



PARTS-WIRING TECHNICAL MANUAL

MSHA PERMISSIBLE CONTROLS

CB-801 CB-8218

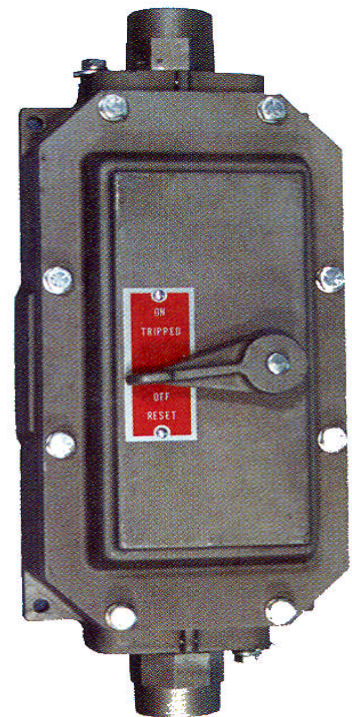
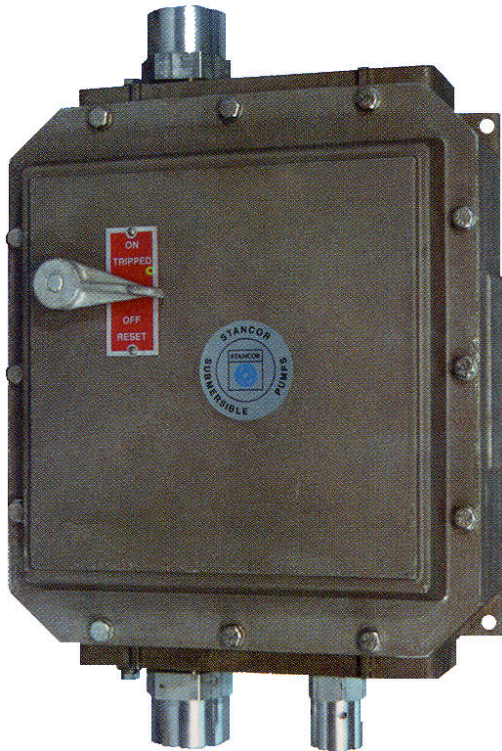


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SAFETY WARNING!

Make sure the power is disconnected (locked off and tagged) before making the installation.

Installation of Stancor Portable Permissible Controls should only be performed by a qualified electrician in accordance with the NEC, local Electrical Codes and MSHA regulations.

The control should be securely mounted in an upright position, away from mud, water and dirt.

Before connecting the power, verify that the supply voltage, phase and frequency matches with the volts, phase and Hz, shown on the control and pump data plates.

Connect the pump cable and power leads as indicated on the wiring diagram, or see the corresponding wiring diagram in this manual.

Prior to energizing the control, check all wiring connections to insure they are tight.

Check and tighten all cover bolts. Check all cable entries for fit and tightness.

**ALWAYS DISCONNECT THE POWER SUPPLY TO
THE CONTROL PRIOR TO UNSCREWING THE
COVER BOLTS.**

**NO CHANGES/MODIFICATIONS MAY BE MADE
TO ANY MSHA APPROVED COMPONENTS
WITHOUT PRIOR AUTHORIZATION FROM MSHA**

EXPLOSION PROOF ELECTRICAL EQUIPMENT - HAZARD WARNINGS

Caution Statement

(Required by 30CFR PART 18)

To retain permissibility of this equipment the following conditions shall be satisfied:

- 1. General Safety.** Frequent inspection shall be made. All electrical parts, including the portable cable and wiring, shall be kept in a safe condition. There shall be no opening into the casings of the electrical parts. A permissible distribution box shall be used for connection to the power circuit unless connection is made in fresh intake air. The machine frame shall be effectively grounded. The operating voltage should match the voltage rating of the motor(s).
- 2. Servicing.** Explosion-proof enclosures shall be restored to the state of original safety with respect to all flame arresting paths, lead entrances, etc. following disassembly for repair or rebuilding, whether by the owner or an independent shop.
- 3. Fasteners.** All bolts, nuts, screws and other means of fastening, and also threaded covers, shall be in place, properly tightened and secured.
- 4. Renewals and Repairs.** Inspections, repairs or renewals of electrical parts shall not be made unless the portable cable is disconnected from the circuit furnishing power, and the cable shall not be connected again until all parts are properly reassembled. Special care shall be taken in making renewals or repairs. Leave no parts off. Use replacement parts furnished by the manufacturer. When any lead entrance is disturbed, the original leads or exact duplicates thereof shall be used and stuffing boxes shall be repacked in the approved manner.
- 5. Cable Requirements.** A flame resistant portable cable bearing a MSHA assigned identification number, adequately protected by an automatic circuit interrupting device shall be used. Special care shall be taken in handling the cable to guard against mechanical injury and wear. Splices in portable cables shall be made in a workmanlike manner, mechanically strong, and well insulated. Not more than one temporary splice is permitted in a portable cable regardless of length. Connections and wiring to the outby end of the cable shall be in accordance with recognized standards of safety.

"DO NOT CHANGE WITHOUT PRIOR APPROVAL OF M.S.H.A".

TITLE	CAUTION STATEMENT
DRWG.NO.	CB8344
DATE	I 4/7/95

STANCOR PERMISSIBLE CONTROLS DESCRIPTION

MANUAL CONTROLS

At the present time Stancor supplies one version, of Permissible manual control: (Circuit Breaker/Overload circuit)

This manual control version is built with a combination circuit breaker/overload/disconnect, allowing a threefold function: (1) manual ON/ OFF switch; (2) motor short-circuit protection; (3) motor overload protection .The circuit breaker will trip when one of the above occurs. The breaker has to be manually reset.

All Stancor 3-phase & 1-phase pump motors have built-in temperature sensors (normally closed thermal switches), wired in series, which open at a preset motor stator winding temperature and re-close after the temperature returns to a safe level. All Stancor P pumps are designed with a thermal switch monitoring circuit, that is, thermal switches are connected in series with a contactor coil mounted in the head of the pump.

AUTOMATIC CONTROLS (FLOATS)

Stancor Permissible automatic controls are used for the unattended operation of Stancor Permissible pumps.

These controls are equipped with a magnetic contactor which controls the pump motor's ON and OFF operation. The contactor is energized by two Stancor level sensors, installed in the sump at selected "LOW" and "HIGH" liquid levels. The two level sensors are connected to the control circuit, using a latching type intrinsically-safe relay as interface. This relay is a solid state switching device and is MSHA approved for hazardous locations. The "High" level sensor automatically turns the pump on at a high level condition, the "Low" level sensor turns the pump off.

AUTOMATIC CONTROLS (FLOATLESS)

These controls are equipped with a Model 821 fully programmable solid state liquid level controller which controls the pump motor's ON and OFF operation via the contactor. The controller operates on the principle that when a pump is pumping liquid it will draw higher KW than when it operates in a "snore" condition. When the Model 821 senses the reduction in KW via the current transformer it shuts the pump off. After a short period of time the control will switch the pump on again. The model 821 is self learning and continually adapts the operation of the pump to the rate of inflow to the sump. No float switches or external sensing devices are required for operation. See the operation manual for a full description of all features and function capabilities.

Important: Notice

ANY SUBSTITUTION OF MSHA APPROVED COMPONENTS REQUIRES THE NOTIFICATION AND RESUBMITTAL OF DOCUMENTATION TO THE APPROVAL AND CERTIFICATION CENTER OF MSHA PRIOR TO THE CHANGE.

SERVICING THE MSHA MANUAL AND AUTOMATIC CONTROL

Because of the critical requirements and potentially explosive environments the Stancor MSHA Controls are to perform in, Stancor recommends that "NO PARTS OF THE CONTROLS ARE TO BE REPAIRED" ONLY REPLACED, with factory original parts that are certified for use in our control box assemblies.

