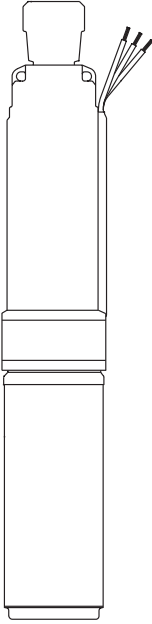


4" Submersible Pumps Two and Three Wire, Single and Three Phase, 1/2 through 10 H.P., 60 Hz



NOTICE D'INSTALLATION ET DE
FONCTIONNEMENT

Pompes submersibles de 4 pouces Moteurs bifilaires et trifilaires, Monophasés et triphasés, Puissance de 1/2 à 10 ch, 60 Hz

MANUAL DE INSTALACIÓN Y
FUNCIONAMIENTO

Bombas sumergibles de 4" Bifilares y Trifilares, Monofásicas y trifásicas, 1/2 hasta 10 H.P., 60 Hz

English.....	Pages 2-12
Français.....	Pages 13-23
Español.....	Paginas 24-34
Tables • Tableaux • Cuadros.....	Pages 35-47
Diagrams • Schémas • Diagramas.....	Pages 48-64

Record the following information from the motor and pump nameplates for future reference:

Sur les lignes qui suivent, indiquer les informations suivantes qui se trouvent sur les plaques signalétiques du moteur et de la pompe de façon à pouvoir s'y reporter ultérieurement :

Anote la siguiente información de las chapas del motor y de la bomba para referencia futura:

Pump Model No.	
N° de modèle de la pompe	
No. de modelo de la bomba	
Pump Serial No.	
N° de série de la pompe	
No. de serie de la bomba	
Motor Model No.	
N° de modèle du moteur	
No. de modelo del motor	
Motor Serial No.	
N° de série du moteur	
No. de serie del motor	
H.P., Volts/Hz/Ph	
Puissance en CH Volts/Hz/Phase(s)	
H.P. Voltios/Hz/Fase	
Rated Amp Draw	
Débit nominal en ampères	
Corriente nominal extraída	

Table of Contents

Important Safety Instructions 2
 Pre-Installation 3
 Rotation – (3 Phase only) 3
 Cabling 6
 Cable Splicing 7
 Initial Start-Up 9
 Effluent Applications 9
 Connecting To Tank / Water System 9
 Troubleshooting 10
 Warranty 12
 Tables 35
 Diagrams 48

Important Safety Instructions

SAVE THESE INSTRUCTIONS - This manual contains important instructions that should be followed during installation, operation, and maintenance of the product. Save this manual for future reference.

⚠ This is the safety alert symbol. When you see this symbol on your pump or in this manual, look for one of the following signal words and be alert to the potential for personal injury!

⚠ DANGER indicates a hazard which, if not avoided, *will* result in death or serious injury.

⚠ WARNING indicates a hazard which, if not avoided, *could* result in death or serious injury.

⚠ CAUTION indicates a hazard which, if not avoided, *could* result in minor or moderate injury.

NOTICE addresses practices not related to personal injury.

To avoid serious or fatal personal injury and possible property damage, carefully read and follow the safety instructions.

⚠ WARNING Hazardous voltage. Can shock, burn or cause death. To avoid dangerous or fatal electric shock hazard, use pump only in a water well.

⚠ WARNING Risk of electrical shock. Do not install this pump in any pond, river, or other open body of water that could be used for swimming or recreation. Do not swim, wade or play in a body of water in which a submersible pump has been installed.

- Installation must meet United States National Electrical Code, Canadian Electrical Code, and local codes (as applicable) for all wiring.
- Disconnect electrical power supply before installing or servicing pump.
- Make sure line voltage and frequency of power supply match motor nameplate voltage and frequency.

⚠ WARNING Hazardous pressure. Under certain conditions, submersible pumps can develop extremely high pressure. Install a pressure relief

valve capable of passing entire pump flow at 75 PSI (517 kPa) when using an air over water pressure tank. Install a pressure relief valve capable of passing entire pump flow at 100 PSI (690 kPa) when using a pre-charged pressure tank.

⚠ CAUTION Risk of freezing. Do not allow pump, pressure tank, piping, or any other system component containing water to freeze. Freezing may damage system, leading to injury or flooding. Allowing pump or system components to freeze will void warranty.

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.

Electrical Grounding Information

⚠ WARNING Hazardous voltage. Can shock, burn, or kill. To reduce the risk of electrical shock during pump operation, ground and bond the pump and motor as follows:

- To reduce risk of electrical shock from metal parts of the assembly other than the pump, bond together all metal parts accessible at the well head (including metal discharge pipe, metal well casing, and the like). Use a metal bonding conductor at least as large as the power cable conductors running down the well to the pump's motor.
- Clamp or weld (or both if necessary) this bonding conductor to the grounding means provided with the pump, which will be the equipment-grounding terminal, the grounding conductor on the pump housing, or an equipment-grounding lead. The equipment-grounding lead, when provided, will be the conductor having green insulation; it may also have one or more yellow stripes.
- Ground the pump, motor, and any metallic conduit that carries power cable conductors. Ground these back to the service by connecting a copper conductor from the pump, motor, and conduit to the grounding screw provided within the supply-connection box wiring compartment. This conductor must be at least as large as the circuit conductors supplying the pump

Allowing pump or system components to freeze will void warranty.

Install pump according to all plumbing, pump and well code requirements.

Test well water for purity before using well. Call your local health department for testing procedure.

During installation, keep well covered as much as possible to prevent leaves and foreign matter from falling into well. Foreign objects in well can contaminate the water and cause serious mechanical damage to the pump.

Pipe joint compound can cause cracking in plastics. Use only PTFE pipe thread sealing tape when sealing joints in plastic pipe or when connecting pipe to thermoplastic pumps.

Pre-Installation

Inspect pump and motor for delivery damage. Report any damage immediately to the shipping carrier or to your dealer.

The well driller should thoroughly develop the well (that is, pump out all fine sand and foreign matter) before pump is installed.

Pump performance is based on pumping clear, cold, liquid water.

Warranty is void in the following conditions:

- If pump has pumped excessive sand – excessive sand can cause premature wear to pump.
- If water is corrosive.
- If entrained gas or air are present in the water being pumped – these can reduce flow and cause cavitation which can damage pump.
- If pump has been operated with discharge valve closed – severe internal damage will result.

Install pump at least 15 to 20' (4.5 to 6 m) below the lowest water level reached with pump running (lowest draw-down water level), and at least 5' (1.5 m) above the bottom of the well.

See *Tables* for information on submersible motor overload protection, control box specifications, recommended fusing, and service wiring requirements. Also see *Diagrams* for typical submersible pump installation wiring.

Wiring/Grounding

⚠ WARNING Hazardous voltage. Can shock, burn, or cause death. Permanently ground pump, motor and control box before connecting power supply to motor.

Ground pump and motor in accordance with local codes and ordinances. Use a copper ground wire at least as large as wires carrying current to motor.

Motor is supplied with a copper ground wire. Splice this ground wire to a copper conductor that matches motor wire size specified in *Cable Sizing Tables*. Also see *Cable Splicing* instructions.

Permanently ground pump, motor and control box before connecting power cable to power supply. Connect ground wire to approved ground first and then connect to equipment being installed. Do not ground to a gas supply line.

⚠ WARNING Fire and electrical shock hazard. If using a drop cable larger than AWG 10 (5.5mm²) [for example, AWG 8 (8.4mm²) wire] between pump and control box, run drop cable to a separate junction box. Connect junction box to control box with AWG 10 (5.5mm²) wire.

For more information, contact your local code authority.

Wiring Connections

Installation must meet United States National Electrical Code, Canadian Electrical Code and local codes for all wiring (as applicable).

Use only copper wire when making connections to pump and control box.

To avoid over-heating wire and excessive voltage drop at motor, be sure that wire size is at least as large as size listed in cable sizing tables for your horsepower pump and length of wire run.

NOTICE See *Diagrams* for typical wiring hookups and control box identification.

NOTICE When built-in overheating protection is not provided, install an approved overload equipped motor control that matches motor input in full load amps. Select or adjust overload element(s) in accordance with control instructions. When built-in overheating protection is provided, use an approved motor control that matches motor input in full load amperes.

Rotation – (3 Phase only)

To make sure motor is running in the correct direction, proceed carefully as follows:

After electrical connections have been made as outlined, and with pump hanging in well supported from clamp on the discharge pipe, turn on then turn off the switch connecting the motor to the power supply line.

Observe the rotation of pump as motor starts. If connections are properly made, pump will “jerk” clockwise when looking into the pump discharge when started. If the “jerk” is counter-clockwise, the motor is running in the wrong direction. Interchange any two cable leads where they connect to the “lead” terminals in the magnetic starter. With connections properly made, and pump lowered into water, turn the switch ON again and the pump should deliver water according to the performance charts.

Overload Protection Of Three Phase Submersible Motors – Class 10 Protection Required

The characteristics of submersible motors are different from standard motors and special overload protection is required.

If the motor is stalled, the overload must trip within 10 seconds to protect the motor windings. All recommended overload selections are of the ambient compensated type to maintain protection at high and low air temperatures.

All heaters and amp settings shown are based on total line amps. When a six-lead motor is used with a Wye-Delta starter, divide motor amps by 1.732 to make your selection or adjustment for heaters carrying phase amps.

See *Table 1* for overload specifications for PENTEK motors.

NOTICE Warranty on three phase submersible motors is void unless proper quick trip protection in all three motor lines is used.

Surge Arresters in Control Box

Grounding: When the box has a surge arrester, the surge arrester **MUST** be grounded, metal to metal, all the way to the water strata for the arrester to be effective. Grounding the arrester to a driven ground rod provides little or no protection for the motor.

NOTICE Surge arresters **DO NOT** protect against direct lightning strikes.

Install grounded surge arresters to protect pump from high voltage surges. Install arrester on the incoming power line to control box or pressure switch, as close to pump motor as possible. See Figures 1 and 2 for installation wiring diagrams for arresters.

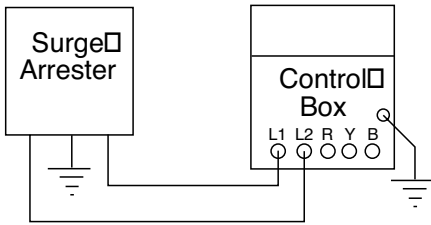


Figure 1 – Typical 3 Wire, Single Phase, 230 Volt Surge Arrester Wiring Diagram

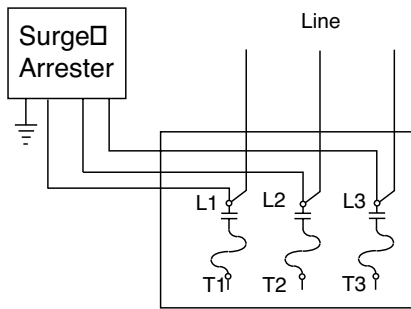


Figure 2 - Three Phase Surge Arrester (650 Volt Maximum) Wiring Diagram

NOTICE Ground the arrester with a AWG 10 or larger bare wire. Ground according to local code requirements.

NOTICE If surge arresters wired into the control box do not comply with local electrical code, contact power company for correct wiring information.

Recommended Adjustable Overload Relays

AEG Series:

B17S, B27S, B27-2.

Allen Bradley:

Bulletin 193, SMP-Class 10 only.

Fanal Types:

K7 or K7D through K400.

Franklin Electric:

Subtrol-Plus.

General Electric:

CR4G, CR7G, RT*1, RT*2, RTF3, RT*4, CR324X-Class 10 only.

Klockner-Moeller Types:

Z00, Z1, Z4, PKZM1, PKZM3, PKZ2.

Lovato:

RC9, RC22, RC80, RF9, RF25, RF95.

Siemens Types:

3UA50, -52, -54, -55, -58, -59, -60, -61, -62, -66, -68, -70, 3VUI3, 3VE, 3UB (Class 5).

Sprecher and Schuh Types:

CT, CT1, CTA 1, CT3K, CT3-12 thru CT3-42, KTA3, CEF1 & CET3 set at 6 sec. max., CEP 7 Class 10, CT4, 6, & 7, CT3.

Square D/Telemecanique:

Class 9065 types TD, TE, TF, TG, TJ, TK, TR, TJE, TJE (Class 10) or LR1-D, LR1-F, LR2-D13, -D23, -D33, Types 18A, 32A, SS-Class 10, SR-Class 10 and 63-A-LB Series. Integral 18,32,63, GV2-L, GV2-M, GV2-P, GV3-M (1.6-10 amp only).

Westinghouse Types:

FT13, FT23, FT33, FT43, K7D, K27D, K67D, Advantage (Class 10), MOR, IQ500 (Class 5).

Other relay types from these manufacturers or from other manufacturers may or may not provide acceptable protection. Contact Pentair Customer Service for more information.

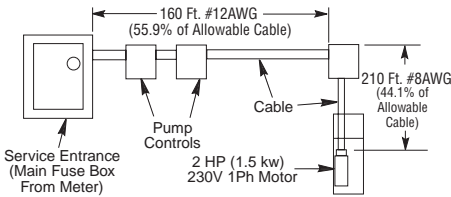
Some approved overload types may not be available for all of the listed motor ratings. When relays are used with current transformers, divide the specified amps by the transformer ratio to obtain the relay setting.

Calculating Cable Size

When two different sizes can be used (calculated in feet)

Sometimes conditions make it desirable to use more than one size cable in an installation.

For example: Replace a pump with a 2 HP, 230 volt, 60 Hz, single phase motor, with the motor setting at 210' down the well and with 160' of #12AWG cable buried between the service entrance and the well head. In order to avoid replacing the buried cable, the question is: What size cable is required in the well? Calculate as follows:



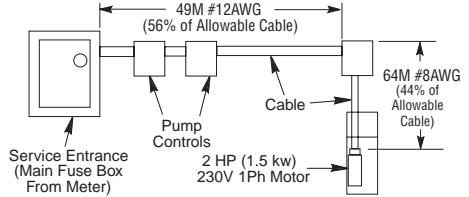
1. According to *Table VIII*, a total of 286' of #12AWG cable is allowed to power the 2 HP motor. The percent of this total that has been used by the 160' of cable in the buried run is: $160' / 286' = .559 = 55.9\%$.
2. With 55.9% of the allowable cable already used, 44.1% of the total length is left for use in the well. To avoid running a cable that is too small and lowering the voltage to the motor, we have to find a cable size large enough so that 210' is less than 44.1% of the total length allowed for that size.
3. Trying #10AWG cable, *Table VIII* shows that the total allowable length for a 2 HP motor is 456'.
 $456' \times 44.1\% = 456' \times .441 = 201'$
 This is not long enough.
4. Trying #8AWG cable, *Table VIII* shows that the total allowable length is 722'.
 $722' \times 44.1\% = 722' \times .441 = 318'$
 This is longer than needed. Therefore, #8AWG cable can be used for the 210' of cable in the well.

Any combination of sizes can be used, provided that the total percentage of the length of the two sizes of cable does not exceed 100% of the allowed lengths.

When two different sizes can be used (calculated in meters)

Sometimes conditions make it desirable to use more than one size cable in an installation.

For example: Replace a pump with a 2 HP, 230 volt, 60 Hz, single phase motor, with the motor setting at 64m down the well and with 49m of #12AWG cable buried between the service entrance and the well head. In order to avoid replacing the buried cable, the question is: What size cable is required in the well? Calculate as follows:



1. According to *Table IX*, a total of 87m of #12AWG cable is allowed to power the 2 HP motor. The percent of this total that has been used by the 49m of cable in the buried run is: $49m / 87m = .56 = 56\%$.
2. With 56% of the allowable cable already used, 44% of the total length is left for use in the well. To avoid running a cable that is too small and lowering the voltage to the motor, we have to find a cable size large enough so that 64m is less than 44% of the total length allowed for that size.
3. Trying #10AWG cable, *Table IX* shows that the total allowable length for a 2 HP motor is 139m.
 $139m \times 44\% = 139m \times .44 = 61m$
 This is not long enough.
4. Trying #8 cable, *Table IX* shows that the total allowable length is 220m.
 $220m \times 44\% = 220m \times .44 = 97m$
 This is longer than needed. Therefore, #8AWG cable can be used for the 64m of cable in the well.

