

NWP Industries Inc.  
**P&ID Bill of Materials**

**Job: 08664**  
**Item: LINEHEATER**  
**Description: 1.0 MM BTU/HR LINEHEATER**

**Drawing: 08644-001-P-001 REV0**  
**Customer: MURPHYOIL**

<i>Part #</i>	<i>Qty</i>	<i>Description/Notes</i>															
<b>BAF025</b>	<b>2.00</b>	<b>1/4" BALL VALVE</b>  <i>Ball Valve Nutron 1/4" 3000 FP NPT Carbon Steel Body Standard Trim</i>															
<b>BE-200</b>	<b>1.00</b>	<b>FLAME ARRESTOR</b>  <i>Wenco SB24-12-NG Firebox flame arrestor One piece O-type aluminum housing 24 In flame cell element To fit a 12 In fire tube Burner rated at 1,000,000 BTU/hr (net) No burner Gas connections: 12 oclock Blank flange bolt pattern</i>															
<b>BE-200 INT</b>	<b>1.00</b>	<b>INTERNALS</b>  <i>ACL Mixer / Barrel / Nozzle 1- ACL-M150 air/gas mixer 1- ACL-B15012 venturi barrel 1- ACL-ON15012 High Efficiency burner nozzle Orifices sized for 1.0 MM BTU/HR total natural gas</i>															
<b>BF025G</b>	<b>5.00</b>	<b>Neovalve 1/4" NPT</b>  <i>Stainless Steel, 200PSI WOG, Blow-out proof stem 2 Piece design, CSA 3.16 Certified, For use with Natural Gas. B149 Compliant. Cat # 2500</i>															
<b>BF100G</b>	<b>3.00</b>	<b>Neovalve 1" NPT</b>  <i>Stainless Steel, 200PSI WOG, Blow-out proof stem 2 Piece design, CSA 3.16 Certified, For use with Natural Gas. B149 Compliant. Cat # 2500</i>															
<b>BMC-100</b>	<b>1.00</b>	<b>ACL Burner Manag. Control</b>  <i>Burner Control System ACL Model 5100 24VDC Operation , Must Come with 3/16" Flame Rod</i>  <i>Power supply 12/24 VDC CSA approved for Class , Div 2 location CSA approved C22.2 No 199-M89. Combustion safety controls and solid-state Ignitors for Gas &amp; Oil burning equipment CSA B149.3 - 10 compatible Type 4x enclosure, corrosive resistant and weatherproof</i>  <table style="width: 100%; border: none;"> <tr> <td>VOLTAGE</td> <td>12 VDC</td> <td>24VDC</td> </tr> <tr> <td>CURRENT</td> <td>0.204A</td> <td>0.186A</td> </tr> <tr> <td>POWER</td> <td>2.4W</td> <td>4.5W</td> </tr> <tr> <td>SOLENOID OUTPUT RATINGS</td> <td colspan="2">5 amp 250 V Per Output</td> </tr> <tr> <td>OPERATING TEMPERATURE</td> <td colspan="2">-40 C to 60 C</td> </tr> </table>	VOLTAGE	12 VDC	24VDC	CURRENT	0.204A	0.186A	POWER	2.4W	4.5W	SOLENOID OUTPUT RATINGS	5 amp 250 V Per Output		OPERATING TEMPERATURE	-40 C to 60 C	
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<b>BR200</b>	<b>1.00</b>	<b>2" BARSTOCK BALL VALVE</b> <i>BA-200</i> <i>Ball Valve Barstock 2" 2M Thrd CS Body NACE Trim</i>
<b>LGV -100</b>	<b>1.00</b>	<b>SITE GLASS VALVE</b> <i>CONBRACO SITE GLASS VALVE W/BALL CHECK CONBRACO</i> <i>1/2 IN. 300 PSI AT 100 F BRASS</i> <i>(20-151-03/20-150-03) SET of 2</i>
<b>LLSD-100</b>	<b>1.00</b>	<b>LEVEL SWITCH ELECTRIC SOR</b> <i>SOR ELECTRIC LEVEL SWITCH</i> <i>MODEL 1510B-G2A-C-L9-ES-CS</i>  <i>2" MNPT</i> <i>303 SST BODY</i> <i>316 SST FLOAT</i> <i>Low Power SPST 25 Watts Max</i> <i>CSA Certified. Class 1, Group A, B, C, D;</i> <i>Divisions 1 &amp; 2. For relay option;</i> <i>Class 1, Group C &amp; D, Divisions 1 &amp; 2.</i> <i>Single seal ambient &amp; process</i> <i>temperatures -40°C to +125°C.</i> <i>Additional seal not required.</i>
<b>PI-105/106</b>	<b>2.00</b>	<b>PRESSURE GAUGE 0-30 PSI</b> <i>PRESSURE GAUGE WIKA 2-1/2" FACE, 1/4" NPT 0 - 30</i> <i>PSI,STAINLESS STEEL,LIQUID FILLED, MODEL 233.53</i> <i>CENTER BACK MOUNT</i>
<b>PRV-101</b>	<b>1.00</b>	<b>REGULATOR 627 5-20 PSI</b> <i>PRESSURE REGULATOR, FISHER, 1" NPT STANDARD SEAT</i> <i>RING,NYLON DISC 1/2" ORIFICE, STEEL BODY,5-20 PSI,</i> <i>RANGE,250 PSI MAWP</i>
<b>PRV/PI-102/104</b>	<b>2.00</b>	<b>REGULATOR 67 CFR,0-35 PSI</b> <i>Fisher 67 CFR,0-35 PSI Adjustable spring range, 5</i> <i>micron filter, 0-60 PSI gauge, adjustable screw</i> <i>with closing cap,Tapped bonnet</i>
<b>PRV/PI-103</b>	<b>1.00</b>	<b>REGULATOR 67 CFR,0-125 PSI</b> <i>Fisher 67 CFR,0-125 PSI Adjustable spring range, 5</i> <i>micron filter, 0-160 PSI gauge, adjustable screw</i> <i>with closing cap,Tapped bonnet</i>
<b>PS-100</b>	<b>1.00</b>	<b>PREHEAT COIL</b> <i>One 3 In Sch XXH, SA333-Gr6, 6 pass preheat</i> <i>coil with Class 2500 RTJ flanged outer ends,5031</i> <i>PSIG At at -20 F to 200 F, 100 percent Radiography</i> <i>with Post Weld Heat Treat, 1/8 In.C.A. Constructed</i> <i>in accordance with ASME B31.3 Normal Fluid</i> <i>Service.</i>
<b>PS-101</b>	<b>1.00</b>	<b>REHEAT COIL</b>

