



FLOTECH ENTERPRISES LTD

Problems with Wells and Pumps

- Improper pump selection
- Incorrect installation methods
- Poor (or no) maintenance



Pre-installation Preparation

- New wells:
 - Location of pump
 - Determine Depth of Pump in Well
 - Location of Water Tank and Electrical Controls

Pre-installation Preparation

- Replacing Pump in Existing Well
 - Turn off Power and Remove Well Seal
 - Remove Well Seal
 - Remove Pump CAREFULLY



Pump Selection and Inspection

- Select Right Pump for YOUR intended use
 - Desired Gallons per minute?
 - Pressure Required?
 - Depth to Pumping level?
- Inspect Pump
 - Ensure no dents or cracks are present
 - Examine cables

Electrical Preparation

- Motor Voltage
 - 115V or 230V
 - Motor Control box MUST have same voltage and Horse power as Motor



Electrical Preparation

- Select Proper Cable Size
 - Undersized cable results in too low a voltage to motor and ultimately motor failure

Allowable Ampacities for Single Copper Conductors in Free Air

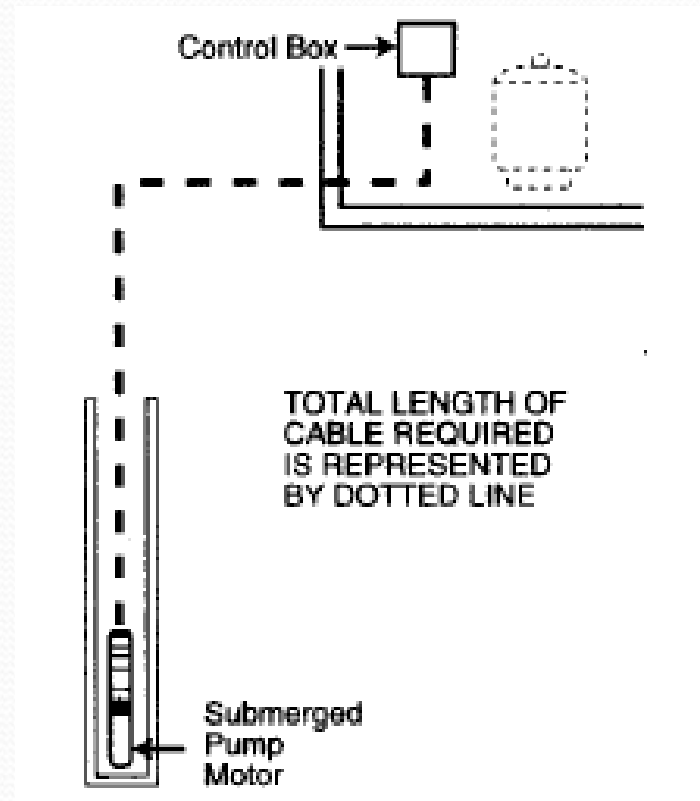
	60 ° C	75 ° C	85-90 ° C
Size AWG kcmil	Type TW	Types RW75, TW75	Types R90, RW90, T90 NYLON <hr/> Single-Conductor Mineral Insulated Cables
14	20	20	20
12	25	25	25
10	40	40	40
8	55	65	70
6	80	95	100
4	105	125	135

Allowable Ampacities for Not More Than 3 Copper Conductors in raceway or Cable

	60 ° C	75 ° C	85-90 ° C
Size AWG kcmil	Type TW	Types RW ₇₅ , TW ₇₅	Types R ₉₀ , R _{w90} , T ₉₀ NYLON ----- Paper ----- Mineral Insulated Cable
14	15	15	15
12	20	20	20
10	30	30	30
8	40	45	45
6	55	65	65
4	70	85	85