Any combination of sizes can be used, provided that the total percentage of the length of the two sizes of cable does not exceed 100% of the allowed lengths.

Installation Wiring Diagrams - Single Phase, 3 Wire

⚠️ WARNING Hazardous voltage. Can shock, burn, or kill. Ground control box, all metal plumbing, and motor frame with copper wire in compliance with local codes. Use a ground wire at least as large in gauge as the wires supplying power to the motor.

NOTICE For motors of 1-1/2 HP and above, use a magnetic starter to avoid damage to pressure switch. Consult factory for wiring information. Permanently close all unused openings in this and other equipment enclosures.

Disconnect power to control box before working on or around control box, pipes, cable, pump, or motor.

To be sure that starting relay will function and that overload will not “nuisance trip”, install control box vertically with top side up.

Wire control box as shown in *Diagrams*. Submersible pump will not operate without a control box, and some boxes require a switch or a jumper lead between ‘SW’ and ‘L2’ terminals. Operation without control box will burn out the pump motor.

Installation must meet United States National Electrical Code, Canadian Electrical Code, and local codes for all wiring (as applicable).

If main overload trips, look for:

1. Shorted capacitor
2. Voltage problems
3. Overloaded or locked pump.

NOTICE Match motor to control box or motor control as shown in *Specifications*.

Liquid Level (Pump Down)

Controls:

Use pump down controls on wells with low flow to prevent pumping well dry. See *Installation Diagrams* for proper installation. Ground controls according to local code requirements.

If start overload trips, replace start relay. Reset and analyze for tripping cause. To avoid motor burnout, do not remove or short circuit overload protection.

Checking Procedure (All Control Boxes):

⚠️ WARNING Hazardous voltage. Can shock, burn, or cause death. Disconnect power to control box before doing these check procedures.

- A. General Procedures.** (Power to control box disconnected)
 1. Disconnect line.
 2. Inspect for damaged or burned parts, loose connections, etc.
 3. Check for misconnections against diagram in control box.
 4. If box is too hot, circuit breakers may trip or fuses blow. Ventilate or shade box. Move away from heat source.
 5. If problem has not been found, check motor and control box. Use test procedures that follow.
- B. Ground (Insulation Resistance) Test.** (Power to control box disconnected)
 1. Ohmmeter Setting: Highest scale (usually Rx100K or Rx10,000).
 2. Terminal Connections: One ohmmeter lead to “Ground” screw on control box and touch other lead to each of the terminals on terminal board.
 3. Ohmmeter Reading: Pointer should remain at infinity (∞) and not deflect.
- C. Capacitor Tests.** (Power to control box disconnected)

⚠️ WARNING Risk of electric shock. Short capacitor across terminals before testing.

 1. Ohmmeter Setting: Rx1000.
 2. Terminal Connections: Connect ohmmeter leads to black and orange wires out of capacitor case.
 3. Ohmmeter Reading: Pointer should swing toward “zero” and “float” back to (∞). Capacitor is shorted if pointer does not move back to (∞), open if it does not move from (∞).
 4. To reset capacitor, reverse ohmmeter connection to capacitor terminals.
- D. Triac Test.** (Solid state switch only)
 1. Ohmmeter Setting: Rx1000.
 2. Connect the leads to “R” (start) terminal and to orange lead terminal on start switch.
 3. Ohmmeter reading: Infinity (∞).
- E. Coil Test.** (Solid state switch only)
 1. Ohmmeter Setting: Rx1.
 2. Connect leads to “Y” (common) and L2 terminal and to orange lead terminal on start switch.
 3. Ohmmeter reading: Infinity (∞).

Cable Splicing

Splice cable to motor leads. Use one of the three methods outlined below. Use only copper wire for connections to pump motor and control box. Use only UL®-approved water-submersion-grade electrical tape.

Taped splice - For wire sizes AWG 8 (8.4mm²) and larger:

1. Cut off motor leads. Stagger lead and wire length so that 2nd lead is 2" (50mm) longer than 1st lead and 3rd lead is 2" (50mm) longer than second.
2. Cut off cable ends. Be sure to match colors and lengths of wires in drop cable to colors and lengths of motor leads.
3. Trim insulation back 1/2" (13mm) from cable ends and motor lead ends.
4. Insert motor lead ends and cable ends into butt connectors (see Figure 3). Be sure to match wire colors between drop cable and motor leads.
5. Using crimping pliers (Figure 6), indent butt connector lugs (see Figure 4) to secure wires.

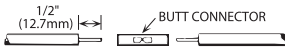


Figure 3



Figure 4



Figure 5

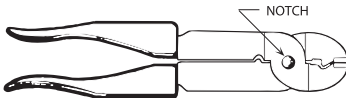


Figure 6



Figure 7

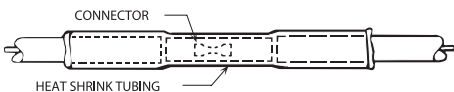


Figure 8

6. Cut electrical insulation putty into 3 equal parts and form tightly around butt connectors. Be sure electrical insulation putty overlaps insulated part of wire.
7. Wrap each joint tightly with electrical tape - cover wire for about 1-1/2" (4cm) on each side of joint. Make four passes with the tape - when finished you should have four layers of tape tightly wrapped around the wire. Press edges of tape firmly down against the wire (see Figure 7).

NOTICE Since the tightly wound tape is the only means of keeping water out of the splice, the efficiency of the splice will depend on the care used in wrapping the tape.

NOTICE For wire sizes larger than AWG 8 (8.4mm²), use a soldered joint rather than a butt connector (see Figure 5).

Heat-shrink splice - For wire sizes AWG 14, 12 and 10 (2, 3, and 5.5mm²):

1. Remove 3/8" (10mm) insulation from ends of motor leads and drop cable wires.
2. Put plastic heat shrink tubing over motor leads.
3. Match wire colors and lengths in drop cable to wire colors and lengths of motor leads.
4. Insert cable and motor wire ends into butt connectors and crimp (See Figures 3 and 4). **BE SURE** to match wire colors between drop cable and motor leads. Pull leads to check connections.
5. Center tubing over butt connector and apply heat evenly with a torch (a match or lighter will not supply enough heat).

NOTICE Keep torch moving. Too much concentrated heat may damage tubing (see Figure 8).

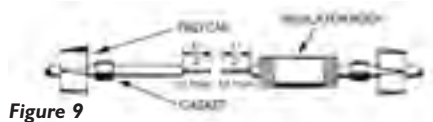


Figure 9



Figure 10

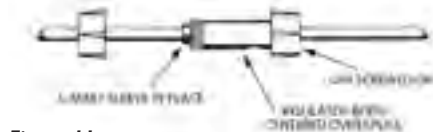


Figure 11

Butt Connectors with plastic insulators - For wire sizes AWG 14, 12 and 10 (2, 3, and 5.5mm²):

1. Cut off motor leads. Stagger lead and wire length so that 2nd lead is 4" (100mm) longer than 1st lead and 3rd lead is 4" (100mm) longer than second.
2. Cut off cable ends. Be sure to match colors and lengths of wires in drop cable to colors and lengths of motor leads.
3. Trim insulation back 1/2" (13mm) from cable ends and motor lead ends.
4. Unscrew plastic caps from insulators. Place a cap and a neoprene gasket sleeve on each wire end to be spliced (see Figure 9).
5. Slide insulator body onto one wire end (Figure 9).
6. Insert wire end into butt connector and crimp (see Figure 10). Be sure to match cable and motor wire colors.
7. Center insulator body over splice and slide neoprene sleeves into body as far as they will go. Screw caps onto insulator body (Figure 11) and tighten by hand for a strong, waterproof splice.

Cable Installation

1. To test submersible pump, momentarily connect it to proper power supply. Power supply frequency and voltage must match motor nameplate frequency and voltage to within $\pm 10\%$. See *Rotation* for three phase pumps.
2. Fasten cable leads securely to pump discharge section; leave 4-5" (100-127mm) of slack in leads at this point. Securely fasten leads to plastic pipe within 6" (150mm) of the pump discharge section. Use properly-installed torque arresters to protect pump and pipe from twisting damage as pump starts and stops.
3. Connect copper ground wire to motor bracket. Ground wire must be at least as large as wires

supplying current to motor. Consult current National Electrical Code, Canadian Electrical Code and local codes (as applicable) for grounding information.

4. Use only submersible cable supplied by pump manufacturer. When lowering pump into well, secure cable to discharge pipe at 10' (3.5m) intervals with electrical tape. Take care not to damage pump cable.

NOTICE To avoid dropping the pump down the well or damaging cable or cable splices, **NEVER** allow pump cable to support weight of pump.

Pump Installation

1. If a standard air over water pressure tank is being used, install two bleeder orifices about 2' (60cm) apart as shown on page 63. These orifices will automatically charge the tank with air. See page 62 to determine orifice location. **NOTICE** If a pre-charged tank is used, **DO NOT** install bleeder orifices. If pump and pre-charged tank are replacing a standard tank system, remove bleeder orifices before installing pump in well.
2. To prevent losing pump down the well, connect a safety rope strong enough to support pump and drop pipe (minimum 5/16" [8mm] twisted polypropylene or pronila rope) to eyelet on pump discharge. Tie off other end of safety rope securely to well seal, well cap or pitless adapter.
3. Discharge outlet is threaded 2" NPT (60 Hz) or 2" BSP (50 Hz).
Use 100 PSI rated polyethylene plastic pipe for installations up to 100' (30m) depth.
Use 160 PSI rated polyethylene plastic pipe for installation up to 220' (67m) depth.
For depths beyond 220' (67m), use galvanized steel pipe for the entire drop pipe.

Initial Start-Up

NOTICE NEVER operate pump with discharge valve completely closed. Pump can destroy itself if run with discharge shut off (“deadheaded”).

NOTICE To avoid sand-locking pump, follow procedure below when starting pump for the first time. NEVER start a pump with discharge completely open unless you have done this procedure first.

1. Connect a pipe elbow, a short length of pipe and a gate valve to pump discharge at well head (see Figure 12).

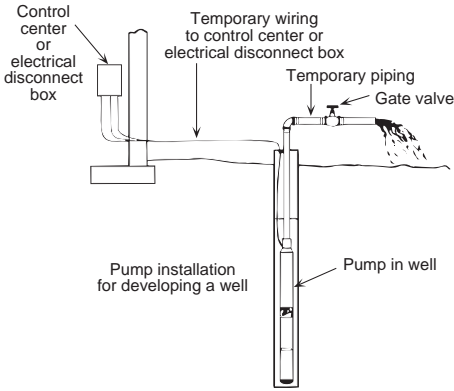


Figure 12 - Typical pump start-up

2. Mount motor control box (3-wire pump), fused disconnect switch (2-wire pump), or magnetic starter (three-phase pump) in a permanently weather proofed place. Make sure that controls will not be subjected to extreme heat or excess moisture.
3. Make sure controls are in OFF position.
4. Connect motor leads and power supply to motor control box, fused disconnect switch, or magnetic starter (see *Diagrams*). **Do not start pump yet.**
5. Set gate valve on discharge 1/3 open; start pump (see Figure 12).
6. Keep gate valve at this setting while water pumps out on ground. Let it run until water is clear of sand or silt. To check solids in water, fill a glass from pump and let solids settle out.
7. When water is completely clear at 1/3 setting, open gate valve to approximately two-thirds open and repeat process.
8. When water is completely clear at 2/3 setting, open gate valve completely and run pump until water is completely clear.
9. Remove gate valve for permanent installation near tank (see pages 62 and 63).
10. Install sanitary well seal or pitless adapter unit, well unit, electrical conduit and surface piping according to local code requirements.

Effluent Applications

Pumps designed and tested for effluent applications must meet the following:

▲WARNING Risk of electric shock. Do not remove cord and strain relief. Do not connect conduit to pump.

1. Only qualified personnel should install the pump and associated control equipment.
2. Vent sewage or septic tank according to local codes.
3. Do not install pump in any location classified as hazardous by National Electrical Code, ANSI/NFPA 70-2001.
4. These pumps are intended for permanent connection only. Provide strain relief at control box for power supply cord connection to box. All control components must be UL listed and suitable for end use application.

Connecting To Tank / Water System

▲WARNING Hazardous pressure. Submersible pumps can develop very high pressure in some situations. To prevent tank failure, install a pressure relief valve able to pass full pump flow at 75 PSI (517 kPa) when using an air over water pressure tank. Install a pressure relief valve capable of passing entire pump flow at 100 PSI (690 kPa) when using a pre-charged pressure tank. Install this relief valve between pump and tank.

NOTICE Allowing pump or piping system to freeze may severely damage pump and will void warranty. Protect pump and entire piping system (including pressure tank) from freezing.

Standard Tank Hookup:

See page 62 for piping connections to standard pressure tank and for correct distance of bleeder orifices from pressure tank.

Pre-charged Pressure Tank Hookup:

See page 63 for piping connections to pre-charged pressure tank.

NOTICE Check air pre-charge in tank before starting pump. Adjust pre-charge to 2 PSI (13.8 kPa) below pump cut-in setting. (For example, a pre-charge tank used with a 30-50 switch should be pre-charged with air to 28 PSI (193 kPa). Adjust pre-charge by either adding or bleeding air through air pressure valve located on top of tank. Check pre-charge annually and adjust as needed.

Problem	Check	Corrective Action
Motor will not start but fuses do not blow.		
No voltage.	No voltage at fuse box.	Consult power supplier, check generator.
	No voltage at control box.	Check connections, rewire from fuse box to control box.
	No voltage at pressure switch.	Check connections, replace control box, rewire from control box to pressure switch.
	No voltage on load side of pressure switch.	Check connections, replace pressure switch.
	Cable or splices bad.	Consult serviceman or licensed electrician.
	Control box incorrectly wired.	Reconnect control box correctly (see <i>Diagrams</i>).
Fuses blow or overload protector trips when motor starts.		
Wrong size fuse or wrong size time delay fuse.	Check fuse size against <i>Fuse Size</i> tables.	Install correct fuse or time delay fuse.
Wire size too small.	Check wire size against <i>Cable Sizing</i> tables.	Install correct size wire.
Starting capacitor defective or blown.	Check control box to see if starting capacitor has blown out.	Replace starting capacitor.
Low or high voltage.	Check that line voltage is within $\pm 10\%$ of nameplate rated voltage while motor is running.	If voltage variation is greater than $\pm 10\%$, call power company to adjust voltage.
Cable leads not correctly connected to control box.	Check control box wiring diagram against incoming power hookup.	Reconnect leads to match wiring diagram in control box cover.
	Check drop cable color coding.	Reconnect drop cable so cable color code matches motor lead color code.
Broken wire in control box.	Examine all connections and wiring in control box.	Disconnect power and repair or replace faulty wire.
Pump or motor stuck or binding.	Check for locked rotor in pump.	If necessary, pull pump (make all possible above ground checks first). If pump is locked, replace it. Clean well of all sand or lime before reinstalling pump.
Fuses blow or overload protector trips when motor is running.		
Low or high voltage.	Check that line voltage is within $\pm 10\%$ of rated nameplate voltage while motor is running.	If voltage variation is more than $\pm 10\%$, call power company to adjust voltage.
High ambient (atmospheric temperature).	Check temperature of control box.	Do not mount control box in direct sunlight.
Control box with wrong voltage or horsepower rating.	Compare voltage and horsepower on motor nameplate with those given on control box nameplate or on circuit diagram inside control box cover.	Replace control box if numbers do not match.
Wire size too small.	Check wire size against <i>Cable Sizing</i> tables.	Install correct wire size.
Cable splices or motor leads grounded, shorted, or open.	Consult licensed electrician or qualified serviceman.	Do not attempt to disassemble pump or motor.