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<i>Part #</i>	<i>Qty</i>	<i>Description/Notes</i>
		<i>One 3 In Sch XH, SA106-B, 2 pass preheat coil with Class 600 RF flanged outer ends, 1350 PSIG at -20 F to 200 F, 100 percent Radiography with Post Weld Heat Treat, 1/8 In.C.A. Constructed in accordance with ASME B31.3 Normal Fluid Service.</i>
<b>PSHH-100</b>	<b>1.00</b>	<b>HIGH PRESSURE SWITCH</b>  <i>SWITCH, PRESSURE, CCS DUAL SNAP MODEL 6900GZE14, 1/2" NPT, SS CONSTRUCTION, CSA APPROVED, SET @ 14 PSI RISING</i>  <i>c-UL, U.L./CSA Explosion Proof: Div. 1, 2 hermetically sealed electrical assembly P/N 46-1058 (46-1061 for M model option), listed by both Underwriter's Laboratories, Inc. (File No. E32961) and Canadian Standard Association (CSA) Testing Laboratories (File No. LR22921) for hazardous locations, Class 1, Groups A, B, C, and D; Class 2 Groups E, F, and G. ATEX certified for potentially explosive atmospheres electrical assembly series</i>
<b>PSLL-100</b>	<b>1.00</b>	<b>LOW PRESSURE SWITCH</b>  <i>SWITCH, PRESSURE, CCS DUAL SNAP MODEL 6900GZE12, 1/2" NPT, SS CONSTRUCTION, CSA APPROVED, SET @ 4 PSI FALLING</i>  <i>c-UL, U.L./CSA Explosion Proof: Div. 1, 2 hermetically sealed electrical assembly P/N 46-1058 (46-1061 for M model option), listed by both Underwriter's Laboratories, Inc. (File No. E32961) and Canadian Standard Association (CSA) Testing Laboratories (File No. LR22921) for hazardous locations, Class 1, Groups A, B, C, and D; Class 2 Groups E, F, and G. ATEX certified for potentially explosive atmospheres electrical assembly series</i>
<b>SC-100</b>	<b>1.00</b>	<b>SPEED CONTROL VALVE</b>  <i>SPEED CONTROL VALVE, MODEL NAS2000-NO2, 1/4IN. NPT, 150 PSI MAWP, C/W ACL 5100 BMC-100</i>
<b>SOV/UY-100</b>	<b>1.00</b>	<b>PROOF OF CLOSURE VALVE</b>  <i>1" Fossil Proof of Closure Valve Pneumatic Actuator 24 VDC C/W solenoid and Quick Exhaust Valve CSA 6.5-2000 C/I Approved</i>
<b>ST-1</b>	<b>1.00</b>	<b>Y STRAINER</b>  <i>Y STRAINER 1" 3000 YS3000, 1/32 Perf. Alberta Y Strainers</i>
<b>TC-100</b>	<b>1.00</b>	<b>TEMP. CONTROLLER</b>  <i>Temperature Controller Kimray Steel HT-12 High INDIRECT ACTING</i>

