

**Installation/Operation Instructions
Custom Metal Fabricators
Power Select**

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Power Select
Ver 2.1

1. Introduction
2. Installation
3. Operation
4. Maintenance
5. Troubleshooting

Drawings

503000-000 Assembly Drawing

D-1046 Electrical Schematic

D-1048 Hydraulic Schematic

Fig. 1 Retrofit adaptor installation

1. **Introduction**

- 1.1 The CMF Power Select is a semi automatic hydro-electric positioning system for the CMF "TH" series distributors. The heart of this system is a micro plc that controls and tracks the movement and location of the inner spout. The micro plc accepts input from the operator via a selector switch on the operator station. Once a position is selected by the operator the micro plc compares the destination to the current location and determines a direction of travel selecting the shortest route on full round models. At this point the micro plc engages the hydraulic system and raises the inner spout. Once the inner spout is raised it then rotates to the position selected by the operator and lowers into the outlet stub. The CMF Power Select incorporates several safety and diagnostic routines in the programming to inform the operator of the current status via two lights on the operator station.

2. **Installation**

- 2.1 The CMF Power Select can be ordered as a complete unit factory installed on a new distributor or by itself to be retrofit to an existing distributor installation in the field. Section 2.2 deals with a factory installed unit and section 2.3 deals with a field installed Power Select.
- 2.2 Factory prepared unit
 - 2.2.1 Upon receipt of distributor check for visible signs of damage that may have occurred during shipment. These include scratched paint, dented housing, oil leaking from unit, broken lights or switch operators on electrical enclosures.
 - 2.2.2 Hang the distributor making sure that all outlet spouts are adequately supported to prevent distortion of the distributor housing from weighted spouts.
 - 2.2.3 Mount the operator station in the desired location. Connect the control wires between the terminal strip in the operator station and the terminal strip located in the main panel mounted on the distributor. Observe all applicable codes for control installations.
 - 2.2.4 Connect the power supply wires to the terminals provided in the main panel located on the distributor.
 - 2.2.5 Turn power on to unit.
 - 2.2.6 Installation is complete proceed to section 3 Operation.

2.3 Field Installation

- 2.3.1 Upon receipt of Power Select check for visible signs of damage that may have occurred during shipment. These include scratched paint, dented housing, oil leaking from unit, broken lights or switch operators on electrical enclosures.
- 2.3.2 Remove current distributor control device and install the provided adaptor in to the inner spout support pipe.
- 2.3.3 Locate and drill (4) 7/16 diameter holes in the bottom of the distributor.
- 2.3.4 Raise Power Select unit up to bottom of distributor aligning the adaptor with the gearbox. Insert (4) 3/8 inch bolts through the holes in the distributor bottom and through holes located in the top of the side frames of the Power Select. Insert provided bolt in adaptor through bottom of the gear box.
- 2.3.5 Mount the operator station in the desired location. Connect control wires between the terminal strip in the operator station and the terminal strip located in the main panel mounted on the distributor. Observe all applicable codes for control installations.
- 2.3.6 Connect the power supply wires to the terminals provided in the main panel located on the distributor.
- 2.3.7 Turn power on to unit.
- 2.3.8 Open the main panel and locate the motor contactor. Located in the center of the motor contactor is a manual override button. Slide this manual override to the left engaging the contactor. As long as this override is held the pump will run supplying hydraulic pressure to the system.
- 2.3.9 Jogging the power select is accomplished by starting the pump as outlined in the previous section and then pressing in on the manual overrides located on the ends of the solenoid valves.
- 2.3.10 Jog Power Select up until lift cylinder is fully extended. Adjust up proximity sensor to point where LED comes on and block completely covers face of sensor with approximately 1/32" gap between sensor and block.
- 2.3.11 Jog Power Select counter clockwise until inner spout is aligned with number one outlet. Jog inner spout down until lift cylinder is fully retracted. Check to see that inner spout has engaged the locator ring and the outlet stub.

