOATS

RED LIGHT INDICATES WATER HAS REACHED TO HIGH LEVEL, ALARM WILL SOUND AND A REMOTE ALARM RELAY WILL ENERGIZE FOR EXTERNAL ALARM CONNECTION.
NOTE: DURING HIGH WATER ALARM CONDITION, BOTH PUMPS WILL RUN REGARDLESS OF MALFUNCTION OF THE OTHER 3 FLOATS

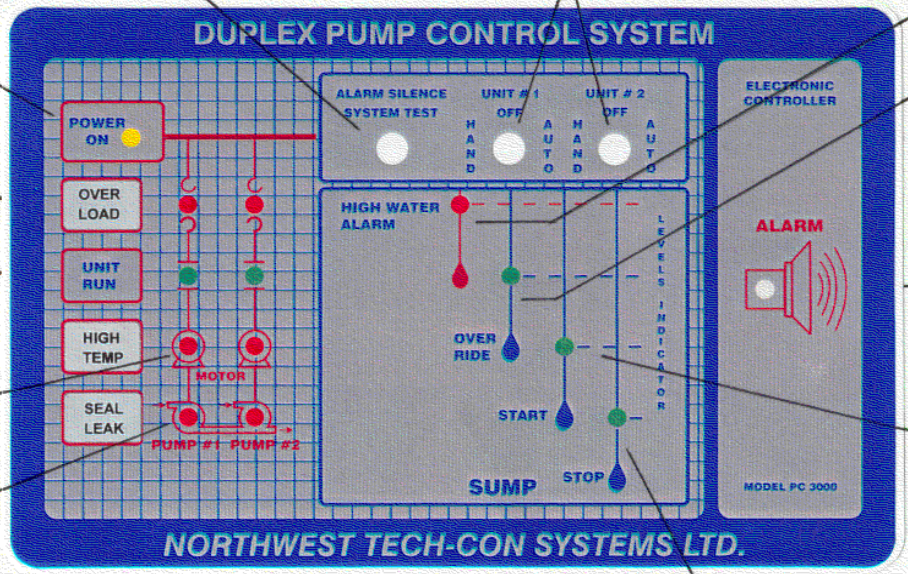
AMBER LIGHT INDICATES AC POWER IS ON

RED LIGHT INDICATE OVERLOAD CONDITION, DUTY PUMP WILL SHUT DOWN.
THE LAG PUMP BECOMES OPERATIONAL

GREEN LIGHT INDICATES MOTOR IS RUNNING

RED LIGHT INDICATES THE MOTOR WIRING IS OVER HEATING

RED LIGHT INDICATE SEAL FAILURE IN THE PUMP CHAMBER



GREEN LIGHT INDICATE WATER KEEP RISING TO OVERRIDE LEVEL LAG PUMP START TO RUN,
(BOTH PUMPS ARE RUNNING)
UNTIL THE WATER DROPS TO THE STOP LEVEL

IN THE EVENT OF SYSTEM FAILURE, THE ALARM WILL SOUND (95DB HIGH PEAK) UNTIL MANUALLY PUSH THE SILENCE SWITCH

GREEN LIGHT INDICATE WATER RISE TO START LEVEL PUMP WILL AUTOMATICALLY START UNTIL WATER DROPS TO STOP FLOAT

GREEN LIGHT INDICATE WATER LEVEL HAS REACHED TO THE STOP FLOAT LEVEL, PUMPS WILL NOT RUN IN MANUAL POSITION
UNLESS STOP FLOAT IS TIPPED
(LOW WATER WILL SHUT DOWN THE PUMP SYSTEM)

RED LIGHT INDICATE THAT THE WATER IS BELOW THE STOP FLOAT.
(IT INDICATES A MALFUNCTION OF THE STOP FLOAT. THE SYSTEM WILL DE- ENERGIZE)

SJE MilliAmpMaster™ Control Switches, SJE MicroMaster® AC/DC Pump Switch, and SJE MicroMaster® Plus WS Pump Switch Installation Instructions

These mechanically-activated switches provide automatic control for AC and DC applications in water and sewage applications.

SJE MILLIAMPMASTER™ (narrow-angle version)

Mechanically-activated control switch for:

- Low current, non-arcing applications down to 0.160 mA at 125 VAC
- Water
- Sewage application
- Control differential of 1.5 inches above or below horizontal with 3.5 inch tether

SJE MILLIAMPMASTER™ (wide-angle version)

Mechanically-activated control switch for:

- Low current, non-arcing applications down to 0.160 mA at 125 VAC
- Water
- Sewage application

tether length *(inches)*	3.5 min.	6	9	12	15	18	22 max.
pumping range *(inches)*	8	11	15	21	28	31	36

SJE MICROMASTER® AC/DC

Mechanically-activated pump and control switch for:

- Battery backup pumps
- Arcing loads
- Water
- Sewage applications

tether length *(inches)*	3.5 min.	6	9	12	15	18	22 max.
pumping range *(inches)*	8	11	15	21	28	31	36

SJE MICROMASTER® PLUS WS

Mechanically-activated pump switch for:

- Water
- Sewage applications

tether length *(inches)*	3.5 min.	6	9	12	15	18	22 max.
pumping range *(inches)*	8	11	15	21	28	31	36

PREVENTATIVE MAINTENANCE

- Periodically inspect the product. Check that the cable has not become worn or that the housing has not been damaged so as to impair the protection of the product. Replace the product immediately if any damage is found or suspected.
- Periodically check to see that the float is free to move and operate the switch.
- Use only SJE Rhombus® replacement parts.

SJE RHOMBUS® FIVE-YEAR LIMITED WARRANTY

Five-Year Limited Warranty. For complete terms and conditions, please visit **www.sjerhombus.com**.

NOTICE!

Products returned must be cleaned, sanitized, or decontaminated as necessary prior to shipment to ensure that employees will not be exposed to health hazards in handling said material. All applicable laws and regulations shall apply.

⚠WARNING **ELECTRICAL SHOCK HAZARD**

Disconnect power before installing or servicing this product. A qualified service person must install and service this product according to applicable electrical and plumbing codes.

⚠WARNING **EXPLOSION OR FIRE HAZARD**

Do not use with flammable liquids.
Install in accordance with ANSI/NFPA 70.
Suitable for usage with intrinsically safe circuit extensions as defined by UL 698A.

Failure to follow these precautions could result in serious injury or death. Replace product immediately if switch cable becomes damaged or severed. Keep these instructions with warranty after installation. This product must be installed in accordance with National Electric Code, ANSI/NFPA 70 so as to prevent moisture from entering or accumulating within boxes, conduit bodies, fittings, float housing, or cable.

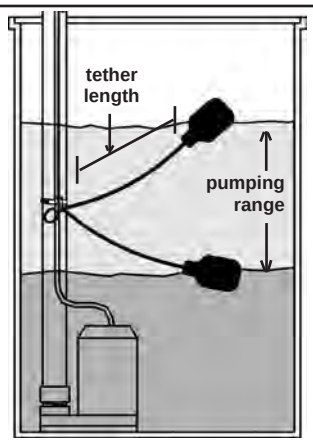
For detailed specifications on this product, or for the complete line of SJE Rhombus® panel, alarm, and switch products, visit our web-site at www.sjerhombus.com.

MOUNTING THE SWITCH

1. Determine the required cord tether length according to product specifications on the front page and as shown in Figure A, B & C.
2. Place the cord into the clamp as shown as shown in Figure D.
3. Locate clamp at desired activation level and secure the clamp to the discharge pipe as shown in Figure D.
   Note: Do not install cord under hose clamp.
4. Tighten the hose clamp using screwdriver. Over tightening may result in damage to the plastic clamp. Make sure the float cable is not allowed to touch the excess hose clamp band during operation.
5. Wire switch as shown in the wiring diagrams.
6. Check installation. Allow system to cycle to insure proper operation.

Note: All hose clamp components are made of 18-8 stainless steel material. See your SJE Rhombus® supplier for replacements.

Figure A



Due to weight of cable, pumping range above horizontal is NOT equal to pumping range below horizontal. Use values published on front page as a guide. Pumping ranges are based on testing in non-turbulent conditions. Range may vary due to water temperature and cord shape. Note: As the tether length increases, so does the variance of the pumping range.

Figure B

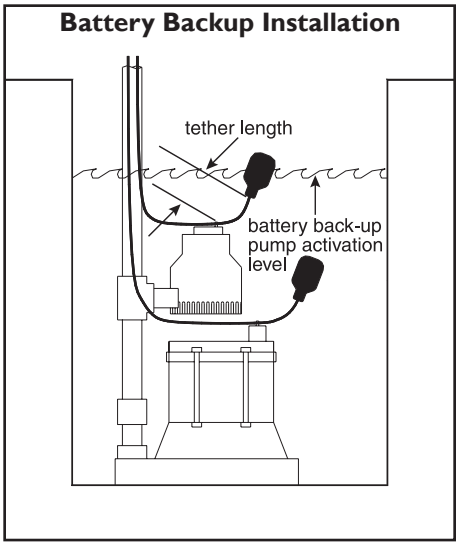


Figure C

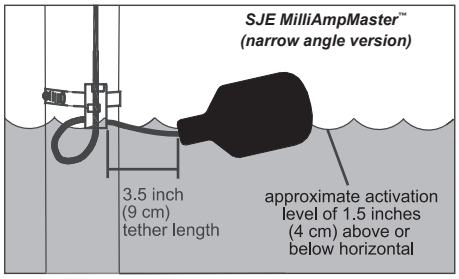
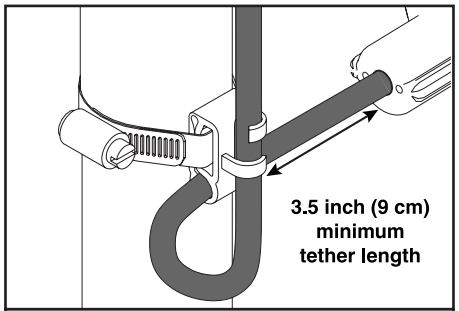
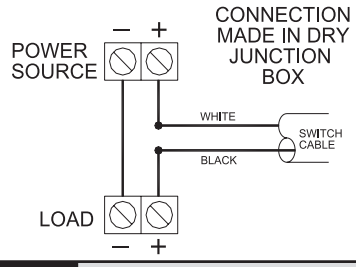


Figure D



WARNING: Tethering switches below minimum tether length can affect switch operation and will reduce the fatigue life of the cable.

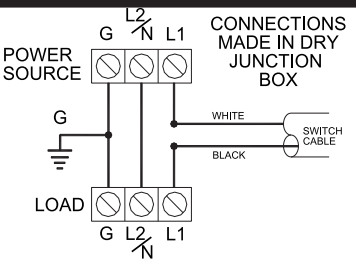
DC Wiring Diagram
Normally Open and Normally Closed



⚠WARNING

Ensure cable connections are performed in a **dry** junction box or other watertight seal that seals both conductors and cable jacket. Failure to do so could result in electrical shock hazard and/or water traveling down cable and entering the switch. Failure to guard against this may affect switch performance.

AC Wiring Diagram
Normally Open and Normally Closed



⚠WARNING

In 230 VAC installations, one side of the line going to the load is always **HOT**. This condition exists if the switch is on or off. Install double pole disconnect on all 230 VAC circuits.

