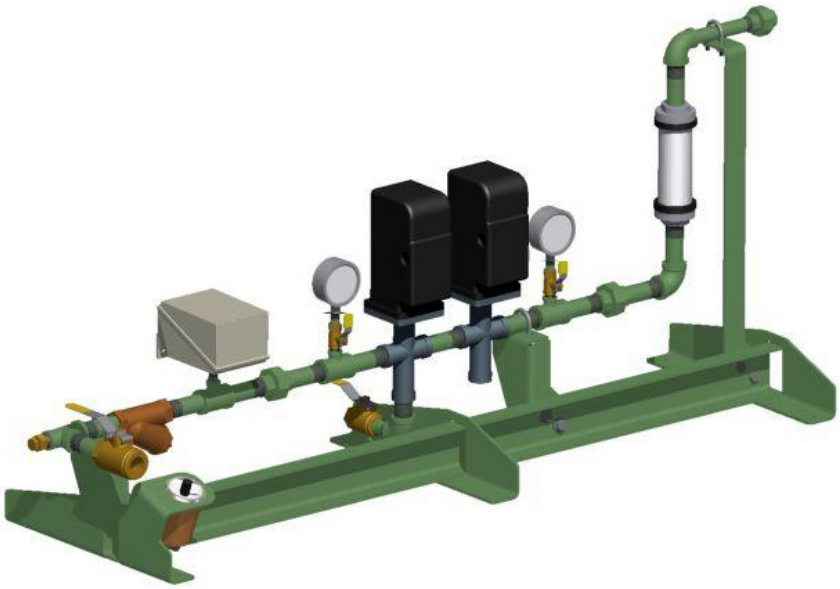
POM / POM-H SERIES
PREPIPED OIL / HEAVY OIL MANIFOLD



WARNING

These instructions are intended for use only by experienced, qualified combustion start-up personnel. Adjustment of this equipment and its components, by unqualified personnel, can result in fire, explosion, severe personal injury, or even death.

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These instructions are intended to serve as guidelines covering the installation, operation, and maintenance of Hauck equipment. While every attempt has been made to ensure completeness, unforeseen or unspecified applications, details, and variations may preclude covering every possible contingency. **WARNING: TO PREVENT THE POSSIBILITY OF SERIOUS BODILY INJURY, DO NOT USE OR OPERATE ANY EQUIPMENT OR COMPONENT WITH ANY PARTS REMOVED OR ANY PARTS NOT APPROVED BY THE MANUFACTURER.** Should further information be required or desired or should particular problems arise which are not covered sufficiently for the purchaser's purpose, contact Hauck Mfg. Co.

WARNING

This equipment is potentially dangerous with the possibility of serious personal injury and property damage. Hauck Manufacturing Company recommends the use of flame supervisory equipment and fuel safety shutoff valves. Furthermore, Hauck urges rigid adherence to National Fire Protection Association (NFPA) standards and insurance underwriter's requirements. Operation and regular preventative maintenance of this equipment should be performed only by properly trained and qualified personnel. Annual review and upgrading of safety equipment is recommended.

A. GENERAL INFORMATION

The Hauck POM/POM-H series oil and heavy oil fuel manifolds are designed to meet industry-accepted standards for fuel delivery to oil fired combustion systems.

B. RECEIVING AND INSPECTION

Upon receipt, check each item on the bill of lading and/or invoice to determine that all equipment has been received. A careful examination of all parts should be made to ascertain if there has been any damage in shipment.

IMPORTANT

If the installation is delayed and the equipment is stored outside, provide adequate protection as dictated by climate and period of exposure. Special care should be given to all motors, bearings and control panels, if applicable, to protect them from rain or excessive moisture.

C. CAPACITIES

Maxon Series – Asphalt Manifolds

MODEL NUMBER		CONNECTION SIZE	MAXIMUM FLOW (gpm)	MAXIMUM FLOW (gph)	FLOW FACTOR CV	MAXIMUM CAPACITY (MMBtu/hr)	SUGGESTED BURNERS
Light Oil	POM 207-1	3/4 NPT	5	300	1.6	42.3	SJ-150,200
	POM 207-2	3/4 NPT	10	600	3.8	84.7	SJ-260,360
	POM 207-3	3/4 NPT	15	900	3.5	127.0	SJ-520
	POM 210	1 NPT	20	1200	4.1	169.4	SJ-580,750
Heavy Oil	POM-H 207-1	3/4 NPT	4.8	288	1.6	40.7	SJ-150,200
	POM-H 207-2	3/4 NPT	9.5	570	3.8	80.5	SJ-260,360
	POM-H 207-3	3/4 NPT	14.3	858	3.5	121.1	SJ-520
	POM-H 210	1 NPT	19.1	1146	4.1	161.8	SJ-580,750

Siemens Series – Asphalt Manifolds

MODEL NUMBER		CONNECTION SIZE	MAXIMUM FLOW (gpm)	MAXIMUM FLOW (gph)	FLOW FACTOR CV	MAXIMUM CAPACITY (MMBtu/hr)	SUGGESTED BURNERS
Light Oil	POM 407-1	3/4 NPT	5	300	1.9	42.3	SJ-150,200
	POM 407-2	3/4 NPT	10	600	2.1	84.7	SJ-260,360
	POM 407-3	3/4 NPT	12	720	2.5	101.6	SJ-520
Heavy Oil	POM-H 407-1	3/4 NPT	4.8	288	1.9	40.7	SJ150,200
	POM-H 407-2	3/4 NPT	9.5	570	2.1	80.5	SJ260,360
	POM-H 407-3	3/4 NPT	11.4	684	2.5	96.5	SJ-520

NOTES:
1. POM maximum flow based on No. 2 fuel oil with 0.87 specific gravity at 60°F, viscosity of 40 SSU at 100°F, and higher heating value (HHV) of 141,146 BTU/hr.

