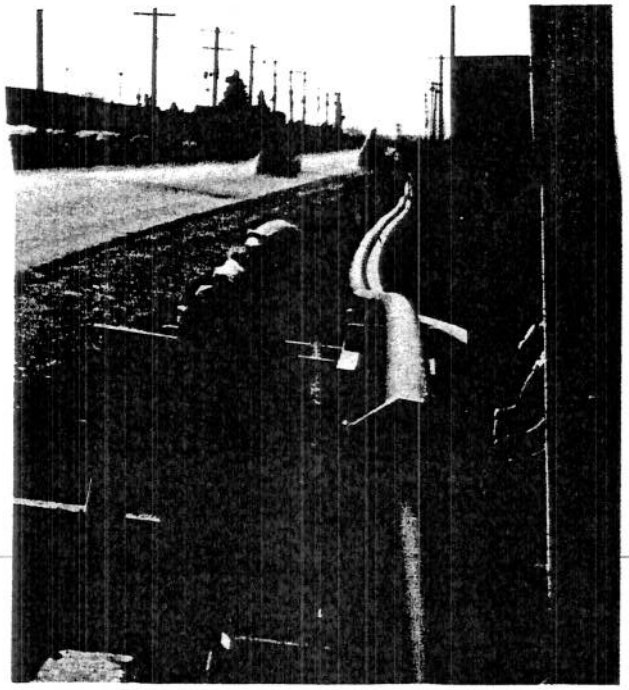
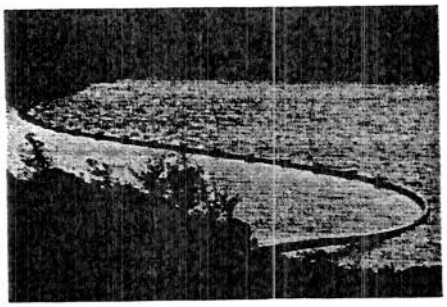
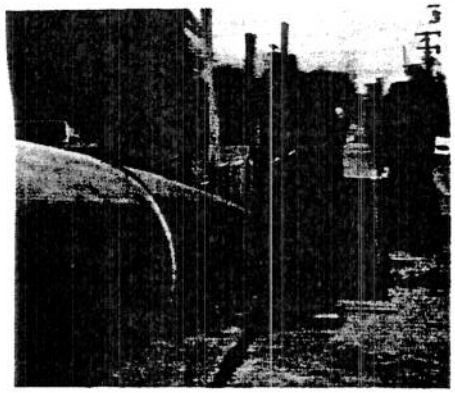
grandview industries, limited

noranda

"A Canadian company providing thermoplastic piping systems for municipal and industrial applications."







PRODUCTS AVAILABLE FROM
GRANDVIEW INDUSTRIAL DIVISION

- Techline HDPE piping systems up to 24"
- Techline Polybutylene piping systems up to 24"
- Techline Copolymer Polypropylene piping systems up to 24"
- Cobra Seal PVC piping systems up to 12"
- Mineline ABS piping systems up to 12"

Fittings are available for all Grandview systems.

GUARANTEE

All pipe, fittings and accessories are guaranteed by Grandview Industries, Limited to be free from defects in material and workmanship with liability extending to the replacement value of the product only. Grandview Industries, Limited and its representatives will offer recommendations on the use and installation of all its products. However, determination of the suitability of any information or materials, its end use, method of use and potential infringements of patents is the responsibility of the user. To the best of our knowledge the information contained herein is accurate, however, neither Grandview Industries, Limited nor any of its affiliates assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

GRANDVIEW INDUSTRIES, LIMITED

Manufacturing Locations

LANGLEY B.C.	extrusion
WEYBURN SASK.	extrusion
REXDALE ONT.	extrusion and fabrication
BARRIE ONT.	Canplas - moulded fittings
NEW WESTMINSTER B.C.	Canplas - moulded fittings

Sales Offices

	Telephone	Telex
LANGLEY B.C.	(604) 534-8631	04-365682
CALGARY ALTA.	(403) 279-0800	03-821004
EDMONTON ALTA.	(403) 451-1591	03-742666
WEYBURN SASK.	(306) 842-4617	07-12812
WINNIPEG MAN.	(204) 775-1224	07-55133
MISSISSAUGA ONT.	(416) 625-8822	06-961129
REXDALE ONT.*	(416) 245-2244	06-989397

*Head Office

grandview industrial division

Head Sales Office
(416) 625-8822
Telex: 06-961129

1125 AEROWOOD DRIVE
MISSISSAUGA, ONTARIO
L4W 1Y6

Distributed by:

SCHLEGEL LINING TECHNOLOGY, INC.

Schlegel®

PHYSICAL PROPERTIES OF SCHLEGEL® SHEET - HIGH DENSITY POLYETHYLENE

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D-1593	±10	%
Density	ASTM D-792	0.940	gm/cm³
Melt Index	ASTM D-1238 Condition "E"	0.15 - 0.60	gm/10 min.
Tensile Properties	ASTM D-638, Type IV		
1. Tensile Strength at Break		4,000	lb/in²
2. Tensile Strength at Yield		2,800	lb/in²
3. Elongation at Break		600	%
4. Elongation at Yield		10	%
Dimensional Stability	ASTM D-1204 100°C/1 Hour	± 2	%
Volatile Loss of Resin	ASTM D-1203 Method "A"	0.1	%
Resistance to Soil Burial	ASTM D-3083 (ASTM D-638, Type IV)		
1. Tensile Strength at Break		±10	%
2. Elongation at Break		±10	%
Environmental Stress Crack	ASTM D-1693 Condition "B"	0 Failures in 1,000 Hours	hours
Water Vapor Transmission	ASTM E-96 Procedure "B"	0.003	Perms
Puncture Resistance	SIA 280/14	11.50 (for 2.5mm) 9.50 (for 2.0mm) 7.05 (for 1.5mm)	Joules
Tear Resistance	ASTM D-1004	85 (for 2.5mm) 70 (for 2.0mm) 50 (for 1.5mm)	lb_f
Abrasion Resistance	ASTM D-3389 (Tabor Wear Index)	0.272 (for 2.5mm) 0.377 (for 2.0mm) 0.406 (for 1.5mm)	gms
Tensile Impact Resistance	ASTM D-1822	400	mJ/mm²
Coefficient of Linear Thermal Expansion	ASTM D-696	1.2×10^{-4}	$^{o}C^{-1}$
Low Temperature Brittleness	ASTM D-746 Procedure "B"	-118	°C
Hardness	ASTM D-2240	65	Shore D
Carbon Content	ASTM D-1603	1.5 - 3.0	%

SCHLEGEL SHEET — QUALITY CONTROL RECORD

SHIPPING DETAILS:

CUSTOMER:	SLT INC. - BECKER	DESTINATION:	USA
CONSIGNMENT NO.:	8614	SHIPPED BY:	HARTRODT JONES
DATE DISPATCHED:	15 APR 86	EXPECTED ARRIVAL:	5 MAY 86

ROLL DETAILS:

ROLL NO.:	H3069G	DATE MANUFACTURED:	20 MAR 86
ROLL LENGTH (M):	200	WEIGHT(T):	4.3
NOM. WIDTH (M):	10.2	MATERIAL:	HULS A3512R R
THICKNESS (mm):	2	PRODUCED ON EW NO:	8

SHEET DEFECT LIST:

THERE ARE NO DEFECTS

PLEASE NOTE THAT THERE ARE ALSO 6 BLEMISHES IN THIS ROLL

21950 A4
Goodrich

SCHEDEL SHEET — LABORATORY TEST RESULTS

ROLL NO.: H30698/ 8
TESTER: E. MC. D.
MATERIAL: HULS VESTOLEN A3512R R

DATE MANUFACTURED: 20 MAR 86
DATE TESTED: 24 MAR 86
NOMINAL THICKNESS -MM: 2

	PEX	SEX	MEAN	WELD	TEST
YIELD TENSILE STRESS-N/MM2	21.90813	21.62585	21.76699	21.43617	DIN 53455
ULTIMATE TENS. STRESS-N/MM2	31.80212	40.64617	36.22415	) 25.53192	DIN 53455
YIELD ELONGATION-%	10.2	10.4	10.3	8.125	DIN 53455
ULTIMATE ELONG. -%	788	900	844	) 655.5556	DIN 53455

MEAN THICKNESS -MM	2.01
STANDARD DEVIATION MM	.01

REMARKS:

ORDER NO / Nº DE COMMANDE	PAGE	ENTRY DATE / DATE D'INSCRIPTION (MO / DY / YR)	CUST ORDER / DATE	TERR	I/C
VS-5907	1	07 03 85	2658	710	2

F.S.T. / F.É.D.	P.S.T. / PROV.	CODE
Incl. "Constr."	Exempt	66001

TERMS / MODALITÉS	F.O.B. / F.A.B.	
Net 30	Hangar 64 / Port de Mtl	Ind

ROUTE / ITINÉRAIRE	FREIGHT / FRET
Notre camion	Port Payé

SOLD TO / VENDU À
Tower Artic Ltée
1350 Sherbrooke Ouest, suite 920
Montréal, Québec
H3G 1J1 Compétence: M. Jean Bantie
849-3551

SHIP TO / EXPÉDIER À
Hangar 64
Port de Montréal
TAG: RESERVOIR PANGNIRTUNG

ORDER NO / NO DE COMMANDE: VS5907 — 1 — INVOICE DATE / DATE DE FACTURATION: 08 01 85 — PLEASE REFER TO / INVOICE NO / FACTURE NO: 73 1052-08 — PAGE: 1

NOUVELLE ADRESSE
NEW ADDRESS

Clôture Frost Inc.
filiale de Stelco Inc.
20-219-2837 DUNS
C.P. 480, Succursale "A"
Montréal, Québec
H3C 2T3

FROST

SUBJECT TO CONDITIONS ON REVERSE
SOUS RESERVE DES CONDITIONS AU VERSO

B/L OR C.O.D. / CONNAISSEMENT: 33695 33702
SHIPPED VIA / EXPÉDIÉ VIA
PACKING DETAIL / DÉTAIL D'EMBALLAGE: 29545 #

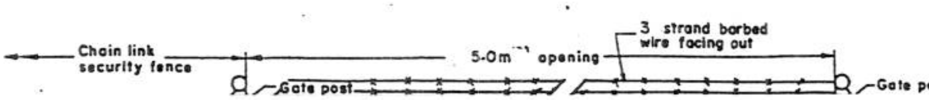
CR. 9041

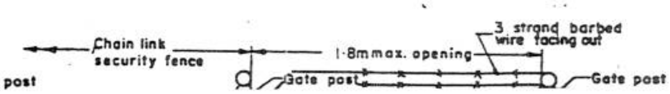
JOB No. 1281
QTY & PRICES
EXTENSION
REC'D 1 AOUT 1985
PAID. CK No. 004
PAID. DATE
SALES TAX

PRODUCT NO. / Nº DU PRODUIT — DESCRIPTION	SIZE / DIMENSIONS		QTY ORDERED / QTÉ COMMANDÉE		QTY SHIPPED / QTÉ EXPÉDIÉE	UNIT / UNITÉ	PRICE & UNIT / PRIX & UNITÉ	DISCOUNT % / % D'ESCOMPTE	NET VALUE / VALEUR NETTE
Clôture devis # 2 A - 7' A.S.B.		1	2300 pi	1	2300 pi				
Galvanisation: 2 onces de zinc par pied		2		2					
carré		3	23	3	11 0 85				
Poteaux intermédiaires 7' plus longs que		4		4		6% F.S.T.			
normalement		5		5					
Poteaux de barrière 4-1/2" x .237 avec		6	6 un	6	6 un				
entretoise		7		7					
Barrière simple de 6'0" x 84"		8	1 un	8	1 un				
Barrières doubles de 16'0" x 84"		9	2 un	9	2 un				
Cadre 1-7/8"		10		10					
Incluant tendeurs		11		11					
		12		12					
		13		13	TU F1 FST [illegible]				
		14		14					