All electrical work should be performed by qualified personnel only

Model CB-801 Service/Inspection

The Stancor Model CB-801 Manual Control box requires no maintenance, only the periodic inspection to ensure that all bolts, washers and safety wire are in place and secure, and the strain relief clamps are securely fastened to the main body of the control and cables. Whenever a pump is removed from service for repair a full inspection of the box should be performed. This includes the machined surfaces of the cover and body, that the on/off handle operates freely (no sticking), and all threaded connections as well as proper ground and ground check hardware are in place. If any discrepancies are noted the appropriate component should be replaced, not repaired.

If the circuit breaker trips, the pump should be immediately inspected in a non explosive environment for possible motor damage. Once the cause has been determined, the pump should be repaired or the circuit breaker replaced before returning the pump to service.

Model CB-8218 Service/Inspection

The Stancor Model CB-8218 Manual Control box requires no maintenance, only the periodic inspection to ensure that all bolts, washers and safety wire are in place and secure, and the strain relief clamps are securely fastened to the main body of the control and cables. Whenever a pump is removed from service for repair a full inspection of the box should be performed. This includes the machined surfaces of the cover and body, that the on/off handle operates freely (no sticking), and all threaded connections as well as proper ground and ground check hardware are in place. If any discrepancies are noted the appropriate component should be replaced, not repaired.

Trouble Shooting

- 1) If the circuit breaker trips, the pump should be immediately inspected in a non explosive environment for possible motor damage. Once the pump has been determined to be operating properly, further inspection and testing of the control can be performed. If the pump requires repair, additional inspection of the contactor in the control should be made. Ensure the contacts operate freely and that the surfaces are free of pitting and excessive arcing. If excessive, replace contactor.

The following checks/tests may only be performed in a non permissible environment. Some tests must be performed with “live” voltage. These tests must only be performed by a qualified electrician using the utmost care.

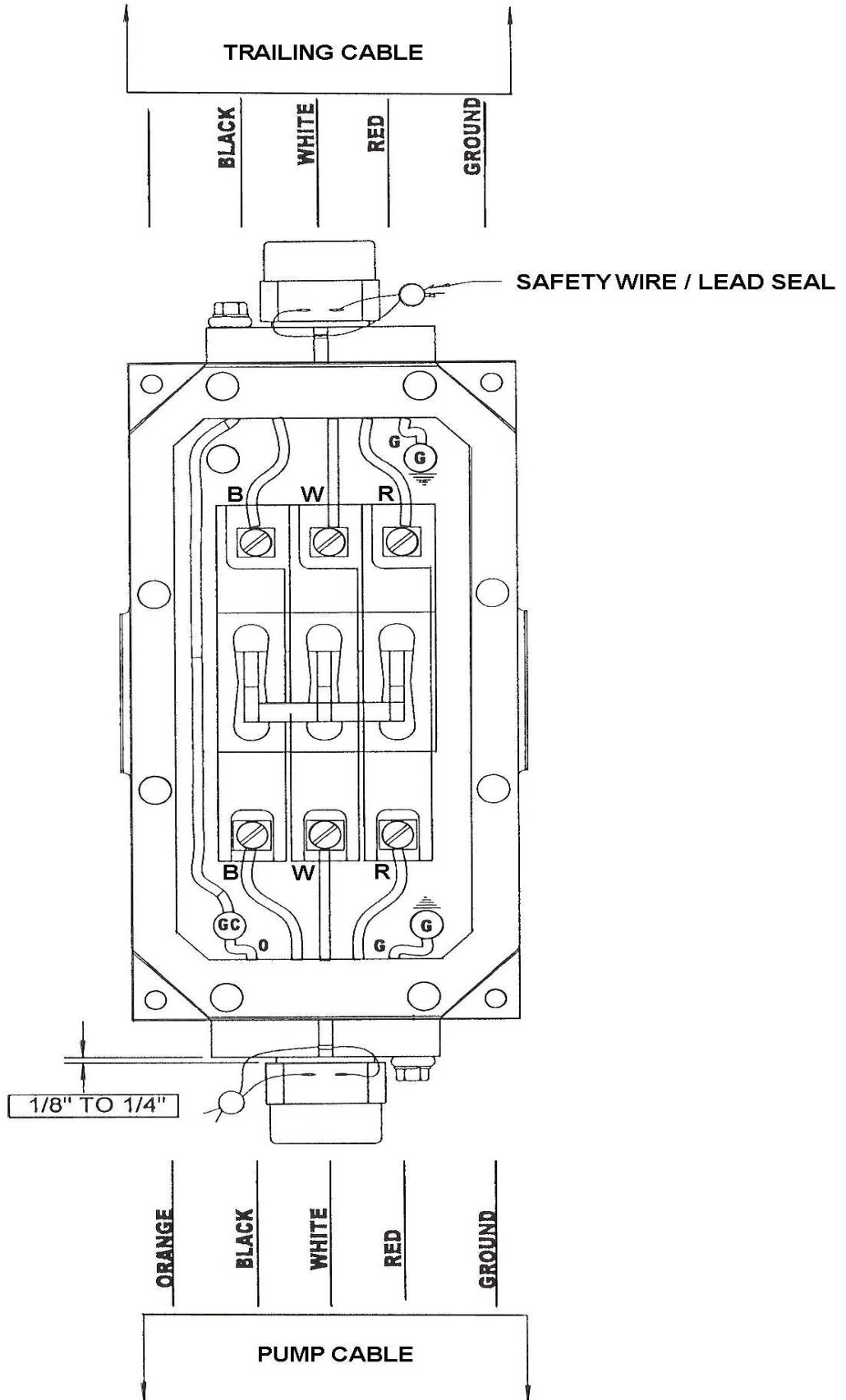
Severe injury and/or death may occur if performed by unqualified personnel.

- 2) If the pump fails to start when floats are activated:
 - A) Check power source/supply
 - B) Check for 115 volt from secondary side of transformer
 - C) Check contactor for coil damage
 - D) Check floats for physical damage – and/or circuit continuity when inverted. Replace if faulty
 - E) Check output signal from intrinsically safe relay. See relay supplied with control for specs – replace if necessary

Model CB-8218 Floatless Service/Inspection

- 1) If the circuit breaker trips, the pump should be immediately inspected in a non explosive environment for possible motor damage. Once the pump has been determined to be operating properly, further inspection and testing of the control can be performed. If the pump requires repair, additional inspection of the contactor in the control should be made. Ensure the contacts operate freely and that the surfaces are free of pitting and excessive arcing. If excessive, replace contactor.
- 2) If the pump fails to start when relay is activated:
 - A) Check power source/supply
 - B) Check for 115 volt from secondary side of transformer
 - C) Check contactor for coil damage
 - D) Check that LED display is lit. Refer to supplemental Instructions provided with control for specific tests and parameters
- 3) If pump starts/stops erratically, or continues to run excessively, consult factory for program data specific to model pump being used.