Electrical Preparation

- Selecting Proper Cable length
 - Length to Control Box,
NOT top of Well

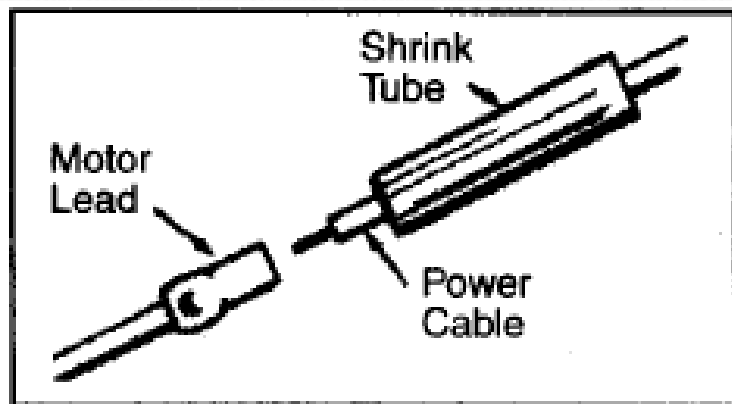


Maximum Cable Length In Feet

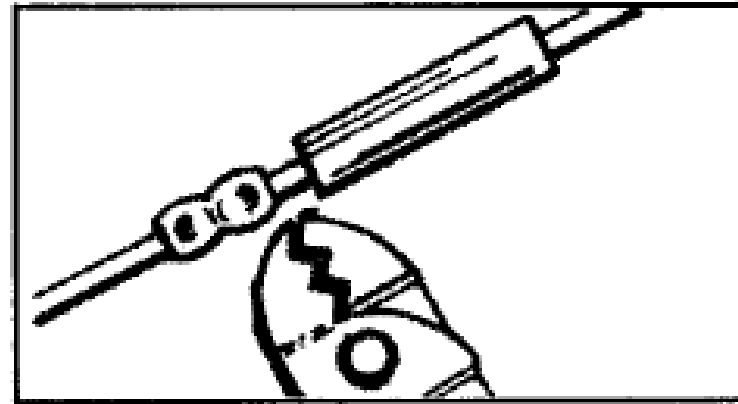
HP	Wire	Volts	Phase	Max. Amps	Maximum Cable Length Using AWG Cable Size							
					#14	#12	#10	#8	#6	#4	#2	#0
1/2	2	115	1	12.0	100	160	250	390	620	960	1460	2160
	2	230	1	6.0	400	650	1020	1610	2510	3880	5880	8720
	3	115	1	12.0	100	160	250	390	620	960	1460	2160
	3	230	1	6.0	400	650	1020	1610	2510	3880	5880	8720
3/4	2	230	1	8.0	300	480	760	1200	1870	2890	4370	6470
	3	230	1	8.0	300	480	760	1200	1870	2890	4370	6470
1	2	230	1	9.8	250	400	630	990	1540	2380	3610	5360
	3	230	1	9.8	250	400	630	990	1540	2380	3610	5360
1-1/2	2	230	1	13.1	190	310	480	770	1200	1870	2850	4280
	3	230	1	11.5	190	310	480	770	1200	1870	2850	4280
2	3	230	1	13.2	150	250	390	620	970	1530	2360	3620

Electrical Preparation

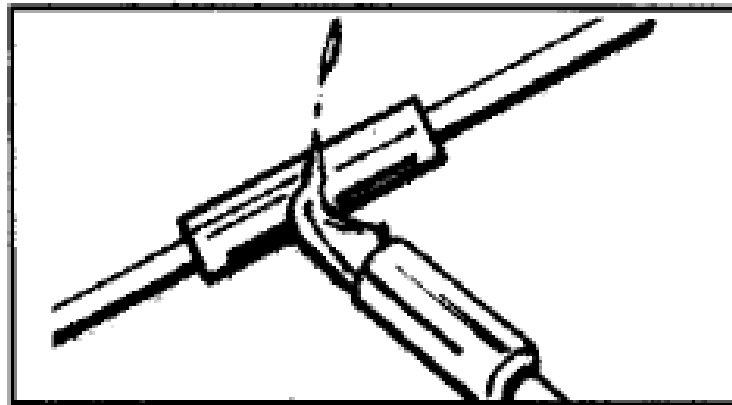
- Splicing Power Cables to Pump
 - After making sure power cables are proper AWG size and specified length, splice them to the pump cable using PROPER technique