DR		FST/FED	PST/PROV	PLEASE PAY THIS AMOUNT / MONTANT À PAYER
		94444		

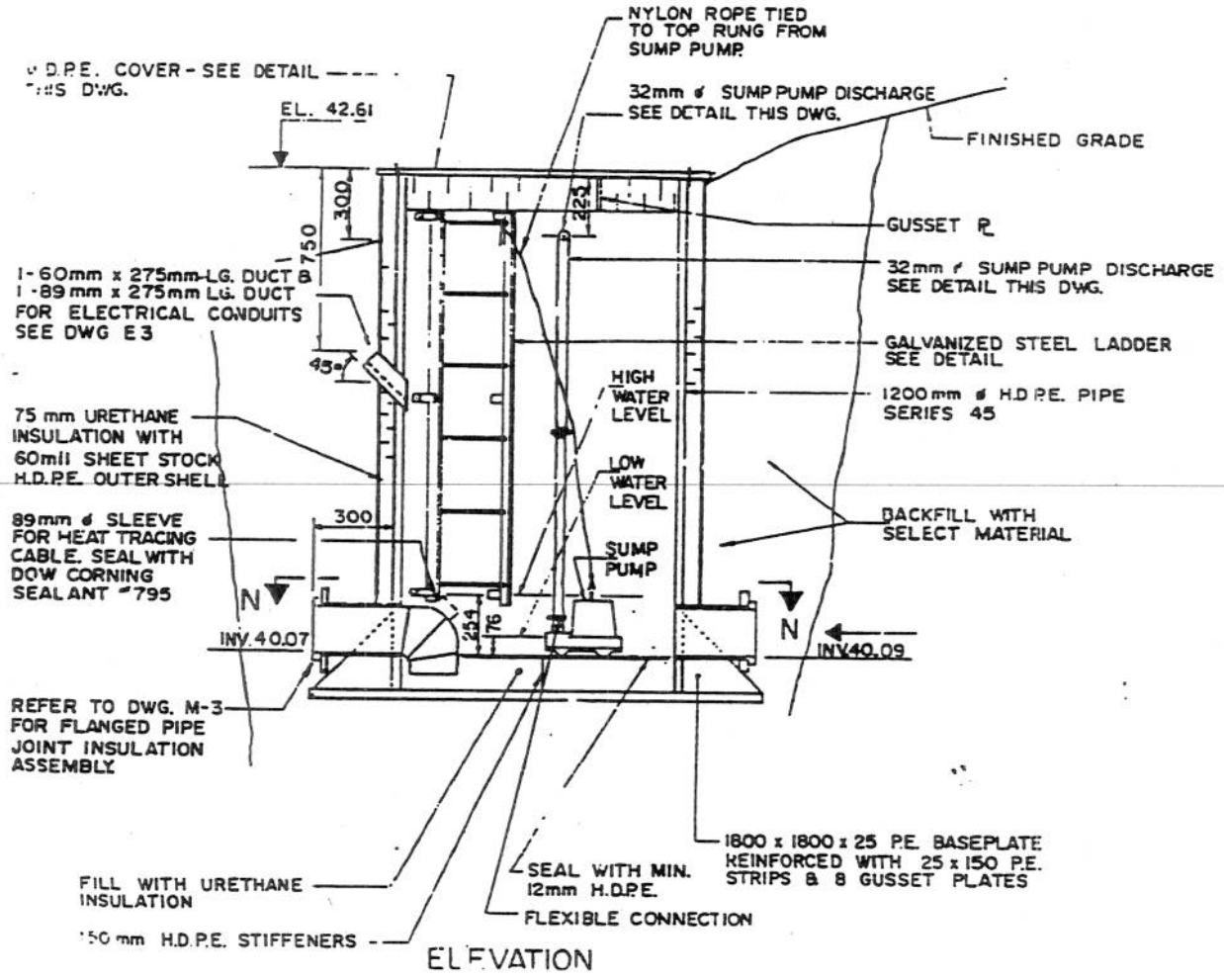
original





URECON LTD./LTÉE

1800 BOULEVARD BEDARD: TEL.: (514) 455-5629
ST-LAZARE • QUEBEC • CANADA • JOP 1V0
TELEX NO.: 05-821712



ELEVATION

Properties of Styrofoam Brand Insulation

	Styrofoam IB	Styrofoam SM	Styrofoam HI-40	Styrofoam HI-60	Styrofoar HD-300
Thermal Resistance ASTM C-518-70 C-177-63	R RSI[3] 4.0 0.69	R[1] RSI[3] 5.0 0.87	R[1] RSI[3] 5.0 0.87	R[1] RSI[3] 5.0 0.87	R RSI 5.0 0.87
Maximum Operating Temperature	F C 165 74	F C 165 74	F C 165 74	F C 165 74	F C 165 74
Linear Thermal Coefficient of Expansion ASTM D696-70	in/in/F° .000035 mm/m/C° 0.063	in/in/F° .000035 mm/m/C° 0.063	in/in/F° .000035 mm/m/C° 0.063	in/in/F° .000035 mm/m/C° 0.063	in/in/F° .000035 mm/m/C° 0.063
Water Absorption (% by volume) max. ASTM D 2842-69	1.5%	0.7%	0.7%	0.7%	0.7%
Water Vapour Permeance ASTM C355-64T	perm[1] ng[2] Pa[-1] sec[-1] m[-2] 1.0 60	perm[1] ng[2] Pa[-1] sec[-1] m[-2] 0.6 35	perm[1] ng[2] Pa[-1] sec[-1] m[-2] 0.6 35	perm[1] ng[2] Pa[-1] sec[-1] m[-2] 0.6 35	perm[1] ng[2] Pa[-1] sec[-1] m[-2] 0.6 35
Capillarity	None	None	None	None	None
Compressive Strength (min) ASTM D-1621-73	psi kPa 30 210	psi[4] kPa[4] 30 210	psi kPa 40 275	psi kPa 60 415	psi kPa 100 690
Tensile Strength (Average) ASTM D-1623-61	psi kPa 70 480	psi kPa 60 415	psi kPa 70 480	psi kPa 85 590	psi kPa 125 860
Shear Strength (Average) ASTM C-273-61	psi kPa 35 240	psi kPa 35 240	psi kPa 40 275	psi kPa 55 380	psi kPa 75 520
Flexural Strength ASTM C-203-58T	psi kPa 60 415	psi kPa 125 860	psi kPa 125 860	psi kPa 125 860	psi kPa 125 860

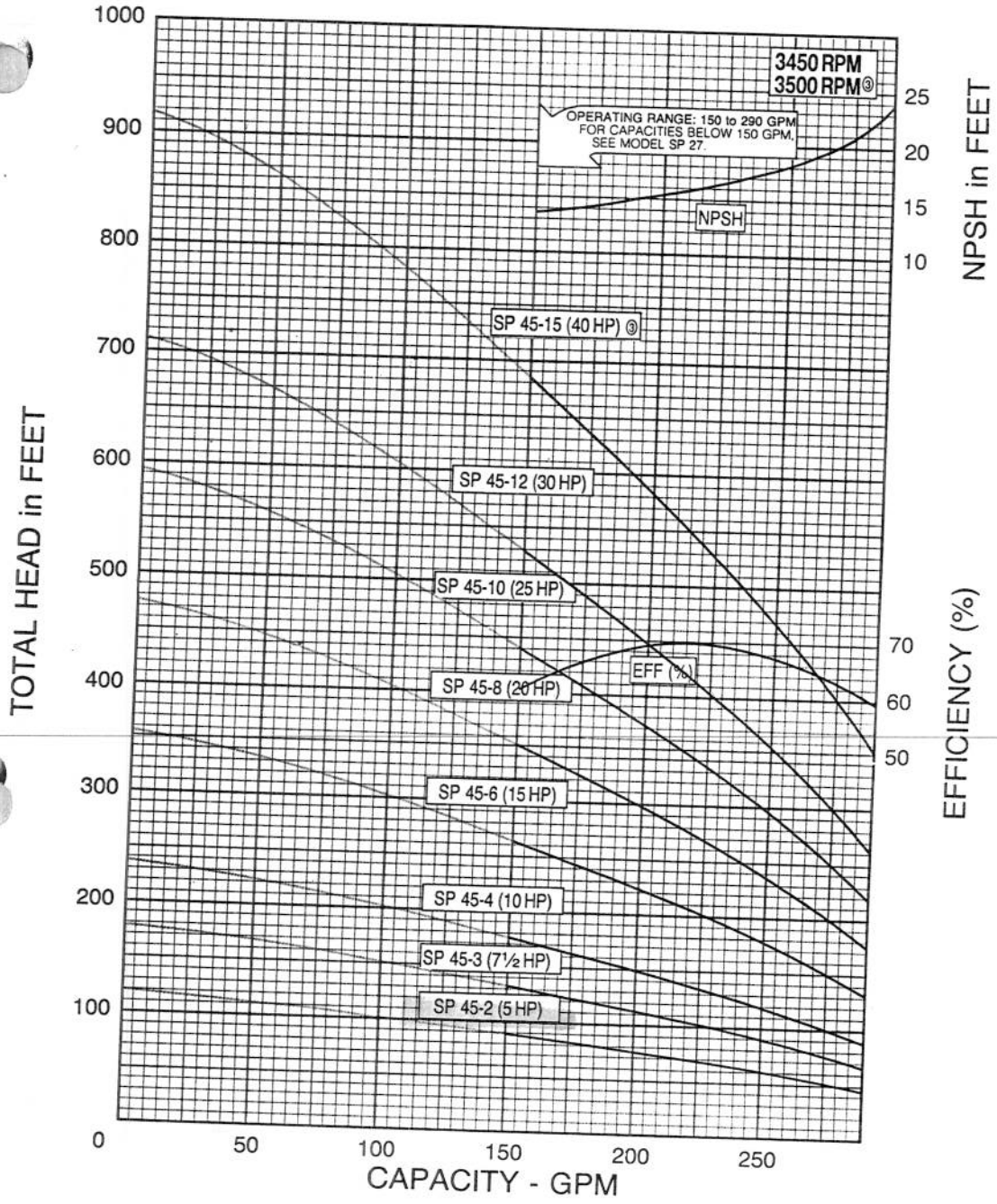
[1] Tested at 1 inch thickness.
[2] Tested at 25 mm thickness.
[3] Yield or 5% deformation, whichever comes first.
[4] Yield or 10% deformation, whichever comes first.

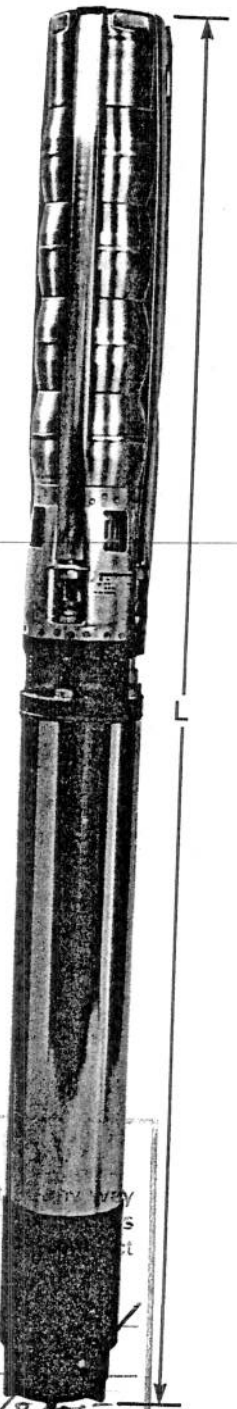
PANGNIRTUNG NORTUR CONTRACTING

Performance Curves

MODEL SP 45

NOM. FLOW RATE
225 GPM
FLOW RANGE
150 to 290 GPM
PUMP OUTLET
3" NPT





DIMENSIONS AND WEIGHTS

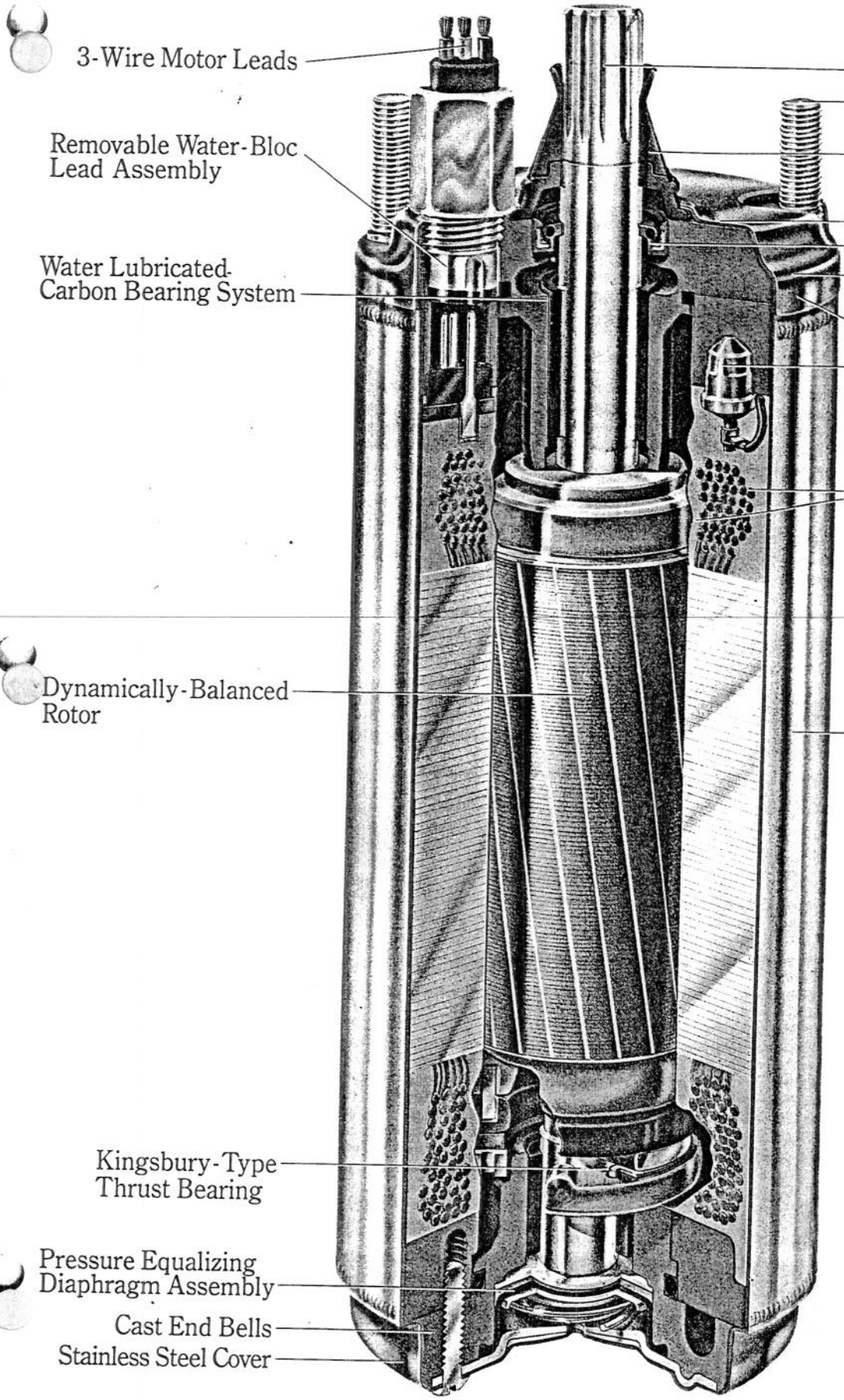
MODEL NO.	HP	MIN. WELL SIZE	LENGTH (L)	APPROX. UNIT SHIPPING WT. (LBS.)
SP 45-2	5①	6"	43⅜"	86
SP 45-3	7½	6"	48½"	133
SP 45-4	10	6"	54⅜"	145
SP 45-6	15	6"	64¾"	174
SP 45-8	20	6"	75¼"	195
SP 45-10	25	6"	85⅝"	221
SP 45-12	30	6"	96⅞"	260
SP 45-15	40③	8"	114"	456

① 4 Inch Motor ③ 8 Inch Motor

Specifications are subject to change without notice.

DRAWING REVI
...f this drawing does not ... in any way relieve the ...ontractor of responsibi... for compliance with t... ...ments.
...ment
...C NOTED
REVISED SEE REMARKS
Submission N...
Project No. ...
Date 7/8/25
By ...
F.J. REINDERS & ASSOC. LTD.
CONSULTING ENGINEERS BRAMPTON

THE SUPER STAINLESS 4 INCH 3-WIRE.