2. POM-H maximum flow based on No. 6 fuel oil with 0.95 specific gravity at 210°F, viscosity of 3000 SSU at 100°F, and higher heating value (HHV) of 157,174 BTU/hr.

Table 1. POM/POM-H 207 Thru POM/POM-H 407 Capacities

C. CAPACITIES (Continued)

Maxon Series – Asphalt Manifolds

MODEL NUMBER		CONNECTION SIZE	MAXIMUM FLOW (lpm)	MAXIMUM FLOW (lph)	FLOW FACTOR CV	MAXIMUM CAPACITY (MW)	SUGGESTED BURNERS
Light Oil	POM 207-1	3/4 NPT	18.9	1136	1.6	11.6	SJ-150,200
	POM 207-2	3/4 NPT	37.9	2271	3.8	23.3	SJ-260,360
	POM 207-3	3/4 NPT	56.8	3407	3.5	34.9	SJ-520
	POM 210	1 NPT	75.7	4542	4.1	46.6	SJ-580,750
Heavy Oil	POM-H 207-1	3/4 NPT	18.2	1090	1.6	11.2	SJ-150,200
	POM-H 207-2	3/4 NPT	36.0	2157	3.8	22.1	SJ-260,360
	POM-H 207-3	3/4 NPT	54.1	3248	3.5	33.3	SJ-520
	POM-H 210	3/4 NPT	72.3	4338	4.1	44.5	SJ-580,750

Siemens Series – Asphalt Manifolds

MODEL NUMBER		CONNECTION SIZE	MAXIMUM FLOW (lpm)	MAXIMUM FLOW (lph)	FLOW FACTOR CV	MAXIMUM CAPACITY (MW)	SUGGESTED BURNERS
Light Oil	POM 407-1	3/4 NPT	18.9	1136	1.9	11.6	SJ-150,200
	POM 407-2	3/4 NPT	37.9	2271	2.1	23.3	SJ-260,360
	POM 407-3	3/4 NPT	45.4	2725	2.5	27.9	SJ-520
Heavy Oil	POM-H 407-1	3/4 NPT	18.2	1090	1.9	11.2	SJ150,200
	POM-H 407-2	3/4 NPT	36.0	2157	2.1	22.1	SJ260,360
	POM-H 407-3	3/4 NPT	43.1	2589	2.5	26.5	SJ-520

NOTES:
1. POM maximum flow based on No. 2 fuel oil with 0.87 specific gravity at 15.5°C, viscosity of 4.6x1010-6 m2/s at 38°C, and lower heating value (LHV) of 10.27 kW/liter.

2. POM-H maximum flow based on No. 6 fuel oil with 0.95 specific gravity at 99°C, viscosity of 6.5x10-4 m2/s at 38°C, and lower heating value (HHV) of 11.46 kW/liter.

Table 2. POM/POM-H 207 Thru POM/POM-H 407 Metric Capacities

C. CAPACITIES (Continued)

Siemens Series – Industrial Single Burner

MODEL NUMBER		CONNECTION SIZE	MAXIMUM FLOW (lpm)	MAXIMUM FLOW (lph)	FLOW FACTOR CV	MAXIMUM CAPACITY (MW)
Light Oil	POM 507	3/4 NPT	45.4	2725	2.9	27.9
Heavy Oil	POM-H 507	3/4 NPT	43.1	2589	2.9	26.5

Siemens Series – Industrial Multi-Burner

MODEL NUMBER		CONNECTION SIZE	MAXIMUM FLOW (lpm)	MAXIMUM FLOW (lph)	FLOW FACTOR CV	MAXIMUM CAPACITY (MW)
Light Oil	POM 607	3/4 NPT	45.4	2725	3.7	27.9
Heavy Oil	POM-H 607	3/4 NPT	43.1	2589	3.7	26.5

NOTES:
1. POM maximum flow based on No. 2 fuel oil with 0.87 specific gravity at 15.5°C, viscosity of 4.6x1010-6 m2/s at 38°C, and lower heating value (LHV) of 10.27 kW/liter.
2. POM-H maximum flow based on No. 6 fuel oil with 0.95 specific gravity at 99°C, viscosity of 6.5x10-4 m2/s at 38°C, and lower heating value (HHV) of 11.46 kW/liter.
3. Flow Meter not included with POM 507 and POM 607.