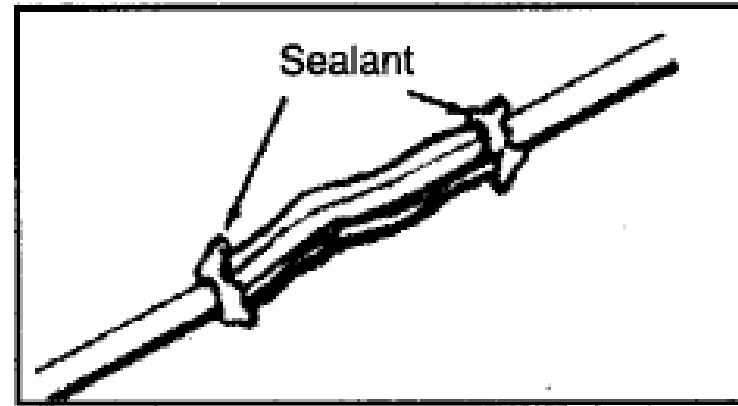
- a** Slip shrink tube over end of each power cable.



- b** Match pump cables to power cables and crimp connectors on each pair.



- c** Slide shrink tubes over center of crimped connectors and apply heat (from propane torch) from center to both ends of shrink tubes.



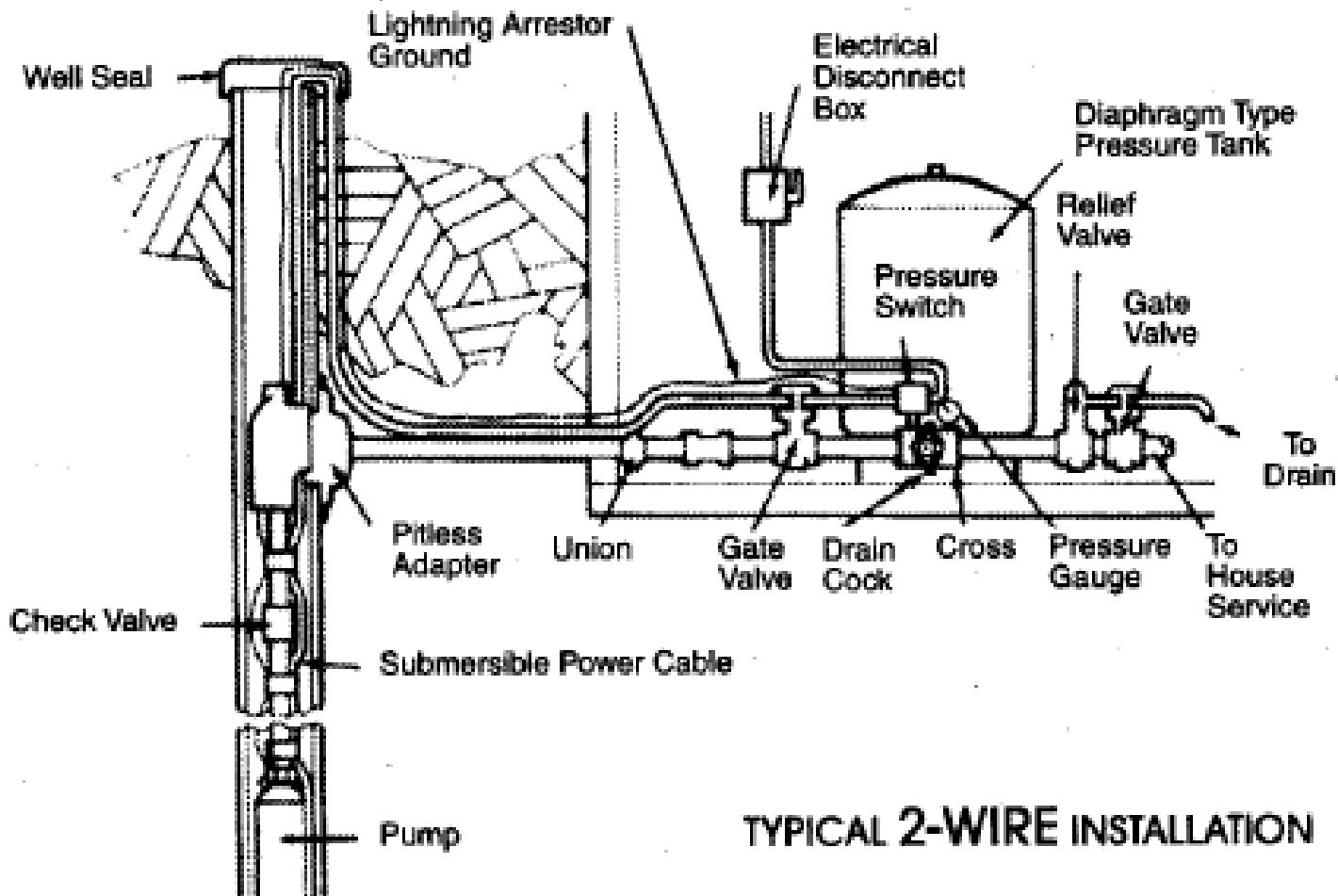
- d** Splice is complete when sealant flows from ends of shrink tubes.