Super Stainless 3-Wire Capacitor Start.
Ratings:
⅓ thru 1½ HP, 115 or 230 Volt, 1 ph, 60 HZ, 3450 RPM.

Auxiliary Running Capacitors for Noisy Installations

1. The addition of auxiliary running capacitors as a method of reducing noise in submersible installations is not a reliable method in all cases but in some cases does reduce the noise to an acceptable level. In some cases, there is space in the control box to add the additional running capacitor or capacitors. In others, there is not room and the additional capacitor(s) should be mounted in an auxiliary box and used in conjunction with the regular control box. Added capacitors must be connected across "Red" and "Black" control box terminals, in parallel with any existing running capacitors.

   Given below are the values of additional running capacitors **most likely** to reduce noise in cases where it may be a problem. The tabulation also gives the running capacitors originally supplied in each rating control box.

2. Cut transmission of noise into the building structure by padding the points where piping is supported and cushioning the tank mounting.

3. Cushion water pulsation by replacing part of metal pipe with plastic or rubber, or adding a small air bladder tank to the line.

TABLE 10

Motor Rating		Normal Running Capacitor(s) Mfd.	Auxiliary Running Capacitors For Noise Reduction		
HP	Volts		Mfd.	Min. Volts	Franklin Part
⅓	115	0	40	236	One 275479-108
½	115	0	60	236	Two 275479-106
⅓	230	0	10	370	One 155328-102
½	230	0	15	370	One 155328-101
¾	230	0	20	370	One 155328-103
1	230	0	25	370	One ea. 155328-103, -101
1½	230	10	20	370	One 155328-103
2	230	20	10	370	One 155328-102
3	230	35	None		
5(4")	230	60	None		
5(6")	230	30	30	370	One 155327-101
7½	230	45	45	370	Two 155328-101
10	230	75	60	370	Two 155327-101

Storage of Prefilled Submersible Motors

The Franklin Electric prefilled submersible motor is designed for trouble-free operation and a minimum of attention and restrictions, in storage and installation, as well as operation. However, reasonable care should be observed in storage.

The motor is provided with a pressure equalizing diaphragm to allow for expansion and contraction of the filling solution. The filling solution is suitable for temperatures down to −40 °C (−40 °F) and motors should be stored in areas that do not go below this temperature. The solution will partially freeze as temperature goes below −3 °C (27 °F), but no damage occurs. Repeated freezing and thawing should be avoided when possible to prevent the possible loss of filling solution.

Extended storage of the motors, either with or without pumps, may also result in loss of the filling solution. This loss occurs mainly at the check valve and shaft seal, and while it may not be discernible because the rate is extremely slow and it evaporates as fast as it comes out, in time the loss can be enough to cause possible damage. When the storage temperature does not exceed 100 °F, storage time should be limited to two years. Where storage temperatures reach 130 °F, storage time should be limited to one year.

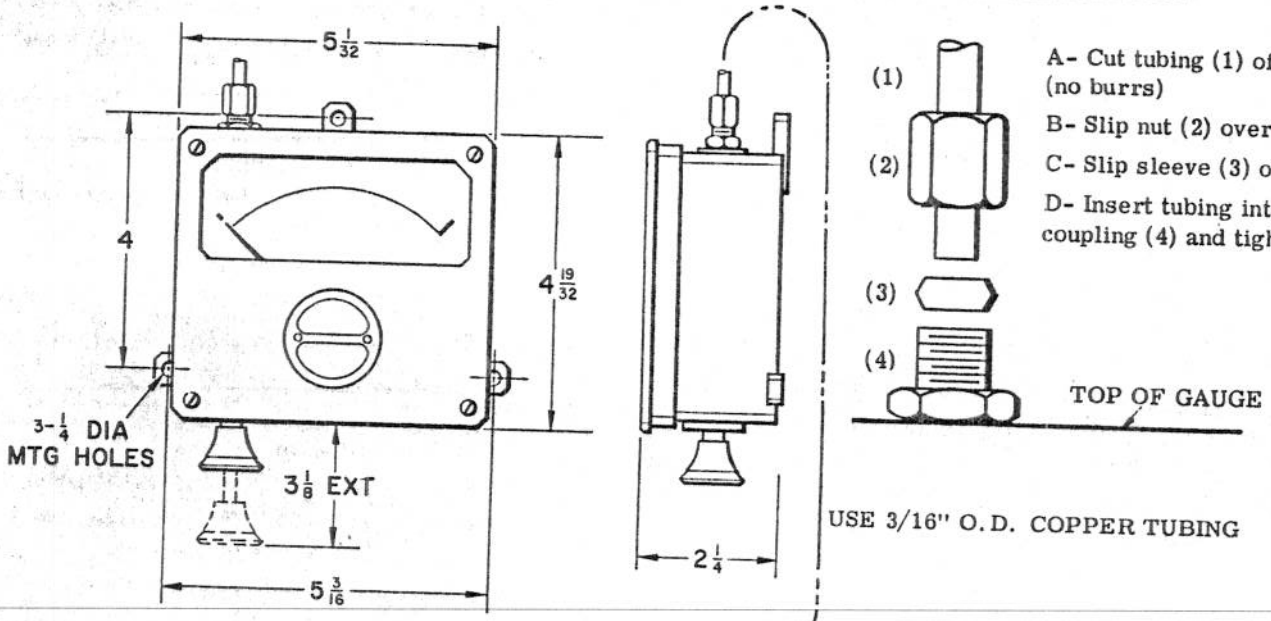
A few drops loss of liquid will not damage the motor since an excess is provided when the motor is filled at the factory and also because after the motor is in service, the Franklin Filter-Check will allow the liquid lost to be replaced by filtered well water. If the above storage recommendations and limits are followed, there will be little or no liquid loss and no need for concern. If, however, there is evidence of considerable leakage or there is reason to believe there has been leakage, the motor should be returned to a Franklin Electric Service Shop for checking or they should be contacted for instructions on checking.

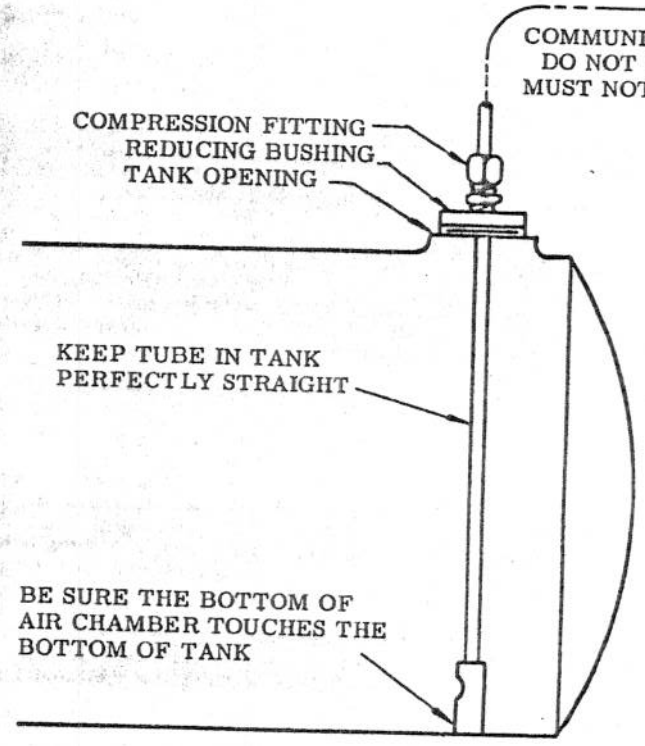
Fuel Oil Tank

BULLETIN 942

MODEL 277 MIDGET LEVELOMETER

INSTALLATION AND ADJUSTMENT





INSTALLATION

Straighten out air chamber end of communicating tubing and insert straight through tank opening until it touches bottom of tank. Screw in reducing bushing and compression fitting which form a tight joint between tubing and reducing bushing. These fittings are on tubing in the order of attachment. Then run the tubing to the desired dial location and connect tubing to dial end. Attach communicating tubing to wall to prevent it from being damaged.

WARNING

Failure to make the following adjustment will result in improper gauge reading.

Be sure the pointer indicates the first mark on the dial before attaching the tube to gauge head. If it is above or below this mark remove plug from adjustment hole at the bottom of the case. Insert screwdriver vertically through the hole and engage it in the slot of the self locking adjustment screw. If pointer is below the first mark on the dial, turn screw clockwise, if above, turn screw counterclockwise. Reinsert plug.

Manufactured in Canada by:

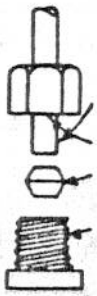
Kodon Controls Ltd.

Liquid Level Gauging Systems

2750 Slough Street,
Mississauga, Ontario L4T 1G3
Tel.(416) 676-1042, Tlx. 06-968826

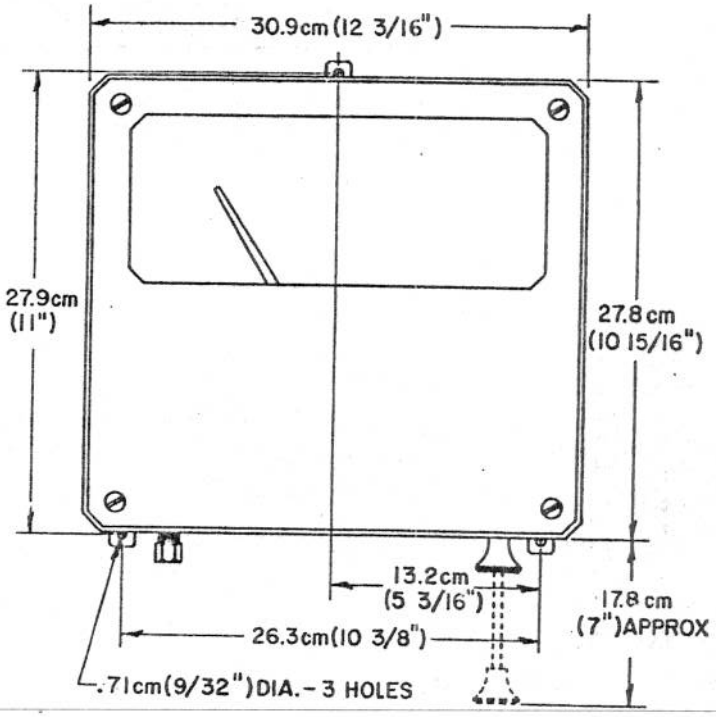
RESEVOIR

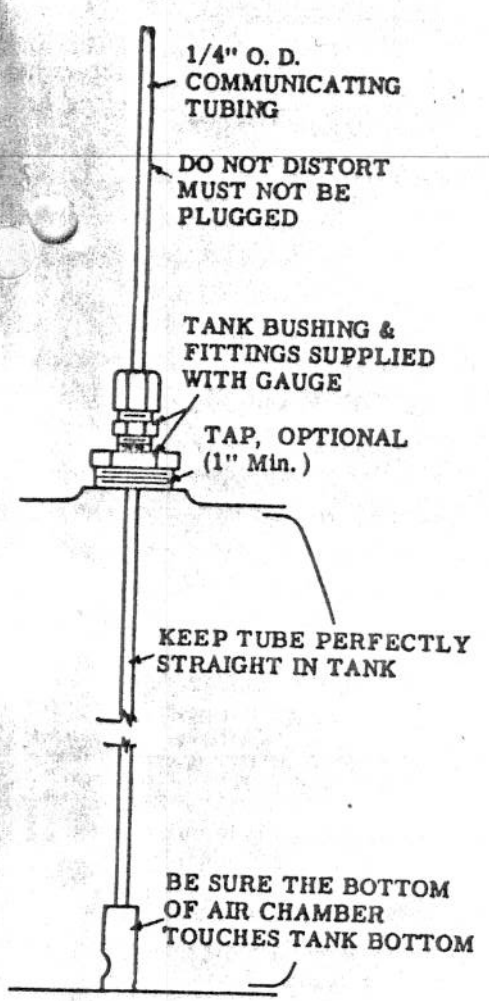
INSTALLATION INSTRUCTIONS
For
MODEL 157 LARGE LEVELOMETER
(HAND PUMP)



TUBING PREPARATION

1. Cut off tubing square (No burrs)
2. Put on nut
3. Slide ferrule over end of tubing
4. Insert tubing into fitting on gauge and tighten compression nut





INSTALLATION.

1. Insert air bell assembly through the tank opening so that the air bell touches the bottom of the tank in a vertical position as shown in the diagram. Screw the reducing bushing and compression fitting in place tightly. Run the copper tubing to desired location. Install gauge on the wall, but do not connect the tubing to the gauge.
2. Observe position of pointer. It should be exactly on the first or "Empty" mark on the dial. Adjust to "Empty" if necessary. Connect tubing to indicator.
3. Gauge is now ready for operation. In order to obtain readings pump must be actuated.

ADJUSTMENT.

4. Be sure the pointer indicates the first mark on the dial before attaching tube to gauge head. If it is above or below this mark, remove cover and loosen slightly the red headed screw at the bottom of instrument mechanism. Tap the brass plate directly under the screw head lightly with screw driver blade on the right hand side if pointer is below the first mark and on the left side if above the mark, until the pointer indicates properly, then tighten screw and replace cover. Do not touch any of the mechanism aside from the red headed screw.

CAUTION

Do not adjust pointer to correspond with stick readings.

Kodon Controls Ltd.

Liquid Level Gauging Systems

2750 Slough Street,
Mississauga, Ontario L4T 1G3
Tel. (416) 676-1042, Tlx. 06-968826

C114

Fuel Oil Tank

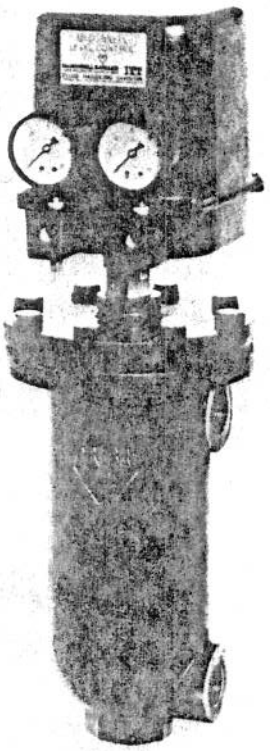
Model PFC
Modulating Pneumatic Control

- Holds desired levels more closely than differential controls
- Ideal for hazardous locations
- Proportional Band adjustable from 50% to 100%

The McDonnell Model PFC is a pneumatic level control. It is used with a pneumatically operated valve, or other control device, to maintain the liquid level in a tank or pressure vessel. It functions by modulating the air pressure supplied to the valve located in the supply or discharge line of the tank.