Problem	Check	Corrective Action
Pump starts too frequently.		
Leaks in system.	Check all tank connections with soapsuds for air leaks. Check plumbing for leaks.	System must be air and water tight.
Pressure switch.	Check for defective switch or switch out of adjustment.	Re-adjust or replace pressure switch.
Tank waterlogged.	Pre-charged tanks; check tank pre-charge air pressure, check for leak in bladder.	Pre-charge tanks: adjust air pressure to 2 PSI (13.8 kPa) less than pump cut-in pressure (when there is no water pressure on system). Replace bladder if necessary.
	Air over water tanks: check for air leaks. Check Air Volume Control (AVC). Check air pressure valve operation.	Air over water tanks: repair or replace tanks; replace air pressure valve if necessary.
Leak in drop pipe.	Raise drop pipe one length at a time until water stands in pipe.	Replace pipe above that point.
Pressure switch too far from tank.	Measure distance from pressure switch to tank.	Move switch to within one foot (.3m) of tank.
Little or no water delivered.		
Bleeder orifice check valve stuck or installed backwards (standard tank only).	Examine valve.	If stuck, free valve; if installed backwards, reverse it.
Low water level.	Determine lowest water level in well while pump is running and compare to pump depth setting.	Lower pump further into well (but at least 5' (1.6m) above bottom of well). Throttle pump discharge until discharge equals recovery rate of well. NOTICE Running pump while airlocked can cause loss of prime and seriously damage pump.
Low voltage.	Check voltage at control box with pump running. Check incoming wire size and drop cable size against <i>Cable Sizing</i> tables.	Install larger wire from meter to control box. Install larger wire from control box to pump. If necessary, have power company raise supply voltage.
Plugged intake screen.	Pull pump and check condition of screen.	Clean or replace as necessary.
Check valve at pump discharge stuck.	Pull pump and examine check valve.	Free check valve.
Worn impellers and diffusers.	Make sure system is clear of obstructions and pump is in solid water and operation normal.	Replace pump.
Air or milky water discharge from faucets.		
Gas in well water.	Check for presence of gas in well water.	Remove bleeder orifices; plug tees. Be sure plugged tees do not leak. If necessary, separate gas from air before it enters pressure tank.
Air volume control not working (standard tanks only).	Make sure ports and ball check valves are clear.	Replace control if necessary.

Limited Warranty

PENTAIR 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
Water Systems Products — jet pumps, small centrifugal pumps, submersible pumps and related accessories	<i>whichever occurs first:</i> 12 months from date of original installation, 18 months from date of manufacture
PENTEK INTELLIDRIVE™	12 months from date of original installation, or 18 months from date of manufacture
Pro-Source® Composite Tanks	5 years from date of original installation
Pro-Source® Steel Pressure Tanks	5 years from date of original installation
Pro-Source® Epoxy-Line Tanks	3 years from date of original installation
Sump/Sewage/Effluent Products	12 months from date of original installation, or 18 months from date of manufacture

Our warranty will not apply to any product that, in our sole judgment, 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 PENTAIR's only duty, is that PENTAIR repair or replace defective products (at PENTAIR'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.

PENTAIR IS NOT 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 how long an implied warranty lasts, 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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Submersible Motor Control, Fusing, and Wiring Specifications

• Boîte à commande du moteur submersible et des caractéristiques des fusibles et des fils • Control de motor sumergible y Especificaciones sobre los fusibles y cables

Three Phase 60 Hz Overload Protection • Protection contre les surcharges - Moteurs triphasés de 60 Hz • Dispositivos de sobrecarga para motores, trifásicos, 60 Hz

Table I • Tableau I • Cuadro I

HP • ch	kW	Volts • Voltios	NEMA Starter Size • Calibre des démarreurs NEMA • Tamaño del arrancador NEMA	Heaters for Overload Relays • Réchauffeurs de relais de surcharge • Calentadores para Relés de Sobrecarga			Adjustable Relays • Relais réglables • Relés regulables • (Note D)	
				Furnas (Note A)	Allen Bradley (Note B)	GE (Note C)	Set • Réglés à • Configuración	MAX
1-1/2	1.1	230	00	K39	J21	L680A	5.5	5.9
		460	00	K29	J15	L343A	2.8	3.0
		575	00	K26	J12	L282A	2.2	2.4
2	1.5	230	0	K49	J25	L910A	7.5	8.1
		460	00	K33	J18	L463A	3.8	4.1
		575	00	K29	J15	L380A	3.0	3.2
3	2.2	230	0	K52	J28	L122B	10.1	10.9
		460	0	K37	J21	L618A	5.1	5.5
		575	0	K34	J19	L510A	4.1	4.4
5	3.7	230	1	K61	J33	L199B	16.6	17.8
		460	0	K49	J26	L100B	8.3	8.9
		575	0	K42	J23	L825A	6.6	7.1
7-1/2	5.5	230	1	K67	J37	L293B	24.6	26.4
		460	1	K55	J30	L147B	12.3	13.2
		575	1	K52	J28	L122B	9.9	10.6
10	7.5	460	1	K61	J33	L220B	17.5	18.8

Overloads for 3 Phase 60 Hertz 4" Motors

Protection contre les surcharges - Moteurs triphasés de 60 Hz et de 4 pouces
Dispositivos de sobrecarga para motores, trifásicos, 60 Hz, 4"

Table I Notes

- A. Apply Furnas intermediate sizes between NEMA starter sizes where (1) is shown in tables. Size 1-3/4 replaces 2, 2-1/2 replaces 3, 3-1/2 replaces 4 and 4-1/2 replaces 5. Heaters are selected from Catalog 294, Table 332 and Table 632 (starter size 00, size B). Size 4 starters are heater type 4 (JG). Starters that use these heater tables include classes 14, 17 and 18 (INNOVA), classes 36 and 37 (reduced voltage), and classes 87, 88 and 89 (pump and motor control centers).
Set overload relay adjustments no higher than 100%, unless it is necessary to stop nuisance tripping when measured amps in all lines are below nameplate maximum.
For heater selections for class 16 starters (Magnetic Definite Purpose), contact Pentair Water Customer Service.
- B: Allen-Bradley heaters are selected from Catalog IC-110, Table 162 (through starter size 4), Table 547 (starter size 5), and Table 196 (starter size 6). Bulletin 505, 509, 520, 540 and 570 use these heater tables.
Contact Pentair Water Customer Service for heater selections for bulletin 1232X and 1233X starters.
- C: General Electric heaters are type CR123, can be used only on type CR124 overload relays, and are selected from Catalog GEP-126OJ).
Set overload relay adjustments no higher than 100%, unless it is necessary to stop nuisance tripping when measured amps in all lines are below nameplate maximum.

- D: Adjustable overload relay amp settings apply to the approved types that are listed. Set relay adjustment at the specified SET amps.
If tripping occurs while amps in all lines are measured at less than maximum nameplate amps, the setting may be increased, but should not exceed the MAX value shown.

Remarques plus relatives au tableau I

- A: Les calibres intermédiaires Furnas, entre les puissances de démarreur NEMA, s'appliquent lorsque (1) est indiqué dans le tableau. Le calibre 1 3/4 remplaçant 2; 2 1/2 remplaçant 3; 3 1/2 remplaçant 4 et 4 1/2 remplaçant 5. Les réchauffeurs ont été sélectionnés à partir du catalogue 294, Tableaux 332 et 632 (démarreurs de puissance 00 et B). Les démarreurs de puissance 4 sont dotés d'un réchauffeur du type 4 (JG). Les démarreurs dotés de réchauffeur et mentionnés dans ces tableaux comprennent les catégories 14, 17 et 18 (INNOVA), les catégories 36 et 37 (tension réduite) et les catégories 87, 88 et 89 (centre de commande des pompes et des moteurs).
Ne pas régler les relais de surcharge au-delà de 100 %, à moins que ces réglages soient indispensables pour arrêter les déclenchements intempestifs lorsque l'intensité en ampères mesurée sur toutes les lignes est inférieure à l'intensité en ampères maximale indiquée sur la plaque signalétique.
Pour une sélection de réchauffeurs pour les démarreurs de la catégorie 16 (à usage déterminé magnétique) s'adresser au service à la clientèle de Pentair Water.
- B: Les réchauffeurs Allen-Bradley ont été sélectionnés à partir du catalogue IC-110, Tableau 162 (jusqu'aux démarreurs de calibre 4), Tableau 547 (démarreurs de calibre 5) et Tableau 196 (démarreurs de calibre 6). Ces tableaux de réchauffeurs sont utilisés dans les bulletins 505, 509, 520, 540 et 570.
S'adresser au service à la clientèle de Pentair Water pour une sélection des réchauffeurs pour les démarreurs 1232X et 1233X.
- C: Les réchauffeurs General Electric sont du type CR123 et ne peuvent être utilisés que sur les relais de protection contre les surcharges du type CR124. Ils ont été sélectionnés à partir du catalogue GEP-1260J.
Ne pas régler les réchauffeurs au-delà de 100 %, à moins que ces réglages soient indispensables pour arrêter les déclenchements intempestifs lorsque l'intensité en ampères mesurée sur toutes les lignes est inférieure à l'intensité en ampères maximale indiquée sur la plaque signalétique.
- D: Les réglages en ampères des relais de protection contre les surcharges réglables s'appliquent aux types approuvés et énumérés ci-contre. Les relais doivent être réglés à l'intensité en ampères spécifiée « SET ». Ils ne doivent pas être réglés au-delà des réglages où les déclenchements intempestifs se produisent lorsque l'intensité en ampères mesurée sur toutes les lignes correspond à l'intensité en ampères maximale indiquée sur la plaque signalétique.
Ils ne devront toutefois jamais être réglés au-delà de la valeur MAXIMALE indiquée.

Más notas del cuadro I

- A: Aplique los tamaños intermedios de Furnas entre los tamaños de arranque NEMA en donde se indique (1) en los cuadros. El tamaño de 1-3/4 sustituye al 2, el 2-1/2 sustituye al 3, el 3-1/2 sustituye al 4 y el 4-1/2 sustituye al 5. Los calentadores se han seleccionado del Catálogo 294, Cuadro 332 y Cuadro 632 (tamaño de arranque 00, tamaño B). Los arranques de tamaño 4 son para el tipo de calentador de tipo 4 (JG). Los arranques que usan estos cuadros de calentadores incluyen las clases 14, 17 y 18 (INNOVA), las clases 36 y 37 (de tensión reducida), y las clases 87, 88 y 89 (centros de mando de la bomba y del motor).
Configure los ajustes del relé de sobrecarga a no más del 100%, a menos que fuese necesario para detener disparos injustificados cuando los amperios medidos en todas las líneas se encuentren por debajo del máximo de la placa de fábrica.
Para las selecciones de calentadores con arranque de clase 16 (Magnético de Propósito Definido), comuníquese con el Departamento de Atención al Cliente de Pentair Water.
- B: Los calentadores Allen-Bradley se han seleccionado del Catálogo IC-110, Cuadro 162 (hasta arranques de tamaño 4), Cuadro 547 (arranque de tamaño 5), y Cuadro 196 (arranque de tamaño 6). Los boletines 505, 509, 520, 540 y 570 usan estos cuadros de calentadores.
Comuníquese con el Departamento de Atención al Cliente de Pentair Water para obtener información sobre las selecciones de calentadores para los arranques de los boletines 1232X y 1233X.
- C: Los calentadores General Electric son de tipo CR123, se pueden usar sólo en relés de sobrecarga tipo CR124, y se han seleccionado del Catálogo GEP-1260J.
Configure los ajustes del relé de sobrecarga a no más del 100%, a menos que fuese necesario para detener disparos injustificados cuando los amperios medidos en todas las líneas se encuentren por debajo del máximo de la placa de fábrica.
- D: Las configuraciones de amperios del relé regulable de sobrecarga corresponden a los tipos aprobados que se indican en la lista. Configure el ajuste del relé a los amperios especificados (SET amps).
- Si ocurre un disparo mientras los amperios en todas las líneas tienen una medida inferior al máximo de amperios de la placa de fábrica, es posible que se deba aumentar la configuración, pero ésta no deberá sobrepasar el valor MÁXIMO indicado.

Motor/Control Coordination • Coordination du moteur/boîte de commande •
 Coordinación del control / motor

Table II • Tableau II • Cuadro II

Model • Modèle • Modelo	SMC Submersible Motor Control Type • Type de commande de moteur submersible • Tipo de control de motor sumergible SMC			
	HP • ch	Volts/Hz/Ph • Voltios/Hz/Fase	CSIR	CSCR
P43B0005A1	1/2	115/60/1	SMC-IR0511	–
P43B0005A2	1/2	230/60/1	SMC-IR0521	SMC-CR0521
P43B0007A2	3/4	230/60/1	SMC-IR0721	SMC-CR0721
P43B0010A2	1	230/60/1	SMC-IR1021	SMC-CR1021
P43B0015A2	1-1/2	230/60/1	–	SMC-CR1521
P43B0020A2	2	230/60/1	–	SMC-CR2021

Motor/Control Coordination

Coordination du moteur/boîte de commande

Coordinación del control / motor

Table II Notes • Remarques relatives au tableau II • Notas del cuadro II:

Motors with model numbers beginning 'P42' or are 2-Wire motors and do not use a Submersible Motor Control.
 Les moteurs avec des numéros de modèles qui commencent par « P42 » sont des moteurs bifilaires et n'utilisent pas une commande de moteur submersible.

Los motores con números de modelo que comienzan en 'P42' son motores bifilares y no usan un control de motor sumergible.

Recommended Fusing Data • Calibres recommandés des fusibles •

Información sobre los fusibles recomendados

Table III • Tableau III • Cuadro III

Model • Modèle • Modelo	HP • ch	Volts/Hz/Ph • Voltios/Hz/ Fase	Motor Winding Resistance • Résistance de l'enroulement des moteurs • Resistencia del devanado del motor • Ohms	Service Factor Amps • Intensité maximale avec facteur de surcharge • Factor de sobrecarga Amperios	Locked Rotor Amps • Ampères du rotor bloqué • Rotor bloqueado-Amperios	Fuze Size Standard/ Dual Elem/CB • Calibre des fusibles standard/A élément double • Tamaño del fusible estándar /doble
P42B0005A1	1/2	115/60/1	1.3-1.8	9.5	36.4	25/15/20
P42B0005A1-01	1/2	115/60/1	1.4-2.0	9.8	28	30/20/25
P42B0005A2	1/2	230/60/1	4.5-5.2	4.7	19.5	15/10/10
P42B0005A2-01	1/2	230/60/1	6.1-7.2	4.7	16	15/10/10
P42B0007A2	3/4	230/60/1	3.0-4.8	6.4	24.8	20/10/15
P42B0007A2-01	3/4	230/60/1	5.9-6.9	6.2	18	20/10/15
P42B0010A2	1	230/60/1	4.2-5.2	9.1	21.7	25/15/20
P42B0010A2-01	1	230/60/1	4.2-5.2	8.1	24	25/15/20
P42B0015A2	1-1/2	230/60/1	1.9-2.3	11	42	30/15/25
P42B0015A2-01	1-1/2	230/60/1	1.8-2.4	10.4	44	35/20/30

Recommended Fusing Data - 60 Hz, Single Phase, 2 Wire Submersible Pump Motors

Calibres recommandés des fusibles – moteurs bifilaires, monophasés de 60 Hz des pompes submersibles
 Información sobre los fusibles recomendados - Motores de bombas sumergibles, 60 Hz, monofásicos, bifilares

Table III Notes • Remarques relatives au tableau III • Notas del cuadro III:

Two-wire motor leads are not color coded. Overload is located in motor and cannot be tested from above ground.
 Les fils des moteurs bifilaires ne sont pas codés par couleur. La protection contre les surcharges est logée dans le moteur et ne peut pas être contrôlée hors terre.
 Los cables de conexión de los motores bifilares no están codificados a color. La sobrecarga está ubicada en el motor y no se puede hacer una prueba de la misma desde la superficie.

