



**LEGEND**

- WATER CONVECTION FLOW
- IMMERSION HEATER
- ◇ SHUTDOWN/ALARM CONTACT
- ◇ ALARM CONTACT
- ◇ CONTROL CONTACT
- SWITCH, TRANSMITTER, OR OTHER ELECTRICAL DEVICE
- ⊖ N.C. VALVE
- ⊕ N.O. VALVE
- ⌞ CHECK VALVE
- ⊥ RELIEF VALVE
- ⌞ IN-LINE STRAINER
- FLUID FLOW DIRECTION
- ⊗ GEAR PUMP
- ⊙ MECHANICAL GAUGE/INDICATOR
- FLEX CONNECTION
- ◇ STRAINER
- ⊗ ORIFICE
- ⊗ SIGHT GLASS
- ⊗ NPT PIPE CAP
- ⊗ ELECTRIC MOTOR
- PIPE/TUBE ADAPTER
- PIPING BY OTHERS
- ⊗ SPRING RELIEF CHECK VALVE
- ⊗ SOLENOID VALVE
- ⊗ CENTRIFUGAL PUMP
- FLANGED CONNECTION
- ◇ FILTER, MANUAL DRAIN, PETCOCK
- ◇ LUBRICATOR
- ⊗ RESISTANCE TEMPERATURE DETECTOR
- ⊗ REDUCER
- ⊗ METERING DEVICE
- ⊗ NPT PIPE PLUG

19	406-5	TEMPERATURE SWITCH THERMOWELL		SO D 9049-A34	1
18	406-3	TEMPERATURE SWITCH	TS-6	SO D 9025-GYW3-A6H10	1
17	406-2	TEMPERATURE SWITCH	TS-8	SO D 9025-GYW3-H10	1
16	406-6	FLANGE, THERMOWELL		MKW/PS A02024	3
15	406-4	TEMPERATURE SWITCH THERMOWELL, BRASS		SO D 9049-A30	4
14	406-1	TEMPERATURE SWITCH	TS-4.5-12	SO D 9025-GYW3-H10	3
13	1104-30	TEMPERATURE GAUGE THERMOWELL, BRASS			2
12	1104-18	TEMPERATURE GAUGE, 50-300°F	TI-4,6	ASHCROFT 4 1/2-600A-02-C12-B01-A1-L07-AL	2
11	1104-12	ISOLATION VALVE, 1/4" T		WHITEY SS-4254	2
10	1104-13	PRESSURE SWITCH, DPDT	PS-27,36	SO D 9012-GAW24	2
9		TEMPERATURE GAUGE	TI-5	PALMER #3BC	1
8	402	RADIATOR ASSEMBLY		O & M ESM-220-3F6.25	1
7		WATER LEVEL SWITCH	LS-15	GEMS 24577	1
6		SIGHT GLASS		EMD 8157497	1
5		EXPANSION TANK		EMD 8398082	1
4		DRAIN VALVE, 1/4" FPT		EMD 8354227	1
3		IMMERSION HEATER, 15KW, 480V		EMD 8398082	1
2		THERMOSTATIC CONTROL VALVE		EMD 8394034	1
1		LUBE OIL COOLER		EMD 8437992	1
ITEM #	B/M #	NOMENCLATURE OR DESCRIPTION	CODE IDENT	PART OR IDENTIFYING #	QTY REQ'D

**NOTES**

- 1 MAXIMUM HEAD ABOVE LUBE OIL COOLER INLET FROM RADIATOR IS 25 FEET
- 2 PRESSURE DROP IN EXTERNAL COOLING SYSTEM BEYOND TEMPERATURE REGULATOR (INCLUDING RADIATOR) SHOULD BE LIMITED TO 8 PSI AT 1100 GPM. RADIATOR DESIGN ΔP=5 PSI.
- 3 COOLING SYSTEM DESIGNED FOR 50-50 MIXTURE OF WATER & ETHYLENE-GLYCOL TYPE ANTI-FREEZE REFER TO EMD MI 1748 FOR QUALITY SPECIFICATIONS
- 4 THE WATER PUMP INLET ASPIRATOR IS A CONVERGENT-DIVERGENT NOZZLE USED TO BOOST INLET PRESSURE AND RAISE CAVITATION TEMPERATURE
- 5 TEMPERATURE REGULATOR VALVE NOMINAL SETTING IS 170°F (INITIAL OPENING AT 165°F, FULLY OPEN AT 180°F)
- 6 FILL COOLING SYSTEM THROUGH ENGINE OR RADIATOR DRAIN VALVE, FROM THE BOTTOM UP. THIS DISPELS AIR THAT MIGHT OTHERWISE BE TRAPPED IN THE SYSTEM
- 7 ⊗ - INDICATES MOUNTED ON NEW SKID-MOUNTED PANEL
- 8 "LOCAL" DESIGNATION AT ALARM INDICATES ALARM AT SKID-MOUNTED ANNUNCIATOR REF DWG 6090F02502
- 9 "REMOTE" DESIGNATION AT ALARM INDICATES ALARM AT REMOTE ANNUNCIATOR. REF DWG 6090F02501
- 10 FOR INSTRUMENTS WEPCO NO. SEE NOMENCLATURE CHART, REF. DWG. 6090F02501 SH 4

<b>PRESSURE SWITCH</b>	<b>SETPOINT</b>
PS-27 LOW JACKET WATER PRESSURE ALARM SWITCH	40 PSIG, 26 PSIG
PS-36 JACKET WATER PRESSURE-START CIRCUIT INTERLOCK	20 PSIG, 17 PSIG
<b>TEMPERATURE GAUGE</b>	<b>RANGE</b>
TI-4 JACKET WATER TEMPERATURE, ENGINE OUTLET	50-300°F
TI-5 JACKET WATER TEMPERATURE, OIL COOLER INLET	50-300°F
TI-6 JACKET WATER TEMPERATURE, ENGINE INLET	50-300°F
<b>TEMPERATURE SWITCH</b>	<b>SETPOINT</b>
TS-4 HIGH JACKET WATER TEMPERATURE SHUTDOWN SWITCH	208°F, 198°F
TS-5 HIGH JACKET WATER TEMPERATURE ALARM SWITCH	200°F, 190°F
TS-6 LOW JACKET WATER TEMPERATURE ALARM SWITCH	105°F, 95°F
TS-8 IMMERSION HEATER CONTROL SWITCH	160°F, 150°F
TS-12 RADIATOR FAN CONTROL SWITCH (MOTOR #3)	190°F, 175°F
<b>LEVEL SWITCH</b>	
LS-15 LOW WATER LEVEL SWITCH	

LEGEND  
 MAGENTA - IN SCOPE LR  
 BLACK - NOT IN SCOPE LR

LR-MKW-6090F04001 SH-1  
 UNIT 1 & 2  
 COOLING SYSTEM  
 REV. 1 DATE: 10-17-03

*Doug*