Table 3. POM/POM-H 507 And POM/POM-H 607 Capacities

Siemens Series – Industrial Single Burner

MODEL NUMBER		CONNECTION SIZE	MAXIMUM FLOW (lpm)	MAXIMUM FLOW (lph)	FLOW FACTOR CV	MAXIMUM CAPACITY (MW)
Light Oil	POM 507	3/4 NPT	45.4	2725	2.9	27.9
Heavy Oil	POM-H 507	3/4 NPT	43.1	2589	2.9	26.5

Siemens Series – Industrial Multi-Burner

MODEL NUMBER		CONNECTION SIZE	MAXIMUM FLOW (lpm)	MAXIMUM FLOW (lph)	FLOW FACTOR CV	MAXIMUM CAPACITY (MW)
Light Oil	POM 607	3/4 NPT	45.4	2725	3.7	27.9
Heavy Oil	POM-H 607	3/4 NPT	43.1	2589	3.7	26.5

NOTES:
1. POM maximum flow based on No. 2 fuel oil with 0.87 specific gravity at 15.5°C, viscosity of 4.6x1010-6 m2/s at 38°C, and lower heating value (LHV) of 10.27 kW/liter.
2. POM-H maximum flow based on No. 6 fuel oil with 0.95 specific gravity at 99°C, viscosity of 6.5x10-4 m2/s at 38°C, and lower heating value (HHV) of 11.46 kW/liter.
3. Flow Meter not included with POM 507 and POM 607.

Table 4. POM/POM-H 507 And POM/POM-H 607 Metric Capacities

D. DIMENSIONS

See appropriate Dimension sheet for detailed dimensional information.

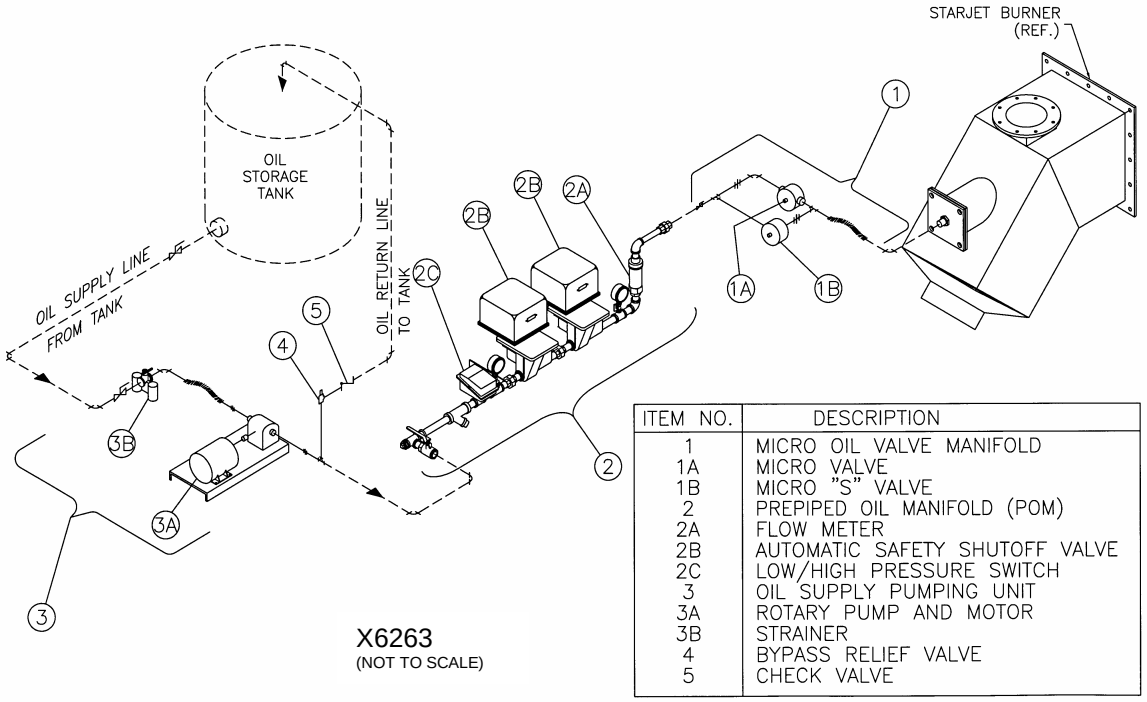
E. LIGHT FUEL OIL INSTALLATION - POM

WARNING

Adjustment of this equipment, and its components, by unqualified personnel, can result in fire, explosion, severe personal injury, or even death.

MECHANICAL

1. Prepare an area within 15 ft (4.6m) of the burner oil inlet to accept the manifold. Attempt to position the manifold as close to the burner as possible. The area should be level and flat. The manifold can be mounted on metal or concrete. Using at least four of the mounting holes in the base, mount the manifold to the mounting structure with appropriate bolts and fasteners. Avoid welding the manifold to its final location unless impractical**. The location of the manifold should not be above the horizontal centerline of the burner.**



ITEM NO.	DESCRIPTION
1	MICRO OIL VALVE MANIFOLD
1A	MICRO VALVE
1B	MICRO "S" VALVE
2	PREPIPED OIL MANIFOLD (POM)
2A	FLOW METER
2B	AUTOMATIC SAFETY SHUTOFF VALVE
2C	LOW/HIGH PRESSURE SWITCH
3	OIL SUPPLY PUMPING UNIT
3A	ROTARY PUMP AND MOTOR
3B	STRAINER
4	BYPASS RELIEF VALVE
5	CHECK VALVE

Figure 1. Typical Piping Schematic of POM with StarJet Burner

2. The position indication windows on the automatic safety shutoff valves must be visible to equipment operators. The valve heads can be field rotated to accommodate viewing the position indication window. Consult valve manufacturer for instructions (200 Series only).

