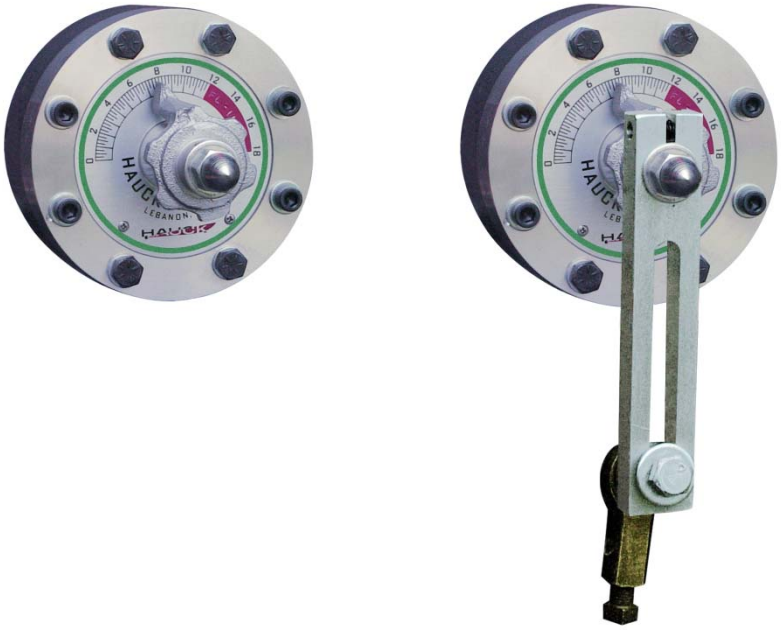
MCOV MICRO-CAM OIL VALVES



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 Micro-Cam Oil Valve (MCOV) is designed to provide positive, accurate, graduated control of fuel liquid flow to any type of burner. Flow control may be either manual or automatic. A large indicator dial provides a greater range of individual precision settings. This valve is specifically engineered to handle small to large oil capacities. B and F valves are UL listed for assured quality.

The Hauck MCOV is intended for *flow control;* **it is not designed to replace a shutoff valve**. For tight shutoff, a ball type or solenoid shutoff valve must be provided in the fuel supply line. These valves will successfully and efficiently handle any grade of fuel oil, even heavy fuel oils, when preheated to the proper viscosity and flow characteristics. Valves are specially designed to reduce erosion from oil particulates. Liquid propane valves are also available.

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 and bearings, if applicable, to protect them from rain or excessive moisture.

C. CAPACITIES

FULL OPEN VALVE CAPACITY

BASED ON NO.2 FUEL OIL, @ 180° (FULL OPEN) VALVE POSITION

VALVE MODEL #	PIPE SIZE NPT		PRESSURE DROP												
		(psig)	1	5	10	15	20	25	30	35	40	45	50	75	100
		(mbar)	70	340	690	1,030	1,380	1,720	2,070	2,410	2,760	3,100	3,450	5,170	6,890
			VALVE FLOW CAPACITY												
B-1/2-12	1/2	(gph)	22	50	71	87	100	112	123	132	142	150	158	194	224
		(lph)	85	189	268	328	379	424	464	501	536	568	599	734	847
B-1/2-16	1/2	(gph)	36	80	113	139	160	179	196	212	227	240	253	310	358
		(lph)	136	303	429	525	606	678	743	802	857	910	959	1,174	1,356
B-1/2-18	1/2	(gph)	46	102	145	177	205	229	250	271	289	307	323	396	457
		(lph)	173	387	547	670	774	865	948	1,024	1,095	1,161	1,224	1,499	1,731
B-1/2-20	1/2	(gph)	57	127	179	219	253	283	310	335	358	380	400	490	566
		(lph)	214	479	678	830	958	1,071	1,174	1,268	1,355	1,437	1,514	1,855	2,143
B-1/2-24	1/2	(gph)	72	161	228	279	323	361	395	427	456	484	510	625	722
		(lph)	273	611	864	1,058	1,222	1,365	1,496	1,616	1,727	1,832	1,931	2,365	2,731
F-1/2-16	1/2	(gph)	33	74	104	128	147	165	180	195	208	221	233	285	329
		(lph)	125	279	394	483	558	623	683	738	789	837	882	1,080	1,247
F-1/2-18	1/2	(gph)	68	153	216	265	306	342	375	405	432	459	483	592	684
		(lph)	259	579	818	1,002	1,157	1,294	1,418	1,531	1,637	1,736	1,830	2,241	2,588
F-1/2-20	1/2	(gph)	100	224	317	389	449	502	548	593	634	673	709	869	1,003
		(lph)	380	849	1,201	1,471	1,698	1,898	2,076	2,246	2,401	2,547	2,685	3,288	3,797
F-1/2-24	1/2	(gph)	150	336	475	582	672	752	823	889	951	1,008	1,063	1,302	1,503
		(lph)	569	1,273	1,800	2,204	2,545	2,845	3,117	3,367	3,599	3,816	4,024	4,929	5,689
BL-1/2-16	1/2	(gph)	33	74	105	129	149	167	182	197	211	223	236	289	333
		(lph)	126	282	399	488	564	631	691	746	798	846	892	1,092	1,261
FL-1/2-20	1/2	(gph)	105	236	334	409	472	528	579	625	668	709	747	915	1,056
		(lph)	397	894	1,264	1,549	1,788	1,999	2,190	2,366	2,529	2,682	2,827	3,463	3,999
FL-1/2-24	1/2	(gph)	153	343	485	595	687	768	841	908	971	1,030	1,086	1,330	1,535
		(lph)	579	1,299	1,838	2,251	2,599	2,906	3,183	3,438	3,675	3,898	4,109	5,033	5,811
GL-1-29	1	(gph)	164	366	518	634	732	818	897	968	1,035	1,098	1,157	1,418	1,637
		(lph)	620	1,385	1,959	2,400	2,771	3,098	3,394	3,666	3,919	4,156	4,381	5,366	6,196
G-1-29	1	(gph)	145	324	458	560	647	724	793	856	915	971	1,023	1,253	1,447
		(lph)	548	1,225	1,732	2,122	2,450	2,739	3,000	3,241	3,464	3,675	3,873	4,744	5,478
K-1-29	1	(gph)	190	426	602	737	851	952	1,043	1,126	1,204	1,277	1,346	1,649	1,904
		(lph)	721	1,612	2,279	2,791	3,223	3,604	3,948	4,264	4,558	4,835	5,096	6,242	7,207
K-1-38	1	(gph)	256	572	809	991	1,145	1,280	1,402	1,514	1,619	1,717	1,810	2,217	2,560
		(lph)	969	2,167	3,064	3,753	4,333	4,845	5,307	5,732	6,128	6,500	6,852	8,391	9,690

