

# **James Cox and Son's, Inc.**

## **CS 7588**

**Mechatronics/Hydraulic Trainer  
Manual**



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# CS 7588 Mechatronics/Hydraulic Trainer

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The CS 7588 Hydraulic Training System was required to meet the following criteria:

- Incorporate features found in typical industrial hydraulic systems.
- Utilize only industry standard components.
- Operate manually as a standalone unit.
- Quickly convertible to PLC control.
- Integrate a variable frequency drive (VFD) driven pump motor.
- Operate on 120 VAC 60 Hz.
- Incorporate a full set of expansion ports.
- Easily portable to other training sites.
- Small and stackable to conserve space.
- Reasonably priced.

## CS 7588 Specifications:

115V 60 Hz      4 Amp  
Chevron Hydraulic Oil ISO 46 or equivalent  
1.4 U.S. Gallon 5.31 liters

## CS 7588 Factory Settings:

TECO FLUXMASTER FM 50 AC DRIVE			
F_##	FACTORY SETTING	F_##	FACTORY SETTING
F_01	5.0	F_16	1.5 Hz
F_02	5.0	F_17	8.0 %
F_03	0	F_18	100 %
F_04	0	F_19	2
F_05	004	F_20	5
F_06	60 Hz	F_21	3
F_07	15 Hz	F_22	1
F_08	10 Hz	F_23	0
F_09	6 Hz	F_24	0
F_10	1	F_25	020
F_11	1	F_26	20
F_12	5	F_27	30
F_13	0.0%	F_28	
F_14	0	F_29	
F_15	0.55	F_30	

### CS7588-011 RELIEF VALVE

- Set to maintain 200 PSI at 15 Hz.

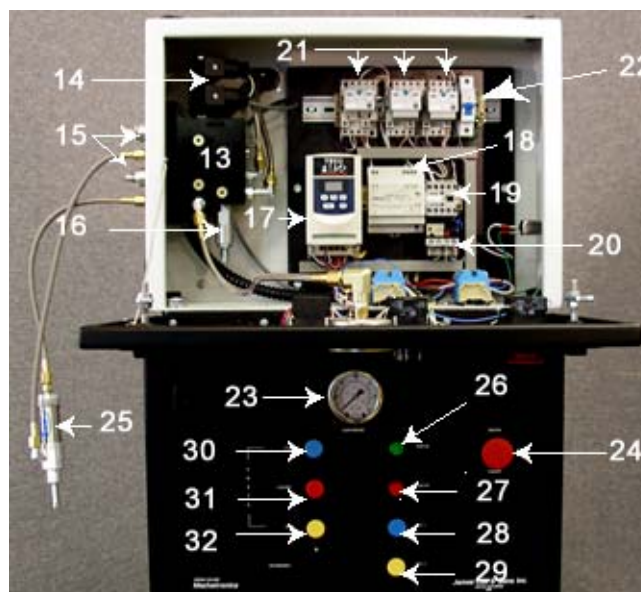
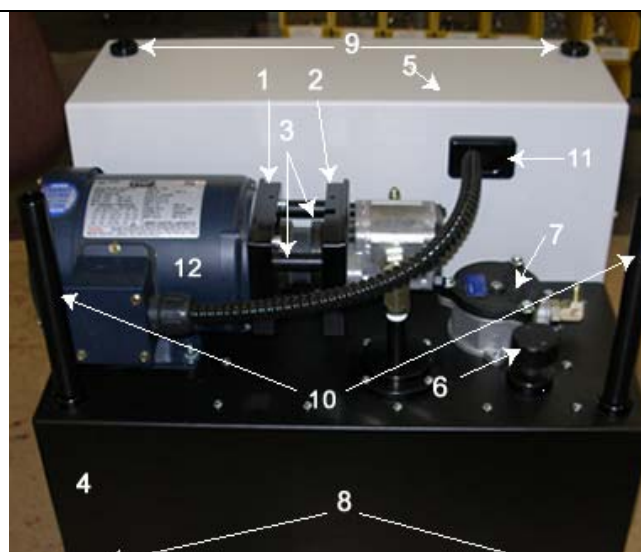
### CS7588-012 FLOW CONTROL VALVES

- Set for slow smooth action of ram in both directions.