Table IV • Tableau IV • Cuadro IV

Model • Modèle • Modelo	HP • ch	Volts/Hz/ Phase • Voltios/Hz/ Fase	Motor Winding Resistance • Résistance de l'enroulement des moteurs • Resistencia del devanado del motor		Service Factor Amps • Intensité maximale avec facteur de surcharge • Factor de sobrecarga Amperios	Locked Rotor Amps • Ampères du rotor bloqué • Rotor bloqueado- Amperios	Fuze Size Standard / Dual Element / CB • Calibre des fusibles standard / A élément double / Disjoncteur • Tamaño del fusible estándar / doble / CB
			R to Y R sur J R a A (Ohms)	B to Y N sur J N a A (Ohms)			
P43B0005A2	1/2	230/60/1	17.4-18.7	4.2-4.9	4.9	22.3	15/10/10
P43B0007A2	3/4	230/60/1	11.8-13.0	2.6-3.6	6.3	32.0	20/10/15
P43B0010A2	1	230/60/1	11.3-12.3	2.2-3.2	7.2	41.2	20/10/15
P43B0015A2	1-1/2	230/60/1	7.9-8.7	1.6-2.3	11.1	47.8	30/15/25
P43B0020A2	2	230/60/1	10.8-12.0	1.6-2.2	12.2	49.4	30/20/25
P43B0030A2	3	230/60/1	2.0-2.5	1.1-1.4	16.5	76.4	45/25/40
P43B0050A2	5	230/60/1	1.36-1.66	0.62-0.76	27	101.0	70/40/60

Recommended Fusing Data - 60 Hz, Single Phase, 3 Wire, Capacitor Run Submersible Pump Motor

Calibres recommandés des fusibles – moteurs de pompes submersibles, trifilaires, monophasés, fonctionnant avec un condensateur

Información sobre los fusibles recomendados – motores de 60 Hz, monofásicos, trifilares, de marcha por capacitor, para bombas sumergibles

Table V • Tableau V • Cuadro V

Model • Modèle • Modelo	HP • ch	Volts/Hz/ Phase • Voltios/Hz/ Fase	Motor Winding Resistance • Résistance de l'enroulement des moteurs • Resistencia del devanado del motor		Service Factor Amps • Intensité maximale avec facteur de surcharge • Factor de sobrecarga Amperios	Locked Rotor Amps • Ampères du rotor bloqué • Rotor bloqueado- Amperios	Fuze Size Standard / Dual Element / CB • Calibre des fusibles standard / A élément double / Disjoncteur • Tamaño del fusible estándar / doble / CB
			R to Y R sur J R a A (Ohms)	B to Y N sur J N a A (Ohms)			
P43B0005A1	1/2	115/60/1	5.7-7.0	0.9-1.6	12.6	49.6	30/20/30
P43B0005A2	1/2	230/60/1	17.4-18.7	4.2-4.9	6.3	22.3	15/10/15
P43B0007A2	3/4	230/60/1	11.8-13.0	2.6-3.6	8.3	32.0	20/10/20
P43B0010A2	1	230/60/1	11.3-12.3	2.2-3.2	9.7	41.2	25/15/25

Recommended Fusing Data - 60 Hz, Single Phase, 3 Wire Induction Run Submersible Pump Motor

Calibres recommandés des fusibles – moteurs trifilaires, monophasés de 60 Hz avec induction des pompes submersibles

Información sobre los fusibles recomendados – Motores de bombas sumergibles a inducción, 60 Hz, monofásicos, trifilares

Table VI • Tableau VI • Cuadro VI

Model • Modele • Modelo	HP • ch	Volts/Hz/ Phase • Voltios/Hz/ Fase	Motor Winding Resistance • Résistance de l'enroulement des moteurs • Resistencia del devanado del motor • L to L	Service Factor Amps • Intensité maximale avec facteur de surcharge • Factor de sobrecarga Amperios	Locked Rotor Amps • Ampères du rotor bloqué • Rotor bloqueado- Amperios	Fuze Size Standard / Dual Element /CB • Calibre des fusibles standard / A élément double / Disjoncteur • Tamaño del fusible estándar /doble / CB
P43B0005A8	1/2	200/60/3	4.1–5.2	3.4	22	10/6/10
P43B0007A8	3/4	200/60/3	2.6–3.0	4.5	32	15/10/10
P43B0010A8	1	200/60/3	3.4–3.9	5.5	29	15/10/10
P43B0015A8	1-1/2	200/60/3	1.9–2.5	7.2	40	20/10/15
P43B0020A8	2	200/60/3	1.4–2.0	8.8	51	25/15/20
P43B0030A8	3	200/60/3	0.9–1.3	12.0	71	35/20/30
P43B0050A8	5	200/60/3	0.4–0.8	20.2	113	60/35/50
P43B0075A8	7-1/2	200/60/3	0.5–0.6	30.0	165	80/50/70
P43B0005A3	1/2	230/60/3	5.7–7.2	2.9	17	6/6/6
P43B0007A3	3/4	230/60/3	3.3–4.3	3.9	27	6/6/6
P43B0010A3	1	230/60/3	4.1–5.1	4.7	26	10/6/10
P43B0015A3	1-1/2	230/60/3	2.8–3.4	6.1	32	15/10/15
P43B0020A3	2	230/60/3	1.8–2.4	7.6	44	15/15/20
P43B0030A3	3	230/60/3	1.3–1.7	10.1	59	25/15/25
P43B0050A3	5	230/60/3	0.85–1.25	17.5	93	45/30/40
P43B0075A3	7-1/2	230/60/3	0.55–0.85	26.4	140	70/45/60
P43B0005A4	1/2	460/60/3	23.6–26.1	1.5	9	3/3/3
P43B0007A4	3/4	460/60/3	14.4–16.2	2.0	14	3/6/3
P43B0010A4	1	460/60/3	17.8–18.8	2.5	13	6/3/6
P43B0015A4	1-1/2	460/60/3	12.3–13.1	3.2	16	10/6/6
P43B0020A4	2	460/60/3	8.0–8.7	3.8	23	15/6/10
P43B0030A4	3	460/60/3	5.9–6.5	5.3	30	15/10/15
P43B0050A4	5	460/60/3	3.6–4.0	8.5	48	25/15/20
P43B0075A4	7-1/2	460/60/3	1.9–2.3	13.5	87	40/25/35
P43B0100A4	10	460/60/3	1.8–2.2	17.2	110	45/25/35
P43B0015A5	1-1/2	575/60/3	19.8–20.6	2.4	12	6/3/6
P43B0020A5	2	575/60/3	9.4–9.7	3.3	21	10/6/10
P43B0030A5	3	575/60/3	9.4–9.7	4.1	21	10/10/10
P43B0050A5	5	575/60/3	3.6–4.2	7.6	55	25/15/20
P43B0075A5	7-1/2	575/60/3	3.6–4.2	10.0	55	25/20/25

Recommended Fusing Data - 60 Hz, Three Phase, Submersible Pump Motor

Calibres recommandés des fusibles – moteurs triphasés de 60 Hz des pompes submersibles

Información sobre los fusibles recomendados - motores de bombas sumergibles, 60 Hz, trifásicos

Service Cable Length by Model Number • Longueur du câble de service par numéro de modèle • Servicio de la longitud del cable por el número de modelo

Table VII • Tableau VII • Cuadro VII

Model • Modèle • Modelo	Wire Size, AWG; Cable Length in FEET • Calibre du fil, AWG, longueur du fil en PIEDS • Tamaño de los hilos, AWG; longitud de los hilos en PIES												
	HP • ch	Volt	14	12	10	8	6	4	3	2	1	0	00
P42B0005A1	1/2	115	115	183	293	463	721	1150	1445	1825	2299	2902	3662
P42B0005A1-01	1/2	115	112	178	284	449	699	1114	1401	1769	2229	2814	3350
P42B0005A2	1/2	230	466	742	1183	1874	2915	4648	5843	7379	9295		
P42B0005A2-01	1/2	230	464	739	1178	1866	2903	4628	5818	7347	9256		
P42B0007A2	3/4	230	342	545	869	1376	2141	3413	4291	5419	6826	8617	
P42B0007A2-01	3/4	230	353	562	897	1420	2210	3523	4429	5594	7046	8895	
P42B0010A2	1	230	241	383	611	968	1506	2400	3018	3811	4801	6060	7646
P42B0010A2-01	1	230	271	430	686	1087	1692	2697	3390	4281	5394	6808	8590
P42B0015A2	1 1/2	230	199	317	505	801	1246	1986	2496	3153	3972	5013	6325
P42B0015A2-01	1 1/2	230	211	335	535	847	1318	2100	2640	3335	4201	5303	6690

60 Hz, Single Phase, 2-Wire Copper Cable Length in FEET (Service to Motor)

Longueur des fils de cuivre, en PIEDS (branchement de service vers moteur) bifilaire, monophasé, 60 Hz

Largo del cable de cobre en PIES (Servicio al motor) bifilar, monofásicos, 60 Hz

See Table VII Notes • Voir les remarques relatives au tableau VII • Ver notas del cuadro VII

Table VII • Tableau VII • Cuadro VII

Model • Modèle • Modelo	Wire Size, AWG; Cable Length in METERS • Calibre du fil, AWG, longueur du fil en MÈTRES • Tamaño de los hilos, AWG; longitud de los hilos en METROS												
	HP • ch	Volt	14	12	10	8	6	4	3	2	1	0	00
P42B0005A1	1/2	115	35	56	89	141	220	350	441	556	701	885	1116
P42B0005A1-01	1/2	115	34	54	87	137	213	340	427	539	679	858	1021
P42B0005A2	1/2	230	142	226	361	571	889	1417	1781	2249	2833		
P42B0005A2-01	1/2	230	141	225	359	569	885	1411	1773	2239	2821		
P42B0007A2	3/4	230	104	166	265	419	653	1040	1308	1652	2081	2626	
P42B0007A2-01	3/4	230	108	171	273	433	674	1074	1350	1705	2148	2711	
P42B0010A2	1	230	73	117	186	295	459	732	920	1162	1463	1847	2330
P42B0010A2-01	1	230	83	131	209	331	516	822	1033	1305	1644	2075	2618
P42B0015A2	1 1/2	230	61	97	154	244	380	605	761	961	1211	1528	1928
P42B0015A2-01	1 1/2	230	64	102	163	258	402	640	805	1017	1280	1616	2039

60 Hz, Single Phase, 2-Wire Copper Cable Length in METERS (Service to Motor)

Longueur des fils de cuivre, en MÈTRES (branchement de service vers moteur) bifilaire, monophasé, 60 Hz

Largo del cable de cobre en METROS (Servicio al motor) bifilar, monofásicos, 60 Hz

Table VII Notes • Remarques relatives au tableau VII • Notas del cuadro VII

Sizes given are for copper wire. For aluminum wire, go two sizes larger. For example, if table lists #12 (3mm²) copper wire, use #10 (5mm²) aluminum wire. Use oxidation inhibitors on connections.

Les calibres indiqués sont ceux de fils de cuivre. Dans le cas de fils d'aluminium, utiliser deux numéros de calibre plus gros. Par exemple, si le tableau stipule d'utiliser des fils de cuivre de calibre n°12 (de 3mm²), utiliser des fils d'aluminium de calibre n°10 (de 5mm²). Utiliser un inhibiteur d'oxydation sur les connexions.

Los tamaños indicados son para hilos de cobre. Para los cables de aluminio, suba dos tamaños. Por ejemplo, si el cuadro indica el No. 12 (3mm²) para hilos de cobre, use No. 10 (5mm²) para hilos de aluminio. Use inhibidores de corrosión en todas las conexiones.

TABLE VIII • Tableau VIII • Cuadro VIII

Model • Modèle • Modelo	Wire Size, AWG; Cable Length in FEET • Calibre du fil, AWG, longueur du fil en PIEDS • Tamaño de los hilos, AWG; longitud de los hilos en PIES												
	HP • ch	Volt	14	12	10	8	6	4	3	2	1	0	00
P43B0005A2	1/2	230	447	711	1135	1797	2796	4458	5604	7078	8916	11254	
P43B0007A2	3/4	230	348	553	883	1396	2175	3467	4359	5505	6935	8753	11044
P43B0010A2	1	230	304	484	772	1223	1903	3034	3814	4817	6068	7659	9663
P43B0015A2	1-1/2	230	197	314	501	793	1234	1968	2474	3124	3936	4968	6268
P43B0020A2	2	230	180	286	456	722	1123	1790	2251	2843	3581	4520	5703
P43B0030A2	3	230	133	211	337	534	830	1324	1664	2102	2648	3342	4217
P43B0050A2	5	230			206	326	507	809	1017	1284	1618	2042	2577

60 Hz, Single Phase, 3-Wire Copper Cable Length in FEET (Service to Motor), Capacitor Start, Capacitor Run

Longueur des fils de cuivre, en PIEDS (branchement de service vers moteur) trifilaire, monophasé, 60 Hz, capacitance au démarrage et en marche

Largo del cable de cobre en PIES (Servicio al motor) trifilar, monofásicos, 60 Hz, Arranque por capacitor, Marcha por capacitor

See Table VIII Notes • Voir les remarques relatives au tableau VIII • Ver notas del cuadro VIII

TABLE VIII • Tableau VIII • Cuadro VIII

Model • Modèle • Modelo	Wire Size, AWG; Cable Length in FEET • Calibre du fil, AWG, longueur du fil en PIEDS • Tamaño de los hilos, AWG; longitud de los hilos en PIES												
	HP • ch	Volt	14	12	10	8	6	4	3	2	1	0	00
P43B0005A1	1/2	115	87	138	221	349	544	867	1090	1376	1734	2188	2761
P43B0005A2	1/2	230	348	553	883	1398	2175	3467	4359	5505	6935	8753	
P43B0007A2	3/4	230	264	420	670	1061	1651	2632	3309	4178	5264	6644	8383
P43B0010A2	1	230	226	359	573	908	1413	2252	2831	3575	4504	5685	7173

60 Hz, Single Phase, 3-Wire Copper Cable Length in FEET (Service to Motor), Capacitor Start, Induction Run

Longueur des fils de cuivre, en PIEDS (branchement de service vers moteur) trifilaire, monophasé, 60 Hz, capacitance au démarrage, fonctionnement par induction

Largo del cable de cobre en PIES (Servicio al motor) trifilar, monofásicos, 60 Hz, Arranque por capacitor, Marcha por inducción

Table VIII Notes • Remarques relatives au tableau VIII • Notas del cuadro VIII

Sizes given are for copper wire. For aluminum wire, go two sizes larger. For example, if table lists #12 (3mm²) copper wire, use #10 (5mm²) aluminum wire. Use oxidation inhibitors on connections.

Les calibres indiqués sont ceux de fils de cuivre. Dans le cas de fils d'aluminium, utiliser deux numéros de calibre plus gros. Par exemple, si le tableau stipule d'utiliser des fils de cuivre de calibre n°12 (de 3mm²), utiliser des fils d'aluminium de calibre n°10 (de 5mm²). Utiliser un inhibiteur d'oxydation sur les connexions.

Los tamaños indicados son para hilos de cobre. Para los cables de aluminio, suba dos tamaños. Por ejemplo, si el cuadro indica el No. 12 (3mm²) para hilos de cobre, use No. 10 (5mm²) para hilos de aluminio. Use inhibidores de corrosión en todas las conexiones.