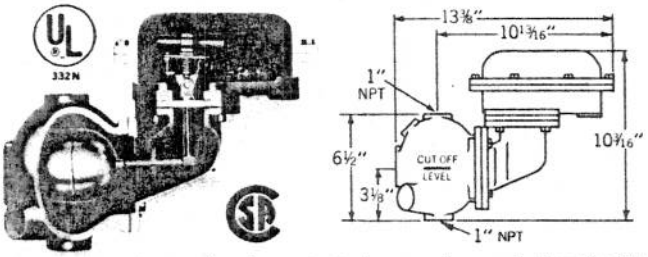
Modulating controls improve system efficiency by adjusting the feed or discharge rate to match the actual demand, thus maintaining levels more precisely. Pneumatic controls are particularly well suited for duty in hazardous locations since no electrical service is required. They frequently permit lower system installation and operating costs.

The Model PFC is float operated, and mounts on the side of the tank or pressure vessel. Its design allows field adjustment of operating level, adjustment of proportional band (anywhere from 100% maximum to 50%), and conversion to either direct acting or reverse acting operation.



Maximum supply air pressure, 20 psi
Output air pressure, 3 to 15 psi
Maximum tank pressure, 250 psi
Maximum temperature, 406 F

No. 65 and No. 65R (Hazardous Duty)
No. 165 and No. 165R (Vapor-Proof)



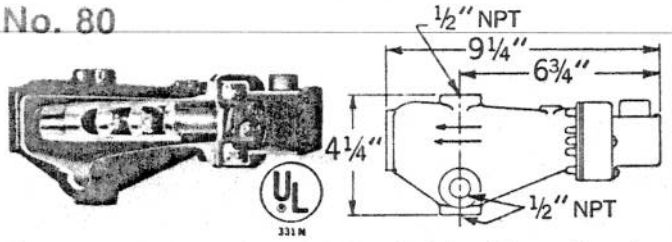
Float operated controllers for water tanks, receivers and other liquid* storage systems. Can be used to make or break electrical circuit at either high or low liquid levels—circuit to motors, signal lamps, electrical elements, etc.

No. 65 opens circuit with falling level; reverse acting No. 65R closes circuit with falling level. Underwriters Listed for use in following hazardous atmospheres: Class 1—Group C and D; Class 2—Group E, F and G.

No. 165 and No. 165R offer same operation in vapor-proof construction.

**Check factory for application information and limitations.*

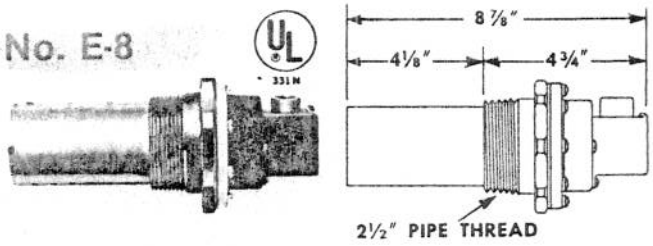
No. 80



Float operated, single pole, double throw switch which provides circuits for high or low level alarm or for starting pump when liquid level rises or falls. Has mercury switch inside float. Underwriters Listed for service on oil tanks (grade 2 fuel oil with a specific gravity of 0.85 or greater). Has ½" NPT tappings at top, bottom and sides.

Maximum pressure, 5 psi.
Maximum temperature, 190 F.

No. E-8



Has operating mechanism of No. 80 above in No. 69 body. Underwriters Listed for use on oil tanks (grade 2 fuel oil with a specific gravity of 0.85 or greater). Designed to be threaded into 2½" NPT tapped opening in side of tank.

Maximum pressure, 5 psi.
Maximum temperature, 190 F.

Panel

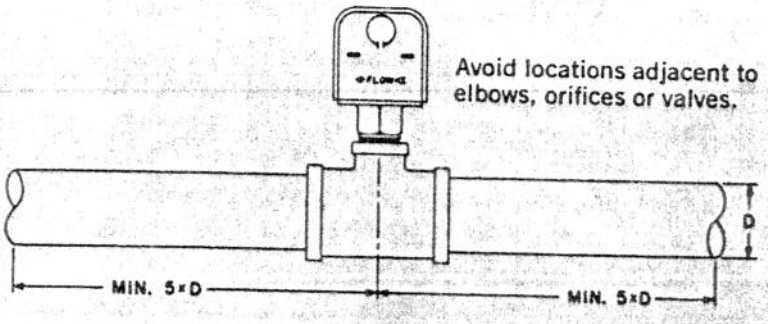
Bulletin No. I-FS4-3

INSTALLATION DATA—McDONNELL No. FS4-3 Series Flow Switches

Installation must be performed by qualified personnel in accordance with all local codes.

LOCATION: Flow switch should be located in a horizontal section of pipe where there is a straight horizontal run of at least five pipe diameters on each side of the flow switch. (Where installation is only possible in a vertical section of pipe refer to reverse side of this sheet.)

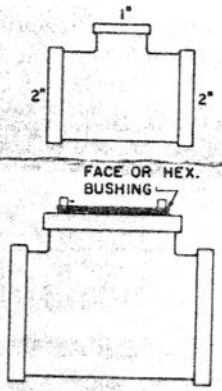
With the increasing usage of spring-load check valves and other close coupled accessories in the pump discharge piping, it is suggested that flow switches be located in the suction piping where less turbulent water flow conditions may exist.



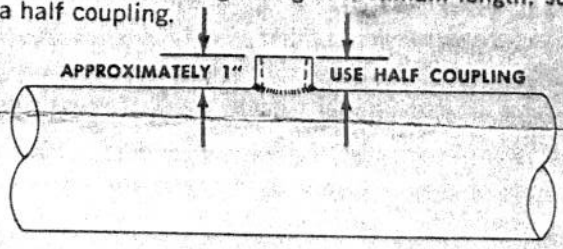
Avoid locations adjacent to elbows, orifices or valves.

INSTALLATION—Adjust the flow switch paddle to size of pipe in which it is to be installed. For most installations the table below can be followed.

When inserting in 1" pipe, use standard 1" x 1" x 1" tee. For larger pipe sizes, use a reducing tee, or standard tee with face or hex bushing to keep flow switch as close to pipe as possible. Always check operation of flow switch to make sure paddle is free to move in the tees or pipes and does not hang up.

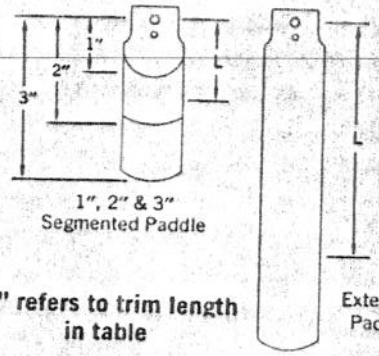


If the flow switch is connected to the pipe by a welding fitting, select a welding fitting of minimum length, such as a half coupling.



PADDLE LENGTH SELECTION TABLE

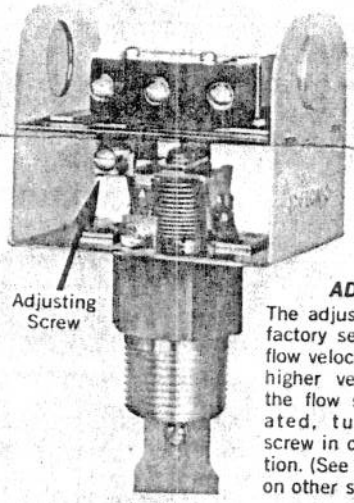
Pipe Size	Installation Using Tee		Installation Using Welding Fitting Paddle	Trim Dimension "L"
	Tee Size	Paddle		
1"	1" x 1" x 1"	1" Segment		
1¼"	1¼" x 1¼" x 1"	1" Segment & Trimmed 2" Segment		1¼"
1½"	1½" x 1½" x 1"	1" Segment & Trimmed 2" Segment		1½"
2"	2" x 2" x 1"	1" Segment & 2" Segment	1" Segment & Trimmed 2" Segment	1⅝"
2½"	2½" x 2½" x 1"	1" & 2" Segments & Trimmed 3" Segment	1" & 2" Segments & Trimmed 3" Segment	2¼"
3"	3" x 3" x 1"	1", 2", 3" Segments	1" & 2" Segments & Trimmed 3" Segment	2⅝"
4"			Extended Paddle Only—Trimmed	3⅝"
5"			Extended Paddle Only—Trimmed	4⅝"
6"			Extended Paddle Only—Trimmed	5⅝"
8" and larger			Extended Paddle Only	



1", 2" & 3" Segmented Paddle

Extended Paddle

"L" refers to trim length in table

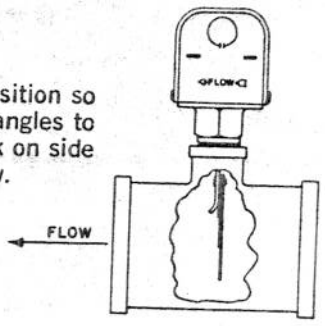


ADJUSTMENT

The adjustment screw is factory set for minimum flow velocities. To obtain higher velocities before the flow switch is actuated, turn adjusting screw in clockwise direction. (See flow rate tables on other side.)

IMPORTANT

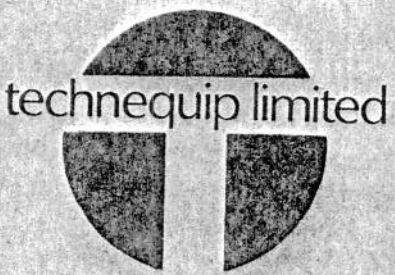
Screw the flow switch in position so that the paddle is at right angles to the flow, and the arrow mark on side is same as direction of flow.



For Wiring Data, Electrical Ratings and Vertical Pipe Installations see other side. →

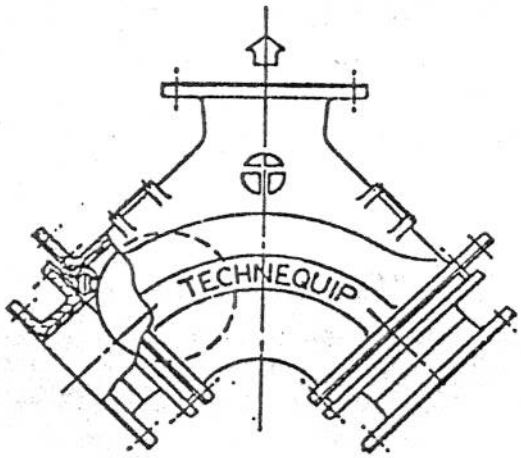
McDONNELL & MILLER ITT
FLUID HANDLING DIVISION

INSTALLATION, OPERATING and MAINTENANCE INSTRUCTIONS

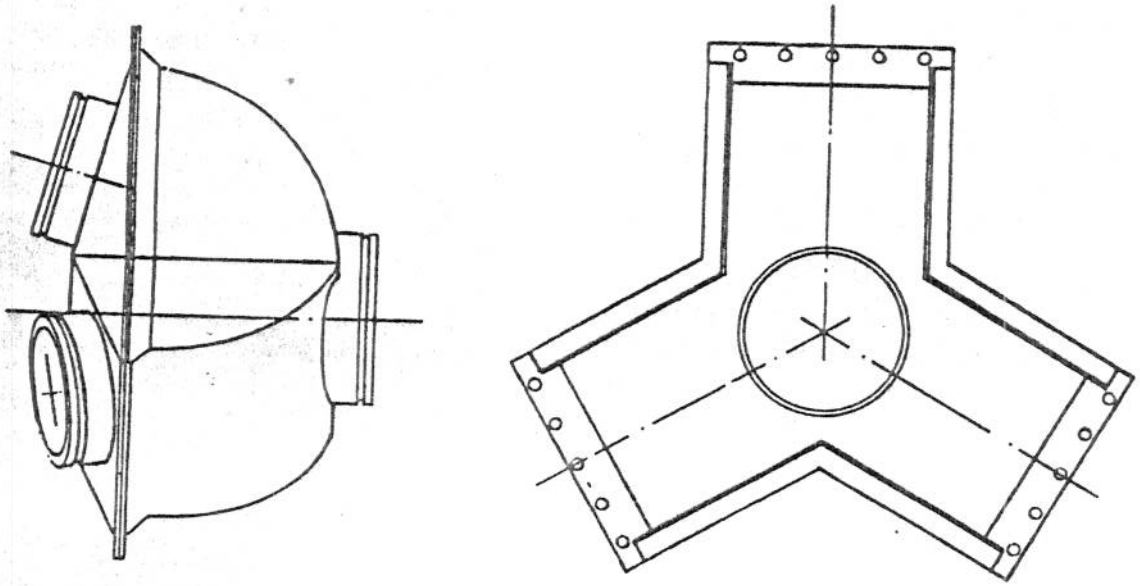


Two popular types of Tech-Taylor Valves are:

(1) The T2 Series, designed for one operating pump and one standby:

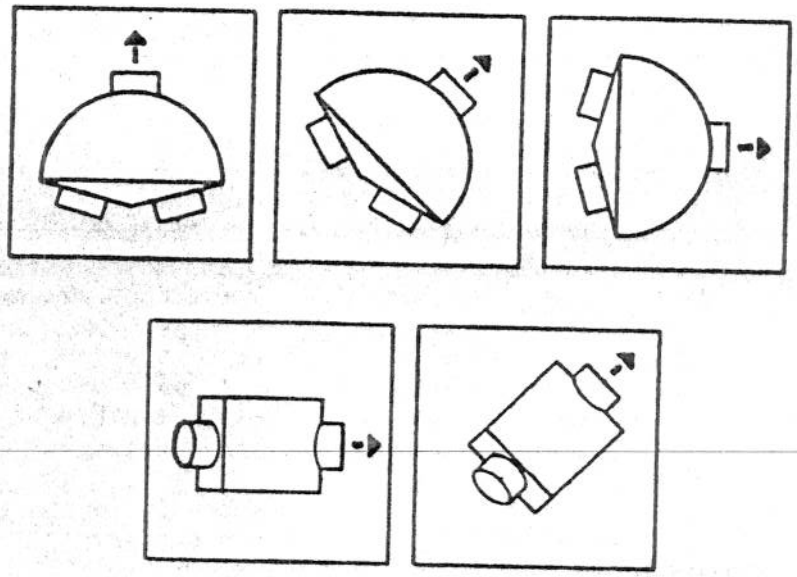


(2) The T3 Series, designed for three pumps connected, with two operating and one standby:



NOTE: While normal operation for the T2 and T3 Series Tech-Taylor Valves is as stated above, all connected pumps may be operated simultaneously, if desired. There will be an increase in head loss in proportion to the square of the flow increase. For nominal head loss data see Page 7.

