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SYSTEM RECEIVING & INSTALLATION

NOTE: The information contained in this booklet is intended to assist the system installing personnel by providing basic information for a safe and effective installation. It does not relieve the user of the responsibility of using accepted trade practices in the handling, anchoring, and connecting of this equipment.

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SYSTEM RECEIVING & INSTALLATION

I. RECEIVING THE EQUIPMENT

A) Prefabricated Systems

All SyncroFlo Prefabricated Water Pressure Booster Systems are assembled, wired and factory tested prior to shipment. A protective plastic wrapping has been attached. Upon arrival of your system, should you find the plastic wrapping has been removed or any other indication of mishandling or breakage during transit, note this immediately on the carriers Bill of Lading. **NOTE: Plastic wrapping is not designed for use as a weather proof covering. If the unit is to be stored and installed at a later date, refer to the temporary storage procedure in this manual.**

Due to shipping height limitations, it may have been necessary to remove the motors from the top of the vertical turbine pumps prior to shipment. In this case the motors will be bolted to the shipping skid. Refer to the specific manual on vertical motors and vertical turbine pumps for care and handling of these motors. Motor headshafts have been strapped to the suction header prior to shipment. The headshafts should not be removed from this location until your SyncroFlo representative arrives for initial start-up of your system. If it is necessary to remove the headshafts, handle them with *extreme* care.

Some systems may contain items for field installation. Make sure these items are accounted for. Protect these components from damage if you are installing at a later date.

An electrical schematic is supplied with the system to serve as a reference for all electrical connections. Please contact your local SyncroFlo representative with any questions about installation or assistance with start-up. **CAUTION: SyncroFlo systems are easily handled by fork lifting from under the skidbase or hoisting by skid base lifting eyes. Never use motor lifting eyes to lift the entire weight of the system.**

B) Knockdown Systems

The Knockdown Booster System is shipped as component parts only for field assembly. All piping, valves and fittings are to be supplied by others.

The Knockdown Booster System consists of numbered pallets containing the various components. Each pallet should be checked individually against the packing list to insure that there are no parts lost in shipment. All gauges, pressure switches, and pressure regulating valves have been *factory preset* and marked accordingly. A piping schematic is supplied with the system and should be used as a schematic reference only. Note that this drawing is not a piping layout diagram.

As with prefabricated systems, an electrical schematic is supplied with the system to serve as a reference for all electrical connections.

Please contact your local SyncroFlo representative with any questions about installation or assistance with start-up.

CAUTION: SyncroFlo systems are easily handled by fork lifting from under the skidbase or hoisting by skid base lifting eyes. Never use motor lifting eyes to lift the entire weight of the system.

II. TEMPORARY STORAGE

If your SyncroFlo system is not to be installed or operated immediately after arrival, the system must be stored in a clean, dry location. It should not be exposed to excess moisture, extreme weather conditions, corrosive fumes, or other harmful conditions.

Motors should be rotated by hand monthly to coat the bearing with lubricant to retard corrosion, oxidation, and to prevent formation of "flat spots". Further, monthly rotation will minimize the possibility of seal damage during start-up. Some motors are equipped with oil lubricated bearings. On these units, the oil reservoir should be filled to the maximum level with suitable oil and also rotated monthly.

The unit should be covered during storage and should be inspected from time to time for damage due to abuse, vandalism or vermin infestation.

III. LOCATION

The area in which the system is installed must be large enough to allow three feet of clear space in front and in back of the system. (The National Electric Code requires a minimum of 36" clearance in front of the control panel extending down to the floor.) There must also be ample room above the system for installation and removal of the motor shafts from vertical hollow shaft motors.

The HydroCumulator tank (if supplied) requires easy access to a location which is twice the length of the tank so that the bladder and distribution tube can be removed for maintenance.

IV. ANCHORING

Prefabricated units should be leveled and bolted to a firm foundation using all of the anchoring holes provided in the skid base, or hold down clips. These holes are typically 13/16" diameter.