Table IX • Tableau IX • Cuadro IX

Model • Modèle • Modelo	Wire Size, AWG; Cable Length in METERS • Calibre du fil, AWG, longueur du fil en MÈTRES • Tamaño de los hilos, AWG; longitud de los hilos en METROS												
	HP • ch	Volt	14	12	10	8	6	4	3	2	1	0	00
P43B0005A2	1/2	230	136	217	346	548	852	1359	1708	2157	2718	3430	
P43B0007A2	3/4	230	106	169	269	426	663	1057	1329	1678	2114	2668	3366
P43B0010A2	1	230	93	148	235	373	580	925	1163	1468	1849	2335	2945
P43B0015A2	1-1/2	230	60	96	153	242	376	600	754	952	1200	1514	1910
P43B0020A2	2	230	55	87	139	220	342	546	686	866	1091	1378	1738
P43B0030A2	3	230	40	64	103	163	253	404	507	641	807	1019	1285
P43B0050A2	5	230			63	99	155	247	310	391	493	623	785

60 Hz, Single Phase, 3-Wire Copper Cable Length in METERS (Service to Motor), Capacitor Start, Capacitor Run

Longueur des fils de cuivre, en MÈTRES (branchement de service vers moteur) trifilaire, monophasé, 60 Hz, capacitance au démarrage et en marche

Largo del cable de cobre en METROS (Servicio al motor) trifilar, monofásicos, 60 Hz, Arranque por capacitor, Marcha por capacitor

See Table IX Notes • Voir les remarques relatives au tableau IX • Ver notas del cuadro IX

Table IX • Tableau IX • Cuadro IX

Model • Modèle • Modelo	Wire Size, AWG; Cable Length in METERS • Calibre du fil, AWG, longueur du fil en MÈTRES • Tamaño de los hilos, AWG; longitud de los hilos en METROS												
	HP • ch	Volt	14	12	10	8	6	4	3	2	1	0	00
P43B0005A1	1/2	115	27	42	67	107	166	264	332	419	528	667	842
P43B0005A2	1/2	230	106	169	269	426	663	1057	1329	1678	2114	2668	
P43B0007A2	3/4	230	80	128	204	323	503	802	1008	1274	1604	2025	2555
P43B0010A2	1	230	69	110	175	277	431	686	863	1090	1373	1733	2186

60 Hz, Single Phase, 3-Wire Copper Cable Length in METERS (Service to Motor), Capacitor Start, Induction Run

Longueur des fils de cuivre, en MÈTRES (branchement de service vers moteur) trifilaire, monophasé, 60 Hz, capacitance au démarrage, fonctionnement par induction

Largo del cable de cobre en METROS (Servicio al motor) trifilar, monofásicos, 60 Hz, Arranque por capacitor, Marcha por inducción

Table IX Notes • Remarques relatives au tableau IX • Notas del cuadro IX

Sizes given are for copper wire. For aluminum wire, go two sizes larger. For example, if table lists #12 (3mm²) copper wire, use #10 (5mm²) aluminum wire. Use oxidation inhibitors on connections.

Les calibres indiqués sont ceux de fils de cuivre. Dans le cas de fils d'aluminium, utiliser deux numéros de calibre plus gros. Par exemple, si le tableau stipule d'utiliser des fils de cuivre de calibre n°12 (de 3mm²), utiliser des fils d'aluminium de calibre n°10 (de 5mm²). Utiliser un inhibiteur d'oxydation sur les connexions.

Los tamaños indicados son para hilos de cobre. Para los cables de aluminio, suba dos tamaños. Por ejemplo, si el cuadro indica el No. 12 (3mm²) para hilos de cobre, use No. 10 (5mm²) para hilos de aluminio. Use inhibidores de corrosión en todas las conexiones.

Table X • Tableau X • Cuadro X – 200 Volts

Model • Modèle • Modelo	Wire Size, AWG; Cable Length in FEET • Calibre du fil, AWG, longueur du fil en PIEDS • Tamaño de los hilos, AWG; longitud de los hilos en PIES													
	HP • ch	Volts/ Hz/Ph • Voltios/Hz/ Fase	Kw	14	12	10	8	6	4	3	2	1	0	00
P43B0005A8	1/2	200/60/3	0.37	560	892	1422	2252							
P43B0007A8	3/4	200/60/3	0.55	423	674	1074	1702	2648						
P43B0010A8	1	200/60/3	0.75	346	551	879	1392	2166	3454	4342				
P43B0015A8	1-1/2	200/60/3	1.1	265	421	672	1064	1655	2638	3317				
P43B0020A8	2	200/60/3	1.5	217	344	549	870	1354	2158	2714	3427	4317	5449	
P43B0030A8	3	200/60/3	2.2	159	253	403	638	993	1583	1990	2513	3166	3996	
P43B0050A8	5	200/60/3	3.7	94	150	239	379	590	940	1182	1493	1881	2374	2995
P43B0075A8	7-1/2	200/60/3	5.5	64	101	161	255	397	633	796	1005	1266	1598	2017

60 Hz, Three Phase Copper Cable Length in FEET (Service to Motor) – 200 Volts

Longueur des fils de cuivre – 200 Volts, en PIEDS (branchement de service vers moteur) triphasé, 60 Hz
 Largo del cable de cobre – 200 Voltios en PIES (Servicio al motor) trifásicos, 60 Hz

See Table X Notes • Voir les remarques relatives au tableau X • Ver notas del cuadro X

Table X • Tableau X • Cuadro X – 230 Volts

Model • Modèle • Modelo	Wire Size, AWG; Cable Length in FEET • Calibre du fil, AWG, longueur du fil en PIEDS • Tamaño de los hilos, AWG; longitud de los hilos en PIES													
	HP • ch	Volts/ Hz/Ph • Voltios/Hz/ Fase	Kw	14	12	10	8	6	4	3	2	1	0	00
P43B0005A3	1/2	230/60/3	.37	645	1025	1635	2590	4030	6425					
P43B0007A3	3/4	230/60/3	.55	562	894	1426	2258	3513	5601	7041				
P43B0010A3	1	230/60/3	.75	466	742	1183	1874	2915	4648	5843	7379			
P43B0015A3	1-1/2	230/60/3	1.1	359	571	912	1444	2246	3581	4502	5685	7162	9040	
P43B0020A3	2	230/60/3	1.5	288	459	732	1159	1803	2874	3613	4563	5748	7256	9155
P43B0030A3	3	230/60/3	2.2	217	345	551	872	1357	2163	2719	3434	4326	5460	6889
P43B0050A3	5	230/60/3	3.7			318	503	783	1248	1569	1982	2496	3151	3976
P43B0075A3	7-1/2	230/60/3	5.5				334	519	827	1040	1314	1655	2089	2635

60 Hz, Three Phase Copper Cable Length in FEET (Service to Motor) – 230 Volts

Longueur des fils de cuivre – 230 Volts, en PIEDS (branchement de service vers moteur) triphasé, 60 Hz
 Largo del cable de cobre – 230 Voltios en PIES (Servicio al motor) trifásicos, 60 Hz

See Table X Notes • Voir les remarques relatives au tableau X • Ver notas del cuadro X

Table X • Tableau X • Cuadro X – 460 Volts

Model • Modèle • Modelo	Wire Size, AWG; Cable Length in FEET • Calibre du fil, AWG, longueur du fil en PIEDS • Tamaño de los hilos, AWG; longitud de los hilos en PIES											
	HP • ch	Volts/Hz/Ph • Voltios/Hz/Fase	Kw	14	12	10	8	6	4	3	2	1
P43B0005A4	1/2	460/60/3	0.37	2922	4648	7414						
P43B0007A4	3/4	460/60/3	0.55	2191	3486	5560	8806					
P43B0010A4	1	460/60/3	0.75	1753	2789	4448	7045					
P43B0015A4	1-1/2	460/60/3	1.1	1370	2179	3475	5504					
P43B0020A4	2	460/60/3	1.5	1153	1835	2926	4635	7212				
P43B0030A4	3	460/60/3	2.2	827	1315	2098	3323	5171				
P43B0050A4	5	460/60/3	3.7	516	820	1308	2072	3224	5140			
P43B0075A4	7-1/2	460/60/3	5.5	325	516	824	1305	2030	3236	4068	5138	6472
P43B0100A4	10	460/60/3	7.5	255	405	647	1024	1593	2540	3193	4033	5080

60 Hz, Three Phase Copper Cable Length in FEET (Service to Motor) – 460 Volts

Longueur des fils de cuivre – 460 Volts, en PIEDS (branchement de service vers moteur) triphasé, 60 Hz
 Largo del cable de cobre – 460 Voltios en PIES (Servicio al motor) trifásicos, 60 Hz

See Table X Notes • Voir les remarques relatives au tableau X • Ver notas del cuadro X

Table X • Tableau X • Cuadro X – 575 Volts

Model • Modèle • Modelo	Wire Size, AWG; Cable Length in FEET • Calibre du fil, AWG, longueur du fil en PIEDS • Tamaño de los hilos, AWG; longitud de los hilos en PIES							
	HP • ch	Volts/Hz/Ph • Voltios/Hz/Fase	Kw	14	12	10	8	6
P43B0015A5	1-1/2	575/60/3	1.1	2283	3631	5792		
P43B0020A5	2	575/60/3	1.5	1660	2641	4212	6671	
P43B0030A5	3	575/60/3	2.2	1336	2126	3390	5370	
P43B0050A5	5	575/60/3	3.7	721	1147	1829	2897	4507
P43B0075A5	7-1/2	575/60/3	5.5	548	871	1390	2202	3426

60 Hz, Three Phase Copper Cable Length in FEET (Service to Motor) – 575 Volts

Longueur des fils de cuivre – 575 Volts, en PIEDS (branchement de service vers moteur) triphasé, 60 Hz
 Largo del cable de cobre – 575 Voltios en PIES (Servicio al motor) trifásicos, 60 Hz

Table X Notes • Remarques relatives au tableau X • Notas del cuadro X

- Sizes given are for copper wire. For aluminum wire, go two sizes larger. For example, if table lists #12 (3mm²) copper wire, use #10 (5mm²) aluminum wire. Use oxidation inhibitors on connections.
 Les calibres indiqués sont ceux de fils de cuivre. Dans le cas de fils d'aluminium, utiliser deux numéros de calibre plus gros. Par exemple, si le tableau stipule d'utiliser des fils de cuivre de calibre n°12 (de 3mm²), utiliser des fils d'aluminium de calibre n°10 (de 5mm²). Utiliser un inhibiteur d'oxydation sur les connexions.
 Los tamaños indicados son para hilos de cobre. Para los cables de aluminio, suba dos tamaños. Por ejemplo, si el cuadro indica el No. 12 (3mm²) para hilos de cobre, use No. 10 (5mm²) para hilos de aluminio. Use inhibidores de corrosión en todas las conexiones.
- For reliable three phase starter operation, length of wire between starter and service entrance should be not more than 25% of total wire length.
 Pour un fonctionnement fiable des démarreurs triphasés, la longueur du fil entre le démarreur et l'entrée du service ne doit pas dépasser 25 % de la longueur totale des fils.
 Para la operación fiable de un arranque trifásico, el largo del cable entre el arrancador y la entrada de servicio no debe ser mayor que el 25% del largo total del cable.

Table XI • Tableau XI • Cuadro XI – 200 Volts

Model • Modèle • Modelo	Wire Size, AWG; Cable Length in METERS • Calibre du fil, AWG, longueur du fil en MÈTRES • Tamaño de los hilos, AWG; longitud de los hilos en METROS												
	HP • ch	Volts/ Hz/Ph • Voltios/Hz/ Fase	Kw	14	12	10	8	6	4	3	2	1	0
P43B0005A8	1/2	200/60/3	0.37	171	272	433	686						
P43B0007A8	3/4	200/60/3	0.55	129	205	327	519	807					
P43B0010A8	1	200/60/3	0.75	106	168	268	424	660	3454	4342			
P43B0015A8	1-1/2	200/60/3	1.1	81	128	205	324	504	2638	3317			
P43B0020A8	2	200/60/3	1.5	66	105	167	265	413	658	2714	3427	4317	5449
P43B0030A8	3	200/60/3	2.2	48	77	123	195	303	482	1990	2513	3166	3996
P43B0050A8	5	200/60/3	3.7	29	46	73	116	180	287	360	1493	1881	2374
P43B0075A8	7-1/2	200/60/3	5.5	19	31	49	78	121	193	243	306	386	487

60 Hz, Three Phase Copper Cable Length in METERS (Service to Motor) – 200 Volts

Longueur des fils de cuivre – 200 Volts, en MÈTRES (branchement de service vers moteur) triphasé, 60 Hz
 Largo del cable de cobre – 200 Voltios en METROS (Servicio al motor) trifásicos, 60 Hz

See Table XI Notes • Voir les remarques relatives au tableau XI • Ver notas del cuadro XI

Table XI • Tableau XI • Cuadro XI – 230 Volts

Model • Modèle • Modelo	Wire Size, AWG; Cable Length in METERS • Calibre du fil, AWG, longueur du fil en MÈTRES • Tamaño de los hilos, AWG; longitud de los hilos en METROS													
	HP • ch	Volts/ Hz/Ph • Voltios/Hz/ Fase	Kw	14	12	10	8	6	4	3	2	1	0	00
P43B0005A3	1/2	230/60/3	.37	196	313	498	789	1228	1958					
P43B0007A3	3/4	230/60/3	.55	171	272	435	688	1071	1797	2146				
P43B0010A3	1	230/60/3	.75	142	226	361	571	889	1417	1781	2249			
P43B0015A3	1-1/2	230/60/3	1.1	110	174	278	440	685	1091	1372	1733	2183	2756	
P43B0020A3	2	230/60/3	1.5	88	140	223	353	550	876	1101	1391	1752	2212	2790
P43B0030A3	3	230/60/3	2.2	66	105	168	266	414	659	829	1047	1318	1664	2100
P43B0050A3	5	230/60/3	3.7			97	153	239	380	478	604	761	960	1212
P43B0075A3	7-1/2	230/60/3	5.5				102	158	252	317	400	504	637	803

60 Hz, Three Phase Copper Cable Length in METERS (Service to Motor) – 230 Volts

Longueur des fils de cuivre – 230 Volts, en MÈTRES (branchement de service vers moteur) triphasé, 60 Hz
 Largo del cable de cobre – 230 Voltios en METROS (Servicio al motor) trifásicos, 60 Hz

See Table XI Notes • Voir les remarques relatives au tableau XI • Ver notas del cuadro XI

Table XI • Tableau XI • Cuadro XI – 460 Volts

Model • Modèle • Modelo	Wire Size, AWG; Cable Length in METERS • Calibre du fil, AWG, longueur du fil en MÈTRES • Tamaño de los hilos, AWG; longitud de los hilos en METROS											
	HP • ch	Volts/Hz/Ph • Voltios/ Hz/Fase	Kw	14	12	10	8	6	4	3	2	1
P43B0005A4	1/2	460/60/3	0.37	891	1417	2260						
P43B0007A4	3/4	460/60/3	0.55	668	1063	1695	2684					
P43B0010A4	1	460/60/3	0.75	534	850	1356	2147					
P43B0015A4	1-1/2	460/60/3	1.1	417	664	1059	1678					
P43B0020A4	2	460/60/3	1.5	352	559	892	1413	2198				
P43B0030A4	3	460/60/3	2.2	252	401	640	1013	1576				
P43B0050A4	5	460/60/3	3.7	157	250	399	632	983	1567			
P43B0075A4	7-1/2	460/60/3	5.5	99	157	251	398	619	986	1240	1566	1973
P43B0100A4	10	460/60/3	7.5	78	124	197	312	486	774	973	1229	1548

60 Hz, Three Phase Copper Cable Length in METERS (Service to Motor) - 460 Volts

Longueur des fils de cuivre – 460 Volts, en MÈTRES (branchement de service vers moteur) triphasé, 60 Hz

Largo del cable de cobre – 460 Voltios en METROS (Servicio al motor) trifásicos, 60 Hz

See Table XI Notes • Voir les remarques relatives au tableau XI • Ver notas del cuadro XI

Table XI • Tableau XI • Cuadro XI – 575 Volts

Model • Modèle • Modelo	Wire Size, AWG; Cable Length in METERS • Calibre du fil, AWG, longueur du fil en MÈTRES • Tamaño de los hilos, AWG; longitud de los hilos en METROS							
	HP • ch	Volts/Hz/Ph • Voltios/ Hz/Fase	Kw	14	12	10	8	6
P43B0015A5	1-1/2	575/60/3	1.1	696	1107	1765		
P43B0020A5	2	575/60/3	1.5	506	805	1284	2033	
P43B0030A5	3	575/60/3	2.2	407	648	1033	1637	
P43B0050A5	5	575/60/3	3.7	220	350	557	883	1374
P43B0075A5	7-1/2	575/60/3	5.5	167	266	424	671	1044

60 Hz, Three Phase Copper Cable Length in METERS (Service to Motor) - 575 Volts

Longueur des fils de cuivre – 575 Volts, en MÈTRES (branchement de service vers moteur) triphasé, 60 Hz

Largo del cable de cobre – 575 Voltios en METROS (Servicio al motor) trifásicos, 60 Hz

Table XI Notes • Remarques relatives au tableau XI • Notas del cuadro XI

- Sizes given are for copper wire. For aluminum wire, go two sizes larger. For example, if table lists #12 (3mm²) copper wire, use #10 (5mm²) aluminum wire. Use oxidation inhibitors on connections.
Les calibres indiqués sont ceux de fils de cuivre. Dans le cas de fils d'aluminium, utiliser deux numéros de calibre plus gros. Par exemple, si le tableau stipule d'utiliser des fils de cuivre de calibre n°12 (de 3mm²), utiliser des fils d'aluminium de calibre n°10 (de 5mm²). Utiliser un inhibiteur d'oxydation sur les connexions.
Los tamaños indicados son para hilos de cobre. Para los cables de aluminio, suba dos tamaños. Por ejemplo, si el cuadro indica el No. 12 (3mm²) para hilos de cobre, use No. 10 (5mm²) para hilos de aluminio. Use inhibidores de corrosión en todas las conexiones.
- For reliable 3 Phase starter operation, length of wire between starter and service entrance should be not more than 25% of total wire length.
Pour un fonctionnement fiable des démarreurs triphasés, la longueur du fil entre le démarreur et l'entrée du service ne doit pas dépasser 25 % de la longueur totale des fils.
Para la operación fiable de un arranque trifásico, el largo del cable entre el arrancador y la entrada de servicio no debe ser mayor que el 25% del largo total del cable.