(4) The ball has a relatively low specific gravity and being immersed in a liquid or slurry, the effect of gravity is negligible. Therefore, the Tech-Taylor Valve will operate in virtually any attitude as shown:



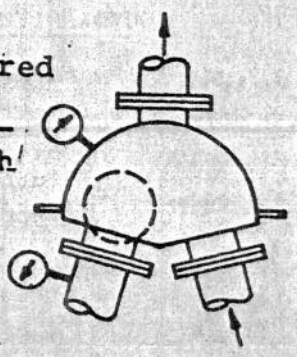
Exceptions

1. On very coarse slurries like cyclone feed in primary grinding, the vertically-up position (upper left sketch) ensures that solids can not settle in troublesome locations.

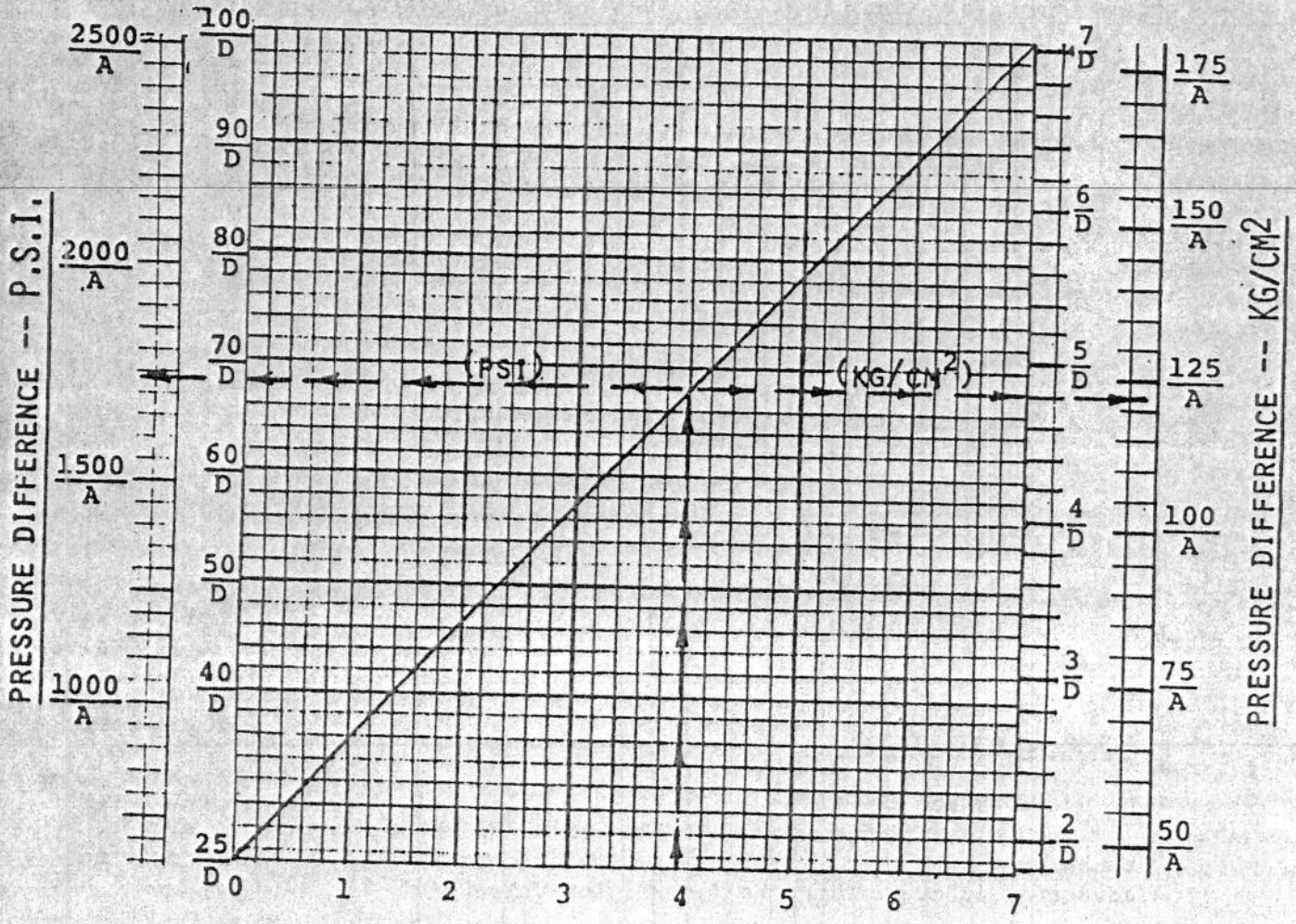
2. On aerated slurries operation is more reliable in the vertically-up position; for 6" and smaller Tech-Taylors, at least 25 PSI downstream pressure is advisable.

CONDITIONS FOR A TIGHT SEAL ON COARSE SLURRY

Hydrostatic pressure holds the ball on its seat. Unless there is ALWAYS more pressure above the ball than below it, it will not remain seated. The required PRESSURE DIFFERENCE between the space above the ball and that in the pipe immediately below it (as illustrated at right) depends on the size of particle which might be caught under the ball when it seats.



Enter the graph below at the bottom (in the example, assuming a 4 mm. maximum particle). You can then read the required PRESSURE DIFFERENCE in either P.S.I. or kg/cm^2 by using left or right scales. You must know the size of Tech-Taylor Valve, in either ins. or mm.



D = TECH-TAYLOR INLET DIAMETER IN INCHES

A = TECH-TAYLOR INLET DIAMETER IN MILLIMETERS

The maximum pressure is determined by the structural design of the Valve. Models are available for 75, 150, 300 and 600 PSI operating pressure. The maximum operating pressure is stated on the nameplate.

B. Body Lining

1. Natural rubber is used under these conditions:

   (a) Temperature less than 160°F;

   (b) No petroleum hydrocarbons present;

   (c) Normal abrasive solids present, except coarse coal.

Many applications fulfill the above conditions including hydrocyclone feed, thickener underflow, wet scrubber effluent systems and transfer pumps in any location critical enough to require a standby unit.

2. Other elastomers, such as Neoprene, Hypalon, EPDM, Urethane etc., can be furnished when operating conditions require them.

INSTALLATION

Tech-Taylor Valves are shipped completely assembled. The valve body is lined with elastomer, and on flanged connections up to 150 PSI the lining material is continued around on the face of the flange to form an integral gasket. Be careful not to damage the elastomer on the flange.

After installation and before making the final connections, check the interior of the valve and remove any foreign materials such as welding rod stubs or tools which could damage the interior lining and prevent the ball from seating properly.

Types of Connections

The following are types frequently supplied;

(a) American standard 150 PSI flange;
(b) British Standard Flange Table "D";
(c) Japanese Industrial Standard Flanges;
(d) Grooved connections for Victaulic or similar couplings;
(e) Plain end connections for clamp-type couplings;
(f) Shouldered end connections for Victaulic couplings.

(3) Where drains are used on the pump or at a low point in the line:

Valves 2 & 4 closed

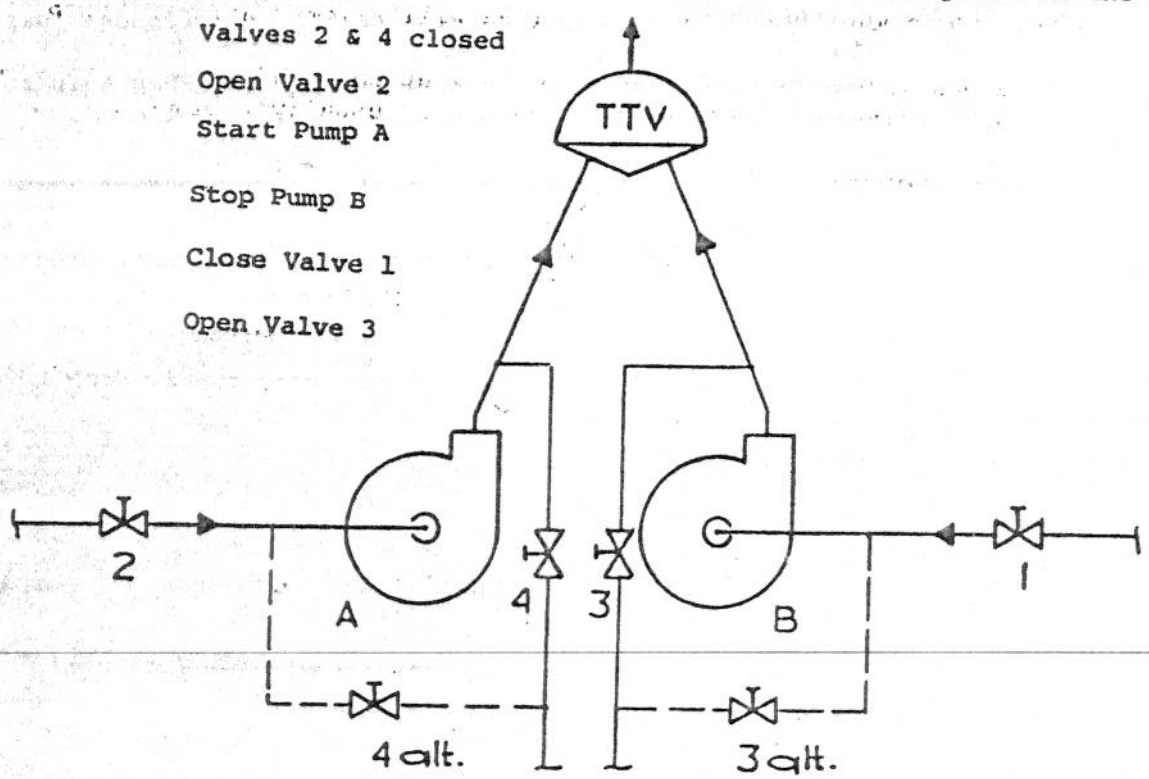
Open Valve 2

Start Pump A

Stop Pump B

Close Valve 1

Open Valve 3



(4) Water lines may be desired to flush the solids from the pump and the inactive pipeline:

Valves 2, 3, 4, 5 & 6 closed

Open Valve 2

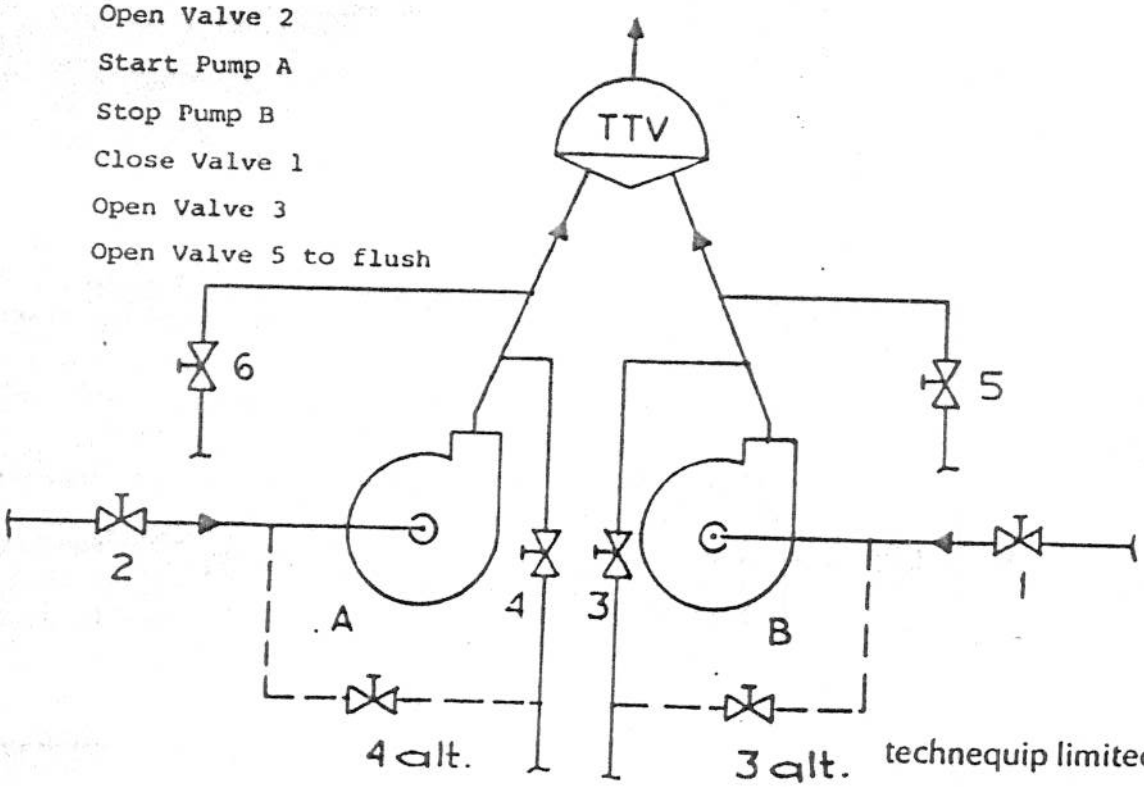
Start Pump A

Stop Pump B

Close Valve 1

Open Valve 3

Open Valve 5 to flush



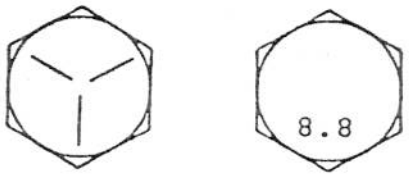
VERY IMPORTANT

Tech-Taylor Valves, in sizes 10" and larger, must be assembled with

HIGH-STRENGTH BOLTS

Be sure to use the following specifications:

(a) 1/2" U.N.C. Bolts Grade 5, or
(b) 12 mm Metric Bolts Grade 8.8



(a) (b)

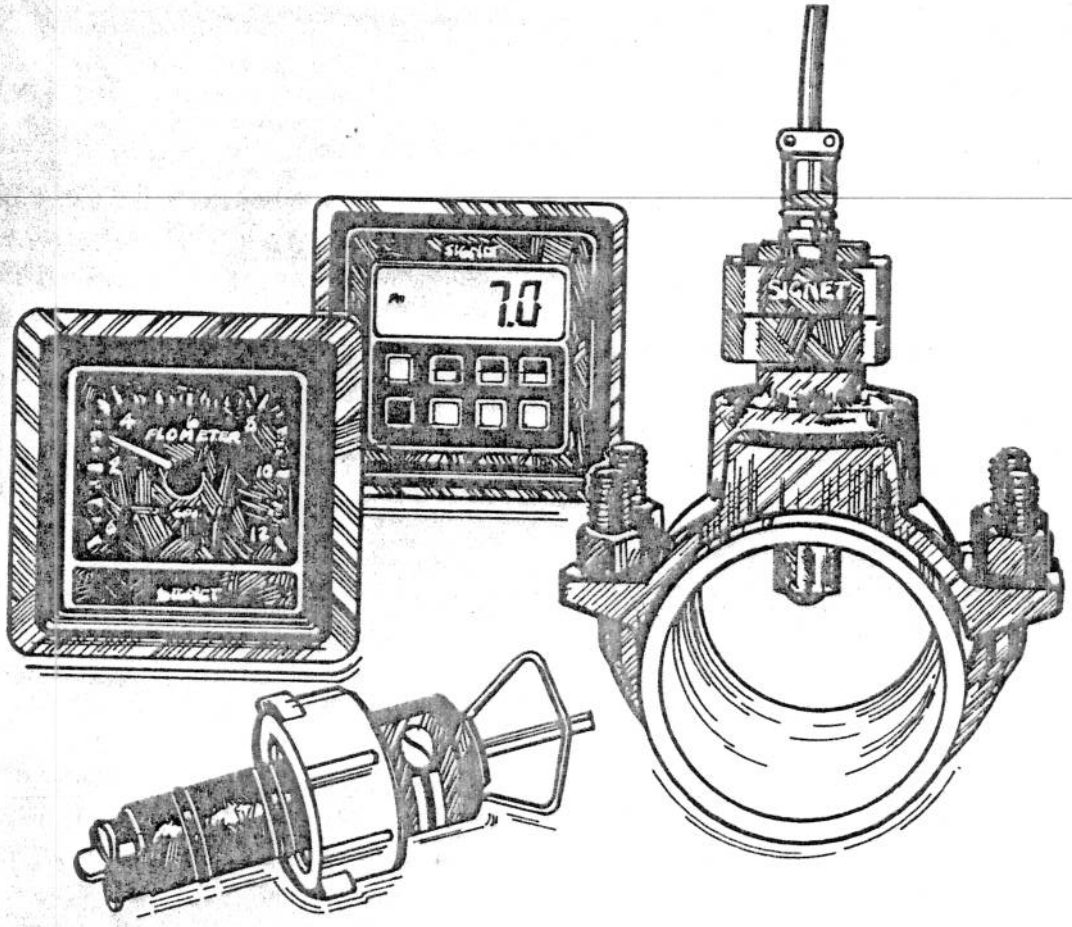
You may find that we have used these bolts on smaller sizes but they are not essential.

PAUL

SIGNET SCIENTIFIC

MK 575/575R
ACCUM-U-FLO

INSTRUCTION MANUAL



Counter: TTL Compatible	source, 5 milliamps sink, 5 milliamps
Frequency	synchronous with accumulator
Pulsewidth	100 milliseconds ± 20%
Power Requirements	12 Vdc, 315 milliamps. Not damaged by voltage as high as 25 Vdc. Contains reverse voltage protection.
Ambient Operating Temperature	0°C to 60°C (32°F to 140°F)
Weight	1.8 lbs. (0.82 kilograms)
Power Supply Converter:	
Input	117 Vac nominal at 0.19 amp max.
Output	12 Vdc at 1.2 amps

2.0 INSTALLATION

2.1 UNPACKING AND INSPECTION

When unpacking your MK 575 package, be sure you have received everything (see Figure 1). Carefully check each item for any damage incurred during shipment. If damage has occurred, promptly notify your dealer and the shipping carrier.

The following items are included in your MK 575 package:

1. MK 575 Accum-u-flo indicator
2. M15129 Mounting Strap
3. P30075 Power Converter
4. Instruction Manual and Warranty Card

Please fill out and return the Warranty Card as soon as possible.

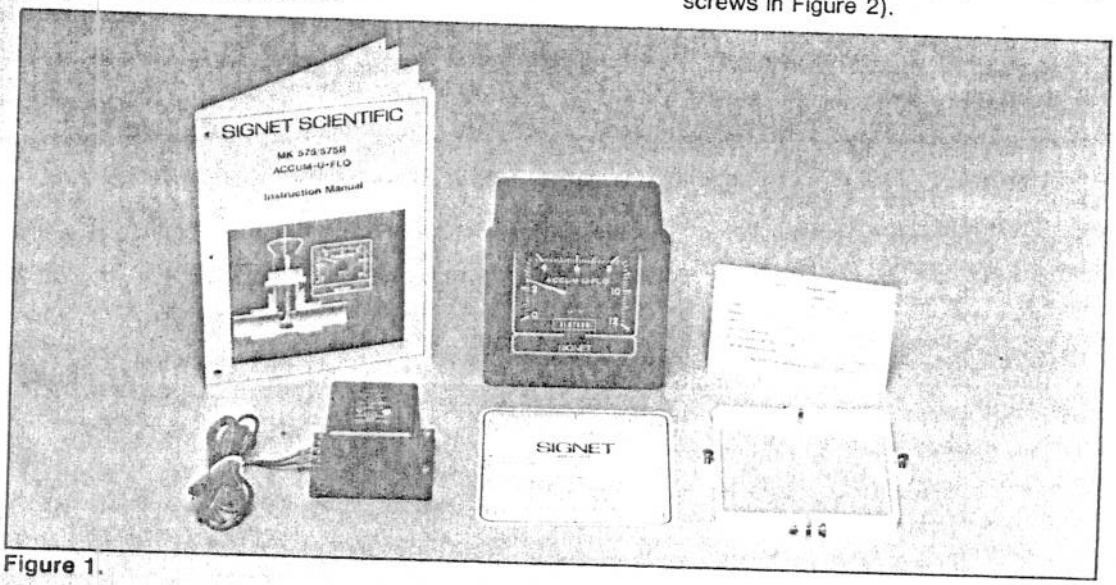


Figure 1.

2.2 INDICATOR INSTALLATION

The MK 575 may be installed as far as 200 feet from the Flosensor. If the indicator location is beyond the standard 25-foot sensor cable length, an extension cable must be used. Additional distances, or systems incorporating several instruments, may require the use of a Signet MK 514 Signal Conditioner. The MK 575 may be used in combination with all Signet indicating and controlling instruments.

The MK 575 may be mounted in an instrument panel having a 5.1 inch square hole with sufficient clearance around it to accommodate the 5-½ inch front bezel of the indicator. There must be a minimum 4-¾ inch rear clearance.

Installation

1. Loosen the clamp ring (see two "A" screws in Figure 2).

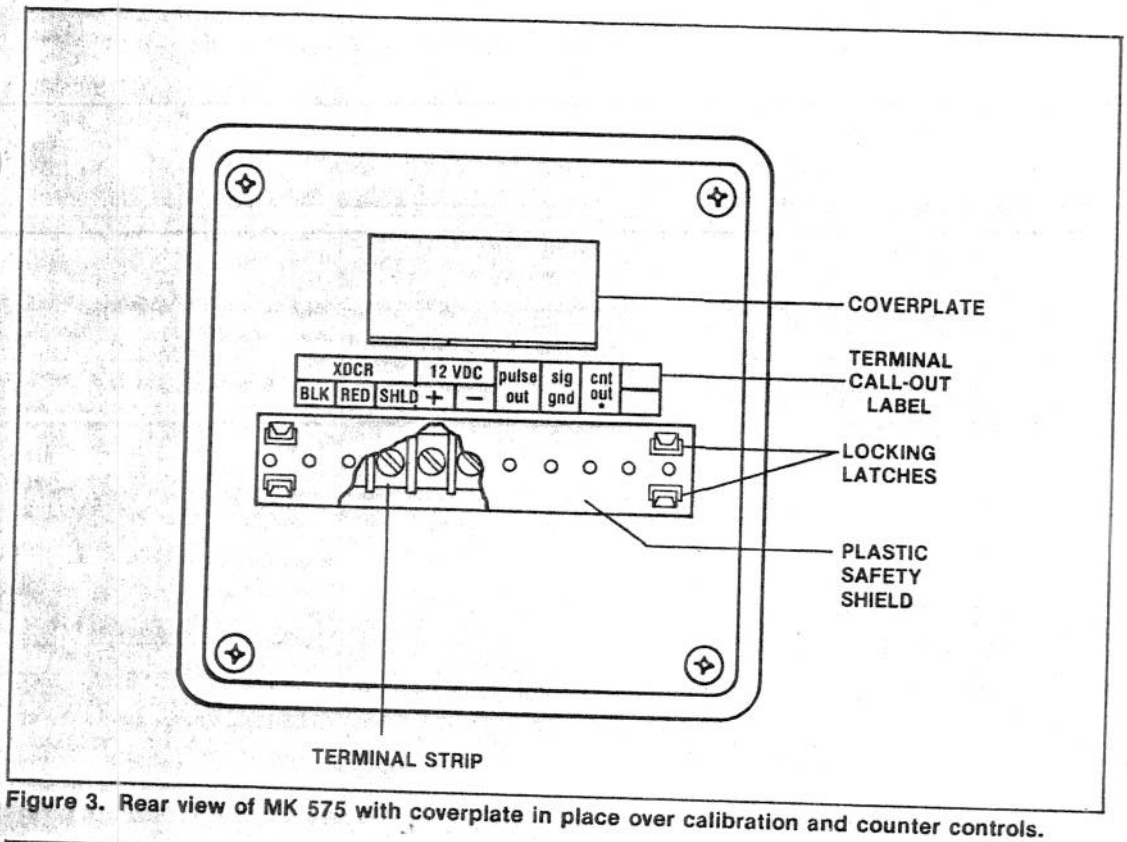


Figure 3. Rear view of MK 575 with coverplate in place over calibration and counter controls.

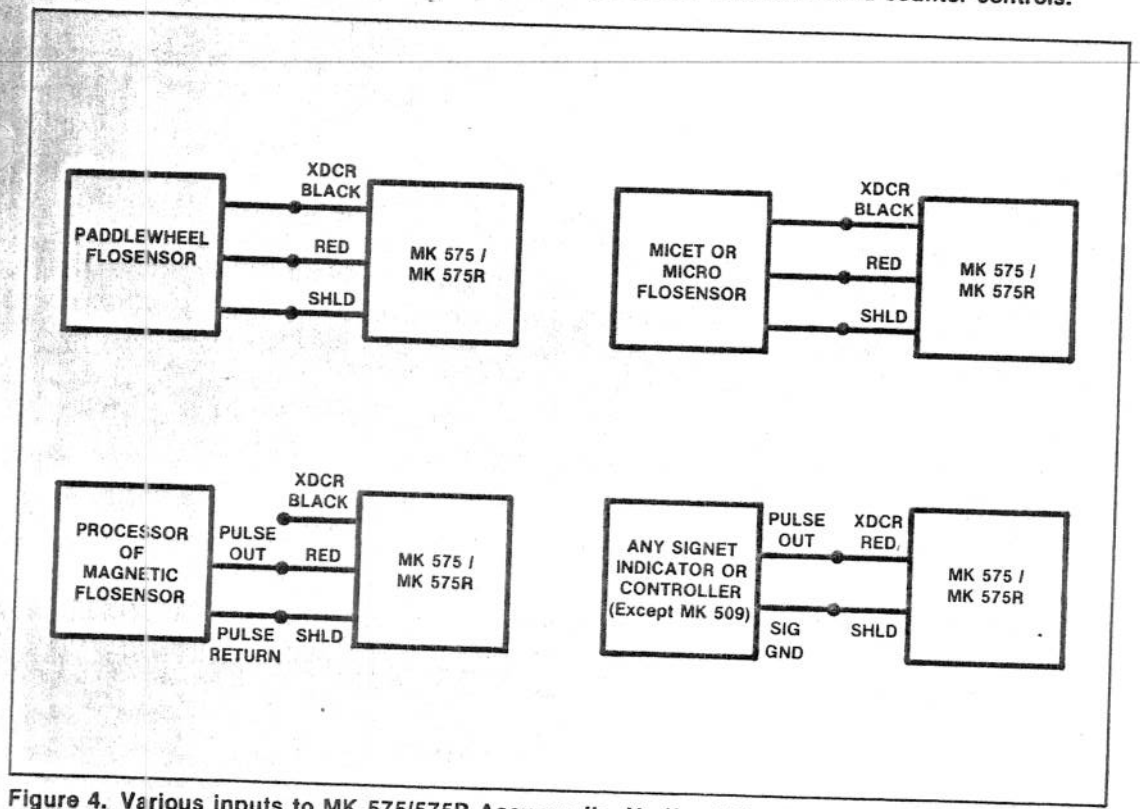
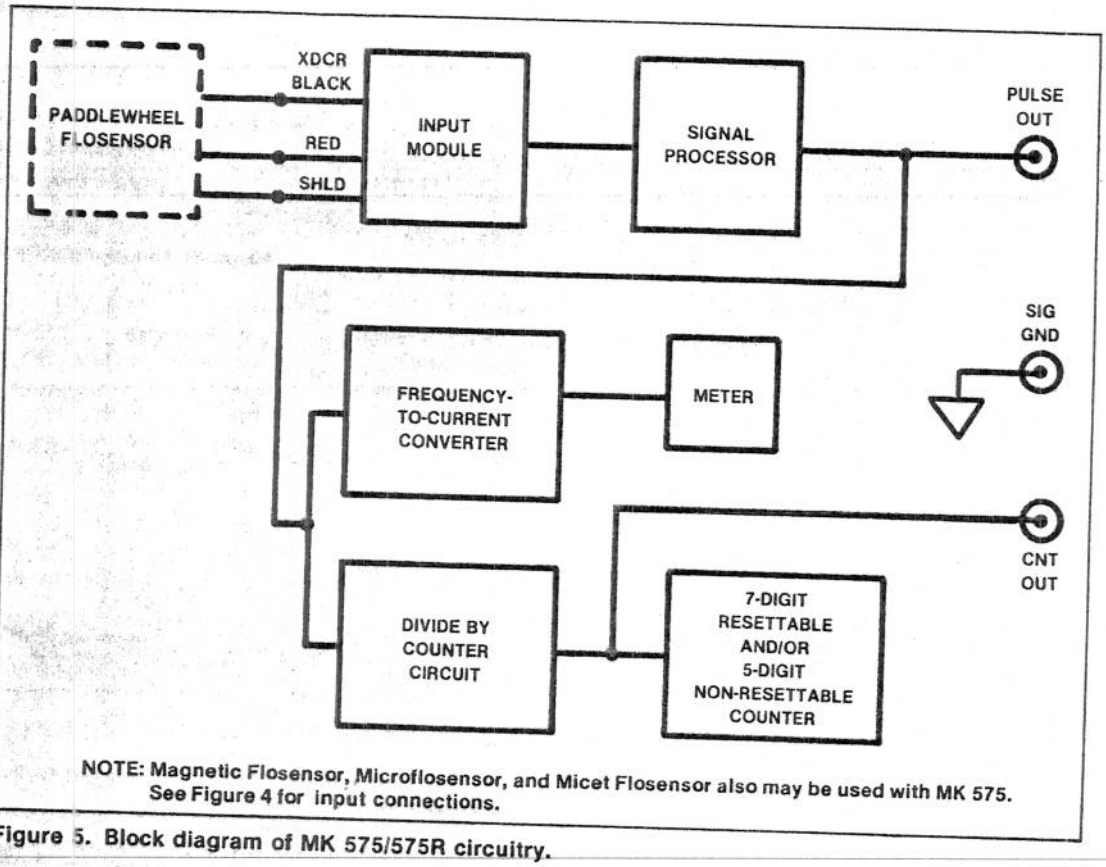