- 2.3.12 Loosen set screw on trigger wheel and rotate trigger wheel until outlet one/home long trigger is aligned with count. and home proximity sensor. Tighten set screw.
- 2.3.13 Loosen 1/4" hold down bolt on Home trigger and align with count and home proximity sensor (LED on). Allow maximum 1/32" air gap between trigger and sensor. Tighten hold down bolt while keeping trigger aligned with sensor.
- 2.3.14 Jog inner spout up until it stops. Jog inner spout clockwise until aligned with the next outlet. Jog inner spout down until lift cylinder is fully retracted. Check to see that inner spout has engaged the locator ring and the outlet stub.
- 2.3.15 Loosen the 1/4 inch hold down bolt for the appropriate trigger and align the trigger with the count proximity sensor (LED on). Allow approximately 1/16" air gap between trigger and sensor. Tighten hold down bolt while keeping trigger aligned with sensor. Repeat this and previous step for all outlets.
- 2.3.16 Jog inner spout to number one/home outlet while watching count proximity sensor to be certain that LED lights when triggers pass it.
- 2.3.17 This completes the installation and set up of the Power Select unit. Proceed to section 3 Operation.

3 Operation

3.1 Operator Station

The operator station consists of two lights, one or two selector switches depending on the number of outlets and one push button.

Red moving light

Flashing-The inner spout is about to move.

On Solid-The inner spout is moving.

Green ready light

On solid-The inner spout is in position and ready.

Spout selector switch(s)

Indicate location of inner spout.

Reset push button

Used to initialize unit and clear error condition.

3.2 Power up

3.2.1 After the Power Select is installed turn the power on to the main panel.

3.2.2 Press the reset button. This will initialize the unit and position the inner spout on the selected outlet. When the green ready light comes on the unit is initialized and ready to operate.

3.3 Selecting an Outlet

3.3.1 4-12 hole units move the selector switch to the desired outlet number. The ready light will go out and the moving light will blink and then come on solid. While the moving light is on solid this indicates that the inner spout is traveling to the selected destination. When the moving light goes out and the ready light comes on the inner spout has arrived at the selected destination.