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		TEMPERATURE RANGE: 34C Min. to 399C Max. WORKING PRESSURE: 4000 PSG Max. with Separable Socket SUPPLY PRESSURE: 5 to 30 PSIG RESPONSE RANGE: 2.50 PSIG/F
<b>TCV-100</b>	<b>1.00</b>	<b>TEMP CONTROL VALVE</b>  <i>Control Valve, Fisher 119, 1" NPT Cast Iron Body            Aluminum/Nitrile Trim 9/16" Orifice            Spring Range: 5 to 35 PSI</i>
<b>TH-100</b>	<b>1.00</b>	<b>THIEF HATCH</b>  <i>Thief Hatch Wenco 16 oz Pressure Spring 0.4 oz            Vacuum Setting Sweet Service c/w Base Gasket</i>
<b>TI-100</b>	<b>1.00</b>	<b>THERMOMETER</b>  <i>THERMOMETER 3" DIAL TREND 9" STEM -20 TO 120C / 0            TO 250F 304SS MODEL 33</i>
<b>TSHH-100</b>	<b>1.00</b>	<b>TEMP. SWITCH</b>  <i>Temperature Switch CCS DUAL SNAP SET @ 90 C Rising            C/W Factory Set Certificate Model 6900TE 14</i>
<b>TW-100</b>	<b>1.00</b>	<b>THERMOWELL</b>  <i>THERMOWELL WIKA 1/2" X 1" X 9" 316 SST</i>
<b>TW-101</b>	<b>2.00</b>	<b>THERMOWELL</b>  <i>Separable Socket Kimray HCE 1" SS-12SS</i>
<b>UY-101</b>	<b>1.00</b>	<b>SOLENOID</b>  <i>Asco 24VDC Solenoid C/I Rated            ANSI Z21.21 &amp; CSA 6.5 Certification 1/4" NPT            10.6 Watts            MODEL HV426716002</i>

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