3. Once the manifold is in place, connect the oil supply piping to the POM inlet. It is recommended that a ball valve followed by a union connection is installed upstream of the manifold inlet connection to ease manifold and fuel component maintenance.

4. Make the piping connection to the manifold outlet. It is recommended that a drain leg be installed at this point to facilitate draining the piping between the burner and POM to allow easy cleaning of the burner nozzle and prevent unnecessary fuel spillage (see Figure 2). Use an appropriate pipe sealant on all piping connections. Once the piping connections are made, the electrical connections can be started.

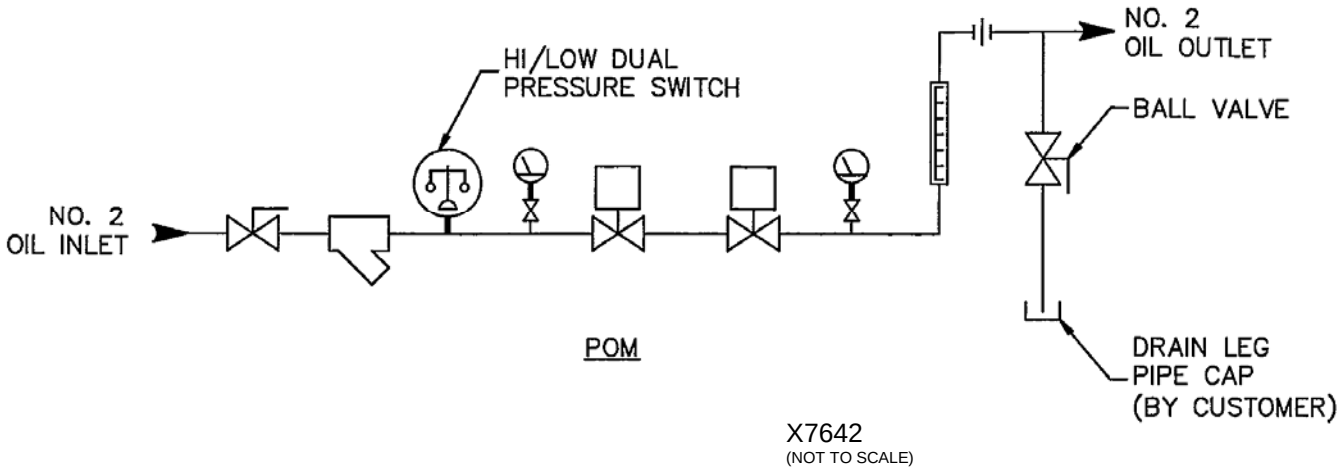


Figure 2. Typical Schematic of POM Drain Leg

ELECTRICAL

Each POM is equipped with three components that require electrical connections (see Table 5). Consult component wiring diagrams (on component cover plates) for component terminal numbers.

Component	Connection Type
Low/High Oil Pressure Switch	Low Pressure is Normally Open. High Pressure is Normally Closed.
Main Oil Shutoff Valve, Blocking Oil Shutoff Valve	Control Voltage, Neutral, Valve Closed Switch(VCS) And In Some Cases The Valve Open Switch (VOS) Must Be Wired In Accordance With Applicable Control System Schematics; Consult Drawings And Manuals Supplied With Your Control System.

Table 5. POM Electrical Component Wiring

F. HEAVY FUEL OIL INSTALLATION – POM-H

WARNING

Adjustment of this equipment, and its components, by unqualified personnel, can result in fire, explosion, severe personal injury, or even death.