NOTES:

1. Capacities based on No. 2 fuel oil at .849 s.g. and 60°F (15.5°C).
2. Pressure drop is measured across full-open valve (Dial position 18).
3. When ordering, specify if valve is to be equipped with hand lever, hand wheel or adjustable radius lever for automatic control.
4. RP thread adapters are available.

Table 1 - Capacities

D. DIMENSIONS

See appropriate Dimension sheet for detailed dimensional information.

E. INSTALLATION

1. Using an appropriate thread sealant (Loctite 565 or equal) on the mating male threads, install the control valve in the fuel line in any position, at a convenient location as close to the burner as possible. To prevent air pocket formation in the burner fuel supply line, mount the MCOV at or below the burner centerline. The valve should be placed downstream of shutoff Valves and a filter. The shutoff valves make it possible to service the burner and control valve without shutting down the fuel supply system. The filter will help prevent clogging by removing any debris which is too large to pass through the control valve. All micro-cam oil valves are provided with female connections threaded for standard pipe.

2. When an automatic operation is to be used, mount a control motor to a rigid support. The valve's operating arm moves in a clockwise direction to open the valve over an arc of 180° (B, BL or H series) or 120° (F, FL, G, GL, J and K series) at an adjustable radius ranging from 1-1/8" to 4-3/8" (29 to 111mm).

   A. Connect the valve lever to the control motor arm by a 3/8" (9.5mm) rod through the snap connection pin on the valve lever. A set screw is provided on the snap pin to secure the rod at the proper point.

   B. Adjust the length of the control motor arm so that the valve pointer moves through the desired range on the valve dial. Since the maximum travel of most control motors is only 90°, the full range of the valve may not be obtained. Be sure that the control motor does not move the valve lever beyond the stops on the dial as this can damage the valve if sufficient force is applied.

   C. Hauck recommends the use of a position displacement low fire limit switch in accordance with NFPA 86 when using automatic operation. The limit switch should be set to make contact with the valve pointer at low fire. Ignition should not be attempted unless the valve is at the proper low fire setting for the desired fuel flow rate.

3. All heavy fuel oil piping must be heat (electric or steam) traced 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/s) at the burner. Electrical heat tracing with a nominal rating of 12 W/ft (39 W/m) covered with a nominal 2" (50 mm) of fiberglass type insulation is sufficient for most applications. Heating the oil lines without fuel flow is not recommended.

When operating the valve with heavy oil, it is recommended that the fuel piping is purged when not in use to protect the components in the fuel train including the control valve. Failure to purge the fuel lines may result in deposits forming in the valve or line, or coking of the heavy fuel oils which may affect the valve or system performance.

F. OPERATION

All Hauck MCOV's are designed to efficiently handle any grade of fuel oil, even the heaviest residual fuel oils. As the heavy grades of oil must be heated to achieve the proper viscosity for atomization, [normally 90 SSU (1.84×10^{-5} m^2/sec)], the valves are suitable for operation at these temperatures.

LP valves are available for use with liquid propane.

The large, easily readable indicator dial enables the valve to be set, or reset, to any setting required by the application.

G. MAINTENANCE

All Hauck MCOV's are designed for maintenance free operation. Under normal usage, no service should be necessary.

NOTE

Due to the critical nature of the alignment of the valve's internal components and it's operating pressures, **Hauck does not recommend disassembly of MCOV's**. Such disassembly will void warranty.