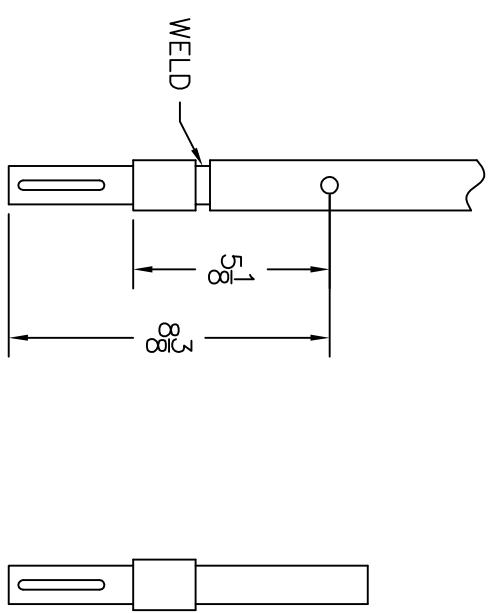
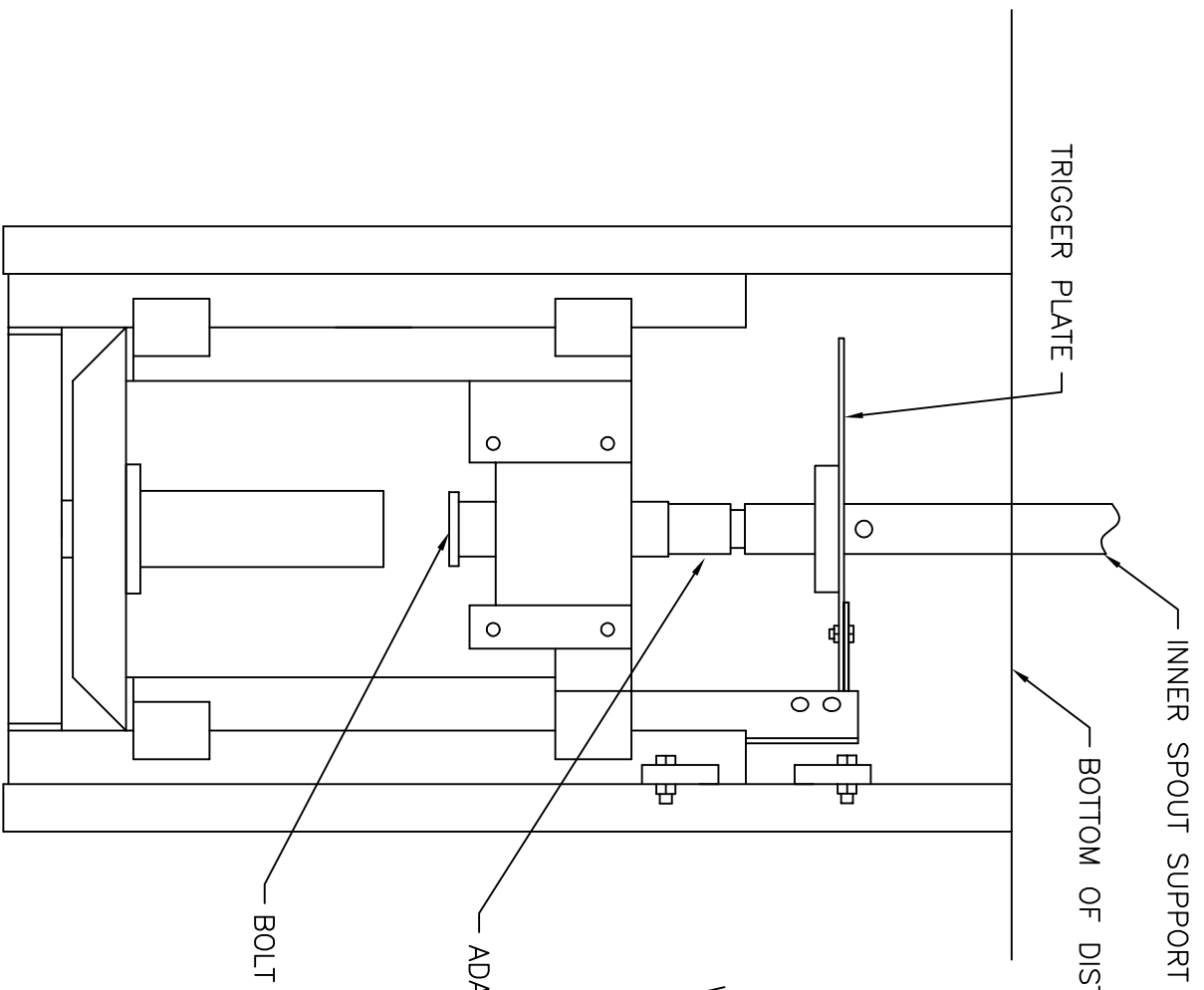
3.3.2 12-24 hole units there are two selector switches one two position and one multiple position. The two position switch selects the range from 1-12 or 13-24. The multiple position switch selects the specific hole according to which range the two position switch is set. The switches may be set in any combination of positions to select the specific outlet desired. The ready light will go out and the moving light will blink and then come on solid. This indicates the inner spout is traveling to the selected outlet. When the moving light goes off and the ready light comes on the inner spout has arrived at the selected destination.

4. **Maintenance**

- 4.1 The Power Select has been designed to be virtually maintenance free for the life of the distributor.
- 4.2 The hydraulic system is sealed from the atmosphere preventing either the leakage of oil or the ingestion of dirt. The oil, a high grade of hydraulic fluid with a -60 degree pour point, is filtered at the factory before installation. It is recommended that the system remain sealed throughout the life of the unit to prevent contaminants from being introduced into the circuits.
- 4.3 The electrical system is comprised mainly of solid state components which require no maintenance over the life of the Power Select even under severe operating conditions. The few mechanical switches in the system are heavy duty industrial type switches also sized to require no maintenance over the life of the Power Select.
- 4.4 Annual Maintenance
 - 4.4.1 Remove front cover from Power Select and check solenoid cables and sensor cables for signs of chafing or cracks in the insulation and replace as required.
 - 4.4.2 Check hydraulic lines and fittings for signs of leakage and correct as required.
 - 4.4.3 Clear away any accumulation of dust or material from inside the unit to prevent sticking of the slides.
 - 4.4.4 Remove any accumulation of dust or material from the inside bottom of the distributor housing.
 - 4.4.5 Inspect all mounting bolts on Power Select for signs of loosening and tighten as required.
 - 4.4.6 Replace the front cover.