Single Phase, 2 Wire • Monophasés bifilaires • Monofásico bifilares

For motors of 1-1/2 HP and above, use magnetic starter to avoid damage to pressure switch. Consult factory for wiring information.

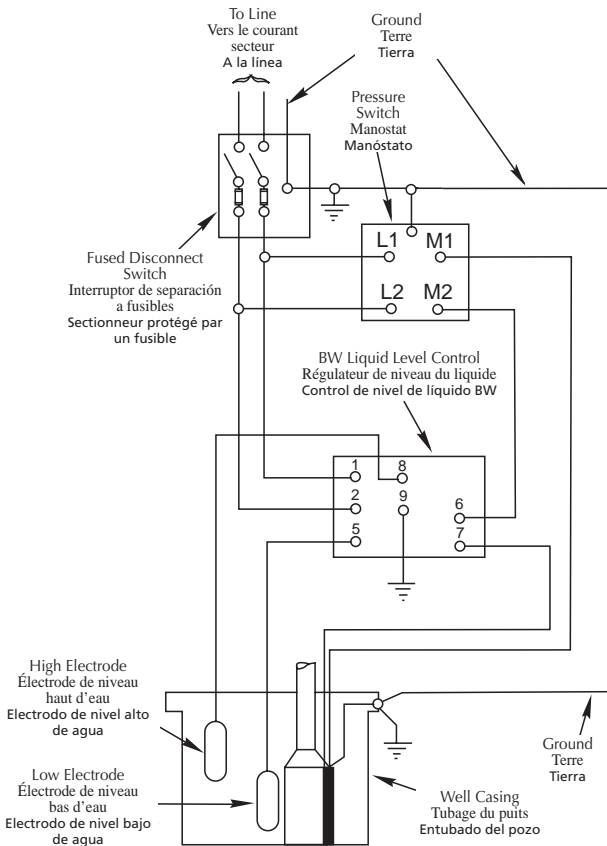
Dans le cas des moteurs d'une puissance de 1 1/2 cheval et plus, utiliser un démarreur magnétique pour ne pas endommager le manostat. Consulter l'usine pour de plus amples renseignements concernant le câblage.

Para motores de 1-1/2 HP y superiores, use el arranque magnético para no dañar el manóstat. Consulte a la fábrica por la información sobre el cableado.

Single Phase - 1/2 HP thru 5 HP with pressure switch and liquid level control

Moteurs monophasés de 1/2 ch à 5 ch avec pressostat et régulateur de niveau du liquide

Caja de control estándar monofásica de 1/2 HP a 5 HP con manóstat y control de nivel de líquido



Single Phase, 2 Wire • Monophasés bifilaires • Monofásico bifilares

For motors of 1-1/2 HP and above, use magnetic starter to avoid damage to pressure switch. Consult factory for wiring information.

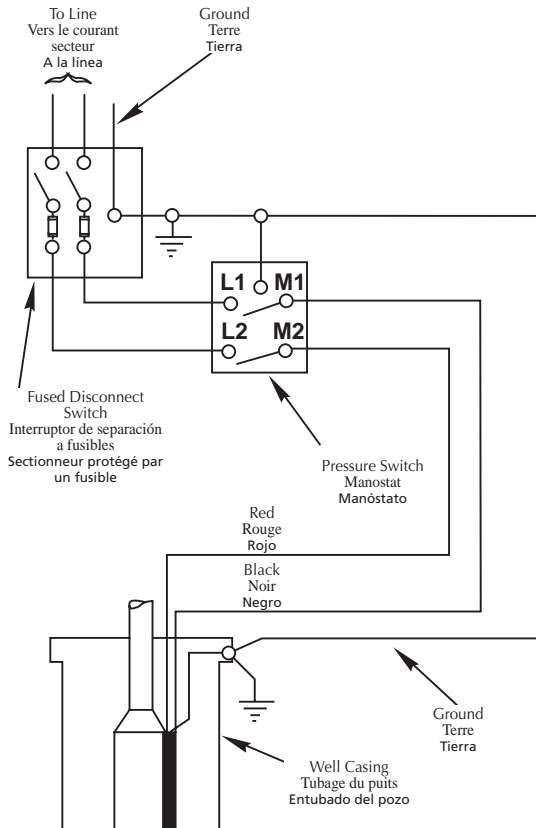
Dans le cas des moteurs d'une puissance de 1 1/2 cheval et plus, utiliser un démarreur magnétique pour ne pas endommager le manostat. Consulter l'usine pour de plus amples renseignements concernant le câblage.

Para motores de 1-1/2 HP y superiores, use el arranque magnético para no dañar el manóstató. Consulte a la fábrica por la información sobre el cableado.

Single Phase - 1/2 HP thru 5 HP with one pump for ONE house with pressure switch

Moteurs monophasés de 1/2 ch À 5 ch - Une pompe pour une Habitation avec pressostat

Caja de control estándar monofásica de 1/2 HP A 5 HP una bomba para una casa con manóstató



Single Phase, 2 Wire • Monophasés bifilares • Monofásico bifilares

For motors of 1-1/2 HP and above, use magnetic starter to avoid damage to pressure switch. Consult factory for wiring information.

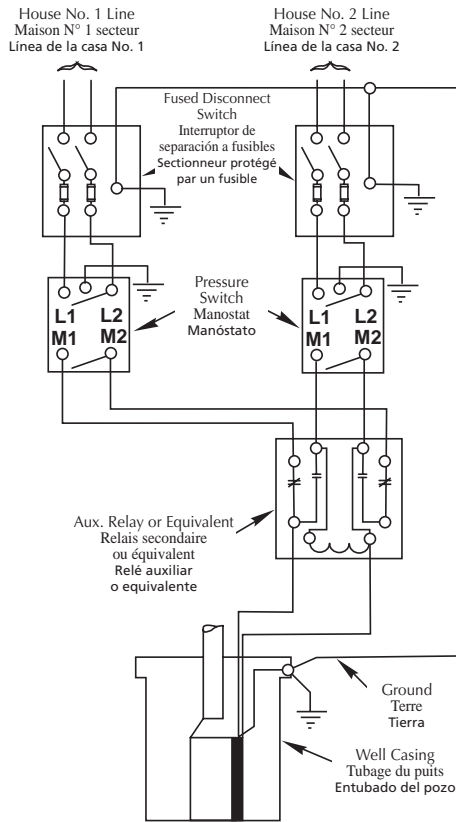
Dans le cas des moteurs d'une puissance de 1 1/2 cheval et plus, utiliser un démarreur magnétique pour ne pas endommager le manostat. Consulter l'usine pour de plus amples renseignements concernant le câblage.

Para motores de 1-1/2 HP y superiores, use el arranque magnético para no dañar el manóstato. Consulte a la fábrica por la información sobre el cableado.

Single Phase - 1/2 HP thru 5 HP with one pump for TWO houses with pressure switch

Moteurs monophasés de 1/2 ch À 5 ch - Une pompe pour deux habitations avec pressostat

Caja de control estándar monofásica de 1/2 HP A 5 HP una bomba para dos casas con manóstato



Single Phase, 3 Wire • Monophasés à 3 fils • Monofásico, trifilar

For motors of 1-1/2 HP and above, use magnetic starter to avoid damage to pressure switch. Consult factory for wiring information.

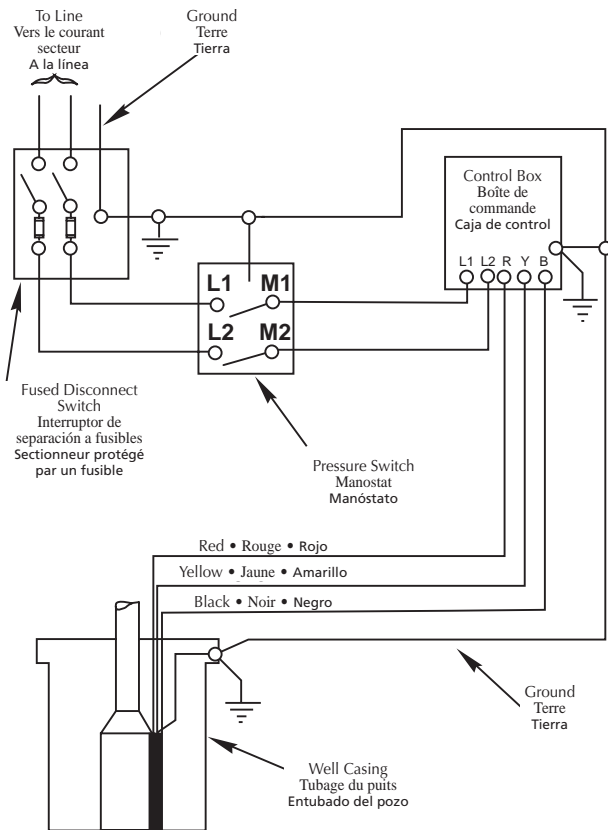
Dans le cas des moteurs d'une puissance de 1 1/2 cheval et plus, utiliser un démarreur magnétique pour ne pas endommager le manostat. Consulter l'usine pour de plus amples renseignements concernant le câblage.

Para motores de 1-1/2 HP y superiores, use el arranque magnético para no dañar el manóstat. Consulte a la fábrica por la información sobre el cableado.

Single Phase - 1/2 HP thru 5 HP standard control box with adequate rated pressure switch

Moteurs monophasés de 1/2 ch À 5 ch Boîte de commande standard avec manostat d'une valeur nominale adéquate

Caja de control estándar monofásica de 1/2 HP A 5 HP con manóstató de la clasificación debida



NOTICE Follow color coding when connecting control box (Yellow to Y, Red to R, Black to B).

AVIS Respecter le codage par couleur pour le branchement de la boîte de commande (le jaune avec Y, le rouge avec R, le noir avec B).

AVISO Siga la codificación a color cuando conecte la caja de control (Amarillo a Y, Rojo a R, Negro a B)

Single Phase, 3 Wire • Monophasés à 3 fils • Monofásico, trifilar

For motors of 1-1/2 HP and above, use magnetic starter to avoid damage to pressure switch. Consult factory for wiring information.

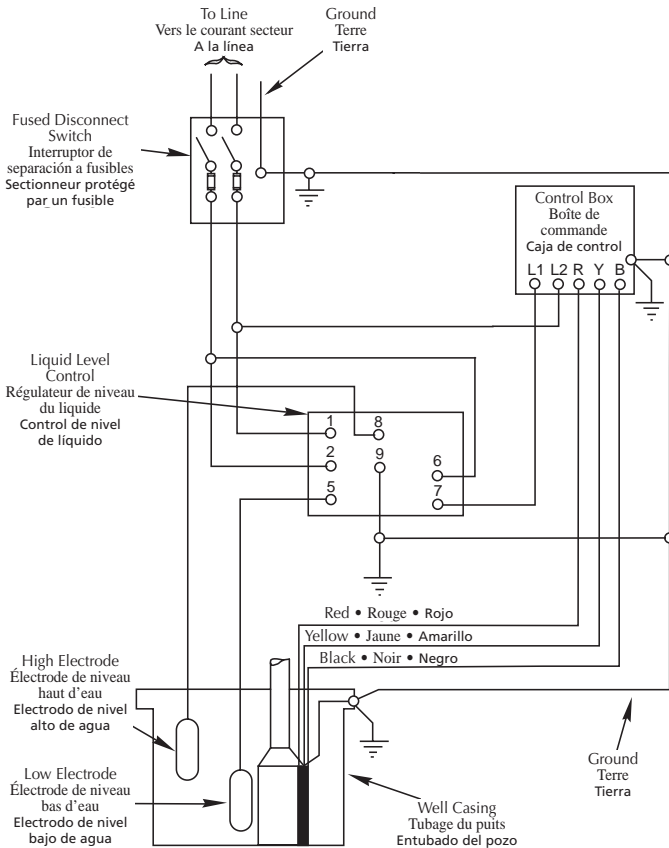
Dans le cas des moteurs d'une puissance de 1 1/2 cheval et plus, utiliser un démarreur magnétique pour ne pas endommager le manostat. Consulter l'usine pour de plus amples renseignements concernant le câblage.

Para motores de 1-1/2 HP y superiores, use el arranque magnético para no dañar el manóstat. Consulte a la fábrica por la información sobre el cableado.

Single Phase - 1/2 HP thru 5 HP standard control box with liquid level control

Moteurs monophasés de 1/2 ch à 5 ch boîte de commande standard avec régulateur de niveau du liquide

Caja de control estándar monofásica de 1/2 HP a 5 HP con control de nivel de líquido



NOTICE Follow color coding when connecting control box (Yellow to Y, Red to R, Black to B).

AVIS Respecter le codage par couleur pour le branchement de la boîte de commande (le jaune avec Y, le rouge avec R, le noir avec B).

AVISO Siga la codificación a color cuando conecte la caja de control (Amarillo a Y, Rojo a R, Negro a B)

Single Phase, 3 Wire • Monophasés à 3 fils • Monofásico, trifilar

For motors of 1-1/2 HP and above, use magnetic starter to avoid damage to pressure switch. Consult factory for wiring information.

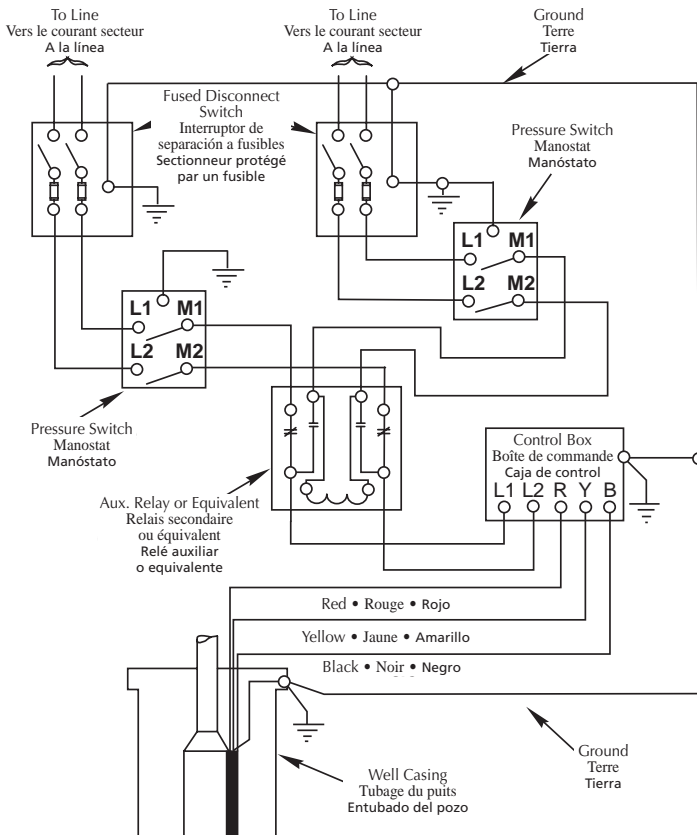
Dans le cas des moteurs d'une puissance de 1 1/2 cheval et plus, utiliser un démarreur magnétique pour ne pas endommager le manostat. Consulter l'usine pour de plus amples renseignements concernant le câblage.