Ensure cable connections are performed in a **dry** junction box or other watertight seal that seals both conductors and cable jacket. Failure to do so could result in electrical shock hazard and/or water traveling down cable and entering the switch. Failure to guard against this may affect switch performance.

SJE RHOMBUS™

22650 County Highway 6 ■ Detroit Lakes, Minnesota 56501 USA
1-888-DIAL-SJE (1-888-342-5753) ■ Phone: 218-847-1317 ■ Fax: 218-847-4617
www.sjerhombus.com ■ E-mail: customer.service@sjeinc.com

Instl. Instr. PN 1038253G 09/18

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ROBINSON™ SUPPLY

DATE: June 10th, 2021

JOB NAME: The Atrium
19945 Brydon Crescent

PLUMBING CONTRACTOR: Elegant Plumbing Ltd.

SUBMITTED BY: Jeff Hession

COMPILED BY: Jeff Hession

11897 103A Ave
Surrey, BC
V3V 0B5
Phone: (604) 444-2000 | www.barobinson.com

A DIVISION OF B. A. ROBINSON™ CO. LTD.

Job Name _____ Contractor _____

Job Location _____ Approval _____

Engineer _____ Contractor's P.O. No. _____

Approval _____ Representative _____

LEAD FREE*

Series 408-OSYRW

Outside Stem and Yoke, Resilient Wedge, Flanged Gate Valves

Sizes 2 ½" – 12" – Epoxy Coated

Series 408-OSYRW Outside Stem and Yoke Resilient Wedge Flanged Gate Valves are available in sizes 2½"-12" The valve body is fusion bonded powder coated cast iron and is operated by a handwheel. The resilient wedge disc design offers positive seating and resistance against high differential pressure. Series 408-OSYRW is best suited for service in either the fully open or closed position. It is also suitable for use as a throttling valve.

This series is recommended for fire main shutoff and distribution service. The 408-OSYRW features Lead Free* construction to comply with Lead Free* installation requirements.

408-OSYRW

Features

- ASTM A126 Class B Cast Iron
- Full port flow, low head loss
- Fusion bonded coating, internal and external
- Encapsulated resilient wedge
- Easy in-line service
- Replaceable disc
- Boss tapped and plugged
- MSS-SP-70 conformance

Specifications

Valve shall be manufactured out of ASTM A126 Class B cast iron and comply with MSS-SP-70. Valve shall be pressure rated to 250psi (17 bar) CWP non-shock and have flanged ends. Valve shall have an outside stem and yoke, full port flow, replaceable disc and fusion bonded coating. Lead Free* Outside Stem and Yoke, Resilient Wedge, Flanged Gate Valves shall be constructed using Lead Free* materials. Lead Free 408-OSYRW shall comply with state codes and standards, where applicable, requiring reduced lead content. Valve shall be a Watts Series 408-OSYRW.

Approvals

Listed

AWWA C509

Standards

Face-to-face dimensions of the valves comply with the American Standard for face-to-face dimensions (ANSI B16.10) for Class 125 cast iron flanged valves.

End Flanges: The dimensions and drilling of end flanges conform to the American cast iron flange standard, Class 125 (ANSI B16.1). The flanges are flat faced and smooth finished.

NOTICE

The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

NOTICE

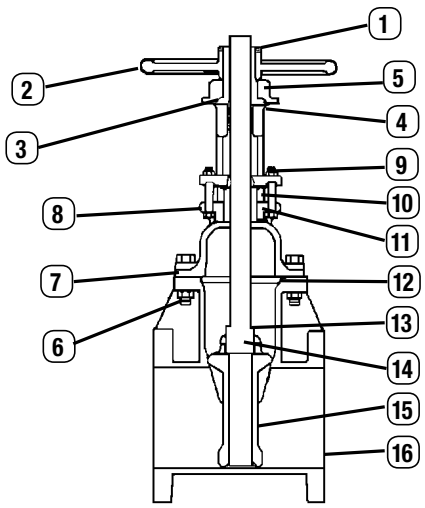
Inquire with governing authorities for local installation requirements.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.

Parts - Materials

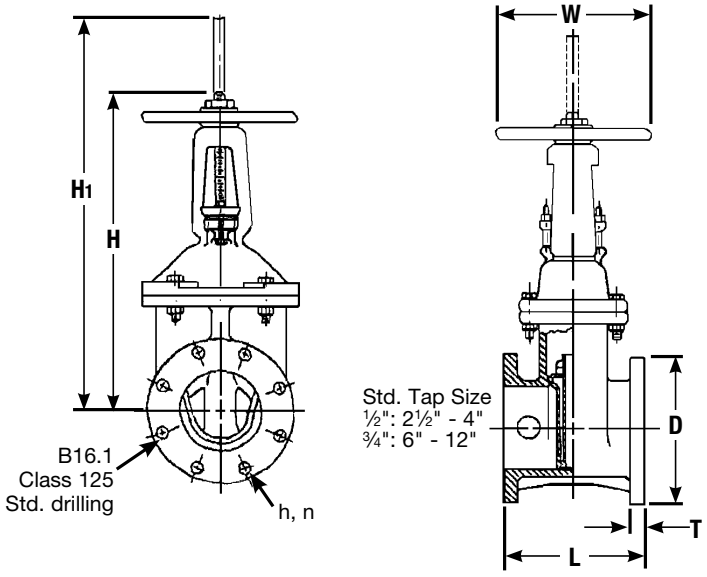
No.	Parts	Material	ASTM Designation
1	Handwheel Nut	Bronze (AWWA Grade A)	B584 CDA 8454
2	Handwheel	Cast Iron	A126 Class B
3	Upper Thrust Washer	Brass	B36 CDA 26D
4	Lower Thrust Washer	Nylatron	
5	Yoke Nut	Manganese Bronze	B584 CDA 862
6	Hex. Head Cover, Bolt & Nuts	Zinc Plated Steel	A307/A563
7	Bonnet	Cast Iron	A126 Class B
8	Packing Bolts	Zinc Plated Steel	A307
9	Packing Bolt Nuts	Brass	A563
10	Packing Gland	Cast Iron	A126 Class B
11	Packing	Graphite Impregnated Square Rope	
12	O-ring	Buna-N	
13	O-ring (Stem)	Buna-N	
14	Stem Assembly	Bronze	B584/B21
15	Wedge Disc	CI SBR Coated	A126 Class B
16	Body	Cast Iron	A126 Class B



Pressure - Temperature

250psi CWP, non-shock

Maximum Temperature: 140°F (60°C)



Dimensions - Weights

SIZE			FLANGE DIMENSIONS							WEIGHT							
					BOLT HOLES												
	L		D		h		n	T		W		H		H1			
in	in	mm	in	mm	in	mm	#of Holes	in	mm	in	mm	in	mm	in	mm	lbs.	kgs.
2½	7½	191	7	178	⅝	16	4	11/16	18	7¼	184	13⅞	352	16⅜	416	55	25
3	8	200	7½	191	⅝	16	4	¾	19	10	254	15⅝	397	18⅞	479	70	32
4	9	229	9	229	⅝	16	8	15/16	24	10	254	18¼	464	22¾	578	100	46
6	10½	267	11	279	¾	19	8	1	25	12	305	23¾	603	30⅛	765	150	82
8	11½	292	13½	343	¾	19	8	1⅛	29	14	356	29¼	743	37¾	959	250	114
10	13	330	16	406	⅞	22	12	13/16	30	18	457	35⅜	899	45¾	1162	400	182
12	14	356	19	483	⅞	22	12	1¼	32	18	457	40⅝	1032	53⅛	1349	580	263

USA: T: (978) 689-6066 • F: (978) 975-8350 • Watts.com
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Latin America: T: (52) 81-1001-8600 • Watts.com

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For Fire Protection Applications

Job Name _____ Contractor _____

Job Location _____ Approval _____

Engineer _____ Contractor's P.O. No. _____

Approval _____ Representative _____

Series 411

Swing Check Valve with Resilient Disc Seat

Sizes: 2" – 10" (50mm – 250mm)

Series 411 Swing Check Valves are UL Listed and FM approved in sizes 2" – 10" (50 – 250mm). Valves feature a full port, flanged cast iron body with a Buna-N resilient disc seat designed for use on fire mains and sprinkler systems. The valve operates automatically by opening on a hinge arm with flow and closing when flow stops or is reversed.

411

Features

- ASTM A126 Class B Cast Iron Body
- Buna-N disc ring
- Complies with ANSI B16.10 and ANSI B16.1
- Full Port Design
- Eye bolt ring 4" – 10" (100-250mm)
- Pressure rated 175psi (12.1 bar) CWP
- Replaceable seat and disc repairable in-line.

Specifications

Swing check valve to be manufactured using ASTM A126 Class B Cast Iron with Buna-N resilient disc seat and comply with MSS-SP-71. Valve to be pressure rated to 175psi (12.1 bar) CWP with flanged ends that comply with ANSI B16.10 and ANSI B16.1 Class 125 standards. Series 411 shall comply with state codes and standards, where applicable, requiring reduced lead content. Valve shall have a full port design, and be in-line repairable. Valve to be Watts Series 411 Swing Check Valve.

Standards

Face-to-face: The dimensions of the valves comply with the American Standard for face-to-face dimensions (ANSI B16.10) for Class 125 cast iron flanged valves.

End Flanges: The dimensions and drilling of end flanges conform to the American cast iron flange standard, Class 125 (ANSI B16.1). The flanges are flat faced with smooth finish.

Approvals

2"-10" (50mm – 250mm)

UL FM Approved

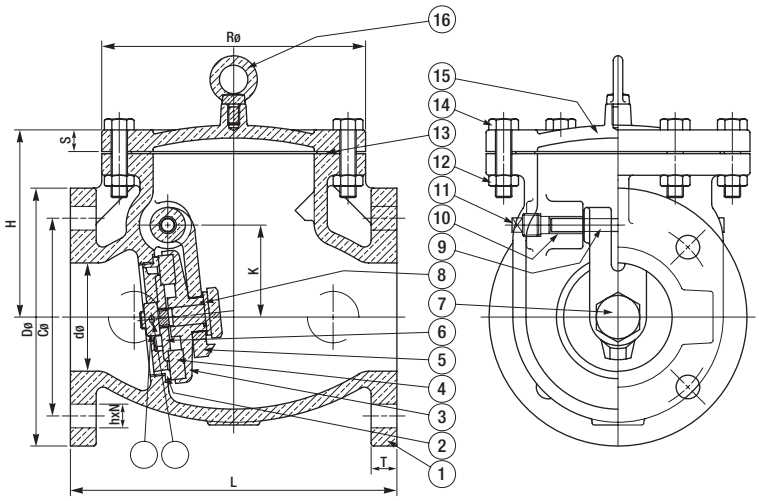
Valves comply with MSS-SP-71 Standards

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.