801 WIRING DIAGRAM

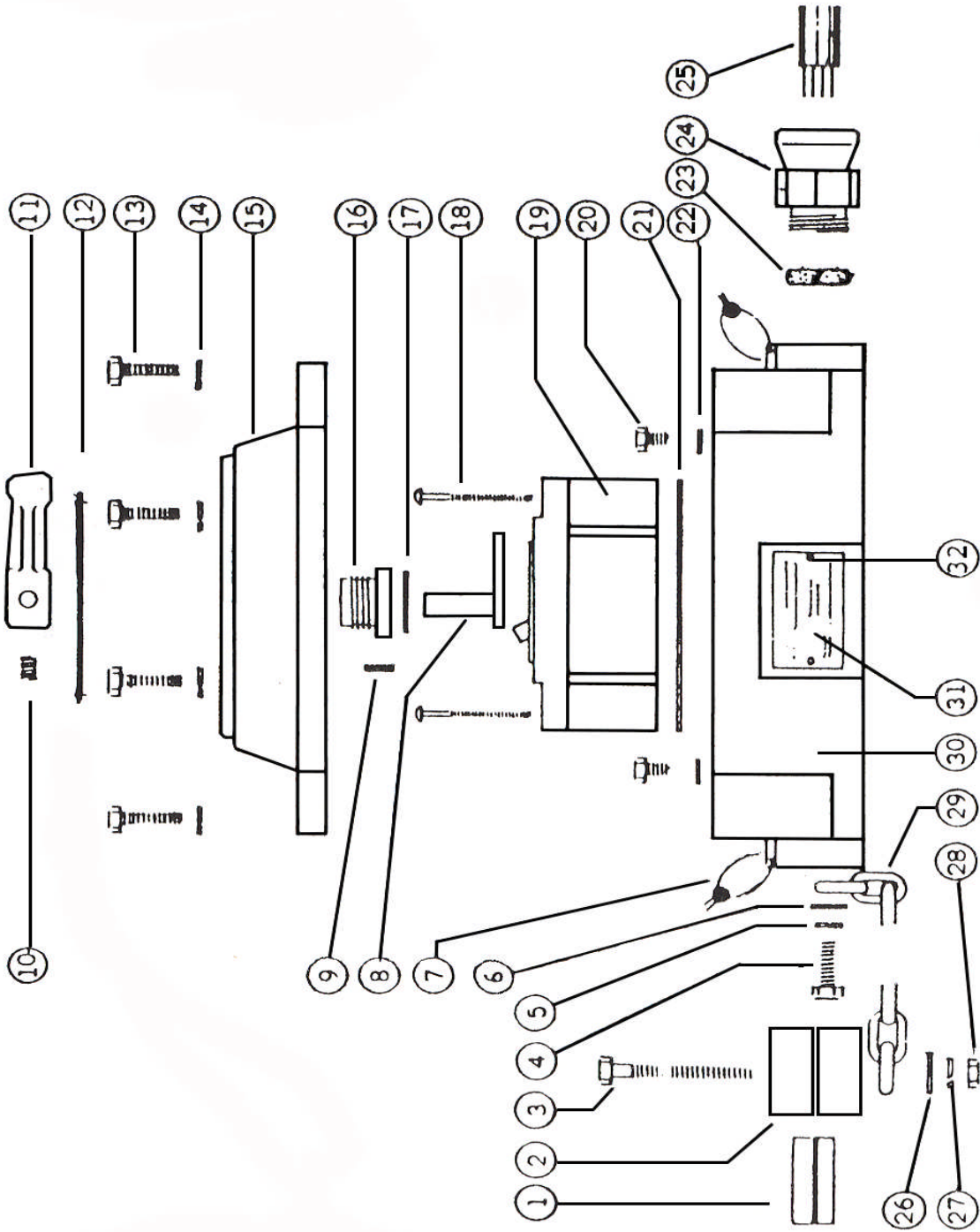


STANCOR MODEL CB-801 PARTS LIST
MSHA APPROVED MANUAL CONTROL BOX

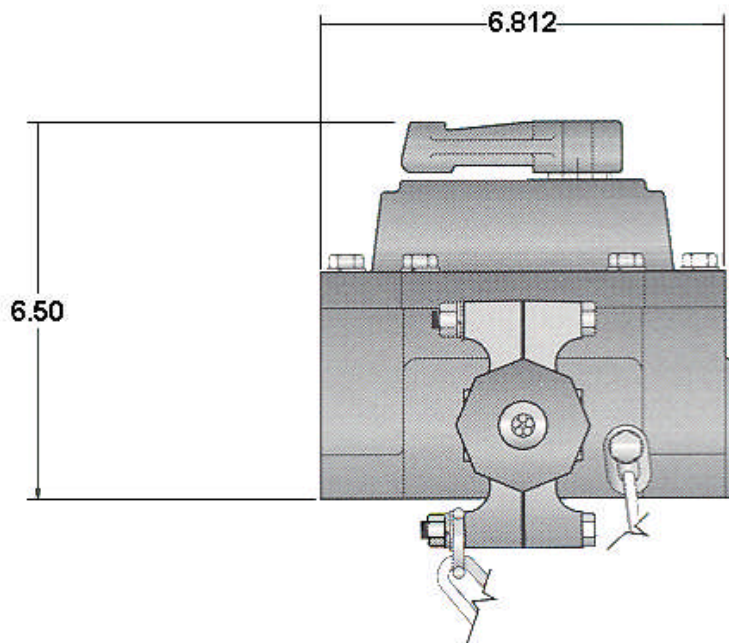
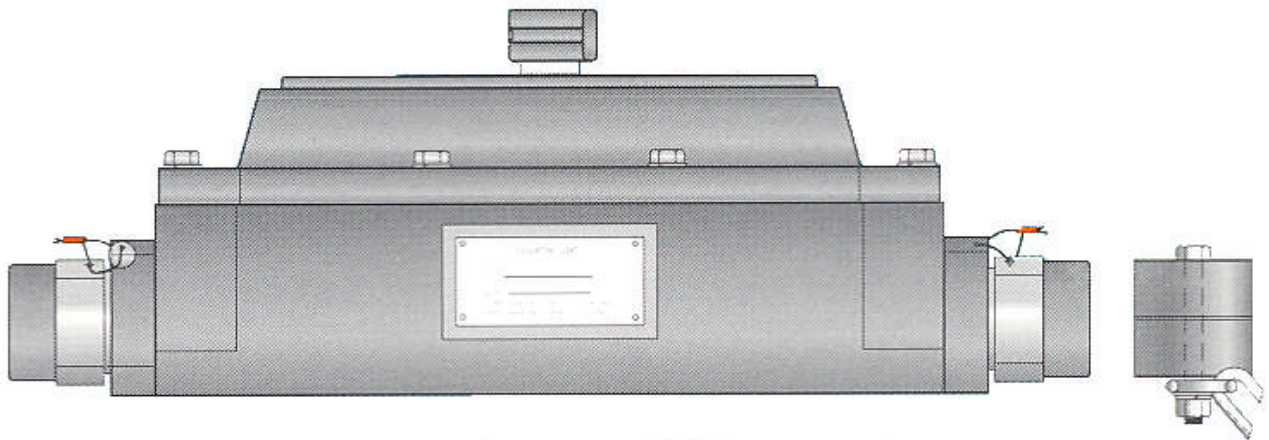
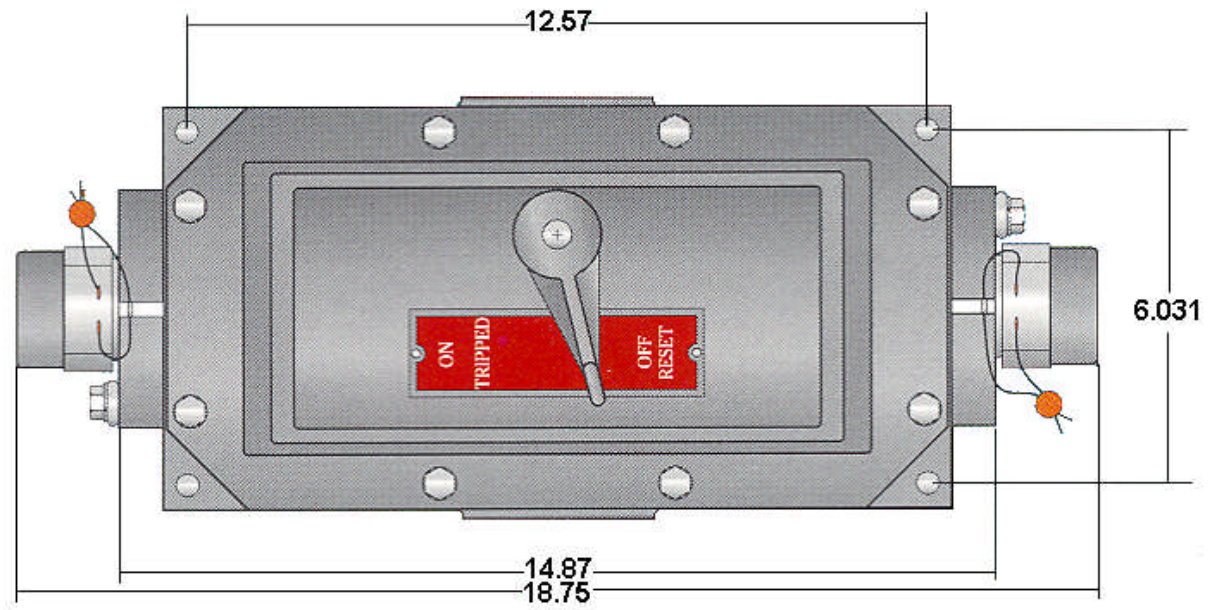
POS. #	QUANTITY	PART #	DESCRIPTION
1	2	CB-827	RUBBER COLLAR
2	2	CB-821	CABLE CLAMP (SET)
3	4	CB-809	BOLT S/S 5/16"X2-3/4"
4	2	CB-812	BOLT 3/8"X1-1/4"
5	2	CB-813	3/8" LOCKWASHER
6	-	-	NOT USED
7	2	CB-817	LOCKWIRE
8	1	CB-824	SHAFT W/FORK
	1	CB-824-1	(2-DCE ONLY)
9	1	CB-823 N/A	ROLL PIN (not available)
10	1	CB-814	ALLEN SET SCREW
11	1	CB-822	SWITCH HANDLE
12	1	CB-808	ON/OFF PLATE
13	8	CB-812	BOLT 3/8"X1-1/4"
14	8	CB-813	3/8" LOCKWASHER
15	1	CB-819	CONTROL BOX COVER
16	1	CB-832 N/A	COLLAR (not available)
17	1	CB-828	WASHER
18	3	CB-829	BREAKER SCREW SHORT
	3	CB-829A	BREAKER SCREW LONG
	4	CB-829L	(2-DCE BREAKER SCREW)
19	1	CB-*	CIRCUIT BREAKER
20	4	CB-815	GROUND SCREW 1/4'X1/2"
21	1	CB-826	GASKET
22	4	CB-822	WASHER
23	2	CB-805	PACKING, P-20 THRU S-1000
	2	CB-806	PACKING, P-60 THRU P-80
24	2	CB-820-6	CABLE ENTRY (ALL EXCEPT #2)
	1	CB-840-2	CABLE ENTRY #2 TRAILING
25	-	SEE PUMP	PUMP CABLE
26	4	CB-825	WASHER
27	4	CB-810	LOCKWASHER
28	4	CB-811	HEX NUT
29	2	CB-804	CHAIN
30	1	CB-819-8	CONTROL BOX BODY
31	1	CB-807	NAME PLATE
32	2	CB-830	RIVET