Para motores de 1-1/2 HP y superiores, use el arranque magnético para no dañar el manóstató. Consulte a la fábrica por la información sobre el cableado.

Single Phase - 1/2 HP thru 5 HP standard control box with pressure switch (One pump for 2 houses) with adequate rated pressure switch

Moteurs monophasés de 1/2 ch à 5 ch boîte de commande standard avec manostat (Une pompe pour deux maisons) avec manostat d'une valeur nominale adéquate

Caja de control estándar monofásica de 1/2 HP a 5 HP con manóstató (Una bomba para 2 casas) Con manóstató de la clasificación debida.



NOTICE Follow color coding when connecting control box (Yellow to Y, Red to R, Black to B).

AVIS Respecter le codage par couleur pour le branchement de la boîte de commande (le jaune avec Y, le rouge avec R, le noir avec B).

AVISO Siga la codificación a color cuando conecte la caja de control (Amarillo a Y, Rojo a R, Negro a B)

Single Phase, 3 Wire • Monophasés à 3 fils • Monofásico, trifilar

For motors of 1-1/2 HP and above, use magnetic starter to avoid damage to pressure switch. Consult factory for wiring information.

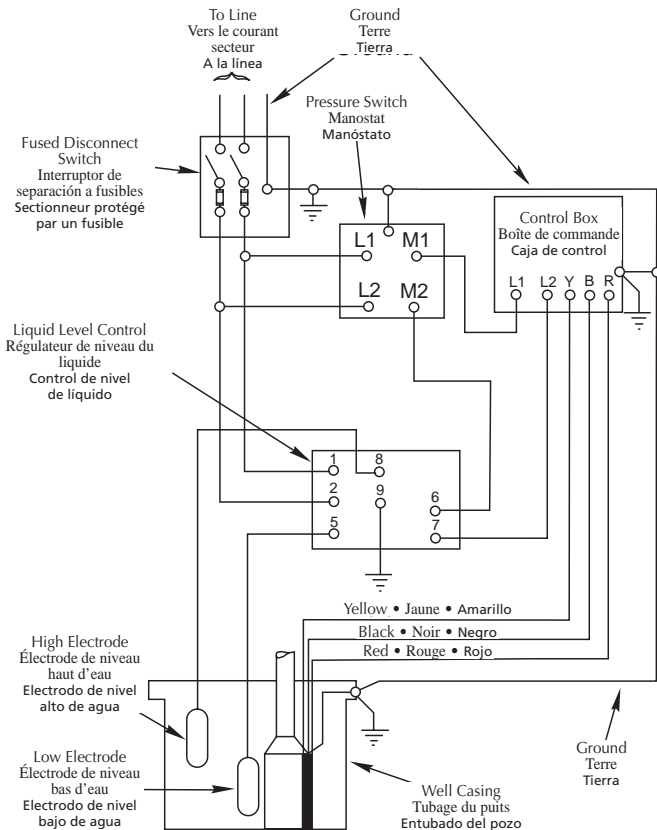
Dans le cas des moteurs d'une puissance de 1 1/2 cheval et plus, utiliser un démarreur magnétique pour ne pas endommager le manostat. Consulter l'usine pour de plus amples renseignements concernant le câblage.

Para motores de 1-1/2 HP y superiores, use el arranque magnético para no dañar el manóstat. Consulte a la fábrica por la información sobre el cableado.

SINGLE PHASE - 1/2 HP thru 5 HP standard control box with pressure switch and liquid level control

Moteurs monophasés de 1/2 ch à 5 ch boîte de commande standard avec manostat et régulateur de niveau du liquide

Caja de control estándar monofásica de 1/2 HP a 5 HP con manóstatoy control de nivel de líquido



NOTICE Follow color coding when connecting control box (Yellow to Y, Red to R, Black to B).

AVIS Respecter le codage par couleur pour le branchement de la boîte de commande (le jaune avec Y, le rouge avec R, le noir avec B).

AVISO Siga la codificación a color cuando conecte la caja de control (Amarillo a Y, Rojo a R, Negro a B)

Single Phase, 3 Wire • Monophasés à 3 fils • Monofásico, trifilar

For motors of 1-1/2 HP and above, use magnetic starter to avoid damage to pressure switch. Consult factory for wiring information.

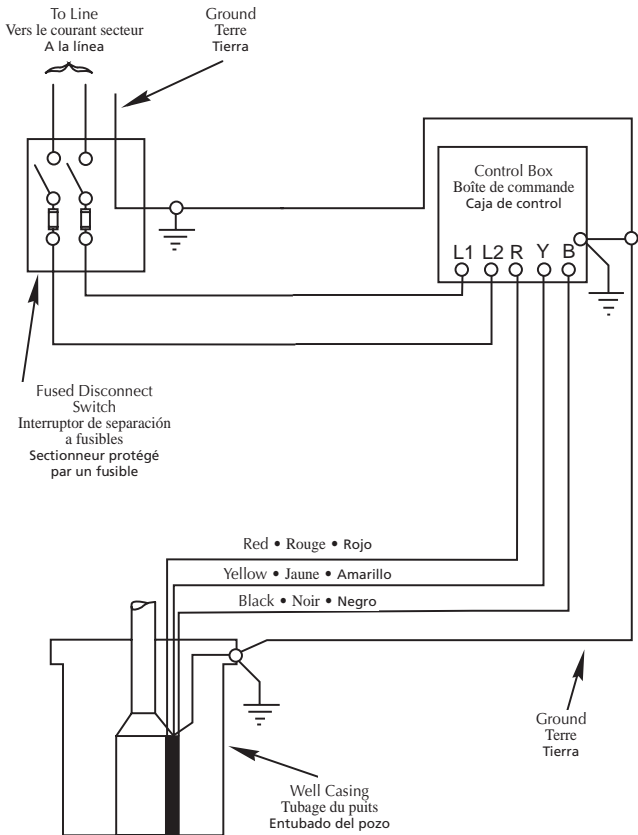
Dans le cas des moteurs d'une puissance de 1 1/2 cheval et plus, utiliser un démarreur magnétique pour ne pas endommager le manostat. Consulter l'usine pour de plus amples renseignements concernant le câblage.

Para motores de 1-1/2 HP y superiores, use el arranque magnético para no dañar el manóstat. Consulte a la fábrica por la información sobre el cableado.

Single Phase, Open system - 1/2 HP thru 5 HP standard control box

Système ouvert - moteurs monophasés de 1/2 ch à 5 ch boîte de commande standard

Caja de control estándar monofásica de sistema abierto de 1/2 HP a 5 HP



NOTICE Follow color coding when connecting control box (Yellow to Y, Red to R, Black to B).

AVIS Respecter le codage par couleur pour le branchement de la boîte de commande (le jaune avec Y, le rouge avec R, le noir avec B).

AVISO Siga la codificación a color cuando conecte la caja de control (Amarillo a Y, Rojo a R, Negro a B)

Single Phase, 3 Wire • Monophasés à 3 fils • Monofásico, trifilar

For motors of 1-1/2 HP and above, use magnetic starter to avoid damage to pressure switch. Consult factory for wiring information.

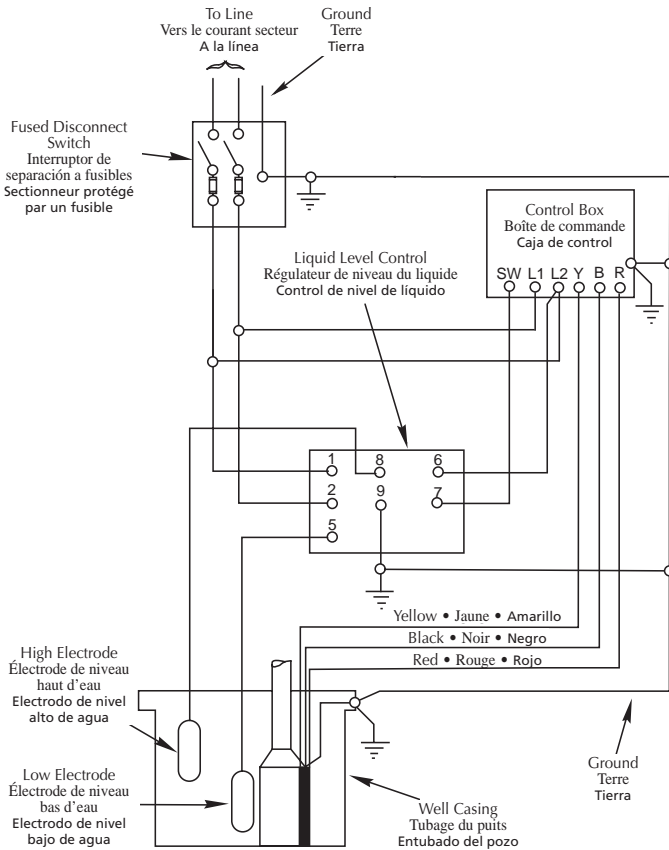
Dans le cas des moteurs d'une puissance de 1 1/2 cheval et plus, utiliser un démarreur magnétique pour ne pas endommager le manostat. Consulter l'usine pour de plus amples renseignements concernant le câblage.

Para motores de 1-1/2 HP y superiores, use el arranque magnético para no dañar el manóstat. Consulte a la fábrica por la información sobre el cableado.

Single Phase - 1/2 HP thru 5 HP standard control box with liquid level control

Moteurs monophasés de 1/2 ch à 5 ch boîte de commande de luxe avec régulateur de niveau du liquide

Caja de control de lujo monofásica de 1/2 HP a 5 HP con control de nivel de líquido



NOTICE Follow color coding when connecting control box (Yellow to Y, Red to R, Black to B).

AVIS Respecter le codage par couleur pour le branchement de la boîte de commande (le jaune avec Y, le rouge avec R, le noir avec B).

AVISO Siga la codificación a color cuando conecte la caja de control (Amarillo a Y, Rojo a R, Negro a B)

Single Phase, 3 Wire • Monophasés à 3 fils • Monofásico, trifilar

For motors of 1-1/2 HP and above, use magnetic starter to avoid damage to pressure switch. Consult factory for wiring information.

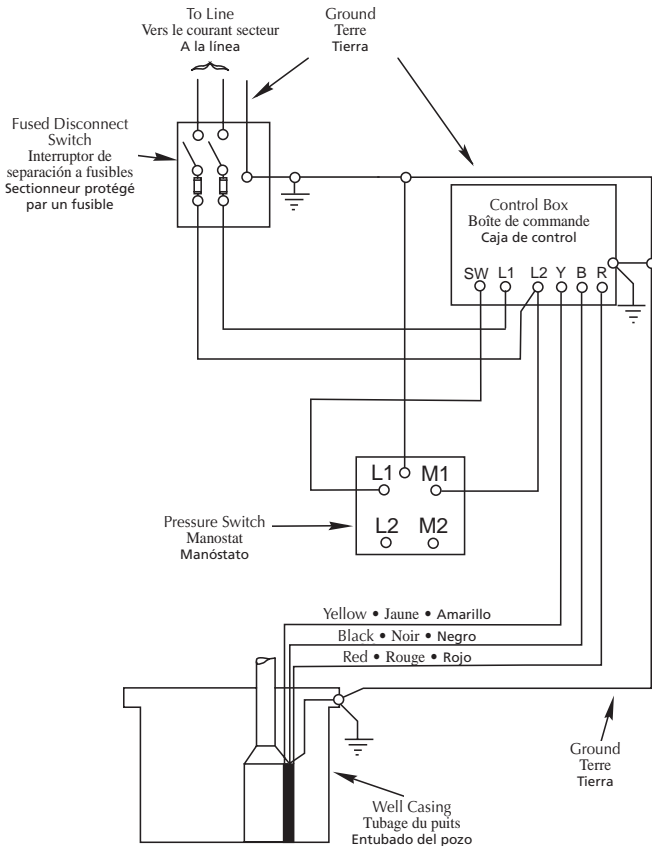
Dans le cas des moteurs d'une puissance de 1 1/2 cheval et plus, utiliser un démarreur magnétique pour ne pas endommager le manostat. Consulter l'usine pour de plus amples renseignements concernant le câblage.

Para motores de 1-1/2 HP y superiores, use el arranque magnético para no dañar el manóstato. Consulte a la fábrica por la información sobre el cableado.

Single Phase - 2, 3, and 5 HP deluxe control boxes with pressure switch

Moteurs monophasés de 2, 3 et 5 ch boîte de commande de luxe avec manostat

Caja de control de lujo monofásica de 2, 3 y 5 HP con manóstato



NOTICE Follow color coding when connecting control box (Yellow to Y, Red to R, Black to B).

AVIS Respecter le codage par couleur pour le branchement de la boîte de commande (le jaune avec Y, le rouge avec R, le noir avec B).

AVISO Siga la codificación a color cuando conecte la caja de control (Amarillo a Y, Rojo a R, Negro a B)

Single Phase, 3 Wire • Monophasés à 3 fils • Monofásico, trifilar

For motors of 1-1/2 HP and above, use magnetic starter to avoid damage to pressure switch. Consult factory for wiring information.

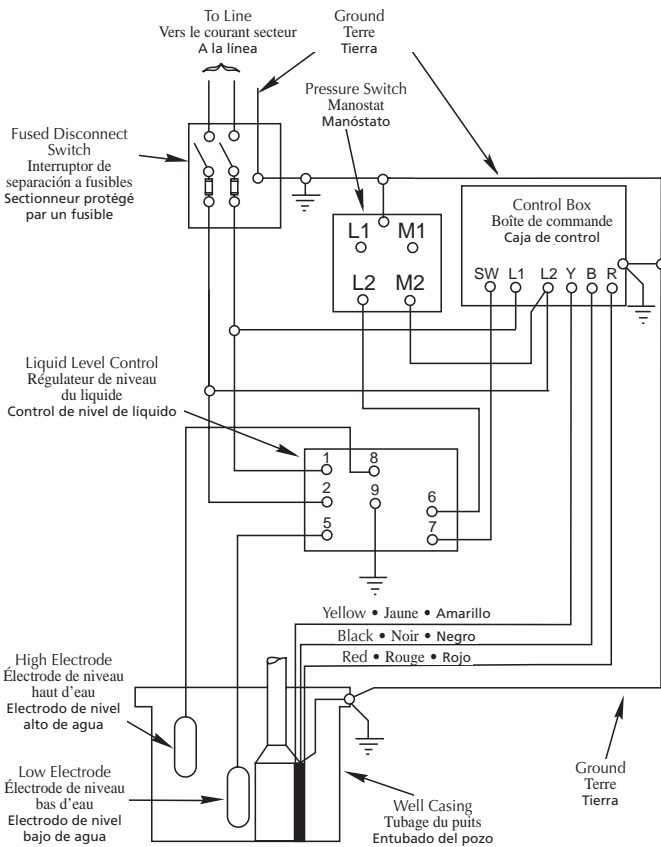
Dans le cas des moteurs d'une puissance de 1 1/2 cheval et plus, utiliser un démarreur magnétique pour ne pas endommager le manostat. Consulter l'usine pour de plus amples renseignements concernant le câblage.

Para motores de 1-1/2 HP y superiores, use el arranque magnético para no dañar el manóstato. Consulte a la fábrica por la información sobre el cableado.

Single Phase - 1/2 HP thru 5 HP standard control box with pressure switch and liquid level control

Moteurs monophasés de 1/2 ch à 5 ch boîte de commande de luxe avec manostat et régulateur de niveau du liquide

Caja de control de lujo monofásica de 1/2 HP a 5 HP con manóstato y control de nivel de líquido



NOTICE Follow color coding when connecting control box (Yellow to Y, Red to R, Black to B).