WATTS®

Parts - Materials

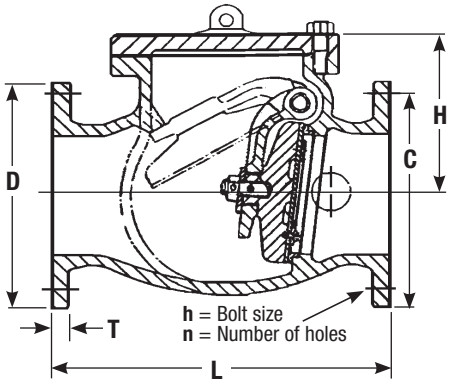
NO.	PARTS	MATERIAL	ASTM DESIGNATION
1	Body	Cast Iron	A126 CL. B
2	Seat Ring	Cast Bronze	B62
3	Disc	Ductile Iron	A536 60-40-18
4	Disc Ring	Buna-N	D-2000
5	Hinge	Ductile Iron	A536 60-40-18
6	Washer	Cast Bronze	B62
7	Hinge Bolt	Brass	B16
8	O-Ring	Buna-N	D-2000
9	Hinge Pin	SS 304	A276
10	Bushing	Brass Tube	B16
11	Plug	Bronze	B62
12	Nut	Steel	A307
13	Gasket	Compressed Fiber	—
14	Bolt	Steel	A307
15	Cover	Cast Iron	A126 CL. B
16	Eye Bolt	Steel	A307

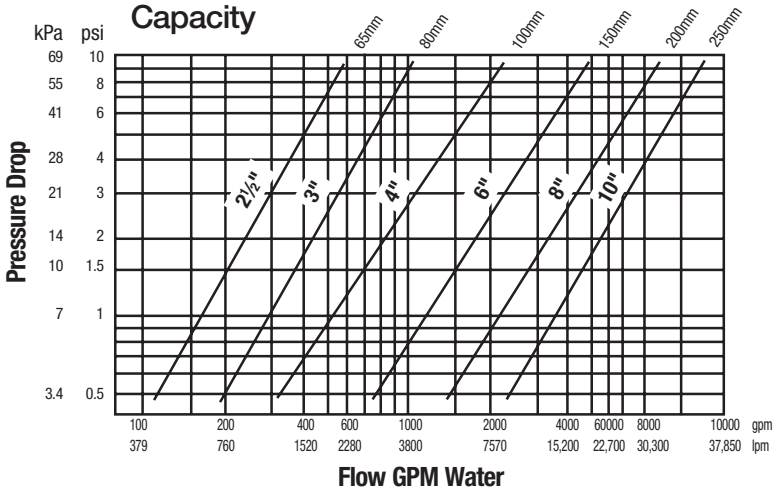


Pressure - Temperature

Maximum Pressure: 175psi (12.1 bar) CWP

Maximum Temperature: 180°F (82°C)





Dimensions – Weights

SIZE		DIMENSIONS														WEIGHT	
		L		D		C		bolt holes size h		bolt holes Qty. n	T		H				
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm		in.	mm	in.	mm		lbs.	Kgs.
2	50	8	203	6	152	4¾	121	¾	19	4	5/8	16	4 7/16	112		28	13
2½	65	8½	216	7	180	5½	140	¾	19	4	1 1/16	18	4¾	120		37	17
3	75	9½	241	7½	191	6	152	¾	19	4	¾	19	5½	140		47	22
4	100	11½	292	9	229	7½	191	¾	19	8	15/16	24	6 5/16	161		82	37
6	150	14	356	11	279	9½	241	⅞	22	8	1	25	8 7/16	214		157	71
8	200	19½	495	13½	343	11¾	299	⅞	22	8	1⅛	29	10 9/16	268		303	138
10	250	24½	622	16	406	14¼	362	1	25	12	1 3/16	30	13 7/16	342		471	214

It is illegal to use this product in any plumbing system providing water for human consumption, such as drinking or dishwashing, in the United States. Before installing standard material product, consult your local water authority, building and plumbing codes.

WATTS®

A Watts Water Technologies Company

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Canada: Tel: (905) 332-4090 • Fax: (905) 332-7068 • www.watts.ca

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Job Name _____ Contractor _____

Job Location _____ Approval _____

Engineer _____ Contractor's P.O. No. _____

Approval _____ Representative _____

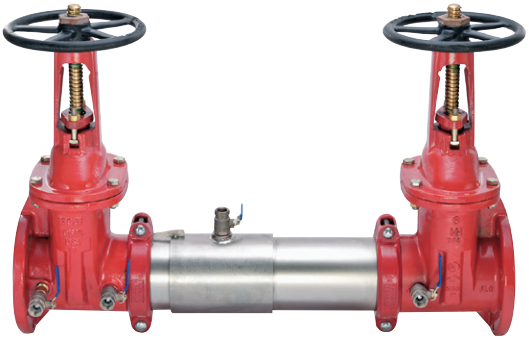
LEAD FREE*

Series 757, 757N

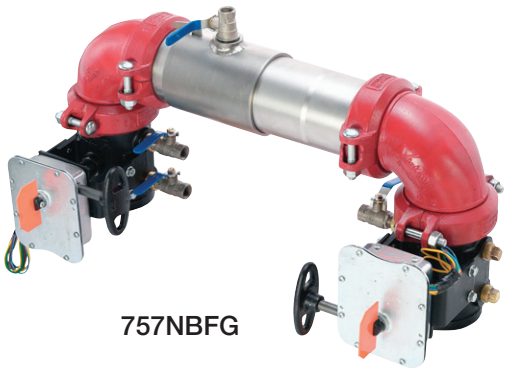
Double Check Valve Assemblies

Sizes: 2½" – 10"

Series 757, 757N Double Check Valve Assemblies are used to prevent backflow of non-health hazard pollutants that are objectionable but not toxic, from entering the potable water supply system. Series 757, 757N may be installed under continuous pressure service and may be subjected to backpressure and backsiphonage. Series 757, 757N consists of two independently operating check valves, two shutoff valves, and four test cocks.



757OSY



757NBFG

757OSY
(Vertical)

Features

- Extremely compact design
- 70% Lighter than traditional designs
- 304 (Schedule 40) Stainless steel housing & sleeve
- Groove fittings allow integral pipeline adjustment
- Patented tri-link check provides lowest pressure loss
- Unmatched ease of serviceability
- Available with grooved butterfly valve shutoffs
- Available for horizontal, vertical or N pattern installations
- Replaceable check disc rubber
- Sizes 2½", 3" and 4" available with quarter-turn ball valve shutoffs

Specifications

The Double Check Valve Assembly shall consist of two independent tri-link check modules within a single housing, sleeve access port, four test cocks and two drip tight shut-off valves. Tri-link checks shall be removable and serviceable, without the use of special tools. The housing shall be constructed of 304 Schedule 40 stainless steel pipe with groove end connections. Tri-link checks shall have reversible elastomer discs and in operation shall produce drip tight closure against reverse flow caused by backpressure or backsiphonage. Assembly shall be a Watts Series 757, 757N.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

NOTICE

The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.

WATTS®

Available Models

Suffix:

NRS –	non-rising stem resilient seated gate valves
OSY –	UL/FM outside stem and yoke, resilient seated gate valves
BFG –	UL/FM grooved gear operated butterfly valves with tamper switch
QT –	2½", 3" and 4" quarter-turn ball valves
**OSY FxG –	Flanged inlet gate connection and grooved outlet gate connection
**OSY GxF –	Grooved inlet gate connection and flanged outlet gate connection
**OSY GxG –	Grooved inlet gate connection and grooved outlet gate connection

Available with grooved NRS gate valves - consult factory**
Post indicator plate and operating nut available - consult factory**
**Consult factory for dimensions

Materials

Housing & Sleeve: 304 (Schedule 40) Stainless Steel
Elastomers: EPDM, Silicone and Buna-N
Tri-link Checks: Noryl®, Stainless Steel
Check Discs: Reversible Silicone or EPDM
Test Cocks: Lead Free* Bronze Body
Pins & Fasteners: 300 Series Stainless Steel
Springs: Stainless Steel

Pressure — Temperature

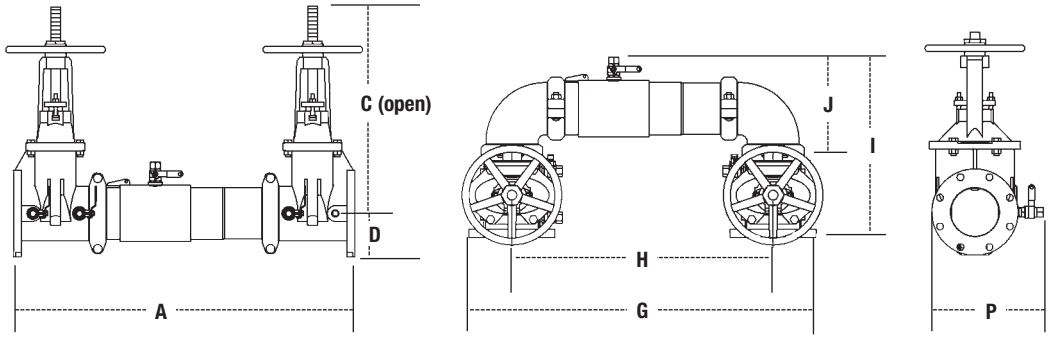
Temperature Range: 33°F – 140°F (0.5°C – 60°C)
Maximum Working Pressure: 175psi (12.1 bar)

Approvals

- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at The Unversity of Southern California (FCCCHR-USC)
- AWWA C510-97

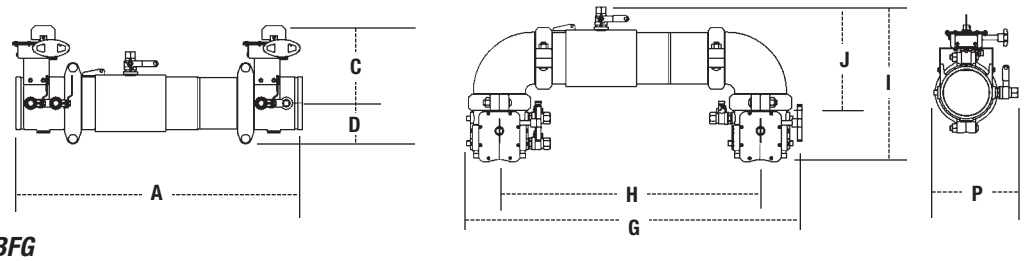
1015 B64.5 (**BFG & OSY Only)

Dimensions — Weight



757, 757N

SIZE	DIMENSIONS																WEIGHT					
	A		C (OSY)		C (NRS)		D		G		H		I		J		P		757NRS		757OSY		757N NRS		757N OSY	
in.	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*	*lbs.*	*kgs.*	*lbs.*	*kgs.*	*lbs.*	*kgs.*
2½	30¾	781	16⅜	416	9⅜	238	3½	89	29 1/16	738	21½	546	15½	393	8 13/16	223	9 3/16	234	115	52	125	57	123	56	133	60
3	31¾	806	18⅞	479	10¼	260	3 1/16	94	30¼	768	22¼	565	17⅛	435	9 3/16	233	10½	267	131	59	145	66	144	65	158	72
4	33¾	857	22¾	578	12 3/16	310	4	102	33	838	23½	597	18½	470	9 15/16	252	11 3/16	284	161	73	161	73	184	83	184	83
6	43½	1105	30⅛	765	16	406	5½	140	44¾	1137	33½	851	23 3/16	589	13 1/16	332	15	381	273	124	295	134	314	142	336	152
8	49¾	1264	37¾	959	19 15/16	506	6 1/16	170	54⅛	1375	40⅛	1019	27 7/16	697	15 11/16	399	17 3/16	437	438	199	480	218	513	233	555	252
10	57¾	1467	45¾	1162	23 13/16	605	8⅜	208	66	1676	49½	1257	32½	826	17 5/16	440	20	508	721	327	781	354	891	404	951	431