Figure 4. Various inputs to MK 575/575R Accum-u-flo. Verify all flosensor output connections by referring to the appropriate Signet instruction manual.



NOTE: Magnetic Flosensor, Microflosensor, and Micet Flosensor also may be used with MK 575. See Figure 4 for input connections.

Figure 5. Block diagram of MK 575/575R circuitry.

4.0 CALIBRATION

Your MK 575 Accum-u-flo indicator was factory calibrated to a water standard for your particular pipe fitting and Signet Flosensor type (indicated on the rear of the MK 575 case). If used with this pipe fitting, recalibration should not be necessary unless the viscosity of the fluid used differs substantially from water. This indicator must be used with the Signet Flosensor transducer type specified. Use of another transducer type may require a different input module or recalibration.

The flow measurement and accumulator sections of the MK 575 are independent of one another. Each section is calibrated separately.

4.1 FLOMETER CALIBRATION

Adjusting the MK 575 meter movement for different units of measurement or recalibration can be accomplished using the Signet MK 561 Flow Test Indicator (see 6.2 Optional Accessories). The complete procedure for using this Tester is supplied in its manual.

NOTE:
FOR COMPLETE CALIBRATION DATA AND PROCEDURES, REFER TO SIGNET'S CALIBRATION MANUAL. CONSULT THE FACTORY FOR DETAILS.

4.2 COUNTER RECALIBRATION

Recalibrating the counter circuitry can be accomplished in the field simply by resetting the decade rotary switches on the rear of the MK 575 case (see Figure 6) using the appropriate K factor (pulses/gallon or pulses/liter) from Table 2 in the following equation:

$(K \times I) - 1 =$ Setting of Switches

where I is the number of increments you want counted.

For example, if you want the counter to count in 10-liter increments, and your pipe size is 2-½"-80, the K pulses/liter value is 6.123. Therefore,

$(6.123 \times 10) - 1 = 60.23$

Rounding off the answer to the nearest integer gives 60. Thus switches would be set to 0060.

Table 2

NOMINAL DIAMETER	PIPE SIZE/ SCHEDULE	ACTUAL I.D.	K* PULSES/ GALLONS	K* PULSES/ LITERS
½"	80	0.526"	451.2	119.2
¾"	80	0.722"	254.9	67.34
1"	80	0.935"	183.5	48.49
1-¼"	80	1.256"	88.27	23.32
1-½"	80	1.476"	59.93	15.83
2"	80	1.913"	33.53	8.861
2-½"	80	2.291"	23.17	6.123
3"	80	2.864"	14.62	3.865
4"	80	3.789"	8.171	2.159

*Illustrative values only.

5.0 MAINTENANCE AND TROUBLESHOOTING

Your MK 575 was designed to require no routine maintenance. After correct installation has been verified, malfunctions will generally be traceable to operating conditions at the flosensor transducer (for example, sediment or particulate matter clogging the free movement of the rotor of a Paddlewheel Flosensor), not within the transducer or indicator. Transducer-oriented problems are explained in detail in the appropriate Signet Flosensor instruction manual. Please refer to it.

Non-transducer problems may be traced to the power supply. Measure the dc voltage from the power source to be sure it is within specifications (see 1.2 Specifications).

Malfunctions isolated to the Flosensor or MK 575 can be checked only by qualified technicians working in a well-instrumented technical laboratory. Attempting repairs inside the Flosensor or MK 575 can void your limited warranty (see 6.3 Warranty).

6.0 APPENDICES

6.1 PARTS LIST

Case (MK 575) ..... MK 509.49
Case (MK 575R) ..... MK 575.49
Glass (MK 575) ..... MK 509.47
Glass (MK 575R) ..... MK 575.47
Meter M00108
Mounting Strap Kit M15129
Reset Button Kit (MK 575R) ... MK 75.95
Power Converter P30075

6.2 OPTIONAL ACCESSORIES

Mounting Bracket ..... MK 500.60
Conduit Mounting Kit ..... MK 500.78
Liquid Tight Kit: one ½" NPT Hub and two ¾" NPT hubs for waterproof cable connections to 500 Series Flometers with rear enclosures ..... MK 500.75
Flow Test Indicator ..... MK 561
Cable Adapter Kit: Flosensor-to-Tester and Tester-to-Flometer adapter cables for the MK 561 ..... MK 561.60
Cable Adapter Kit: Series 300 Sensor to MK 575, adapter cables ..... MK 500.61-1

6.3 WARRANTY

SIGNET SCIENTIFIC COMPANY LIMITED TWO-YEAR WARRANTY

Signet Scientific Company warrants its instruments to be free from defects in material and workmanship under normal use for a period of two years from date of purchase by the initial

Pamc

SIGNET SCIENTIFIC

MK 515/415 PADDLEWHEEL FLOSENSORS

INSTRUCTION MANUAL

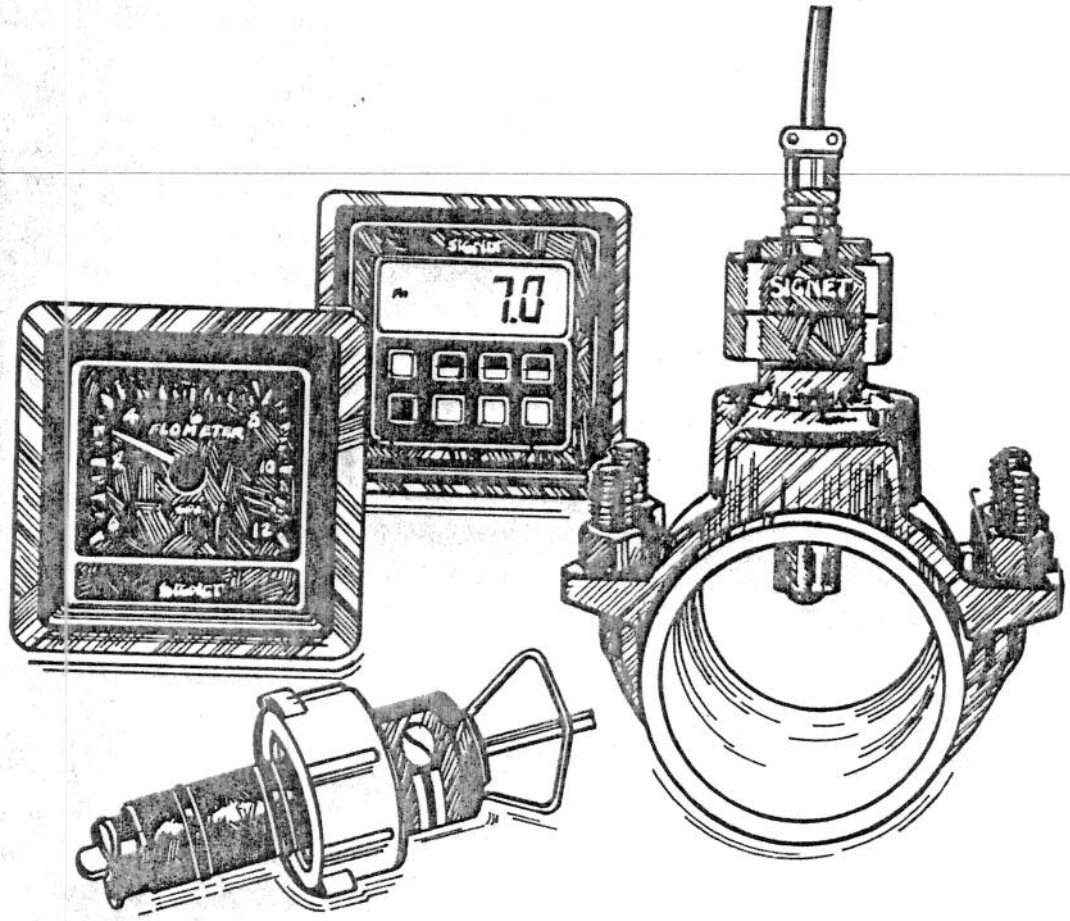


TABLE 1

FLOSENSOR	PART NO.	PIPE SIZE
Standard Polypropylene	MK 515-P0	½" to 4"
Extended Polypropylene	MK 515-P1	5" to 8"
Double Extended Polypropylene	MK 515-P2	10" & up
Standard Polypropylene (for MK 319)	MK 515-P3	½" to 4"
Extended Polypropylene (for MK 319)	MK 515-P4	5" to 8"
Double Extended Polypropylene (for MK 319)	MK 515-P5	10" & up
Standard PVDF	MK 515-V0	½" to 4"
Extended PVDF	MK 515-V1	5" to 8"
Double Extended PVDF	MK 515-V2	10" & up
High-Clearance Polypropylene	MK 415-P0	2" to 12"
High-Clearance PVDF	MK 415-V0	2" to 12"

TABLE 2

MK 515/415 FLOSENSOR MATERIALS AVAILABLE

Model No.	MK 515-0, -1, -2		MK 515-3, -4, -5		MK 415	
Sensor Designation	P	V	P	V	P	V
Part						
Paddlewheel Material	V	V	V	V	V	V
Shaft Material	Ti	H	Ti	H	Ti	H
Main Housing Material	P	V	P	V	P	V
Extension Housing Material (see Note 3)	CP	CP	CP	N/A	N/A	N/A
O-Ring Material	— — — Viton — — —					

Note:

1) P = Polypropylene
   V = PVDF (Polyvinylidene Fluoride)
   CP = CPVC (Chlorinated Polyvinyl Chloride)
   Ti = Titanium
   H = Hastelloy

2) Model number and sensor designation must be specified when ordering.

3) -0 version includes main housing material only

2.0 INSTALLATION

2.1 UNPACKING AND INSPECTION

When unpacking your MK 515 or 415 package, be sure you have received everything (see Figure 3). Carefully check each item for any damage incurred during shipment. If damage has occurred, promptly notify your dealer and the shipping carrier.

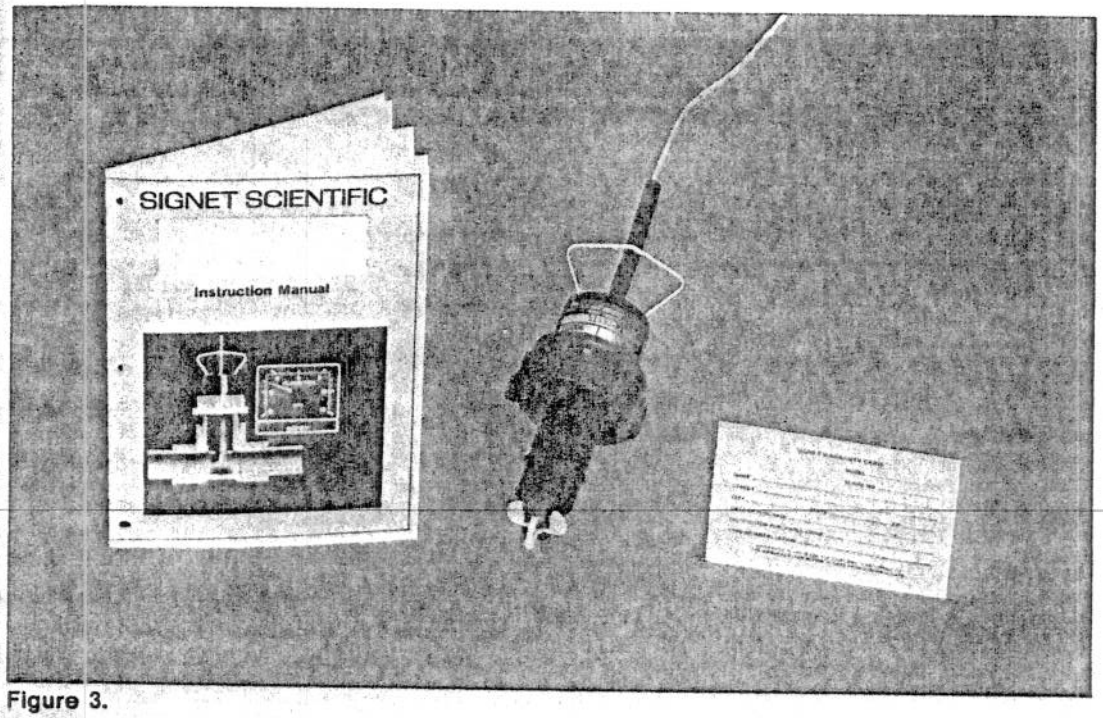


Figure 3.