NOTE: Splice kits are not included with pumps.

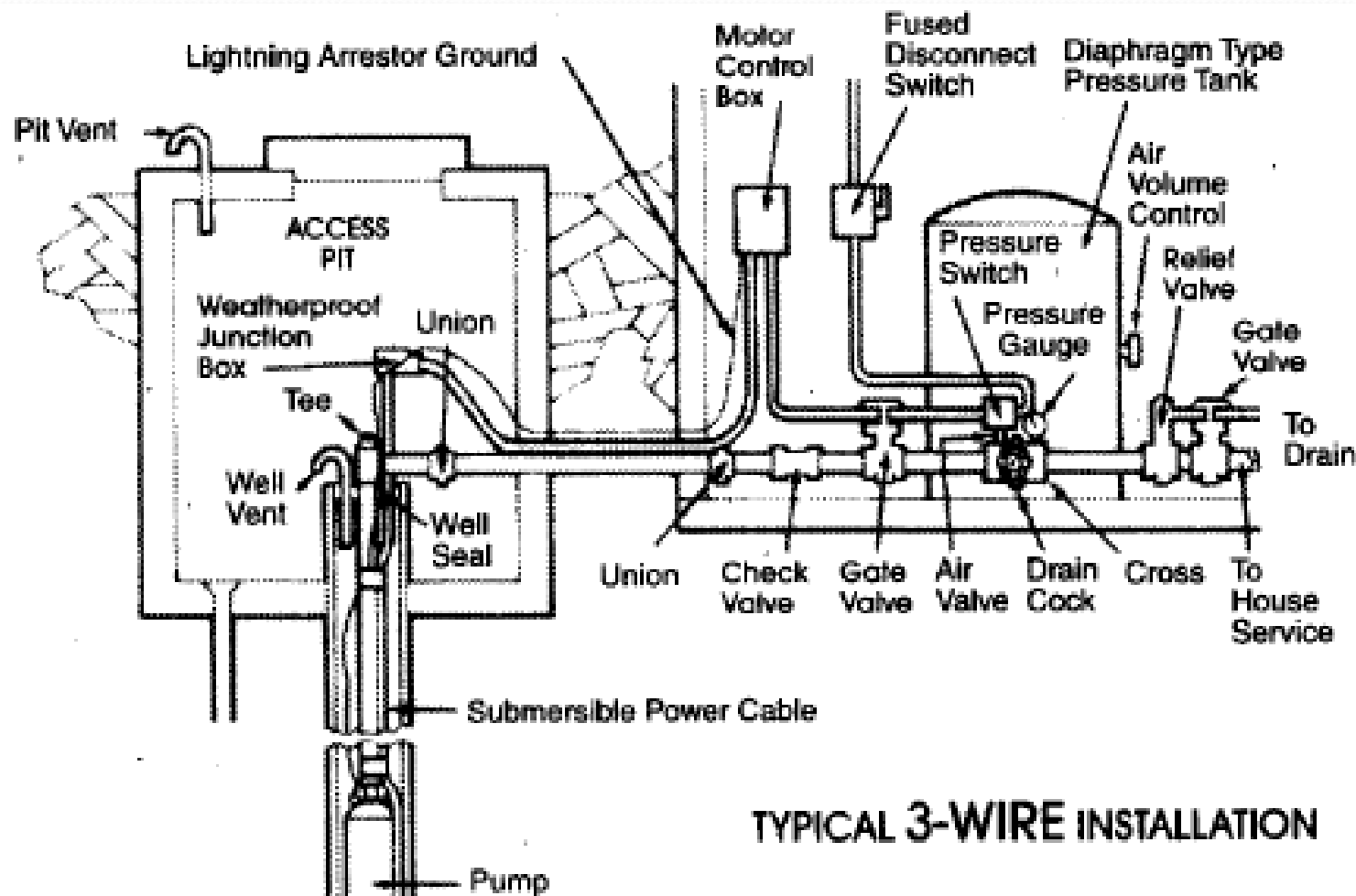
Electrical Preparation

- Motor Grounding
 - Grounding wire must be the same size as the power conducting wire
 - Connect the top end of the ground wire to the main electrical system ground on the control box on a 3-wire system or the pressure switch on a 2-wire system, if they are grounded to the main electrical system ground.
 - Ground to Steel Casing.

Installation of Pump in Well



Installation of Pump in Well



Installation of Pump in Well

- Prior to Lowering Pump
 - Smooth out rough or sharp areas on top lip of well seal
 - Attach Safety Cable to aid in lowering of pump
 - Install Torque Arrestor
 - Attach a Brass or Steel Adapter to top end of pump
 - Firmly Secure Power Cables and Safety Lifting Cable to Pipe

Installation of Pump in Well

- Lowering the Pump
 - Align Pump Carefully. Do NOT rub well casing
 - Depth of Pump Setting.
 - 10 ft below max. draw down of water level
 - Min 10-15 ft from bottom of well
 - Check valve every 200 ft
 - Pipe Fitting to Support Pump
 - Frost-Proof Pitless Installation