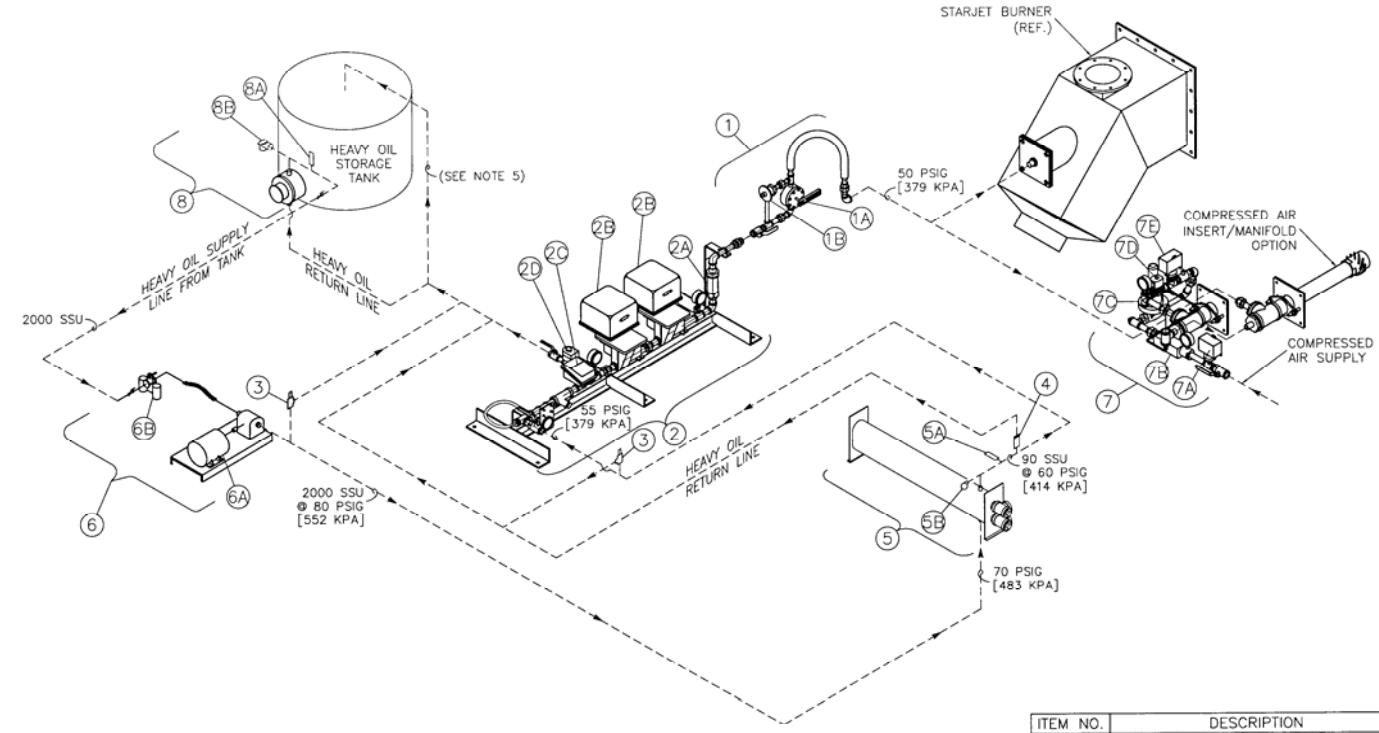
MECHANICAL

The POM-H is designed to handle all fuel oils up to 240°F (115°C). Installation of a sampling location is recommended to allow operators to drain fuel near the POM-H or burner to obtain oil for a viscosity test.

1. Prepare an area within 15 ft (4.6m) of the burner oil inlet to accept the manifold (Attempt to position the manifold as close to the burner as possible). The area should be level and flat. The manifold can be mounted on metal or concrete. Using **at least** four of the mounting holes in the base, mount the manifold to the mounting structure with appropriate bolts and fasteners. Avoid welding the manifold to its final location unless impractical**. The outlet of the manifold should not be above the horizontal centerline of the burner.**

NOTE

All heavy fuel oil piping **must be** heat traced (electric or steam) and insulated. Self-regulating heat tracing is recommended to maintain the desired temperature of a given fuel to achieve 90 SSU (1.8×10^5 m^2/sec) at the burner. Electrical heat tracing with a nominal rating of 12 W/ft (39 W/m) covered with a nominal 2" (50mm) fiberglass type insulation is sufficient for most applications.



NOTES:
1. PIPING SCHEMATIC SHOWS TYPICAL COMPONENTS AND NOMINAL VISCOSITIES AND PRESSURES FOR HEAVY FUEL OIL SUPPLY; ACTUAL REQUIREMENTS ARE DEPENDENT UPON THE SPECIFIC BURNER SYSTEM (CONSULT HAUCK).
2. OIL RETURN LINES TO BE SIZED ACCORDING TO DISTANCE TO PUMP – MINIMUM SIZE EQUAL TO TWO PIPE SIZES LARGER THAN OIL SUPPLY LINE (SEE GL88 FOR MINIMUM LINE SIZES FOR HAUCK OIL SUPPLY PUMPING UNITS).
3. FOR ALL HEAVY OIL APPLICATIONS, OIL PIPING MUST BE HEAT TRACED (ELECTRIC OR STEAM) AND INSULATED. SELF-REGULATING HEAT TRACING IS RECOMMENDED TO MAINTAIN THE DESIRED TEMPERATURE OF A GIVEN FUEL OIL TO ACHIEVE 90 SSU (1.8×10^{-5} M^2/SEC) OR LESS AT THE BURNER. ELECTRICAL HEAT TRACING WITH A NOMINAL RATING OF 12 W/FT (39W/M) COVERED WITH A NOMINAL 2" (50MM) FIBERGLASS TYPE INSULATION IS SUFFICIENT FOR MOST APPLICATIONS.
4. IF USING NO. 6 FUEL OIL AND THE PIPING BETWEEN THE SUPPLY PUMPING UNIT (ITEM 6) AND THE PREPIPED OIL MANIFOLD (ITEM 2) IS GREATER THAN 50 FT (15M), AN ADDITIONAL BYPASS RELIEF VALVE (ITEM 3) MAY BE REQUIRED IN THE SUPPLY PIPING TO ACCOMMODATE COLD SYSTEM START UP (CONSULT HAUCK).
5. IF SUCTION HEATER IS NOT UTILIZED, OIL RETURN LINE SHOULD BE PIPED TO THE OIL STORAGE TANK.