AVIS Respecter le codage par couleur pour le branchement de la boîte de commande (le jaune avec Y, le rouge avec R, le noir avec B).

AVISO Siga la codificación a color cuando conecte la caja de control (Amarillo a Y, Rojo a R, Negro a B)

Single Phase, 3 Wire • Monophasés à 3 fils • Monofásico, trifilar

For motors of 1-1/2 HP and above, use magnetic starter to avoid damage to pressure switch. Consult factory for wiring information.

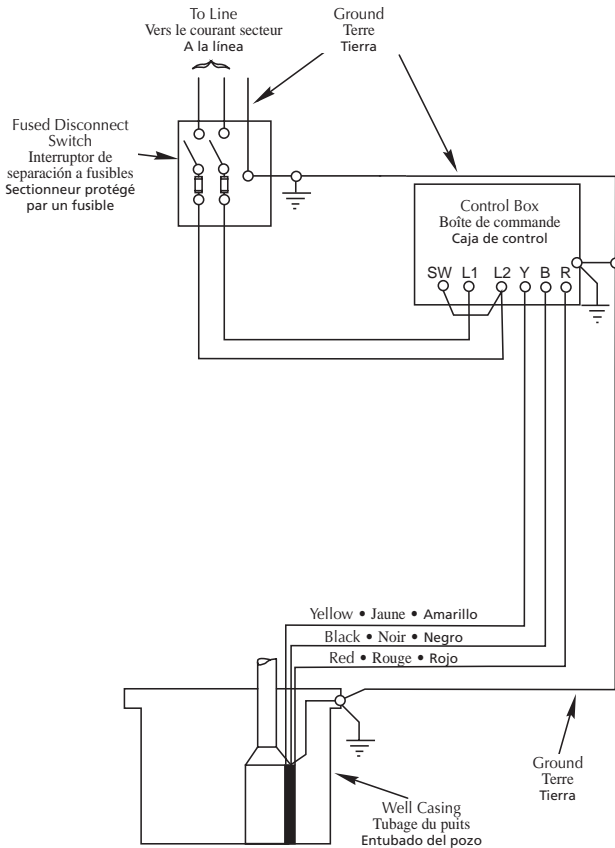
Dans le cas des moteurs d'une puissance de 1 1/2 cheval et plus, utiliser un démarreur magnétique pour ne pas endommager le manostat. Consulter l'usine pour de plus amples renseignements concernant le câblage.

Para motores de 1-1/2 HP y superiores, use el arranque magnético para no dañar el manóstato. Consulte a la fábrica por la información sobre el cableado.

Single Phase - Open system - 1/2 HP thru 5 HP standard control box

Système ouvert - moteurs monophasés de 1/2 ch à 5 ch boîtes de commande de luxe

Caja de control de lujo monofásica de sistema abierto de 1/2 HP a 5 HP



NOTICE Follow color coding when connecting control box (Yellow to Y, Red to R, Black to B).

AVIS Respecter le codage par couleur pour le branchement de la boîte de commande (le jaune avec Y, le rouge avec R, le noir avec B).

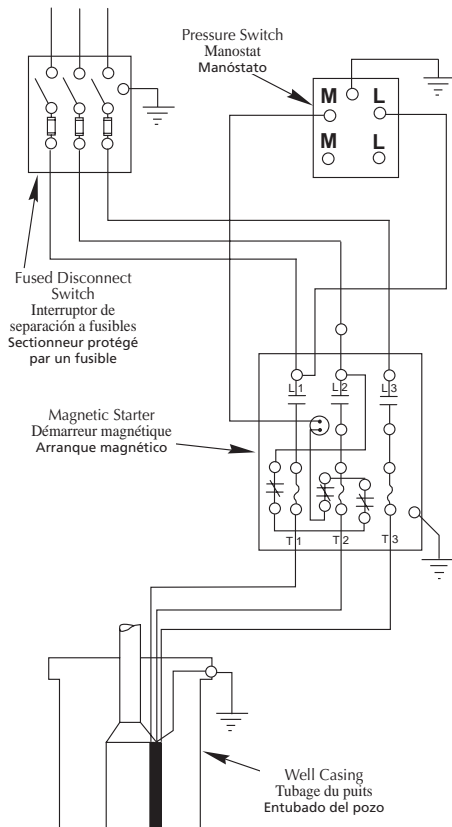
AVISO Siga la codificación a color cuando conecte la caja de control (Amarillo a Y, Rojo a R, Negro a B)

Three Phase • Triphasés • Trifásico

Three Phase - 1-1/2 HP and larger with pressure switch

Moteurs triphasés de 1 1/2 ch et plus puissants avec manostat

Trifásico de 1-1/2 HP y mayores con manóstatu



NOTICE Follow color coding when connecting control box (Yellow to Y, Red to R, Black to B).

AVIS Respecter le codage par couleur pour le branchement de la boîte de commande (le jaune avec Y, le rouge avec R, le noir avec B).

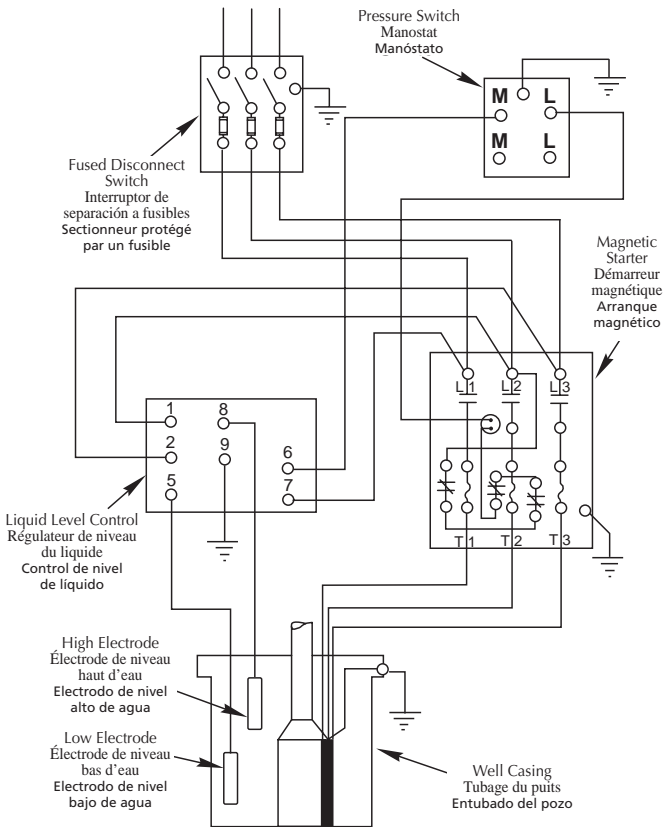
AVISO Siga la codificación a color cuando conecte la caja de control (Amarillo a Y, Rojo a R, Negro a B)

Three Phase • Triphasés • Trifásico

Three Phase - 1-1/2 HP and larger with pressure switch and liquid level control

Moteurs triphasés de 1 1/2 ch et plus puissants avec manostat et régulateur de niveau du liquide

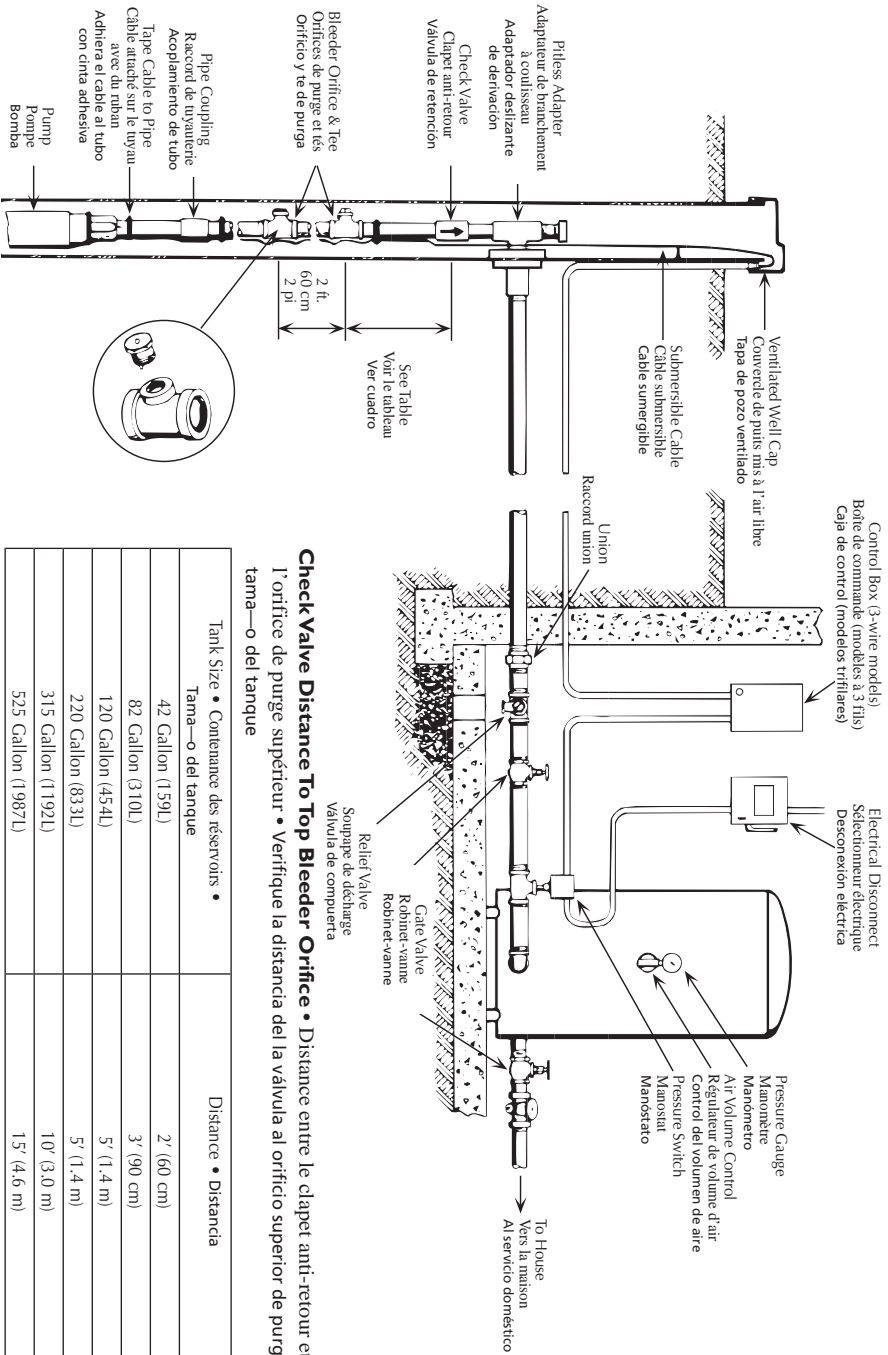
Trifásico de 1-1/2 HP y mayores con manóstatoy control de nivel de líquido



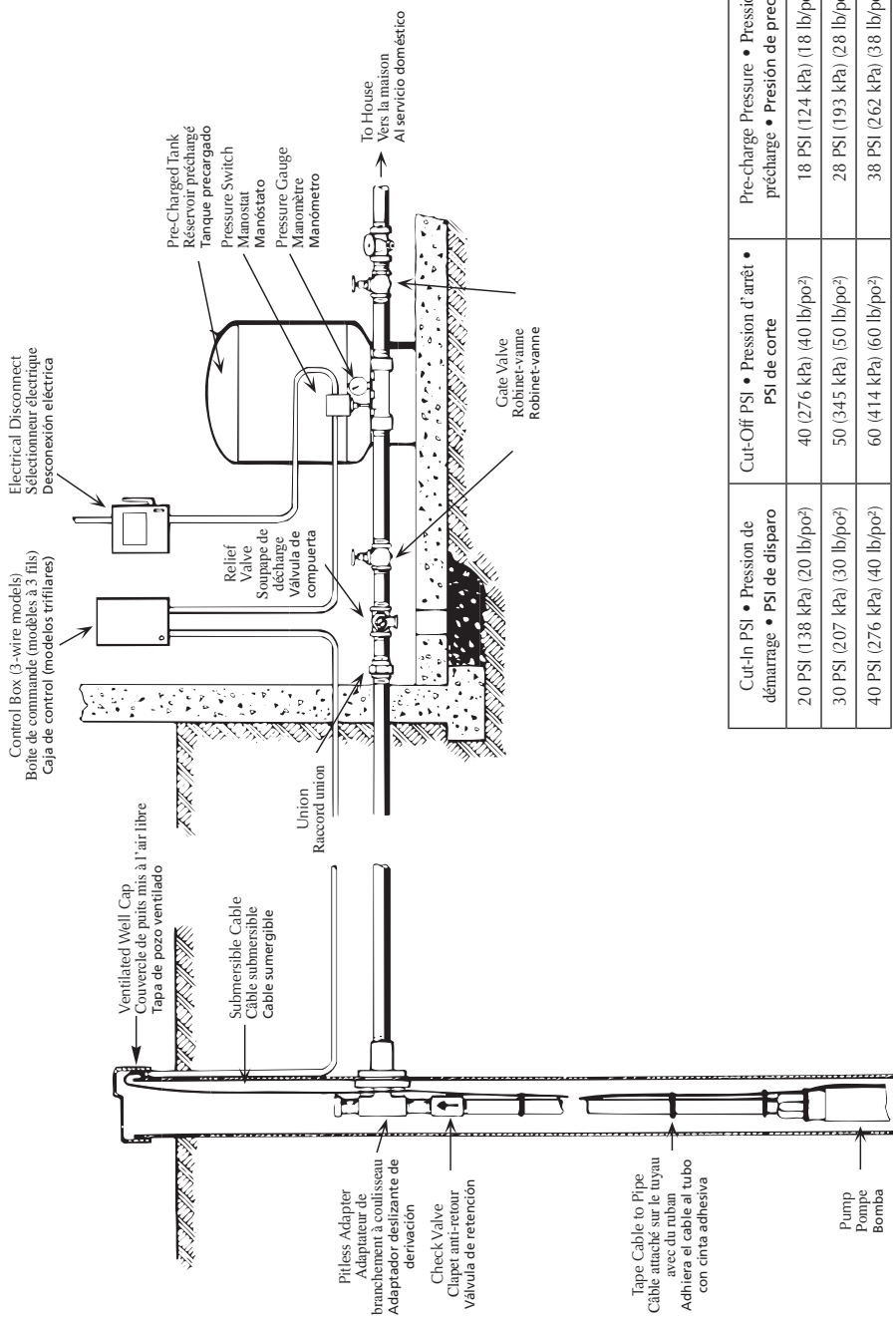
NOTICE Follow color coding when connecting control box (Yellow to Y, Red to R, Black to B).

AVIS Respecter le codage par couleur pour le branchement de la boîte de commande (le jaune avec Y, le rouge avec R, le noir avec B).

AVISO Siga la codificación a color cuando conecte la caja de control (Amarillo a Y, Rojo a R, Negro a B)



Standard Pressure Tank Installation • Installation d'une pompe branchée sur un réservoir sous pression standard • Instalación con tanque de presión estándar



Typical Submersible Installation with Pre-charged Tank • Installation type d'une pompe submersible branchée sur un réservoir préchargé • Instalación submersible típica con tanque precargado

Cut-In PSI • Pression de démarrage • PSI de disparo	Cut-Off PSI • Pression d'arrêt • PSI de corte	Pre-charge Pressure • Pressions de précharge • Presión de precarga
20 PSI (138 kPa) (20 lb/psf)	40 (276 kPa) (40 lb/psf)	18 PSI (124 kPa) (18 lb/psf)
30 PSI (207 kPa) (30 lb/psf)	50 (345 kPa) (50 lb/psf)	28 PSI (193 kPa) (28 lb/psf)
40 PSI (276 kPa) (40 lb/psf)	60 (414 kPa) (60 lb/psf)	38 PSI (262 kPa) (38 lb/psf)