It is recommended that the skid base be grouted. The following grouting procedure is recommended after the system is level. (Refer to Fig. 1)

Grouting Procedure: A) Build a strong form around the foundation to contain the grout. The skid base of some systems is designed to contain the grout, so a form may not be necessary. B) Soak the top of the foundation thoroughly, then remove the surface water. C) Install anchoring bolts in place and pour grout into form. D) After the grout has thoroughly hardened, install anchoring bolt nuts and tighten. E) Check the pump and motor shaft alignment on systems utilizing end suction pumps with flexible couplings. This should be done after system is anchored and filled with water. F) Approximately 14 days after the grout has been poured, or when the grout has thoroughly dried, apply an oil base paint to the exposed surfaces of the grout to prevent air and moisture from coming in contact with the grout. **NOTE: Grout must be of a non-shrink non-ferrous variety.**

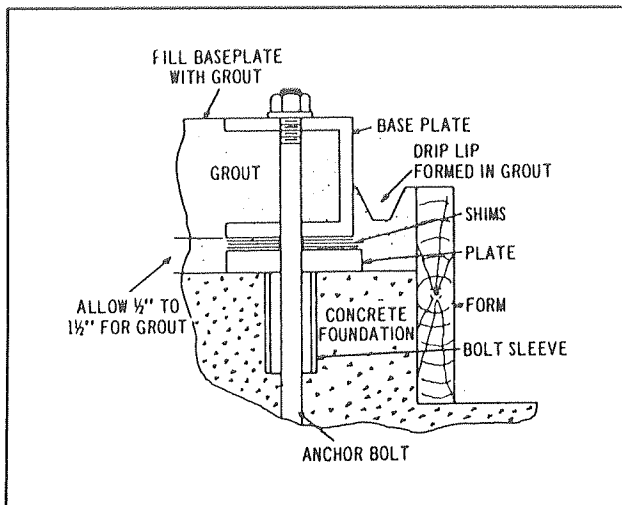


Fig. -- 1 Setting Baseplate and Grouting

V. PIPING

CAUTION: *Pumping systems discharge water. There must be a floor drain located adjacent to the pumping system, with a minimum three inch drainage pipe. This floor drain area must be kept clear and clean to receive various discharges from the pumping system. Significant water damage might occur if adequate drainage is not provided. Locate drains at the low point in the mechanical room floor. Provide barriers so that water can not reach areas that are not properly flashed.*

A) Prefabricated Systems

Piping connections to the system must be equal to or greater than the diameter of the headers themselves. The minimum amount of straight pipe at these connections should be the same as that which is stated on the system drawing.

Caution: *When connecting piping of two dissimilar metals, accelerated corrosion can occur. If incompatible metals are to be used, SyncroFlo recommends dielectric isolation devices be used to prevent electric corrosion.* SyncroFlo also recommends that isolation valves be installed on both the suction and discharge sides of the unit as well as a bypass valve and piping in the event that major maintenance work is required. Non-full port valves are excessively restrictive and should never be used for this purpose.

Connections to SyncroFlo manifolds should be made after all other piping connections in the system are drawn up tight. Be careful not to force connections.

Use pipe hangers or other supports at proper intervals to provide complete piping support near the unit. Both suction and discharge piping should be independently supported and properly aligned so that no strain is transmitted to the pumps. **CAUTION:** *Excessive strain can cause severe damage to pump and/or motor piping.*

All purge lines should be piped to a floor drain to avoid equipment room flooding. Pipe to atmosphere, do not connect with any other drain connections. When all piping is complete, check the system for leaks by opening the suction and discharge valves and bleeding the air from the pressure regulating valves, pressure gauges, pumps, and barrels, if applicable. Check for leaks again when the system is started and before insulation is installed. Purge system of air one more time after flow has been established for a period of time.

B) Knockdown Systems

When assembling a knockdown system, it is important to follow the piping schematic closely. The piping schematic is not a piping layout diagram and should be used as a *schematic reference only*.

The pumps themselves should be spaced no less than 24" apart. Most control device connections require 1/4" tubing. Flow and pressure sensor devices must be located a sufficient distance from areas of turbulence.

CAUTION: *When connecting piping of two dissimilar metals, accelerated corrosion can occur. If incompatible metals are to be used, SyncroFlo recommends dielectric isolation devices be used to prevent electric corrosion.*

Pipe connections to the system must be equal to or greater than the diameter as the headers themselves. A minimum amount of straight pipe is required at these connections. SyncroFlo recommends that isolation valves be installed in both the suction and discharge sides of the unit as well as a bypass valve and piping in the event that major maintenance work is required. Globe type valves are excessively restrictive and should never be used for this purpose.