ITEM NO.	DESCRIPTION
1	MICRO OIL VALVE MANIFOLD
1A	MICRO VALVE
1B	MICRO "S" VALVE
2	PREPIPED HEAVY OIL MANIFOLD
2A	FLOW METER
2B	AUTOMATIC SHUTOFF VALVE
2C	LOW/HIGH PRESSURE SWITCH
2D	RETURN OIL SOLENOID VALVE
3	BYPASS RELIEF VALVE
4	OVER PRESSURE RELIEF VALVE
5	ELECTRIC LINE HEATER
5A	OIL FLOW SWITCH
5B	OIL TEMPERATURE CONTROL THERMOCOUPLE
6	OIL SUPPLY PUMPING UNIT
6A	ROTARY PUMP AND MOTOR
6B	STRAINER
7	COMPRESSED AIR MANIFOLD
7A	LOW SUPPLY PRESSURE SWITCH
7B	FLOW METER
7C	PRESSURE REDUCING REGULATOR
7D	AIR SOLENOID
7E	LOW ATOMIZING PRESSURE SWITCH
8	ELECTRIC SUCTION HEATER
8A	OIL FLOW SWITCH
8B	OIL TEMPERATURE CONTROL THERMOCOUPLE

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(NOT TO SCALE)

Figure 3. Typical Piping Schematic of POM-H with StarJet Burner

2. The position indication windows on the automatic shut off valves must be visible to equipment operators. The valve heads can be field rotated to accommodate viewing the position indication window. Consult valve manufacturer for instructions (200 Series only).

3. Once the manifold is in place, connect the oil supply piping to the POM-H inlet. It is recommended that a ball valve followed by a union connection is installed upstream of the manifold inlet connection to ease manifold and fuel component maintenance.

4. Connect the return oil line to the outlet of the ball valve on the return oil line. The return line should be used to keep hot oil flowing through the oil piping when the burner is not firing. Burner performance may suffer on cold start-ups if the return line is not properly piped. A sampling tee can be installed downstream of the ball valve to accommodate viscosity testing.

5. Make the piping connection to the manifold outlet. It is recommended that a drain leg be installed at this point to facilitate draining the piping between the burner and POM-H to allow easy cleaning of the burner nozzle and prevent unnecessary fuel spillage (see Figure 4). Use an appropriate pipe sealant on all piping connections. Once the piping connections are made, the electrical connections can be started.

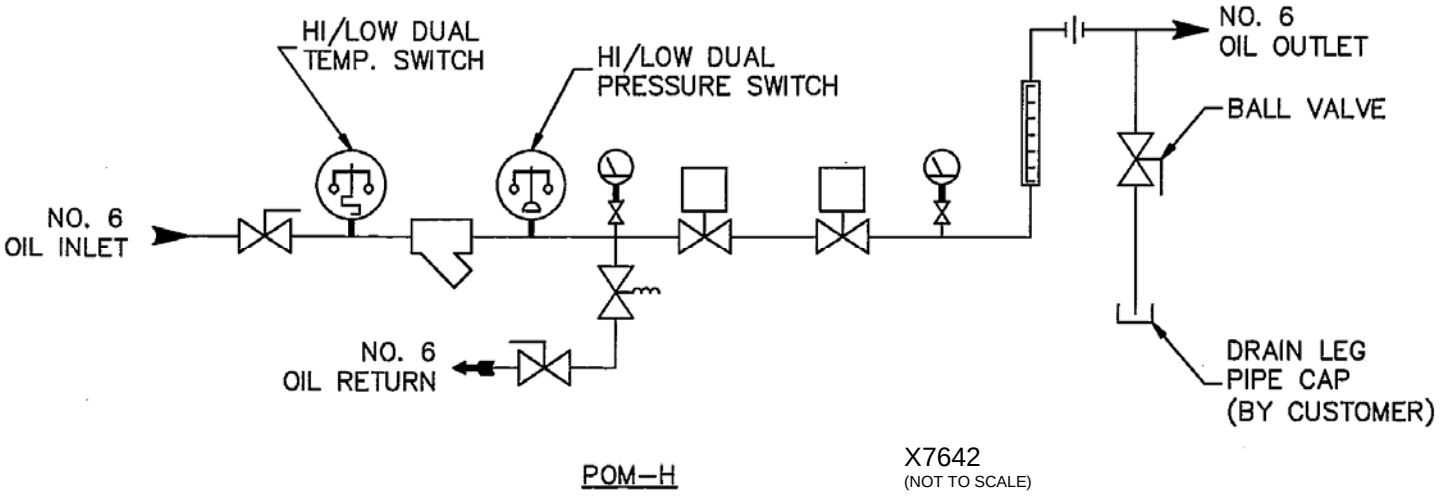

Figure 4. Typical Schematic of POM-H Drain Leg

ELECTRICAL

Each POM-H is equipped with five components that require electrical connections (see Table 6). Consult component wiring diagrams (on component cover plates) for component terminal numbers.