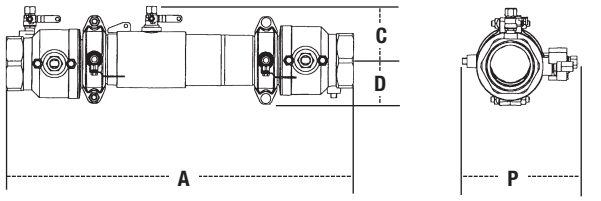


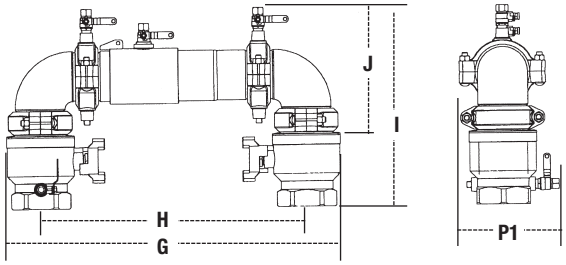
757BFG, 757NBFG

SIZE	DIMENSIONS																		WEIGHT	
	A		C		D		G		H		I		J		P		757BFG		757N BFG	
in.	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
2½	27¾	705	8	203	3½	89	29⅞	759	21½	546	14 15/16	379	8 13/16	223	9	229	56	25	64	29
3	28¼	718	8 5/16	211	3 1/16	94	30 1/16	779	22¼	565	15 7/16	392	9 3/16	233	9½	241	54	24	67	30
4	29	737	8 15/16	227	3 1/16	94	31 15/16	811	23½	597	16¼	412	9 15/16	252	10	254	61	28	84	38
6	36½	927	10	254	5	127	43 3/16	1097	33¼	845	19 11/16	500	13 1/16	332	10½	267	117	53	157	71
8	42¾	1086	12¼	311	6½	165	51 1/16	1297	40⅛	1019	23 3/16	592	15 11/16	399	14 3/16	361	261	118	337	153

Noryl® is a registered trademark of SABIC Innovative Plastics Holding BV.

Dimensions — Weight continued





757QT

SIZE	DIMENSIONS																		WEIGHT	
	A		C		D		G		H		I		J		P		P1		QT		QTN	
in.	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*	*lbs.*	*kgs.*
2½	27¼	692	4⅞	124	6⅞	175	30¼	768	24½	622	16 1/16	407	11⅜	289	11 5/16	287	11 5/16	287	40	18	50	23
3	28¼	718	4⅞	124	6⅞	175	30¼	768	24½	622	16 9/16	420	11⅜	289	11 5/16	287	11 5/16	287	50	23	60	27
4	31½	800	4⅞	124	6⅞	175	30¼	768	24½	622	18 5/16	465	11⅜	289	11 5/16	287	11 5/16	287	70	32	80	36

Capacity

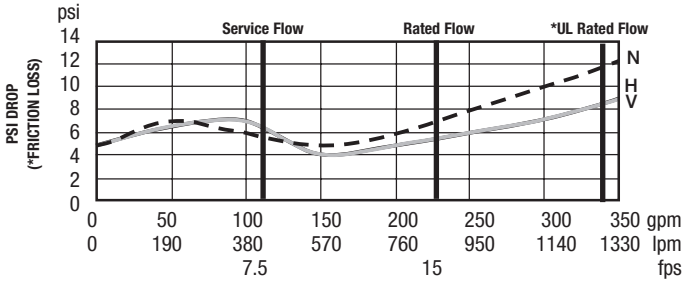
Series 757, 757N flow curves as tested by Underwriters Laboratory. Flow characteristics collected using butterfly shutoff valves

Horizontal Vertical N - Pattern

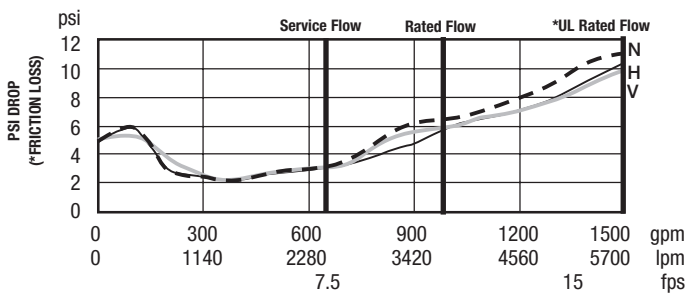
Flow capacity chart identifies valve performance based upon rated water velocity up to 25fps

- Service Flow is typically determined by a rated velocity of 7.5fps based upon schedule 40 pipe.
- Rated Flow identifies maximum continuous duty performance determined by AWWA.
- UL Flow Rate is 150% of Rated Flow and is not recommended for continuous duty.
- AWWA Manual M22 [Appendix C] recommends that the maximum water velocity in services be not more than 10fps.

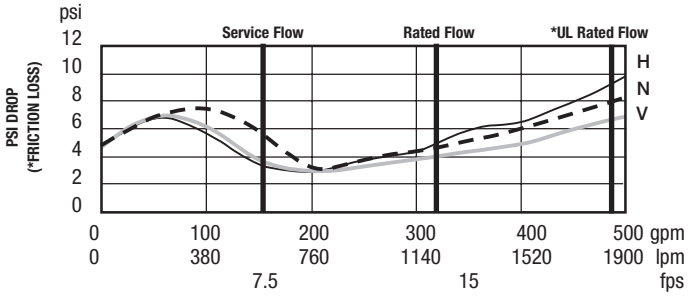
2½"



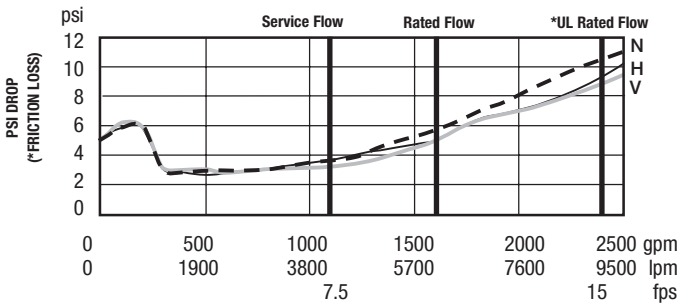
6"



3"



8"



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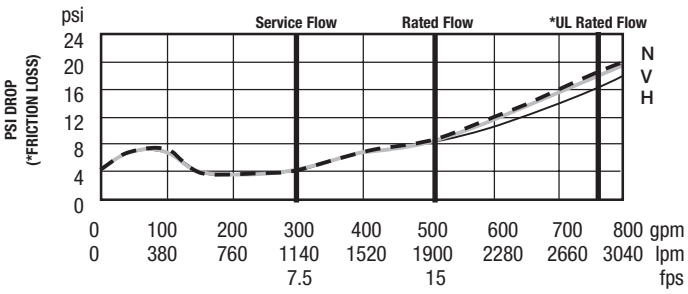
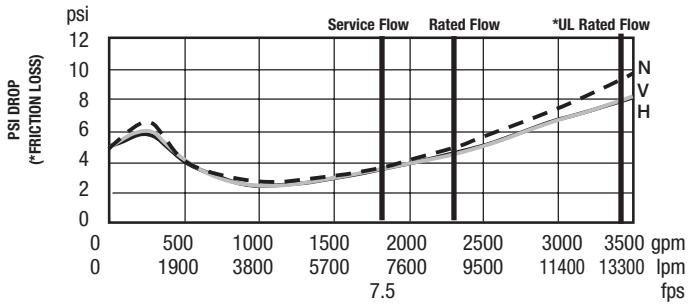


10"



NOTICE

Inquire with governing authorities for local installation requirements

USA: T: (978) 689-6066 • F: (978) 975-8350 • Watts.com
Canada: T: (888) 208-8927 • F: (888) 479-2887 • Watts.ca
Latin America: T: (52) 55-4122-0138 • Watts.com

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Engineering Specification

LEAD FREE*

Series LFM115

Pressure Reducing Control Valve

Full Port Ductile Iron Single Chamber Valve

Features

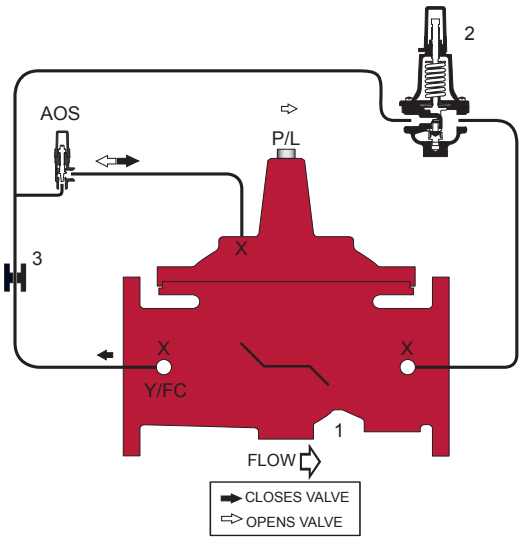
- Throttles to reduce high upstream pressure to constant lower downstream pressure
- Reducing setpoint is adjustable

Standard Components

1—Main Valve (M100 - Single Chamber)
2—Pressure Reducing Control
3—Fixed Orifice
X—Isolation Cocks

Options and Accessories

- O FC Flo-Clean Strainer (Standard 1¼" – 4")
- O Y Y-Strainer (Replaces Flo-Clean)
- O ACS Adjustable Closing Speed (Replaces Fixed Orifice)
- O AOS Adjustable Opening Speed (Standard 1¼" – 4")
- O P Position Indicator
- O L Limit Switch



Operation

The Pressure Reducing Automatic Control Valve (ACV) is designed to automatically reduce a fluctuating higher upstream pressure to a constant lower downstream pressure regardless of varying flow rates. It is controlled by a normally open, pressure reducing pilot designed to: 1) Open (allowing fluid out of the main valve cover chamber) when downstream pressure is below the adjustable setpoint, and 2) Close (allowing fluid to fill the main valve cover chamber) when downstream pressure is above the adjustable setpoint. A decrease in downstream pressure causes the valve to modulate toward an open position, raising downstream pressure. An increase in downstream pressure causes the valve to modulate toward a closed position, lowering downstream pressure.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

NOTICE

The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.

M Series Basic Valves

Pressure Reducing Control Valve

Full Port Ductile Iron Single Chamber Basic Valve

This Watts Automatic Control Valve (ACV) is a full port, single chamber basic valve that incorporates a one-piece disc and diaphragm assembly. This assembly is the only moving part within the valve allowing it to open, close, or modulate as commanded by the pilot control system.

Watts ACV Main Valves are Lead Free. The Watts ACV piloting system contains Lead Free* components, ensuring all of our configurations are Lead Free compliant.

Globe Pattern Single Chamber Basic Valve (M100)
Angle Pattern Single Chamber Basic Valve (M1100)

Standard Materials

Body and Cover:	Ductile Iron ASTM A536
Coating:	NSF Listed Fusion Bonded Epoxy Lined and Coated
Trim:	316 Stainless Steel
Elastomers:	Buna-N (standard) EPDM (optional) Viton® (optional)
Nut, Spring and Stem:	Stainless Steel
Anti-Scale (Optional):	Xylan Coated Stem and Seat

NSF Certified to NSF/ANSI 61-G

Viton® is a registered trademark of DuPont Dow Elastomers.