5. Troubleshooting

- 5.1 Green and Red lights both off.
This indicates a power interruption has occurred. Check power supply to main panel. Restore power to main panel. Press reset button on the operator station.
- 5.2 Green and Red lights alternately flashing.
This indicates the distributor is in a reset mode. The reset mode is a manually triggered event. Reset mode is manually triggered any time the reset button on the control panel is pressed. Allow the Power Select to complete Reset cycle.
- 5.3 Green and Red lights flashing at the same time.
This indicates that internal diagnostics in the program have sensed an abnormal event. If this occurs the first step should be to manually reset the distributor by pressing the reset button on the control panel. If the problem is corrected the ready light will come on and stay on. If after pressing reset both lights flash at the same time the following should be checked.
 - 5.3.1 System fuse located in the Main Panel has blown. Replace fuse and reset distributor using manual reset on the Operator Station.
 - 5.3.2 The inner spout is for some reason blocked from moving up, down, counter clock wise or clock wise. After clearing the obstruction try manually resetting the distributor from the Operator Station.



Instructions for adding Power Select drive:

- Remove the inner spout support pipe from the distributor.
- Insert new adaptor into support pipe and weld in place.
- Install support pipe through distributor bottom.
- Install trigger plate on support pipe.
- Lift Power Select to bottom of distributor and bolt in place.
- Install bolt in bottom of support pipe at bottom of gearbox.
- Align triggers with sensors.