The following items are included in your flosensor package:

1. MK 515 or MK 415 Flosensor
2. Instruction manual and warranty card

Please fill out and return the warranty card as soon as possible.

2.2 INSTALLATION FITTINGS

Signet Flosensors are designed to measure flow rate in full pipes. To accomplish this, a Signet Pipe Fitting must be installed in the pipe to receive the Flosensor. A wide variety of fittings are available from your dealer for virtually any type and size of pipe.

Side mounting of the fitting and flosensor is most desirable for horizontal pipe runs (see Figure 4A). However, if no suspended particles are present in the liquid, a bottom mounting is best (see Figure 4B). The flosensor may still function adequately in a top or vertically mounted position (see Figure 4B), but there must not be any suspended particles in the liquid and the pipe must be absolutely full.

Vertical mounting of the flosensor runs the risk of having either air bubbles or sediment interfere with the continuous action of the paddlewheel. For vertical pipe runs, the location of any flow disturbance will dictate the best flosensor installation location.

The installation location of the Signet Pipe Fitting and Flosensor must be in a free-flowing straight-run section of the pipe. This section must be at least 10 diameters down-stream of any minor flow changes. There must be at least 5 diameters of free-flowing straight-runs beyond the fitting (see Figure 5). Major up or down-stream obstructions will require longer straight runs. A partially open butterfly valve, for example, may require 50 diameters of free flow for adequate liquid stability at the flosensor.

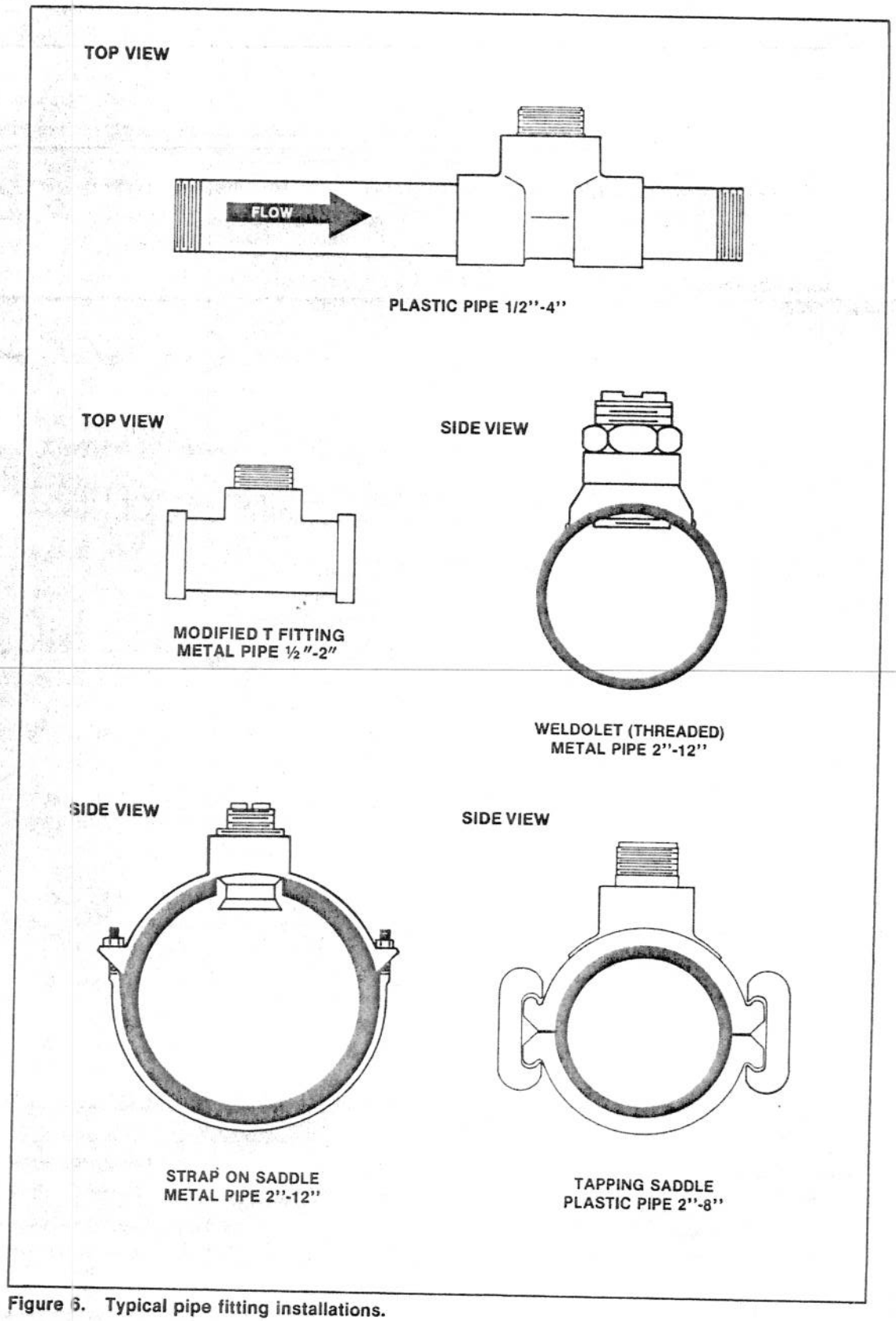


Figure 6. Typical pipe fitting installations.

The MK 515.89 Kit consists of two separate adapters. The right angle adapter is designed for insertion in the flosensor, while a straight adapter is included for use with Signet controllers and/or the MK 500.78 waterproof housing. Both adapters are designed for use with ½ inch conduit knockouts. The conduit end accepts 3/8 inch flex conduit.

For correct flexible conduiting installation, first remove the cap-plug as shown in Figure 8. Thread the sensor cable through the right angle adapter, and carefully screw it into the adapter cap. (The rubber boot can be discarded when the conduit adapter kit is used).

Once the right angle adapter is screwed into the cap, attach the section of flexible conduit by threading it into the adapter. Complete the installation by connecting the straight adapter to the conduit. This adapter can then be attached to the appropriate Signet junction box.

NOTE: Special conduiting material can be obtained from your local electrical supplier.

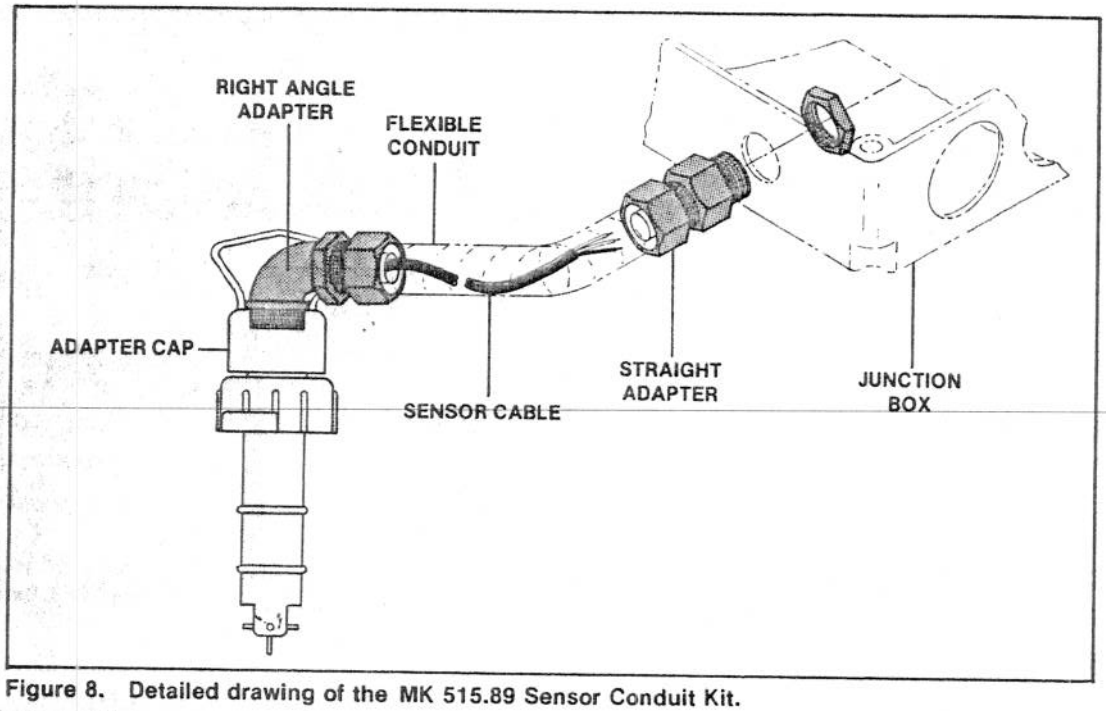


Figure 8. Detailed drawing of the MK 515.89 Sensor Conduit Kit.

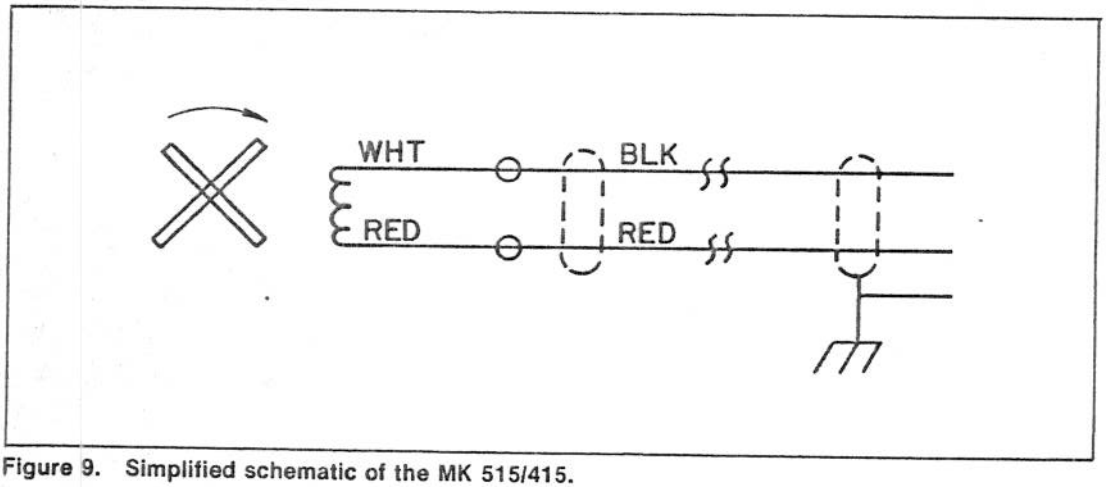


Figure 9. Simplified schematic of the MK 515/415.

MK 415

Spare Rotor Kit: PVDF paddlewheel, titanium shaft, Viton O-rings (2) ..... MK 415.31

6.2 OPTIONAL ACCESSORIES/ REPLACEMENT PARTS

Tantalum Rotor Pin ..... MK 15.46-3
Stainless Steel Rotor Pin ..... MK 15.46-4
EPR O-Ring PP-1224-0021
Polypropylene Plug ..... MK 315.36-1
PVDF Plug ..... MK 315.36-2
Kalrez O-rings PP-1228-0021

MK 415

Polypropylene Plug ..... MK 415.36
PVDF Plug ..... MK 415.36V

Miscellaneous

Conduit Sensor Kit: one straight and one right-angle ½" NPT adapter for 3/8" conuit ..... MK 515.89
Wet Tap: interface between 515-3, -4, and -5 only and pipe fitting to allow flosensor removal while under operating pressure MK 319
Flow Test Indicator ..... MK 561
Cable Adapter Kit: Flosensor-to-Tester and Tester-to-Flometer adapter cables for the MK 561 MK 561.60
Cable Adapter Kit: MK 515/415 Flosensor to Series 300 Indicator/Controller, adapter cables .. MK 500.61-2

6.3 WARRANTY

SIGNET SCIENTIFIC COMPANY LIMITED TWO-YEAR WARRANTY

Signet Scientific Company warrants its instruments to be free from defects in material and workmanship under normal use for a period of two years from date of purchase by the initial owner, or three years from date of manufacture, whichever comes first, as described in the following paragraphs.

This warranty does not cover defects caused by abuse or electrical damage. Signet will not cover under warranty any instruments damaged during shipment to the factory, less case, or improperly packed. Repair attempts by anyone other than authorized service personnel will void the warranty. Proof of date of purchase will be required before warranty repairs can begin.

Parts which prove to be defective in the first year will be repaired or replaced free of charge including labor, shipped F.O.B. our factory or a designated service center (address furnished upon request).

Only non-moving parts, such as electrical components, which prove defective during the second year are warranted. Meter movements will not be covered. All units qualifying for warranty service after one year are subject to a maximum service charge of $15.00 for replacement of non-moving parts.

Items returned for warranty repair must be shipped prepaid and insured. Warranty claims are processed on the condition that prompt notification of a defect is given to Signet within the warranty period. Signet shall have the sole right to determine whether in fact a warranty situation exists.

The Signet warranty does not cover travel time, mileage expenses, removal, reinstallation, or calibration.

Signet is continually making design changes and improvements that adapt to the original circuit configuration. These will be incorporated as required in older units on a minimal-charge basis while under warranty.

CONSEQUENTIAL DAMAGES

Signet Scientific Company shall not be liable for special consequential damages of any nature with respect to any merchandise or service sold, rendered, or delivered.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

7.0 MANUAL CHANGE INFORMATION

Signet continually strives to keep up with the latest electronic and design developments by adding circuit, component, and design improvements to its instruments as soon as they are developed and tested. Sometimes, due to printing and shipping requirements, we cannot immediately get these changes into printed manuals. Therefore, your manual may contain new change information on the following pages. A single change may affect several sections. Be sure to make all changes within the appropriate sections of this manual.