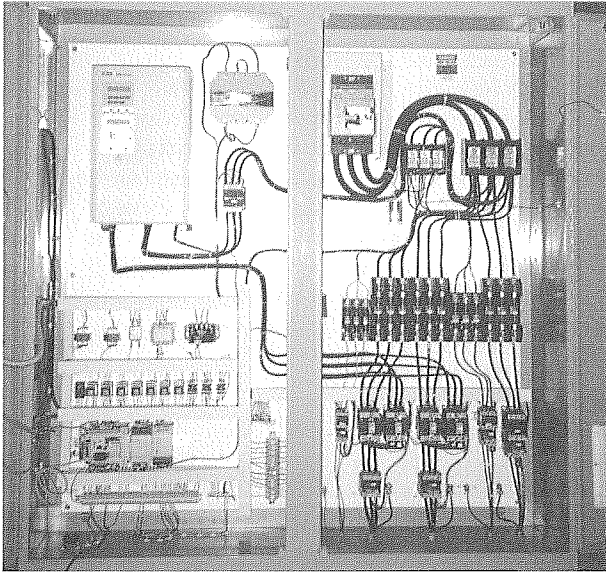
Use pipe hangers or other supports at proper intervals to provide complete support of system piping. Both suction and discharge piping should be independently supported and properly aligned so that no strain is transmitted to the pumps.

CAUTION: *Excessive strain can cause severe damage to pump and/or motor piping.*

When all piping is complete, check the system for leaks by opening the suction and discharge valves and bleeding the air from the pressure regulating valves, pressure gauges, pumps, and barrels, if applicable. Check for leaks again when the system is started and before insulation is installed.

VI. ELECTRICAL

CAUTION: Connection should be made by a qualified electrician. Once connected, an electrocution hazard may exist.



A) All Systems (Prefabricated & Knockdown)

Most SyncroFlo systems require a three phase power source connection to either the main power block labeled "TB1" or to the top of individual disconnect switch(es). An earth ground must also be connected to the terminal lug provided in the control enclosure.

All wiring and grounding should be done by qualified electricians to comply with the National Electrical Code and local codes. *Incorrect wiring can cause damage to equipment and possible injury to personnel, or death to operators.*

System operation requires that the voltage variance be no more than +/-7 percent of that which is stated on the panel nameplate.

NOTE: SyncroFlo recommends use of copper stranded wire for wiring of field installed control devices. Refer to National Electric Code and local standards for correct wire selection.

B) Prefabricated Systems

SyncroFlo prefabricated systems are completely wired and tested prior to shipment. The only field wiring required is as follows:

Check the motor rotation after connecting the system to the power source. This can be done by switching the pump into the hand position just for a split second and observing. If the rotation is incorrect, simply reverse any two of the incoming leads. If system has a VFD connected, check rotation across the line and in variable frequency mode. Incorrect rotation from VFD can only be corrected by changing two output leads to motor. **NOTE:** See pump manual for correct rotation.

If indicated on the electrical drawing, SyncroFlo has provided isolated "dry" alarm relay contact(s) for field wiring to building system monitoring stations. These contacts are factory wired to terminals shown on the electrical drawing using "yellow" wire. Remote alarm devices to be activated through these contacts must not exceed current or voltage rating listed on relay or Programmable Controller.

In addition, based on System Design, it may be necessary to field wire equipment supplied with your system which could not be system mounted and wired at the factory. Refer to electrical drawing for terminal identification and for wiring of field installed components.

C) Knockdown Systems

SyncroFlo control panels are completely wired and tested prior to shipment. All other wiring connections must be done in the field.

Motors are to be wired using the size wire specified on the control panel data sheet. Motor wires are brought into the control panel and connected to the motor starters. Check the motor rotation after connecting the system to the power source. This can be done by switching the pump into the hand position just for a split second and observing. If the motor rotation is incorrect, simply reverse any two leads at the motor starter(s). If system has a VFD connected, check rotation across the line and in variable frequency mode. Incorrect rotation from VFD can only be corrected by changing two output leads to motor. **NOTE:** See pump manual for correct rotation.

If indicated on the electrical drawing, SyncroFlo has provided isolated "dry" alarm relay contact(s) for field wiring to building system monitoring stations. These contacts are factory wired to terminals shown on the electrical drawing using "yellow" wire. Remote alarm devices to be activated through these contacts must not exceed current or voltage rating listed on relay or Programmable Controller.

Knockdown systems require that all control devices, not attached to the control panel, be field wired to the control terminal strip. Locate the control device (flow switch, temperature probe, purge valve, etc.) on the electrical drawing and wire from the device to its corresponding terminals.

VII. START-UP ASSISTANCE

Upon completion of installation, contact your SyncroFlo representative for verification of proper installation and assistance with system start-up.

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