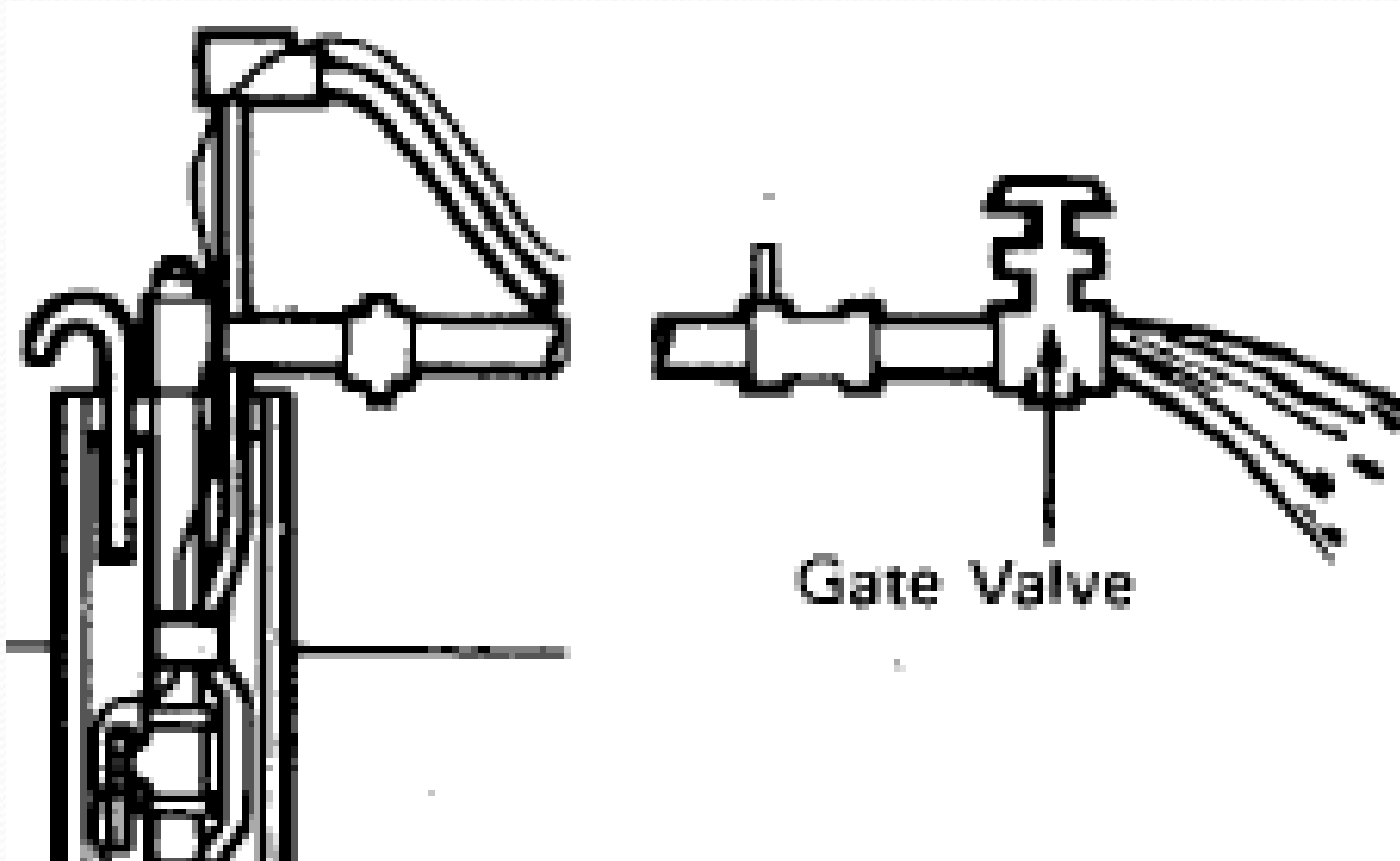
Above Ground Electrical Connection

- Connect Pressure Switch and Power Cables
- Fuses for Disconnect Switch
- Lightning Arrestor

Above Ground Pipe and Tank Connections

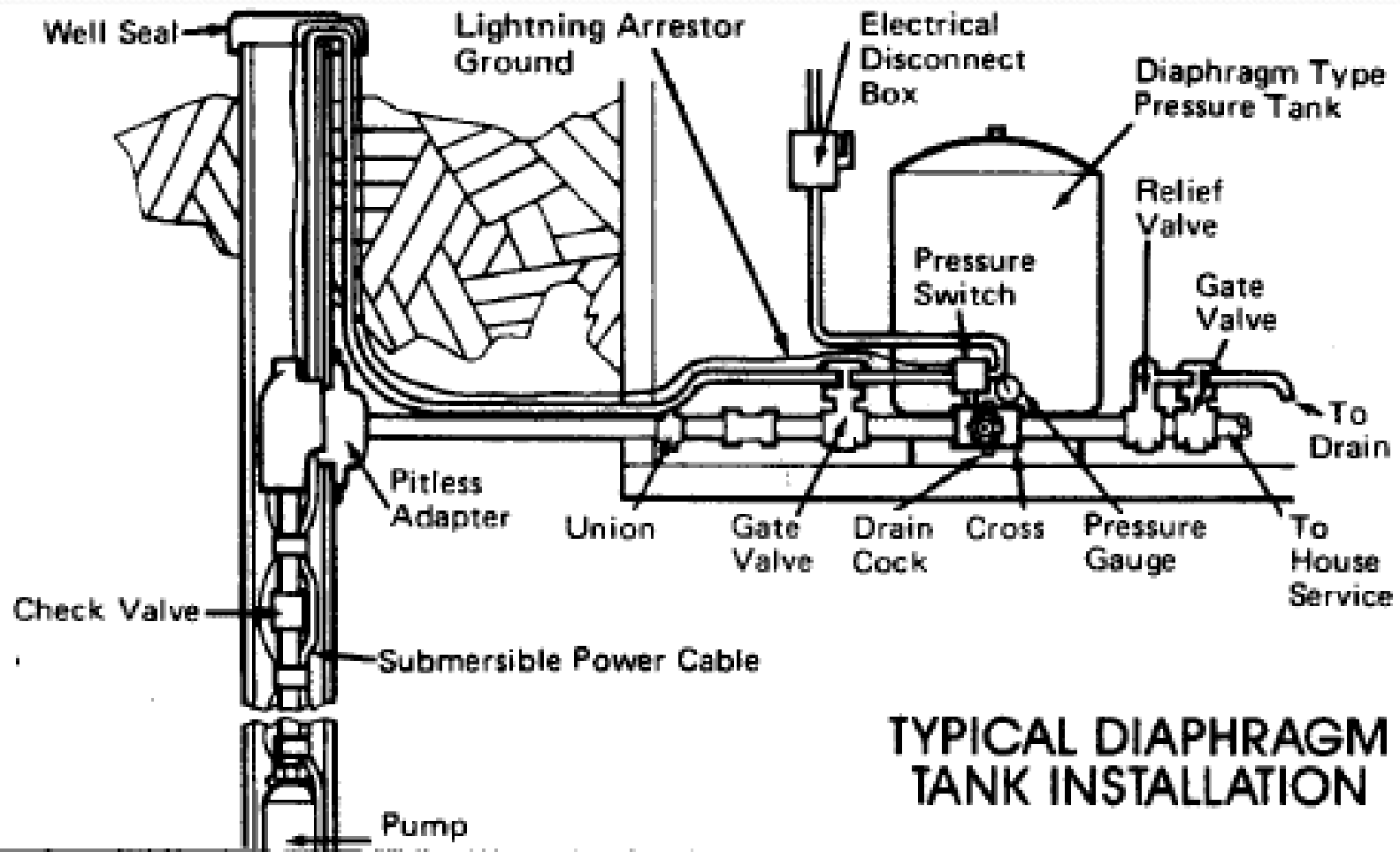
- Check Pump Before Connecting Piping to Tank
 - Install Gate Valve in the Discharge Pipe
 - Fully open gate valve. If pump lowers water in the well to a point at which the pump loses its prime, either:
 - Lower pump further down well (if possible)
 - “Throttle” the pump to the capacity of the well by using a flow valve