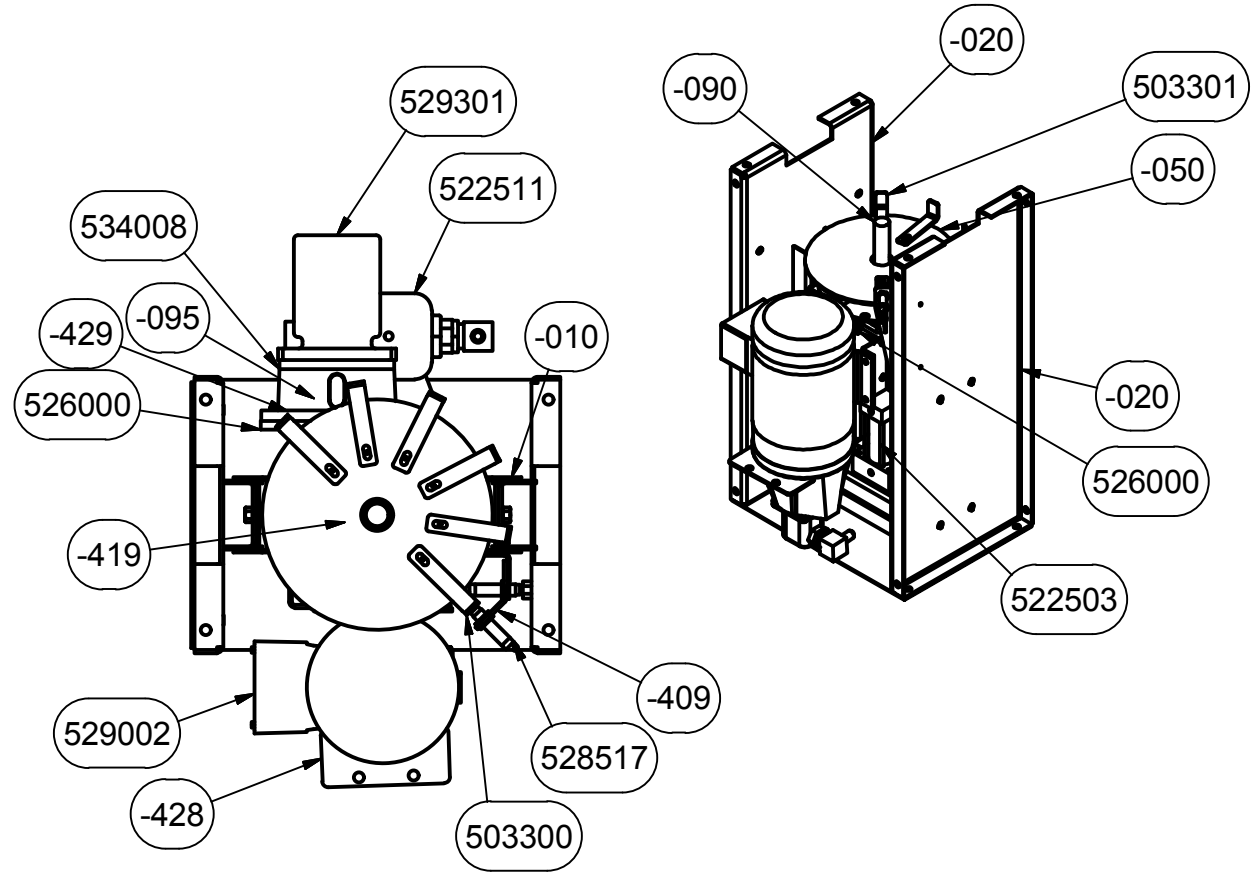
RETROFIT INSTALLATION

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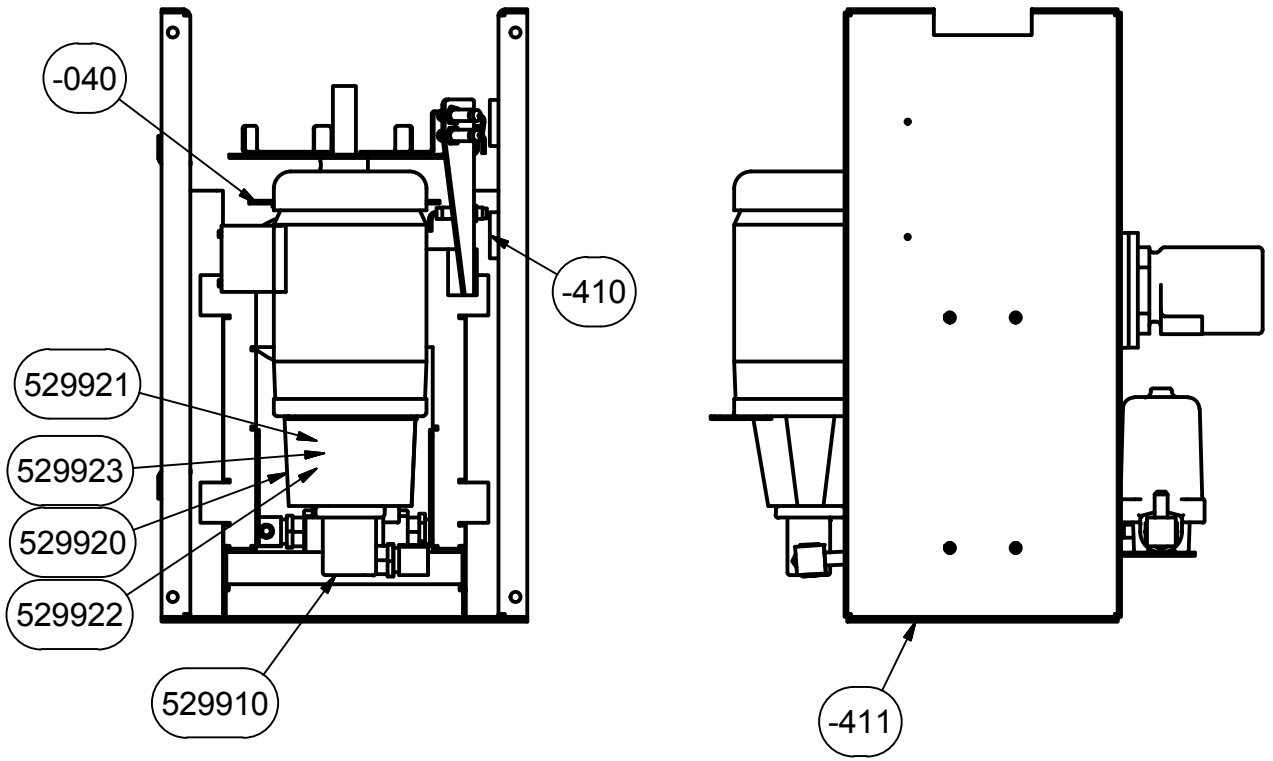
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Parts List		
PART NUMBER	QTY	DESCRIPTION
-010	1	LIFT FRAME
-020	1	SUPPORT FRAME
-040	1	LIGHT KIT
-050	1	TRIGGER PLATE
-090	1	SUPPORT PIPE TO GEARBOX ADAPTOR
-095	1	MOTOR GEARBOX DRIVE ADAPTOR
-409	1	SENSOR MOUNTING BRACKET
-410	2	UP / DOWN TRIGGER
-411	1	LOWER COVER
-419	1	WASHER
-428	1	MANIFOLD MOUNTING BRACKET
-429	1	MOTOR GEARBOX ADAPTOR RING
503300	1	TRIGGER LONG
503301	5	TRIGGER SHORT
522503	1	CYLINDER 1 1/2 BORE 2 1/2 STROKE 5/8 ROD
522511	1	CANISTER RETURN FILTER -12SAE PORTS
526000	1	HMQ818 60:1 1"BORE
528517	3	INDUCTIVE PROXIMITY SENSOR (2WIRE)
529002	1	MOTOR 1/2 HP TEFC 56C 1725 RPM W/ BASE
529301	1	HYDRAULIC MOTOR 4 CIPR
529910	1	HYDRAULIC GEAR PUMP .75GPM -6SAE PORTS
529920	1	ADAPTER MOTOR TO HYD PUMP
529921	1	JAW COUPLING 1/2" BORE PUMP SIDE
529922	1	JAW COUPLING 5/8" BORE MOTOR SIDE
529923	1	COUPLING INSERT
534008	1	ADAPTOR MOTOR / GEARBOX