# CS 7588 Mechatronics/Hydraulic Trainer

## CS 7588 General Overview:

1. 7588-002 PUMP ADAPTER MOTOR SIDE
2. 7588-003 PUMP ADAPTER PUMP SIDE
3. 7588-004 STANDOFFS
4. 7588-005 RESERVOIR OUTER CASE
5. 7588-008 ELECTRICAL CONTROL CASE
6. 7588-011 FILLER AND BREATHER CAP
7. 7588-012 SUCTION FILTER CAP
8. 7588-013 CONNECTING FEET
9. 7588-014 TOP CONNECTING PINS
10. 7588-015 CONNECTING RODS
11. 7588-016 HYDRAULIC HOSE FEED THRU
12. CS7588-005 3 PHASE 60HZ MOTOR (LEESON)
13. 7588-001 HYDRAULIC MANIFOLD M0-001
14. CS7588-010 SOLENOID VALVE
15. CS7588-012 FLOW CONTROL VALVES
16. CS7588-011 RELIEF VALVE
17. CS7588-013 TECO FM50 AC DRIVE
18. CS7588-016 DC SWITCHING POWER SUPPLY
19. CS7588-014 TECO IEC CONTACTOR
20. CS7588-069 OVERLOAD RELAY (SEE NOTE) \*1
21. CS7588-026 RELAYS 1,2 & 3
22. CS7588-066 MINIATURE CIRCUIT BREAKER 6 AMP
23. CS7588-042 PRESSURE GAUGE
24. CS7588-017 POWER ON / EMERGENCY STOP
25. CS7588-072 "500" HYDRAULIC CYLINDER
26. CS7588-021 PUMP START SWITCH
27. CS7588-060 PUMP OFF SWITCH
28. CS7588-061 AUXILLARY SWITCH 1
29. CS7588-062 AUXILLARY SWITCH 2
30. CS7588-022 C1 ON
31. CS7588-060 C1 OFF SWITCH
32. CS7588-022A C1 ON



\*1 **NOTE:** The CS7588-069 OVERLOAD RELAY is used for training purposes only it will not shut down power to the Motor. It only disconnects power from the **C1–C2** control circuit. This is intended to demonstrate that if the system current exceeds the set value on the CS7588-069 OVERLOAD RELAY it will trip. This normally is used to protect the motor, however in this system the motor is protected by the TECO FM 50 Inverter drive.

**During normal operation if a motor overload condition should occur then the FM 50 Inverter Drive will trip and display the fault code in order to protect the motor. (See TM-50 Manual)**

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## CS 7588 Recommended Startup Procedures

1. Check the oil level in sight glass located at the right hand end of unit if facing the front. (Should be at approximately even with the 160° on the thermometer.
2. Check that all hoses are connected and that there are no visible leaks.
3. Check that the Mushroom main power switch is in the off position. This is the Main Power/Emergency Stop button only and is not intended to turn the pump on and off.  
**Note: Doing so can cause a fault problem with the TM 50 Drive.**
4. Connect the power cord and plug into 115V receptacle.
5. Turn the speed control all the way down to 0.

**Note:** With the speed control set at 0 the motor will run at 15 Hz. when the Pump On Switch is activated.

6. Twist the mushroom shaped power button to turn on. The Green light on front panel should come on and the TECO TM 50 inverter should energize. If you open the CS7588 front panel you should see the display on the TM 50 flashing 15. This indicates that the unit is energized and that the minimum speed is correctly set at 15 Hz. (The low speed is set at 15 Hz so the motor will not overheat due to lack of airflow over the armature.)
7. Check that both the yellow and blue lights on front panel are off. If either one is on press the **C1/C2 OFF** button to de-energize both solenoids.
8. Check for leaks, then using the blue C1 On, yellow C2 On and red **C1/C2 OFF** control switches operate ram or a hydraulic motor depending upon your application.