Component	Connection Type
Low/High Oil Temperature Controller	Low Temperature is Normally Open. High Temperature is Normally Closed.
Low/High Oil Pressure Switch	Low Pressure is Normally Open. High Pressure is Normally Closed.
Return Oil Solenoid Valve (Normally Open Valve)	Power And Neutral Must Be Wired In. (200 Series Only)
Main Oil Shutoff Valve, Blocking Oil Shutoff Valve	Control Voltage, Neutral, Valve Closed Switch(VCS) And In Some Cases The Valve Open Switch (VOS) Must Be Wired In Accordance With Applicable Control System Schematics; Consult Drawings And Manuals Supplied With Your Control System.

Table 6. POM-H Electrical Components Wiring

G. INITIAL SET-UP

IMPORTANT
Before subjecting the manifold to fuel, cycle the automatic shutoff valves 10 times to prepare the valve seat and gate for operation.

Once all piping and electrical connections are complete, the system should be leak tested.

1. Close the ball valve at the inlet of the manifold and at the burner fuel inlet.

2. Start the oil pump and leak check all components upstream of the POM or POM-H.

3. If any leaks exist, repair as necessary.

4. Remove the pipe plug from the POM inlet tee or the low oil temperature switch capillary tube from the POM-H inlet tee.

5. Pressurize the POM or POM-H manifold using **75 psig** (517 kPa) of compressed air.

6. Coat all piping connections with a leak test solution of liquid soap and water. If any bubbles appear, a leak exists. **Repair the leak before proceeding.**

> **CAUTION**
> If any leaks exist downstream of the safety shutoff valves when they are in the "shut" position, contact Hauck or the valve manufacturer immediately.

7. Once all leaks on the inlet side of the manifold are repaired, energize the main safety shutoff valve and coat all piping connections downstream of the main safety shutoff valve with the leak test solution.

8. Repair any leaks as necessary.

9. Lastly, energize both safety shutoff valves and coat all piping downstream of the valves with the leak test solution.

10. Repair any leaks as necessary.

11. Depressurize manifold.

Switch Adjustment

Adjust the low/high pressure switch to the desired setting – each switch is factory set at **15** and **80 psig** (103 and 552 kPa), respectively.

POM-H ONLY:
Adjust the low/high oil temperature controller to 5°F (1.5°C) below the temperature that achieves an oil viscosity of 80 to 90 SSU (1.6×10^{-5} to 1.8×10^{-5} m^2/sec). This temperature is determined by performing a viscosity test on the oil. Consult Hauck concerning equipment necessary to perform oil viscosity testing and oil viscosity test procedures.

H. OPERATION

Once properly installed and initially set, the prepiped manifold is ready for operation. The combustion control system will automatically cycle and operate the safety shutoff valves and monitor the safety switches.

I. MAINTENANCE

The manifold does not require any normal maintenance.

J. RECOMMENDED SPARE PARTS

Item	Manifold Type	Part No.	Description
1	POM	303133	Switch, Low/High Pressure
2	POM/POM-H	35971	Gauge, Liquid Filled 0-100 psig
3	POM-H	301199	Controller, Low/High Temperature
4	POM-H (200 Series)	301680	Solenoid Valve 1/2 NPT

Table 7. Manifold Spare Parts List

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CONTROL SYSTEM SPECIAL FEATURES TO MEET NFPA 86 2007 EDITION REQUIREMENTS FOR MULTIPLE BURNER OIL APPLICATIONS

There are basically two control system options that can be utilized to ensure compliance to NFPA 86 2007 Edition requirements for multiple oil burners firing into a common chamber. The first option utilizes two oil safety shutoff valves at each burner, while the second option (actually an exception per NFPA) utilizes a single oil safety shutoff valve in the main oil supply line and a single oil safety shutoff valve at each burner.

For Option 1, specific requirements and a typical oil piping layout (see Figure 1) are as follows:

Oil Safety Shutoff Valves

1. The main (first) oil safety shutoff valve at each burner requires both a proof of closure switch and visual indication.
2. The blocking (second) oil safety shutoff valve at each burner requires only visual indication.

Electrical Wiring

1. The proof of closure switch contacts in the main (first) oil safety shutoff valve must be connected in series with the purge limits and only two wires from that series wiring must run back to the control panel for inclusion.