Operating Pressure

Threaded = 400psi (27.6 bar)
150# Flanged = 250psi (17.2 bar)
300# Flanged = 400psi (27.6 bar)
Grooved End = 400psi (27.6 bar)

Operating Temperature

Buna-N: 160°F (71°C) Maximum
EPDM: 300°F (140°C) Maximum
Viton®: 250°F (121°C) Maximum
Epoxy Coating**: 225°F (107°C) Maximum

*** Valves can be provided without internal epoxy coating consult factory*

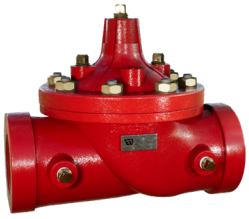
Basic Valve Body Options

Globe Flanged

Angle Flanged

Globe Grooved End

Angle Grooved End


Globe Threaded

Angle Threaded

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ACV Schematic - Series LFM115

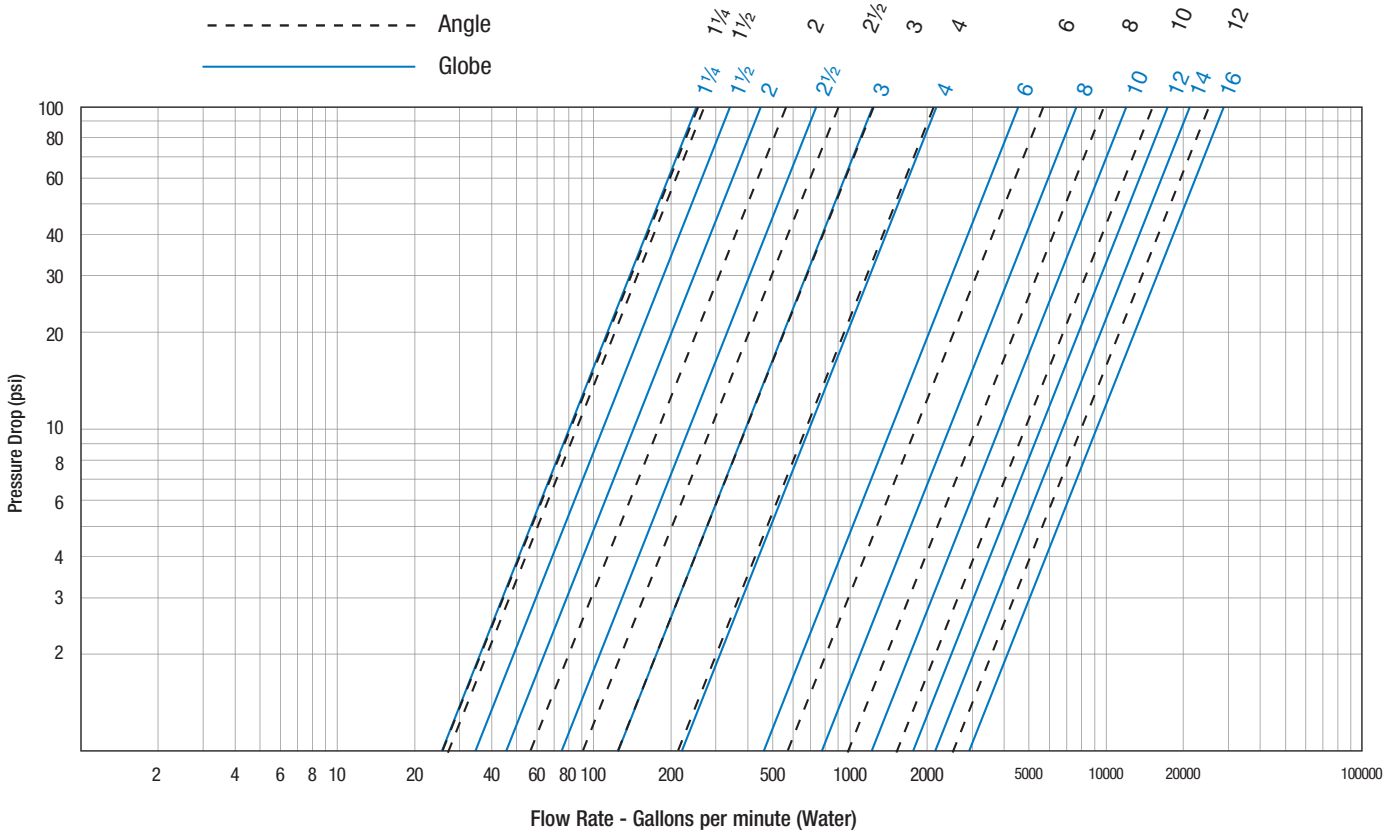
Flow Data

	Valve Size - Inches	1¼	1½	2	2½	3	4	6	8	10	12	14	16
Suggested	Maximum Continuous Flow Rate Gpm (Water)	95	130	210	300	485	800	1850	3100	5000	7000	8500	11100
	Maximum Intermittent Flow Rate Gpm (Water)	119	161	265	390	590	1000	2300	4000	6250	8900	10800	14100
	Minimum Flow Rate Gpm (Water)	3	5	6	9	15	16	17	25	55	70	190	400
Cv	C_v Factor GPM (Globe)	26	26	48	75	112	188	387	764	1215	1734	2234	3131
	C_v Factor GPM (Angle)	26	27	57	91	125	207	571	889	1530	1945		

- Maximum continuous flow based on velocity of 20 ft. per second.
- Maximum intermittent flow based on velocity of 25 ft. per second.
- Minimum flow rates based on a 20-40 psi pressure drop.
- The C_v Factor of a value is the flow rate in US GPM at 60°F that will cause a 1psi drop in pressure.
- C_v factor can be used in the following equations to determine Flow (Q) and Pressure Drop (ΔP):

  Q (Flow) = $C_v\sqrt{\Delta P}$ **ΔP (Pressure Drop) = $(Q/C_v)^2$**

- The C_v factors stated are based upon a fully open valve.
- Many factors should be considered in sizing control valves including inlet pressure, outlet pressure and flow rates.
- For sizing questions including cavitation analysis consult Watts with system details.



Valve Cover Chamber Capacity

Valve Size - Inches	1¼	1½	2	2½	3	4	6	8	10	12	14	16
fl.oz.	4	4	4	10	16	22	70					
U.S. Gal								1¼	2½	4	6½	9½

Valve Travel

Valve Size - Inches	1¼	1½	2	2½	3	4	6	8	10	12	14	16
Travel - Inches	⅜	⅜	½	⅝	¾	1	1½	2	2½	3	3½	4

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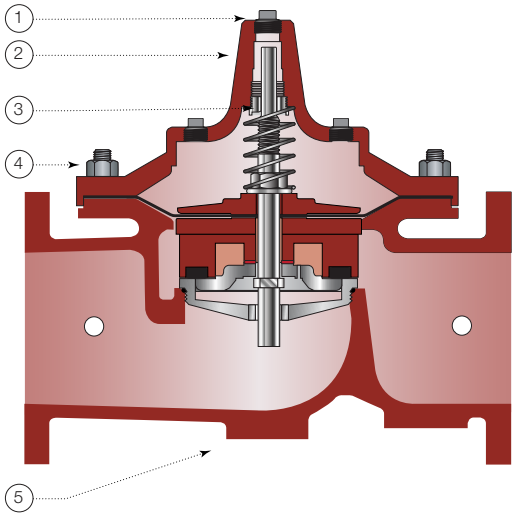
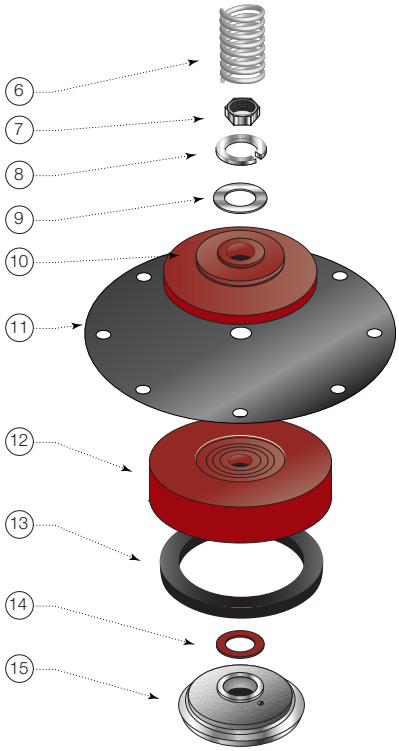
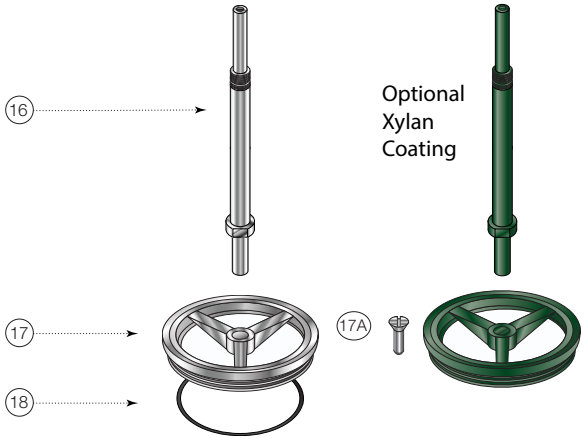
ACV Schematic - Series LFM115

M100 Basic Valve







Item	Description	Material
1	Pipe Plug	Lead Free Brass
2	Cover	ASTM A536 65-45-12 Epoxy Coated Ductile Iron
3	Cover Bearing	ASTM A276 304 Stainless Steel
4	Stud with Cover Nut and Washer	ASTM A570 Gr.33 Zinc Plated Steel
5	Body	ASTM A536 65-45-12 Epoxy Coated Ductile Iron
6	Spring	ASTM A276 302 Stainless Steel
7	Stem Nut	ASTM A276 304 Stainless Steel
8	Lock Washer	ASTM A276 304 Stainless Steel
9	Stem Washer	ASTM A276 304 Stainless Steel
10	Diaphragm Washer	ASTM A536 65-45-12 Epoxy Coated Ductile Iron
11	Diaphragm*	Buna-N (Nitrile)
12	Disc Retainer	ASTM A536 65-45-12 Epoxy Coated Ductile Iron
13	Seat Disc*	Buna-N (Nitrile)
14	Spacer Washer* x5	NY300 Fiber*
15	Disc Guide	ASTM A743 CF8M (316) Stainless Steel
16	Shaft	ASTM A276 304 Stainless Steel
17	Seat Ring**	ASTM A743 CF8M (316) Stainless Steel
17A	Seat Screw** (8" and Larger)	ASTM A276 304 Stainless Steel
18	Seat Gasket*	Buna-N (Nitrile)

** Contained in Main Valve Repair Kit*
***Note: 6 inch and Smaller Valves, Seat Ring is threaded*

NOTICE

Installation: If unit is installed in any orientation other than horizontal (cover up) OR extreme space constraints exist, consult customer service prior to or at the time of order.