*REFER TO STANCOR CHART WITH THE PUMP MODEL AND VOLTAGE FOR MSHA APPROVED CIRCUIT BREAKER TYPE

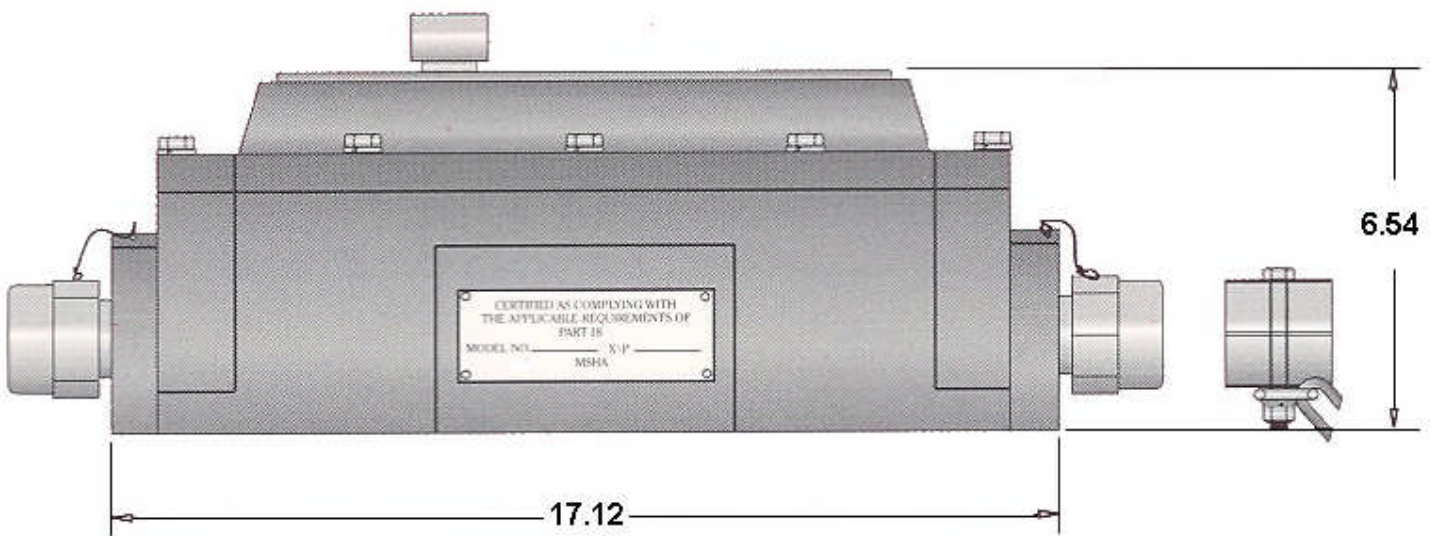
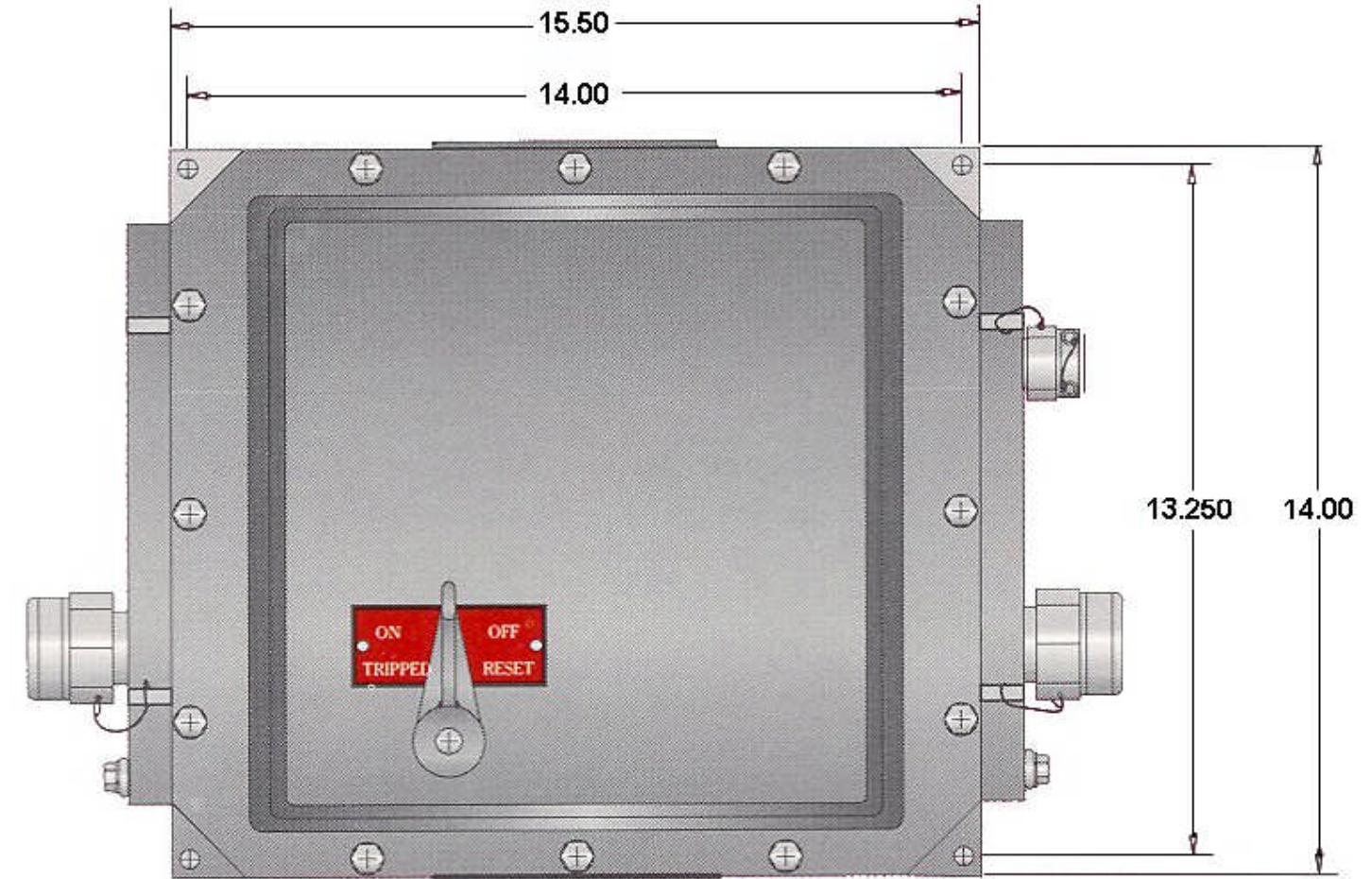
STANCOR MODEL CB-801 EXPLODED VIEW MSHA APPROVED MANUAL CONTROL BOX