Gate Valve



Above Ground Pipe and Tank Connections

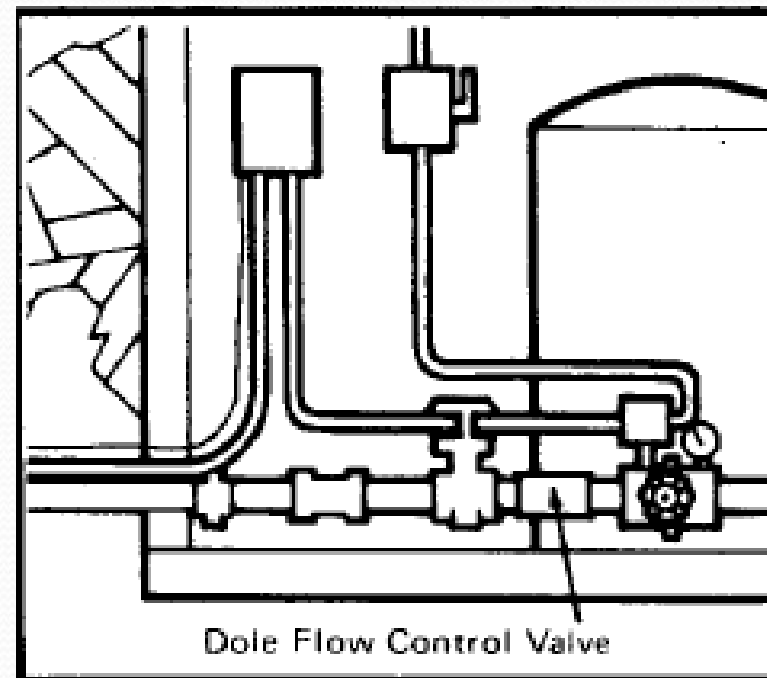
- Connecting Diaphragm tank System
 - Connect Pipes
 - Precharge Tank
 - Start Pump
 - Check that systems operates automatically



**TYPICAL DIAPHRAGM
TANK INSTALLATION**

Controlling Weak Wells

The Flow Valve Method is the Simplest Way to Prevent Drawdown to Pump Inlet



Pump Protection

- Pumptec by Franklin Electric protects against:
 - Dry Well (Underload)
 - Over and Under Voltage
 - Rapid Cycle
 - Bound Pump