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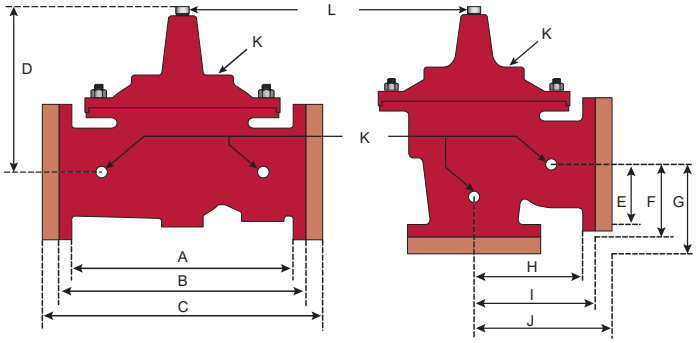
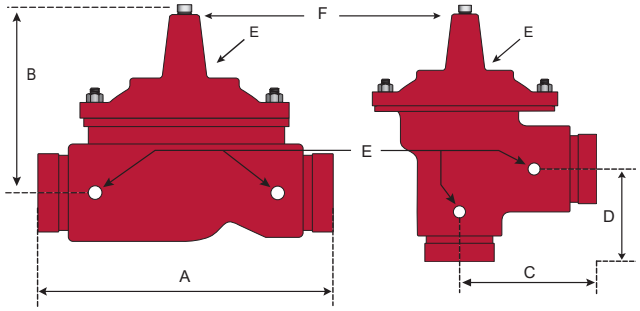
ACV Schematic - Series LFM115

Dimensions

Flanged and Threaded



Grooved End



Flanged and Threaded Dimensions

Valve Size	Globe Thread		Globe 150#		Globe 300#		Cover To Center		Angle Thread		Angle 150#		Angle 300#		Angle Thread		Angle 150#		Angle 300#		Port Size NPT	Port Size NPT	Shipping Weights*	
	A		B		C		D		E		F		G		H		I		J		K	L		
in.	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*in.*	*lbs.*	*kgs.*
1¼	7¼	184					5½	140													⅜	¼	20	9
1½	7¼	184	8½	216			5½	140	3¼	83					1⅞	48					⅜	¼	25	11
2	9⅜	238	9⅜	238	10	254	6¾	171	4¾	120	4¾	121	5	127	3¼	83	3¼	83	3½	89	⅜	½	40	18
2½	11	279	11	279	11⅝	295	7½	191	5½	140	5½	140	5⅞	149	4	102	4	102	4⅝	110	½	½	65	29
3	12½	318	12	305	13¼	337	8¼	210	6¼	159	6	152	6⅜	162	4½	114	4	102	4⅜	111	½	½	95	43
4			15	381	15⅝	397	10⅝	270			7½	191	7⅞	200			5	127	5⅝	135	¾	¾	190	86
6			20	508	21	533	13	330			10	254	10½	267			6	152	6½	165	¾	¾	320	145
8			25⅜	645	26⅜	670	16	406			12¾	324	13¼	337			8	203	8½	216	1	1	650	295
10			29¾	756	31⅛	791	17	430			14⅞	378	15⅝	395			8⅝	219	9⅝	237	1	1	940	426
12			34	864	35½	902	20⅞	530			17	432	17¾	451			13¾	349	14½	368	1	1¼	1500	680
14			39	991	40½	1029	24¼	616													1	1½	1675	760
16			41⅜	1051	43½	1105	25¼	640													1	2	3100	1406

Grooved End Dimensions

Valve Size	Globe Grooved		Cover To Center		Angle Grooved		Angle Grooved		Port Size (npt)	Port Size (npt)	Shipping Weights*	
	A		B		C		D		E	F		
in.	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*in.*	*lbs.*	*kgs.*
1¼	8½	216	5½	140	4¼	108	3¼	83	⅜	¼	25	11
1½	8½	216	5½	140	4¼	108	3¼	83	⅜	¼	25	11
2	9	229	6½	165	4¾	121	3¼	83	⅜	½	40	18
2½	11	279	7½	191	5½	140	4	102	½	½	65	29
3	12½	318	8¼	210	6	152	4¼	108	½	½	95	43
4	15	381	10⅝	270	7½	191	5	127	¾	¾	190	86
6	20	508	13⅜	340					¾	¾	320	145
8	25⅜	645	16	406					1	1	650	295

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Job Name _____ Contractor _____

Job Location _____ Approval _____

Engineer _____ Contractor's P.O. No. _____

Approval _____ Representative _____

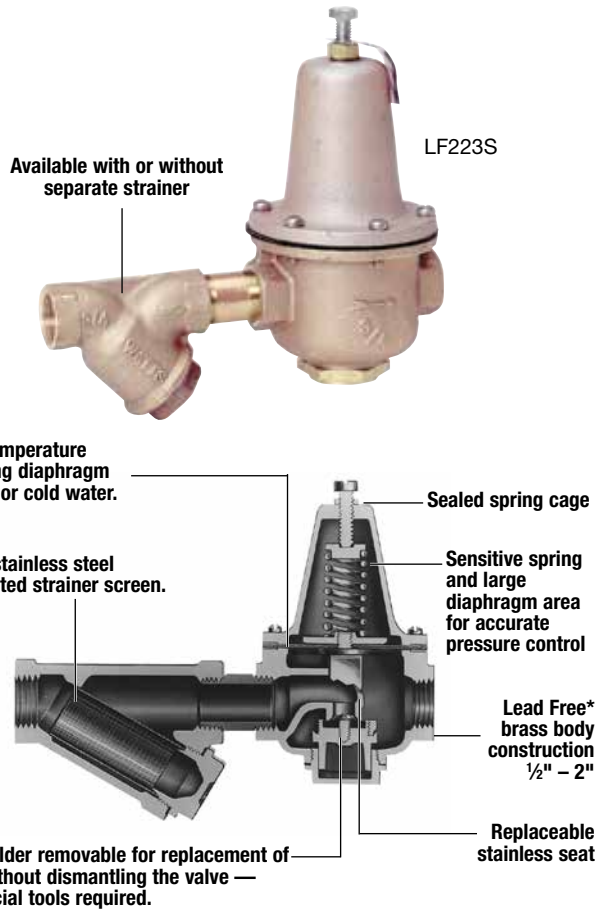
LEAD FREE*

Series LF223, LF223S

High Capacity Water Pressure Reducing Valves**

Sizes: ½" – 2½"

Series LF223 and LF223S High Capacity Water Pressure Reducing Valves are designed to reduce incoming water pressure to a sensible level to protect plumbing system components and reduce water consumption. The LF223/LF223S features Lead Free* construction to comply with Lead Free* installation requirements. This series is suitable for water supply pressures up to 300psi (20.7 bar) and may be adjusted from 25 – 75psi (172 – 517 kPa). The standard setting is 50psi (345 kPa). Series LF223 features an enlarged diaphragm, spring cage and seat orifice for high capacity performance. Series LF223S has the same options as the LF223, except it is furnished with a strainer. All parts are quickly and easily serviceable without removing the valve from the line. The optional bypass feature permits the flow of water back through the valve into the main when pressures, due to thermal expansion on the outlet side of the valve, exceed the pressure in the main supply.



Features

- Enlarged diaphragm, spring cage and seat orifice for super capacity performance
- Lead Free* brass body construction (except 2½" which is iron)
- Serviceable in line
- Series LF223S furnished with separate strainer
- Optional bypass feature controls thermal expansion pressure***
- Sealed spring cage on all models for accessible outdoor or pit installations.

Models

LF223	NPT threaded female inlet x NPT threaded female outlet
LF223-S	NPT threaded female inlet with strainer x NPT threaded female outlet

For 2½" – 3" bronze threaded valves, refer to literature ES-LFN223B.

For 3" flanged connections, refer to literature ES-LFN223F.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

****A water saving test program concluded that reducing the supply pressure from 80-50psi (551-345 kPa) resulted in a water savings of 30%.**

*****The bypass feature will not prevent the pressure relief valve from opening on the hot water supply system with pressure above 150psi (10.3 bar).**

NOTICE

The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

Specifications

A Lead Free Water Pressure Reducing Valve shall be installed on the water service pipe near its entrance to the building where supply main pressure exceeds 60psi (413 kPa) to reduce it to 50psi (345 kPa) or lower. The water pressure reducing valve shall be constructed using Lead Free* materials. Lead Free* regulators shall comply with state codes and standards, where applicable, requiring reduced lead content. Sill cocks and outside wall hydrants may be left on full main pressure at the option of the owner. Provision shall be made to permit the bypass flow of water back through the valve into the main when pressures, due to thermal expansion on the outlet side of the valve, exceed the pressure in the main supply. Pressure reducing valves with builtin bypass check valves and strainer will be acceptable. Approved valves shall comply with ASSE 1003. Valve shall be a Watts Series LF223 or LF223S (with strainer).

NOTICE

Inquire with governing authorities for local installation requirements

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.

WATTS®

Materials

Body:	½" – 2" Lead Free* Brass 2½" Cast Iron
Spring cage:	Iron
Bottom plug:	Lead free brass
Bottom plug gasket:	Buna-N
Seat:	Stainless steel
Seat gasket:	Buna-N
Adjusting screw:	Steel
Locking nut:	Brass
Spring button:	Cast Iron
Spring:	Zinc-plated wire
O-Ring:	Buna-N
Diaphragm plate:	Cast Iron
Diaphragm:	Reinforced Buna-N
Disc holder:	Lead free copper silicon alloy
Nameplate:	Aluminum

Pressure – Temperature

Temperature Range: 33°F – 160°F (0.5°C – 71°C)
Maximum Working Pressure: 300psi (20.7 bar)
Adjustable Reduced Pressure Range: 25-75psi (172 – 517 kPa)
Standard Reduced Pressure Setting: 50psi (345 kPa)

Standards

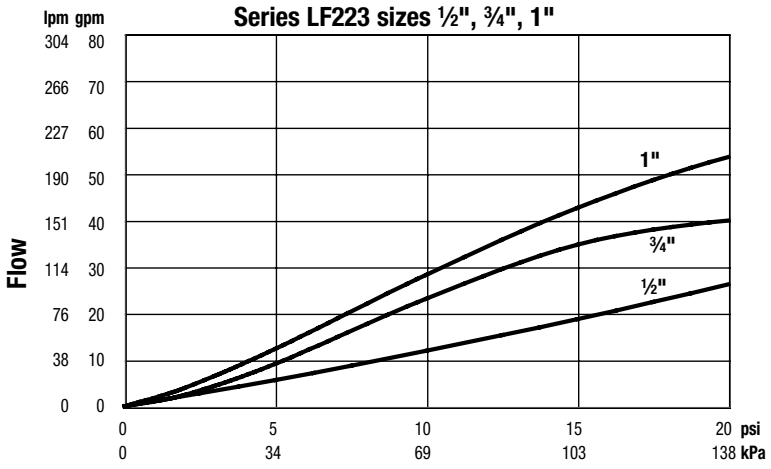
½" – 2" meets requirements of ASSE Standard 1003; (ANSI A112.26); CSA Standard B356; Southern Standard Plumbing Code, Military Standard MIL-V-18146B and listed by IAPMO.