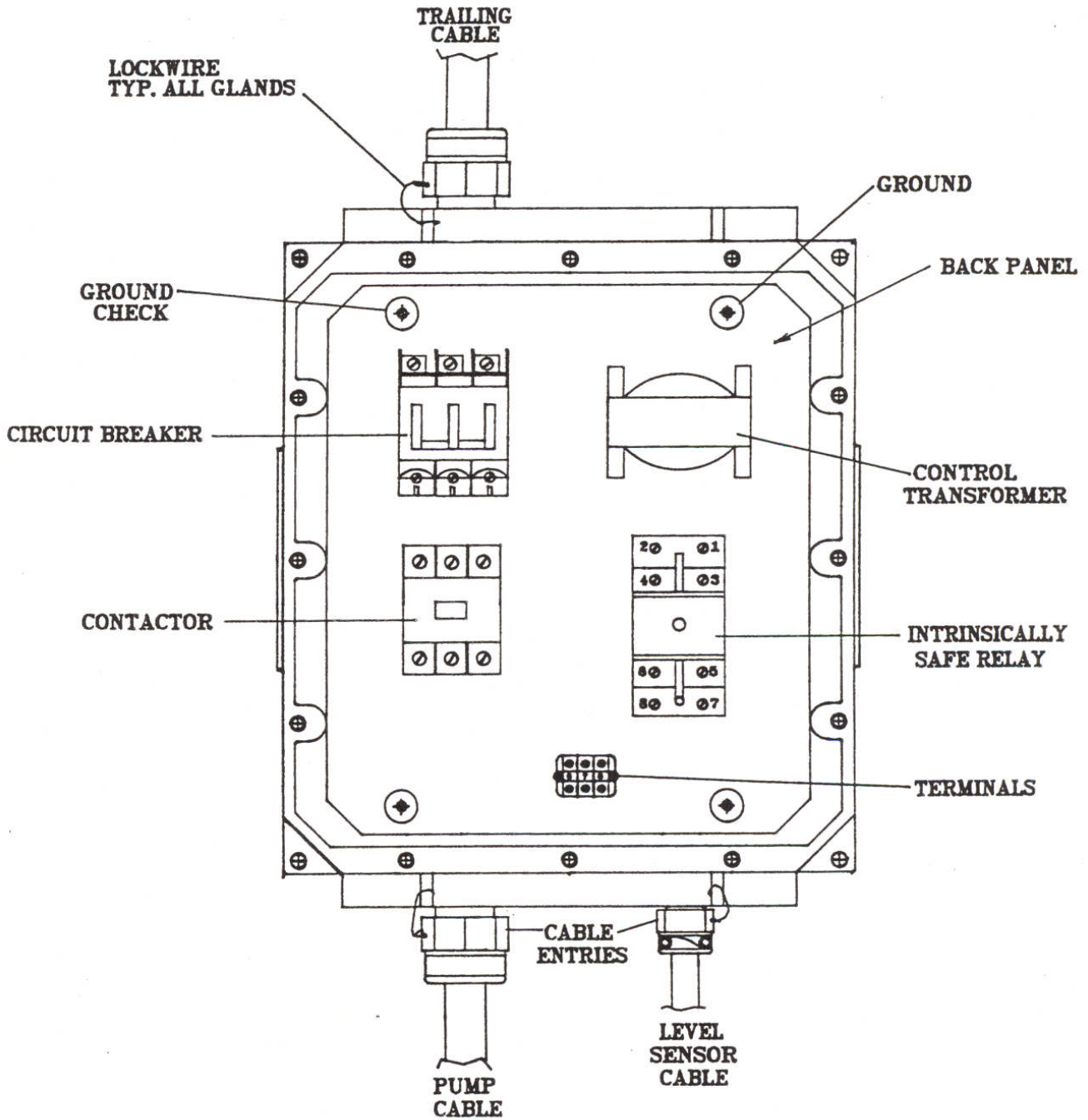
CB-801 DIMENSIONS



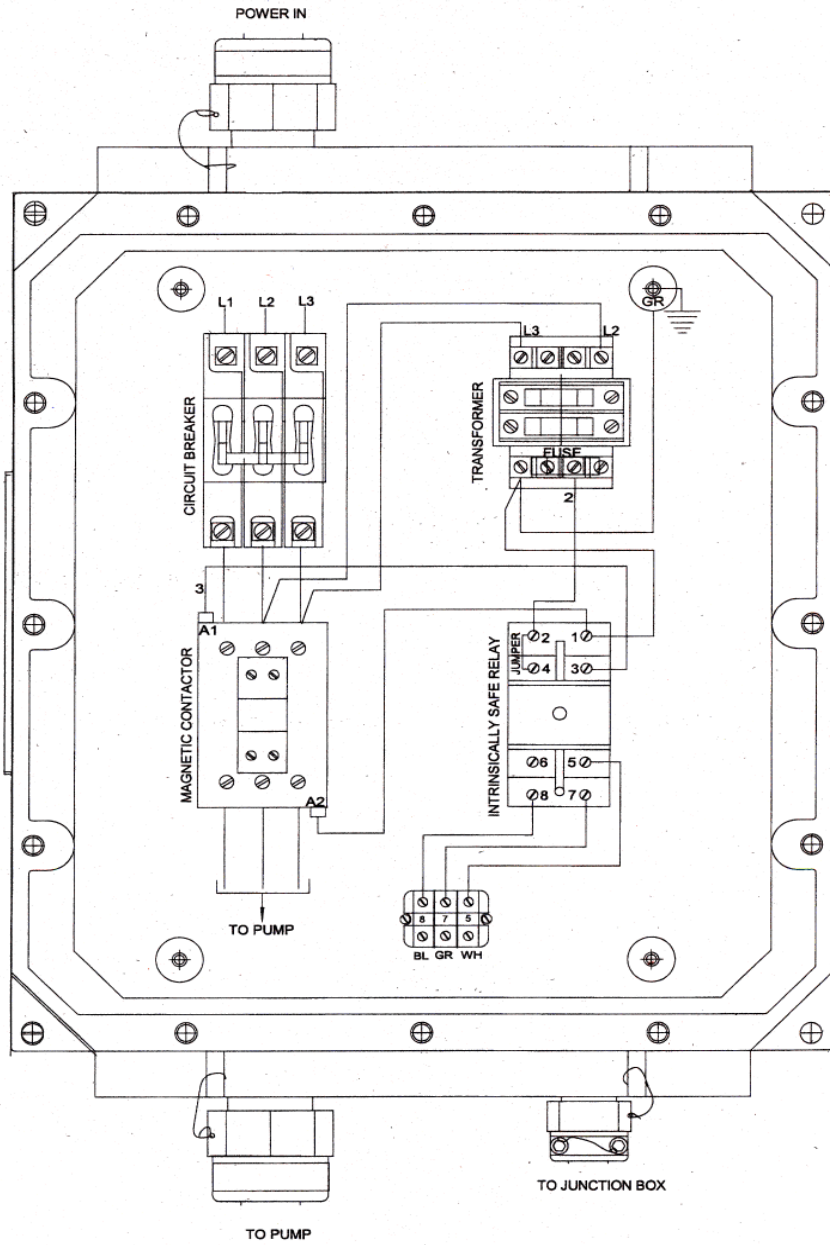
CB-8218 DIMENSIONS



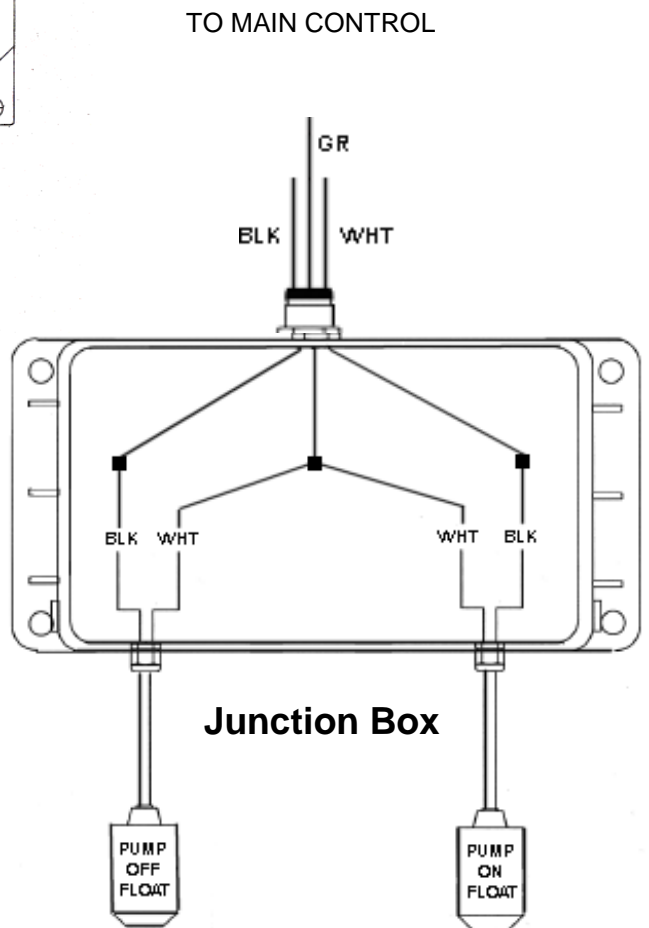