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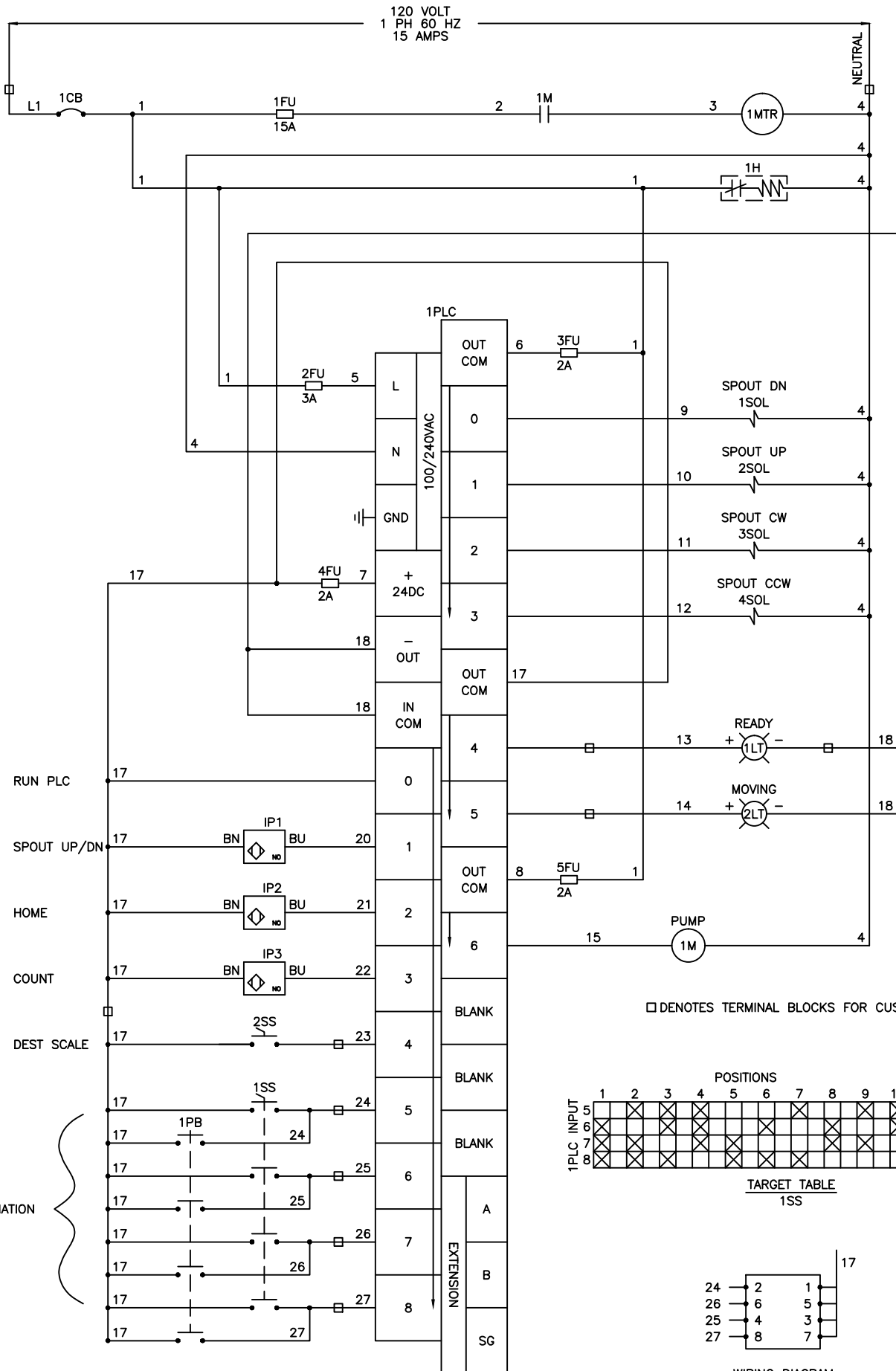
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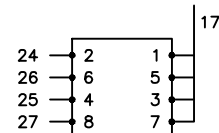