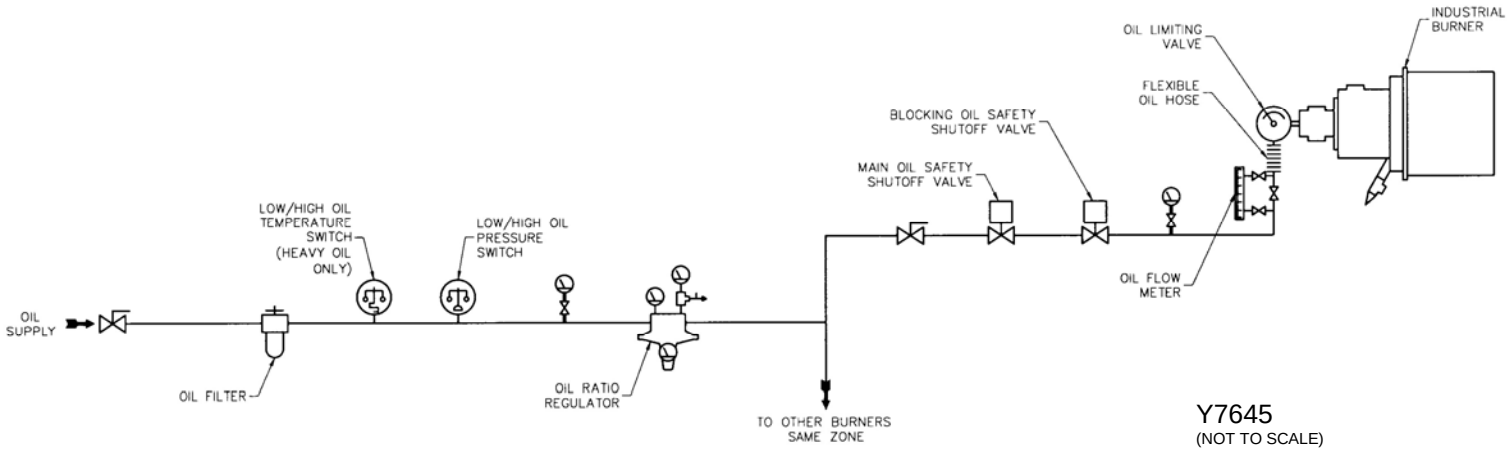

Figure 1. Option 1 Typical Oil Piping Layout

For Option 2, specific requirements and a typical oil piping layout (see Figure 2) are as follows:

Oil Safety Shutoff Valves

1. The main oil safety shutoff valve in the main oil supply line requires both a proof of closure switch and visual indication.
2. The burner oil safety shutoff valve at each burner requires a proof of closure switch and visual indication.

Electrical Interlocking of Burner Oil Safety Shutoff Valves

1. Two wires from each burner safety shutoff valve closed switch must be run back to the control panel.
2. A normally open auxiliary relay contact for each burner must be connected in parallel with the associated valve closed switch.
3. These parallel switch/relay circuits must be connected in series to energize an off-delay timer.
4. A normally open contact of this off-delay timer must be wired in series with the purge timer circuit and the main gas safety shutoff valve.

Circuit Operation

1. Provided that all burner oil safety shutoff valve closed switches are closed, the off-delay contact will energize.
2. If all safety and purge limits are satisfied and the main oil safety shutoff valve proof of closure switch contact is closed, the purge timer will be enabled.
3. After purge time is complete, the main oil safety shutoff valve will be enabled.
4. If any burner goes out and the burner oil safety shutoff valve **fails to close**, the timer will complete its off-delay and its normally open contacts will be de-energized. This will in turn de-energize the main oil safety shutoff valve and disable the purge timer circuit.

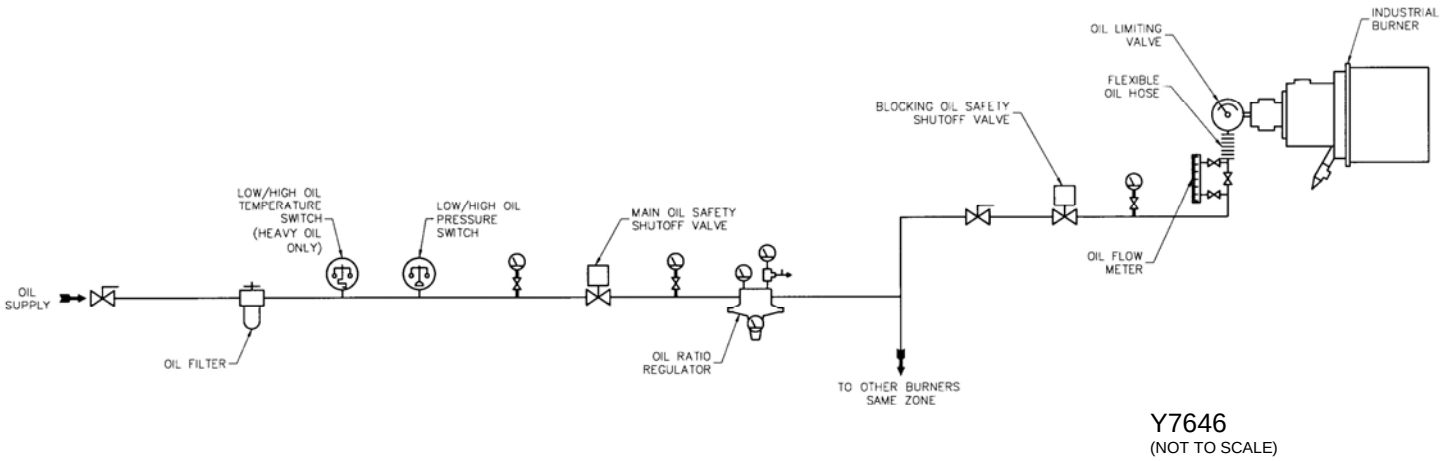

Figure 2. Option 2 Typical Oil Piping Layout