8218 LAYOUT DRAWING



8218 WIRING DIAGRAM

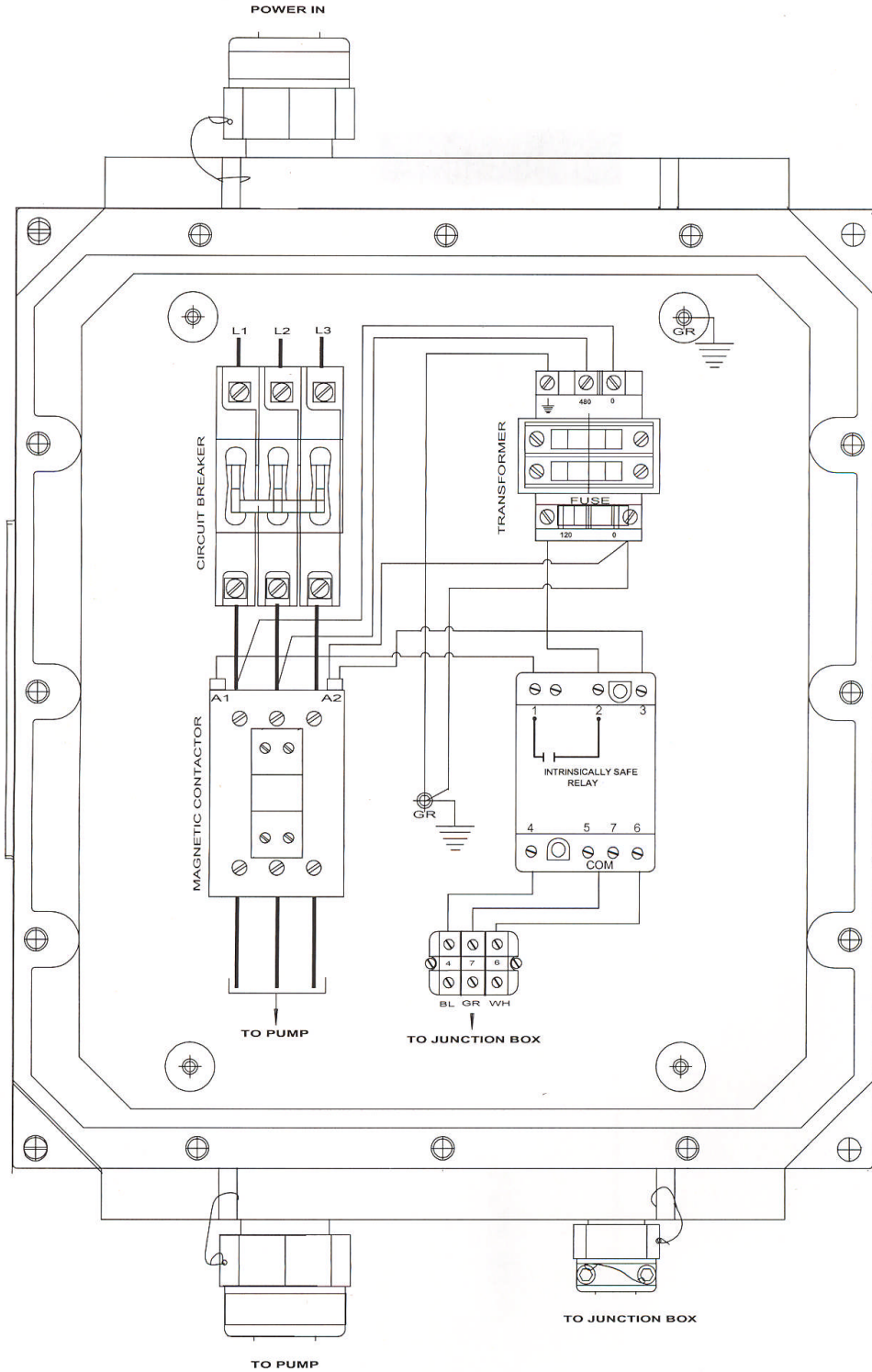


460/575 Volt

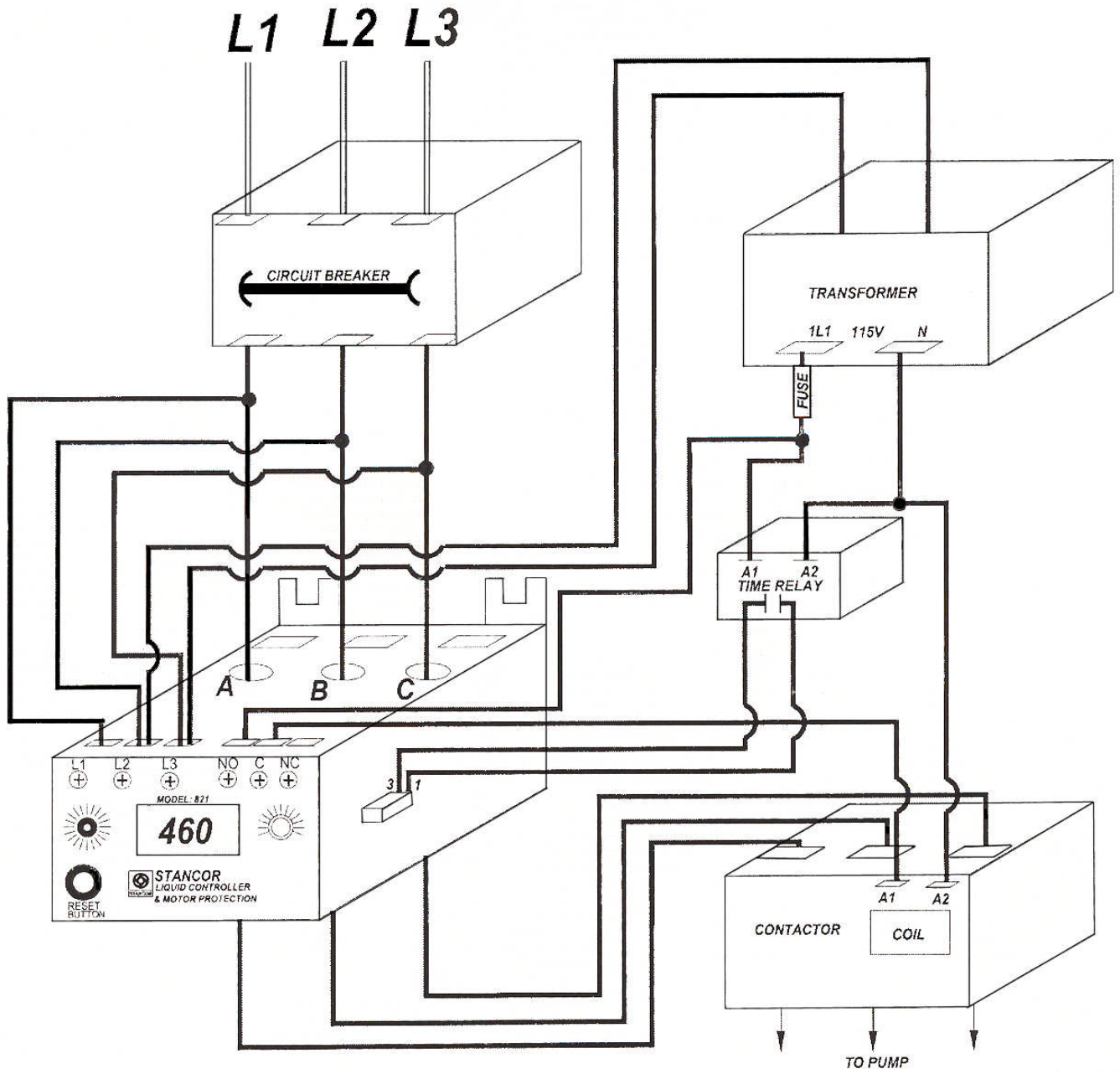