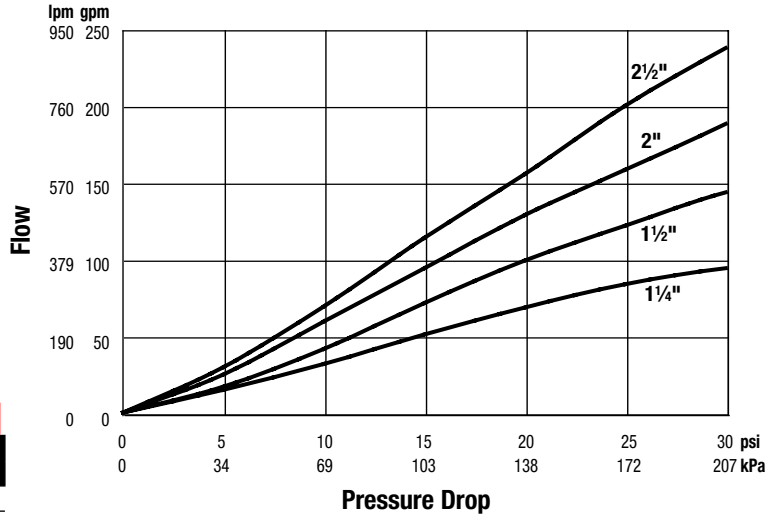
Options

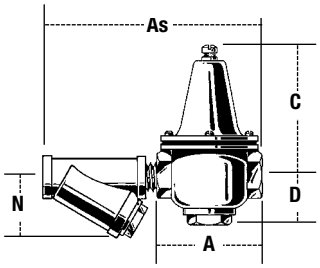
B	Built in bypass feature
LP	Low pressure range 10-35psi (69 – 241 kPa)
HP	High pressure range, reduced range shown below:

REDUCED PRESSURE RANGE - SUFFIX HP		
SIZE	RANGE	
in.	*psi*	*bar*
½	50-145	3.4-10.0
¾	50-145	3.4-10.0
1	50-145	3.4-10.0
1¼	50-120	3.4-8.3
1½	50-95	3.4-6.6
2	50-95	3.4-6.6
2½	50-95	3.4-6.6

Capacity







Dimensions — Weights

SIZE	DIMENSIONS										WEIGHT			
	A (LF223)		As (LF223S)		C		D		N (LF223S)		LF223		LF223S	
in.	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs*	*lbs.*	*kgs*
½	4¼	108	9	229	6¼	159	2	50	2½	64	4.5	2.0	6	2.7
¾	4¼	108	9	229	6¼	159	2	50	2½	64	5	2.3	6.5	2.9
1	4¾	121	10 15/16	262	6½	165	2⅛	54	2 15/16	75	7	3.2	9.5	4.3
1¼	5	127	11 15/16	287	6¾	172	2¾	70	3	76	9	4.1	12	5.4
1½	6¾	171	14¾	375	9⅞	251	2¾	70	3 7/16	87	19.5	8.8	23.5	10.7
2	8	203	16¾	425	10¾	273	3⅜	86	4	102	30	13.6	37.5	17.0
2½	9	229	20⅛	511	10¾	273	3⅜	86	5	127	32.5	14.8	59	26.8

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Latin America: T: (52) 81-1001-8600 • Watts.com

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**** BFP (RPBA) TO IRRIGATION ****

ES-LF009

Engineering Specification

Job Name _____

Job Location _____

Engineer _____

Approval _____

Contractor _____

Approval _____

Contractor's P.O. No. _____

Representative _____

LEAD FREE*

Series LF009

Reduced Pressure Zone Assemblies

Sizes: ¼" – 3"

Series LF009 Reduced Pressure Zone Assemblies are designed to protect potable water supplies in accordance with national plumbing codes and water authority requirements. This series can be used in a variety of installations, including the prevention of health hazard cross-connections in piping systems or for containment at the service line entrance. The LF009 features Lead Free* construction to comply with Lead Free* installation requirements.

This series features two in-line, independent check valves, captured springs and replaceable check seats with an intermediate relief valve. Its compact modular design facilitates easy maintenance and assembly access. Sizes ¼" – 1" shutoffs have tee handles.

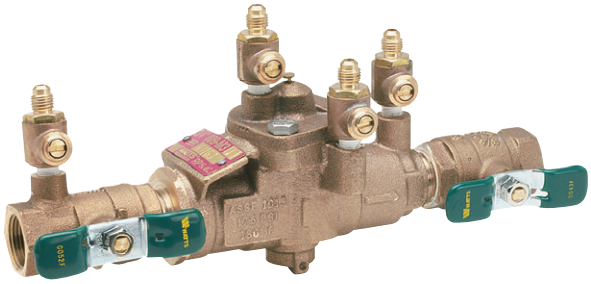
Features

- Single access cover and modular check construction for ease of maintenance
- Top entry – all internals immediately accessible
- Captured springs for safe maintenance
- Internal relief valve for reduced installation clearances
- Replaceable seats for economical repair
- Lead Free* cast copper silicon alloy body construction for durability ¼" – 2"
- Fused epoxy coated cast iron body 2½" and 3"
- Ball valve test cocks — screwdriver slotted ¼" – 2"
- Large body passages provides low pressure drop
- Compact, space saving design
- No special tools required for servicing

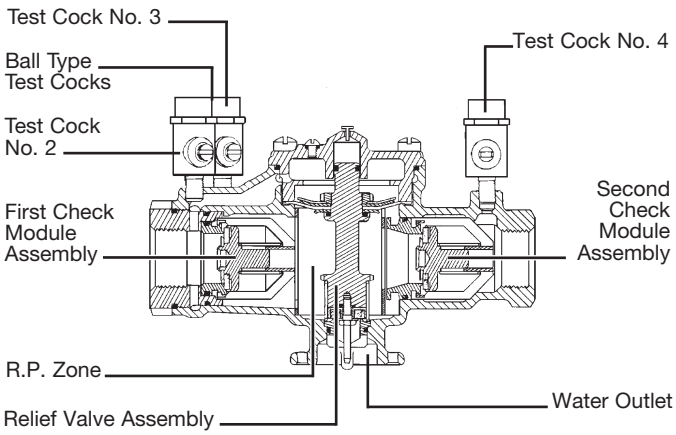
Specifications

A Reduced Pressure Zone Assembly shall be installed at each potential health hazard location to prevent backflow due to backsiphonage and/or backpressure. The assembly shall consist of an internal pressure differential relief valve located in a zone between two positive seating check modules with captured springs and silicone seat discs. Seats and seat discs shall be replaceable in both check modules and the relief valve. There shall be no threads or screws in the waterway exposed to line fluids. Service of all internal components shall be through a single access cover secured with stainless steel bolts. Body and shutoffs shall be constructed using Lead Free* cast copper silicon alloy materials. Lead Free* reduced pressure zone assembly shall comply with state codes and standards, where applicable, requiring reduced lead content.

The assembly shall also include two resilient seated isolation valves, four resilient seated test cocks and an air gap drain fitting. The assembly shall meet the requirements of: USC; ASSE Std. 1013; AWWA Std. C511; CSA B64.4. Shall be a Watts Series LF009.



LF009



Now Available
WattsBox Insulated Enclosures.
For more information, send for literature ES-WB.

NOTICE

Inquire with governing authorities for local installation requirements

NOTICE

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***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

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WATTS®

Available Models: ¼" – 2"

Suffix:

QT	– quarter-turn ball valves
S	– strainer
LF	– without shutoff valves
PC	– internal polymer coating
W/Press**	– press inlet x press outlet (½" – 2" only)

Prefix:

U	– union connections

Available Models: 2½" – 3"

Suffix:

NRS	– non-rising stem resilient seated gate valves
OSY	– UL/FM outside stem and yoke resilient seated gate valves
S-FDA	– FDA epoxy coated strainer
LF	– without shutoff valves

Note: The installation of a drain line is recommended. When installing a drain line, an air gap is necessary (see ES-AG).

Materials: ¼" – 2"

Lead Free* cast copper silicon alloy body construction, silicone rubber disc material in the first and second check plus the relief valve. Replaceable polymer check seats for first and second checks. Removable Relief valve seats. Stainless steel cover bolts.

Standardly furnished with NPT body connections.
Model LF009QT furnished with quarter-turn, full port, resilient seated, Lead Free* cast copper silicon alloy body ball valve shutoffs.

Materials: 2½" and 3"

- (FDA approved) Epoxy coated cast iron unibody with plastic seats
- Relief valve with stainless steel seat and trim
- Lead Free cast copper silicon alloy body ball valve test cocks

Pressure / Temperature

Sizes ¼" – 2" Suitable for supply pressure up to 175psi (12.1 bar). Water temperature: 33°F – 180°F (0.5° – 82°C).

Sizes 2½" and 3" are suitable for supply pressures up to 175psi (12.1 bar) and water temperature at 110°F (43°C) continuous, 140°F (60°C) intermittent.

Standards

USC
ASSE No. 1013
AWWA C511
CSA B64.4
IAPMO File No. 1563.

USC-FCCCHR

Approvals

ASSE, AWWA, CSA, IAPMO

Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.

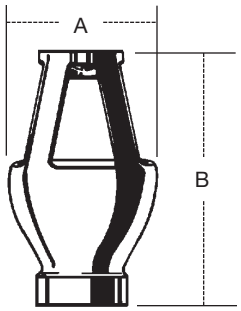
Approval models QT, PC, NRS, OSY.

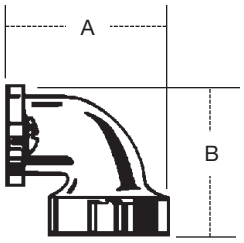
UL Classified
2½" and 3" with OSY gate valves.

¾" - 2" without shutoff valves (-LF) (except LF009M3LF)

Air Gaps and Elbows

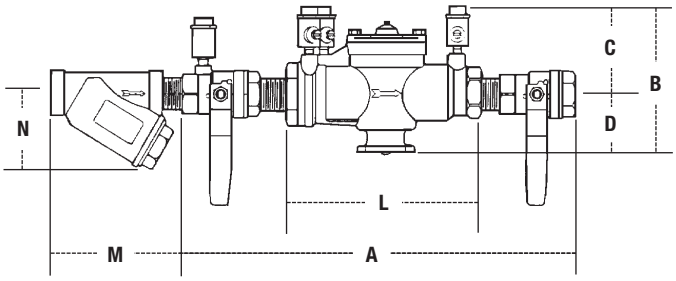
MODEL		DRAIN OUTLET		DIMENSIONS				WEIGHT	
	for 909, 009 and 993 sizes			A		B			
		in.	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
909AGA	¼"–½" 009, ¾" 009M2/M3	½	13	2⅜	60	3⅛	79	0.625	0.28
909AGC	¾"–1" 009/909, 1"–1½" 009M2	1	25	3¼	83	4⅞	124	1.5	0.68
909AGF	1¼"–2" 009M1, 1¼"–3" 009/909, 2" 009M2, 4"–6" 993	2	51	4⅜	111	6¾	171	3.25	1.47
909AGK	4"–6" 909, 8"–10" 909M1	3	76	6⅜	162	9⅝	244	6.25	2.83
909AGM	8"–10" 909	4	102	7⅜	187	11¼	286	15.5	7.03
909ELA	¼"–½" 009, ¾" 009M2/M3	–	–	–	–	–	–	–	–
909ELC	¾"–1" 009/909	–	–	2⅜	60	2⅜	60	0.38	0.17
* 909ELF	1¼"-2" 009M1, 1¼"–2" 009/909, 2" 009M2, 4"–6" 993	–	–	3⅝	92	3⅝	92	2	0.91
* 909ELH Vertical	2½"–3" 009/909	–	–	–	–	–	–	–	–