□ DENOTES TERMINAL BLOCKS FOR CUSTOMER CONNECTIONS.

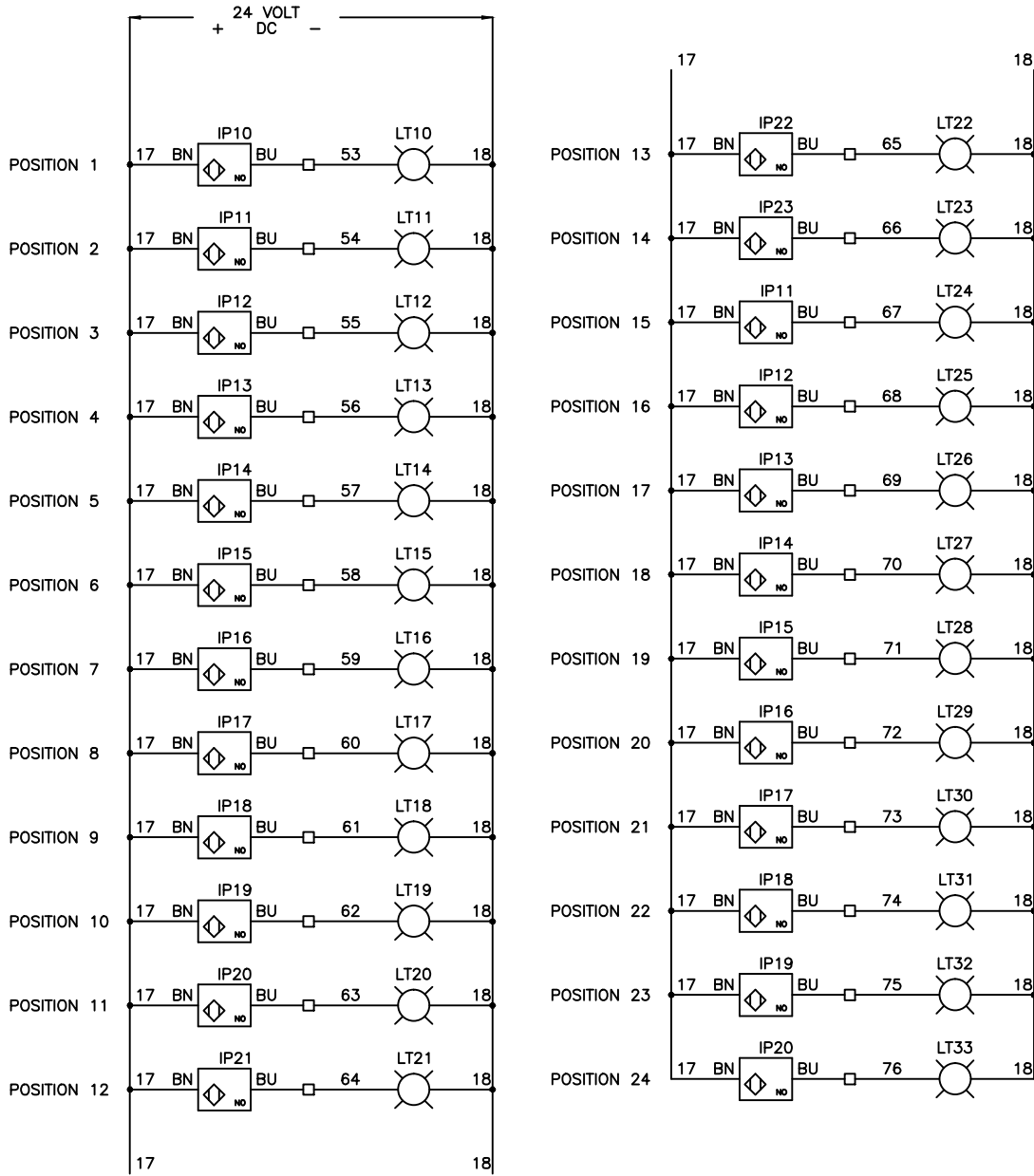
POSITIONS

	1	2	3	4	5	6	7	8	9	10	11	12	
1PLC INPUT	X	X	X	X	X	X	X	X	X	X	X	X	
5													1-2
6													3-4
7													5-6
8													7-8

TARGET TABLE
1SS



WIRING DIAGRAM
1SS



LIGHT INDICATOR OPTIONAL WIRING

1CB	1	CIRCUIT BREAKER 15A	528108	CMF
1FU	1	FUSE 15A TIME DELAY MDX15	STOCK	CMF
2FU	1	FUSE 3A	STOCK	CMF
3-5FU	3	FUSE 2A	STOCK	CMF
1-3IP	3	INDUCTIVE PROXIMITY SENSOR AC/DC NO	XS2M12MA230	SQUARED
1LT	1	PILOT LIGHT GREEN 24VDC	AP6M222-G	IDEC
2LT	1	PILOT LIGHT RED 24VDC	AP6M222-R	IDEC
1M	1	CONTACTOR	528200	CMF
1MTR	1	1/2 HP MOTOR 56C FACE W/ BASE	CL3504	BALDOR
1PB	1	PUSH BUTTON (OPERATOR)	528100	CMF
-	4	NO CONTACT USE W/1PB	528101	CMF
1PLC	1	PROGRAMABLE LOGIC CONTROLLER 16 I/O	TWDLCAA16DRF	SQUARE D
-	1	32K EEPROM USE WITH 1PLC	TWDXCPMFK32	SQUARE D
SOL	REF	SOLNOID VALVE		D-1048
1SS	1	SELECTOR SWITCH 4 NO CONTACT	SEE NOTE 2	CMF
2SS	1	SELECTOR SWITCH 2 POSITION 1 NO CONTACT	528117	CMF
-	2	OPERATOR HANDLE FOR 1SS AND 2SS	528105	CMF
IP10-23		INDUCTIVE PROXIMITY SENSOR AC/DC NO	XS2M12MA230	SQUARED
LT10-23		PILOT LIGHT GREEN LENS 24 VDC	AP2M122-G	IDEC

2 POS P/N 528117
4 POS P/N 528104
6 POS P/N 528110
7 POS P/N 528114
8 POS P/N 528111
9 POS P/N 528115
10 POS P/N 528112
11 POS P/N 528116
12 POS P/N 528113

P/N BREAKDOWN
1SS

NOTE:

1. USE TARGET TABLE FOR OPEN AND CLOSE CAM ON 1SS X= CLOSED CONTACT.
2. SEE TARGET TABLE FOR PART NUMBER OF SWITCHES.
3. WIRE NOT USED.
4. 2SS NOT USED IF LESS THAN 12 OUTLETS.
5. USED ON DRAWING D-1135 & D-1106.
6. WIRE MOTOR FOR CW ROTATION L1(135) L2(248) WIRE GROUPS

1	1	HYDRAULIC PUMP	529902	CMF
2	2	4 WAY SOLINOID VALVE	531200	CMF
3	1	HYDRAULIC MOTOR	529301	CMF
4	1	CYLINDER	522503	CMF