8218 WIRING DIAGRAM

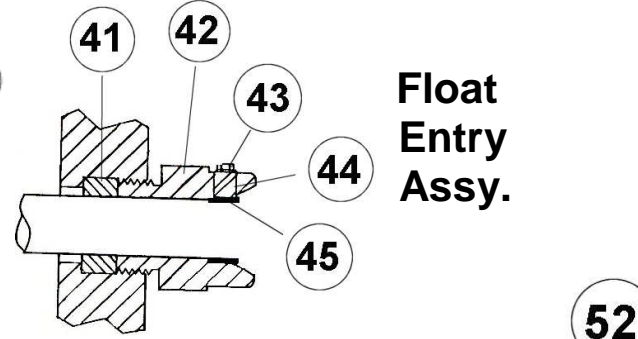
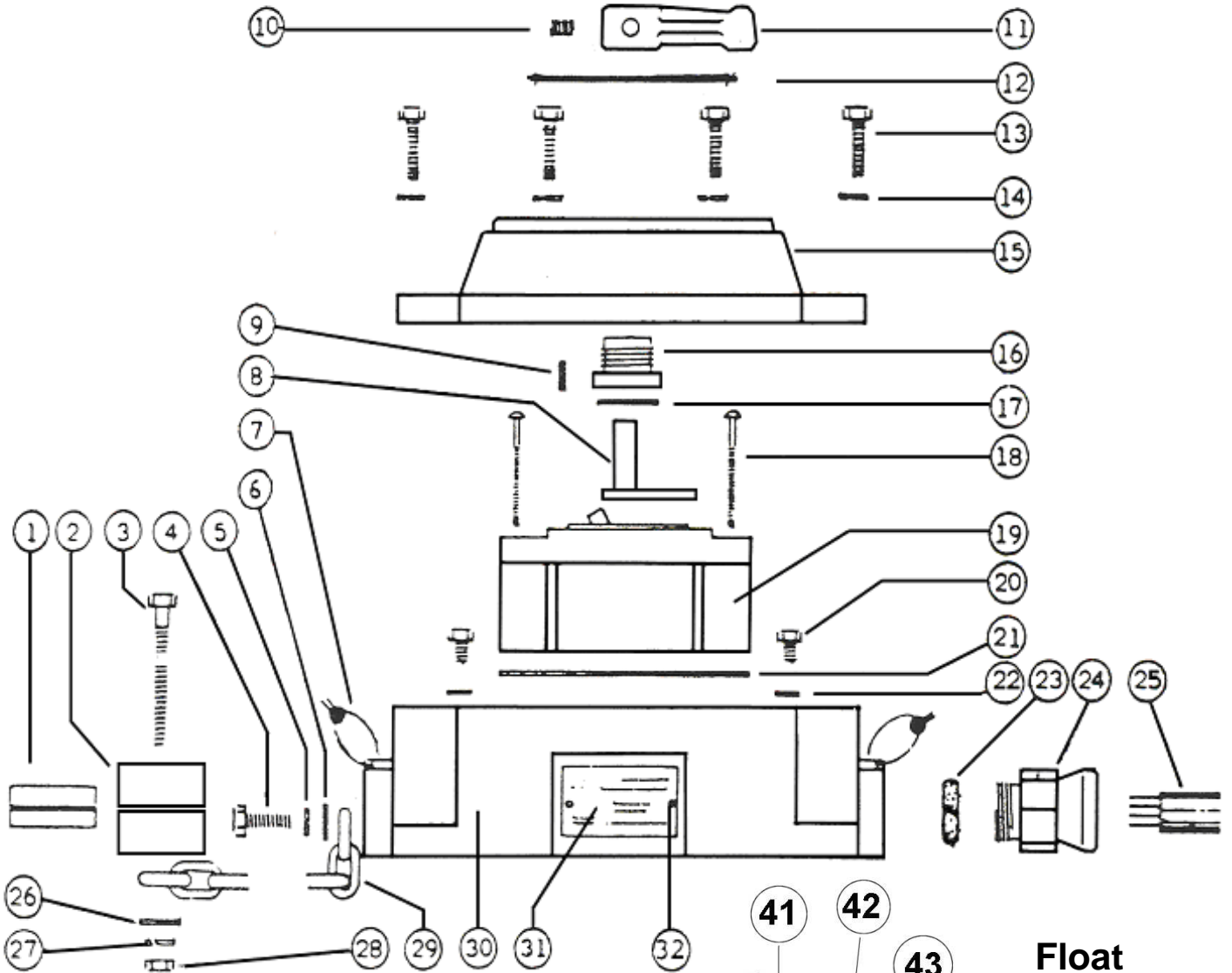
(Alternate I/S Relay)