** Viega ProPress® connections are optional factory-installed fitting on each end of the approved/certified assembly.

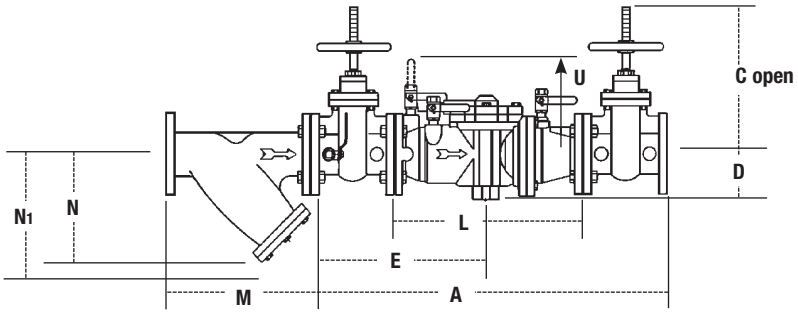
Dimensions – Weight Size: ¼" – 2" LF009

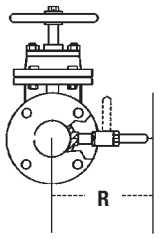


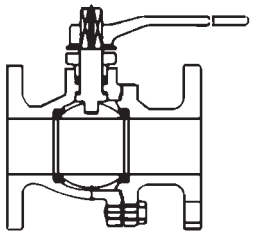
LF009 ¼" – 2"

SIZE	DIMENSIONS (APPROX.)														WEIGHT	
	A		B		C		D		L		M		N			
in.	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in*	*mm*	*in*	*mm*	*lbs.*	*kgs.*
¼	10	250	4⅝	117	3⅜	86	1¼	32	5½	140	2⅜	60	2½	64	5	2
⅜	10	250	4⅝	117	3⅜	86	1¼	32	5½	140	2⅜	60	2½	64	5	2
½	10	250	4⅝	117	3⅜	86	1¼	32	5½	140	2¾	70	2¼	57	5	2
¾	10¾	273	5	127	3½	89	1½	38	6¾	171	3⅜₁₆	81	2¾	70	6	3
1	14½	368	5½	140	3	76	2½	64	9½	241	3¾	95	3	76	12	5
1¼	17⅜	441	6	150	3½	89	2½	64	11⅜	289	4⅞₁₆	113	3½	89	15	6
1½	17⅞	454	6	150	3½	89	2½	64	11⅛	283	4⅞	124	4	102	16	7
2	21⅜	543	7¾	197	4½	114	3¼	83	13½	343	5⅝₁₆	151	5	127	30	13

Dimensions – Weight Size: 2½" and 3" LF009







Watts G-4000 Series
QT – Ball Valves

STRAINER SIZE		DIMENSIONS (APPROX.)						WEIGHT	
		M		N		N1†			
in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
2½	65	10	254	6½	165	9¾	248	28	12.7
3	80	10⅛	257	7	178	10	254	34	15.4

†Clearance for servicing

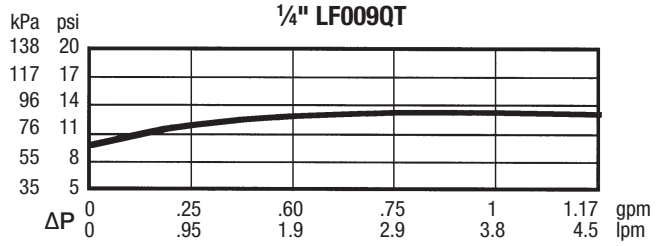
MODEL	SIZE	DIMENSIONS (APPROX.)														WEIGHT	
		A		C		D		E		L		R		U			
	in.	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
LF009LF	2½	—	—	—	—	4½	114	—	—	18⅛	460	—	—	10⅝	270	76	34.5
LF0090SY	2½	33¼	845	15⅞	403	4½	114	16⅜	416	18⅛	460	7¾	197	10⅝	270	166	75.3
LF009NRS	2½	33¼	845	11⅜	289	4½	114	16⅜	416	18⅛	460	7¾	197	10⅝	270	161	73.0
LF009LF	3	—	—	—	—	4½	114	—	—	18⅛	460	—	—	10⅝	270	76	34.5
LF0090SY	3	34¼	870	18½	470	4½	114	16⅝	422	18⅛	460	8¾	222	10⅝	270	198	89.8
LF009NRS	3	34¼	870	12¾	324	4½	114	16⅝	422	18⅛	460	8¾	222	10⅝	270	191	86.6

Capacity

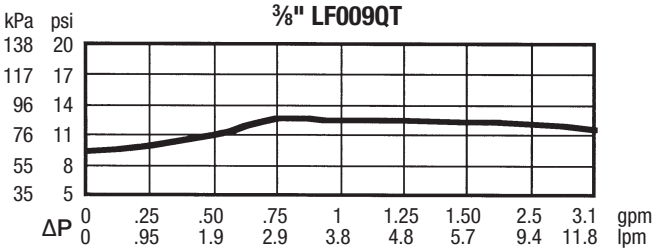
Performance as established by an independent testing laboratory.

*Typical maximum system flow rate (7.5 feet/sec., 2.3 meters/sec.)

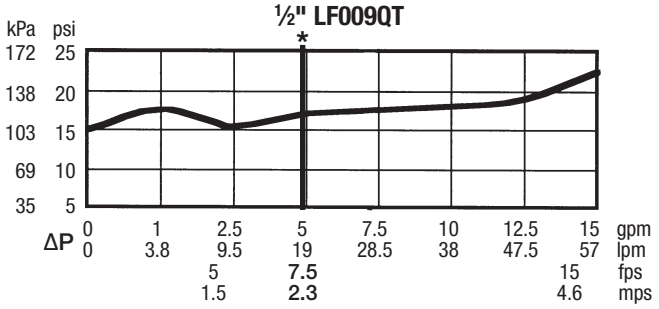
¼" LF009QT



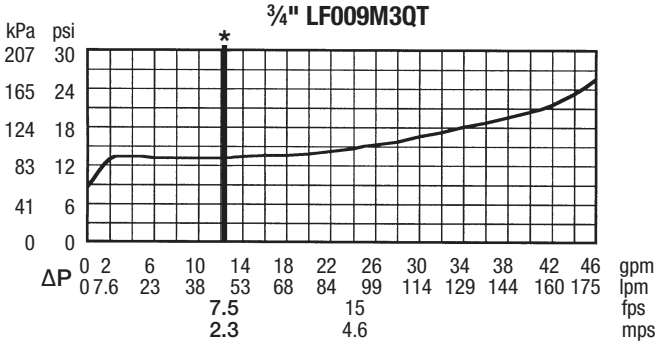
⅜" LF009QT



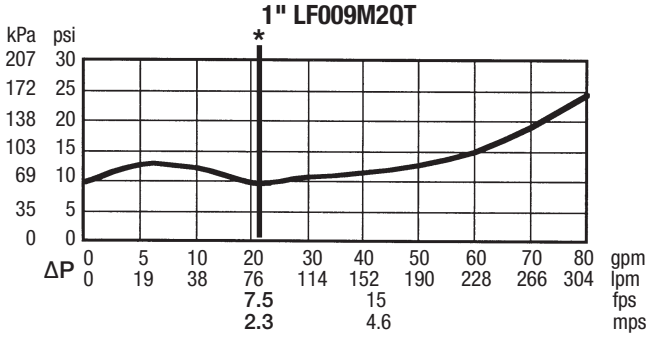
½" LF009QT



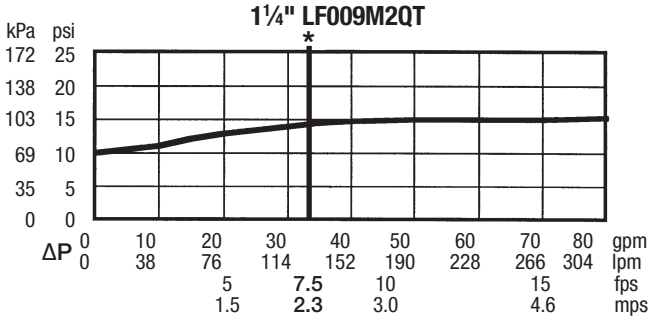
¾" LF009M3QT



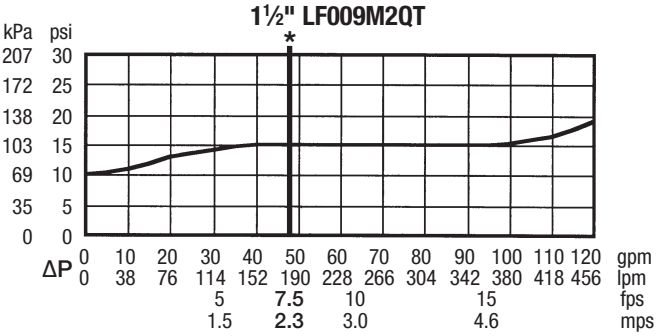
1" LF009M2QT



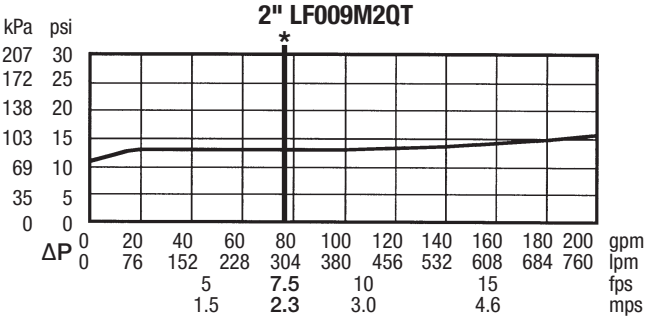
1¼" LF009M2QT



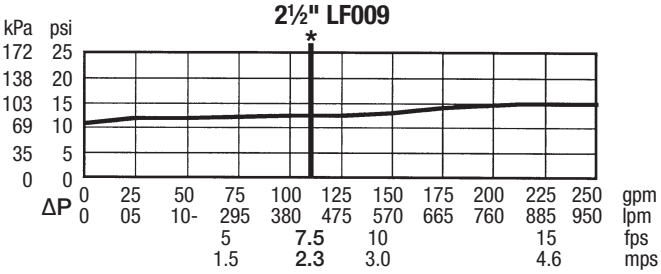
1½" LF009M2QT



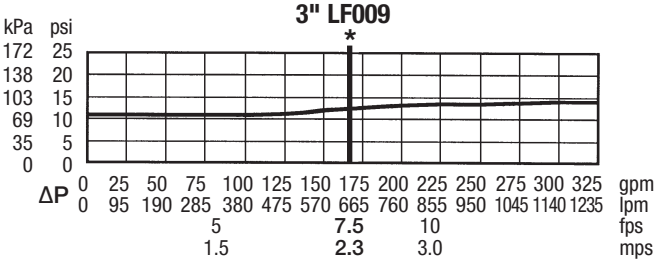
2" LF009M2QT



2½" LF009



3" LF009



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