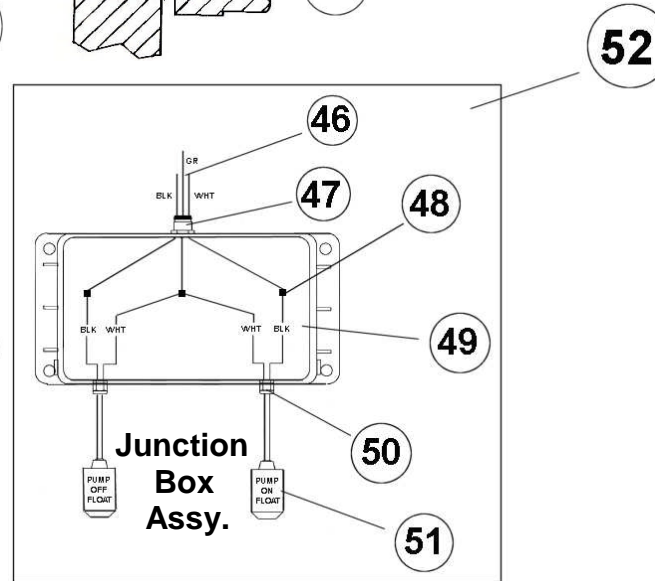
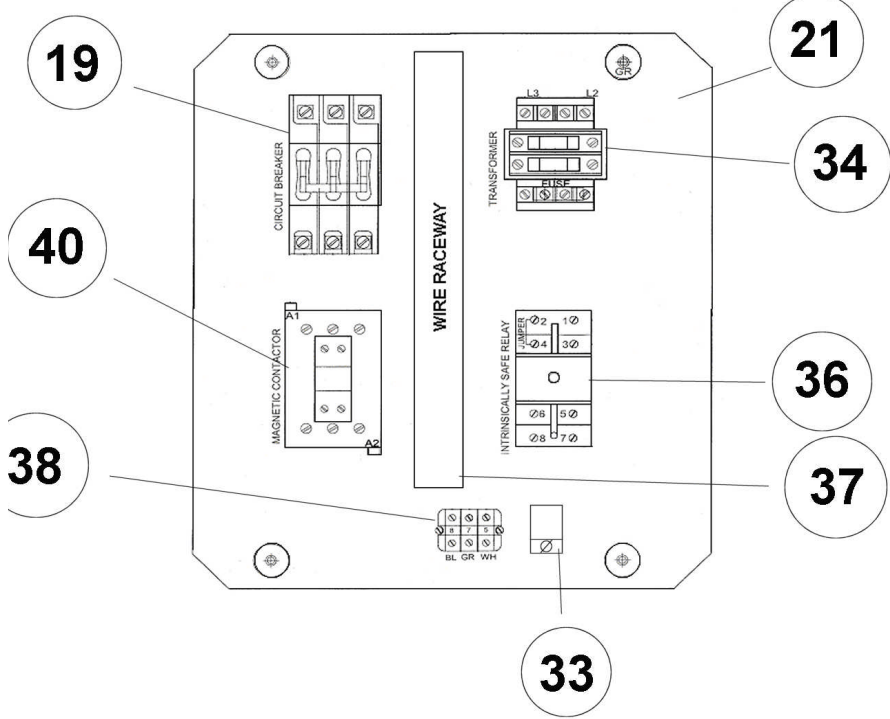
8218 FLOATLESS WIRING DIAGRAM (TYPICAL)



STANCOR MODEL CB-8218 PARTS VIEW



Float Entry Assy.



Junction Box Assy.

STANCOR MODEL CB-8218 PARTS LIST

MSHA APPROVED AUTOMATIC CONTROL BOX

POS. #	QUANTITY	PART #	DESCRIPTION
1	2	CB-827	RUBBER COLLAR
2	1	CB-821/2	CABLE CLAMP SET #2 TRAILING CABLE
2	2	CB-821	CABLE CLAMP SET
3	4	CB-809	BOLT S/S 5/16"X2-3/4"
4	2	CB-812	BOLT 3/8"X1-1/4"
5	2	CB-813	3/8" LOCKWASHER
6	-	-	NOT USED
7	4	CB-817	LOCKWIRE
8	1	CB-824-2	SHAFT W/FORK
9	1	CB-823 N/A	ROLL PIN (not available)
10	1	CB-814	ALLEN SET SCREW
11	1	CB-822	SWITCH HANDLE
12	1	CB-808	ON/OFF PLATE
13	12	CB-812	BOLT 3/8"X1-1/4"
14	12	CB-813	3/8" LOCKWASHER
15	1	CB-8218-2	CONTROL BOX COVER
15	1	CB-8218-2F	COVER FOR FLOATLESS
16	1	CB-832 N/A	COLLAR (not available)
17	1	CB-828 N/A	WASHER (does not apply)
18	3	CB-829	BREAKER SCREW SHORT
18	3	CB-829A	BREAKER SCREW LONG
19	1	CB-*	CIRCUIT BREAKER (SPECIFY AMPS)
20	4	CB-815	(GROUND SCREW 1/4"X1/2") BACKPLATE BOLT
21	1	CB-864	BACKPLATE
22	4	CB-822	LOCK WASHER
23	2	CB-854	PACKING, STANDARD (SPECIFY PUMP MODEL)
	1	CB-855	PACKING #2, TRAILING CABLE
24	2	CB-840-6	CABLE ENTRY (ALL EXCEPT #2)
	1	CB-840-2	CABLE ENTRY #2 (TRAILING ONLY)
25	-	SEE PUMP	PUMP CABLE
26	4	CB-825	WASHER
27	4	CB-810	LOCKWASHER
28	4	CB-811	HEX NUT
29	2	CB-804	CHAIN
30	1	CB-8218-1	STANDARD BODY
30	1	CB-8218-3	BODY WITH #2 TRAILING CABLE
30	1	CB-8218-4	BODY FOR FLOATLESS VERSION
31	1	CB-807	NAME PLATE
32	4	CB-830	RIVET
33	1	CB-861	GROUND LUG
34	1	CB-852/230	TRANSFORMER 230/120
34	1	CB-852/460	TRANSFORMER 460/120
34	1	CB-852/575	TRANSFORMER 575/120
35	1	CB-858	TIME RELAY (FLOATLESS ONLY)
36	1	CB-870 (CB-851)	INTRINSICALLY SAFE RELAY
37	1	CB-860	WIRE RACEWAY FOR 8218
38	1	CB-862	TERMINAL BLOCK ASSY.(FLOAT ASSEMBLY)
39	1	CB-850	FLOATLESS CONTROL UNIT (230/460V)
39	1	CB-850/575	FLOAT LESS CONTROL UNIT (575V ONLY)

**STANCOR MODEL CB-8218 PARTS LIST (Cont.)
MSHA APPROVED AUTOMATIC CONTROL BOX**

POS. #	QUANTITY	PART #	DESCRIPTION
40	1	55015/115	CONTACTOR UP TO 15 HP (115V COIL)
	1	55010/115	CONTACTOR 20/30 HP FOR 460V PUMP (115V COIL)
	1	31484-3	CONTACTOR SX4500 (115V COIL)
41	1	CB-853	PACKING (FLOAT CABLE)
42	1	CB-841	CABLE ENTRY FOR FLOATS
43	1	754-109-1	BOLT FOR FLOAT ENTRY CABLE CLAMP
44	1	CB-841A	CABLE CLAMP FOR FLOAT ENTRY
45	1	CB-841B	RUBBER INSULATOR
46	25	14/3	14/3 CABLE (25')
47	1	CB-856	CABLE GLAND (3/4")
48	3	CB-859	BUTT SPLICE
49	1	J4X-3	JUNCTION BOX
50	2	CB-857	CABLE GLAND (1/2")
51	2	SF 2015	FLOAT SWITCH
52	1	CB-863	JUNCTION BOX ASSY. W/ 25' 14/3 CABLE, INCLUDING 2 FLOAT SWITCHES AND J BOX, ALL PREWIRED

*REFER TO STANCOR CHART WITH THE PUMP MODEL AND VOLTAGE FOR
MSHA APPROVED CIRCUIT BREAKER TYPE



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