MCOV MICRO-CAM OIL VALVES

SELECTION

When choosing the proper Micro-Cam Oil Valve (MCOV) for a particular application, three basic criteria must be considered; actual pressure drop allowable through the valve in psig, maximum oil flow capacity in gallons per hour, and manual or automatic valve control. To select the proper MCOV use the appropriate flow Curve in MCOV-2.1, MCOV-2.2 and MCOV-2.4.

TO SELECT A MICRO-CAM OIL VALVE WITH MANUAL CONTROL:

1. Read horizontally across the top of the table, locate the column representing the actual pressure drop allowable through the valve.
2. Read vertically down the column until you reach a capacity which equals or just exceeds your computed maximum capacity.
3. Read horizontally to the left to determine the model number of the micro oil valve which meets your requirements.

TO SELECT A MCOV VALVE WITH AUTOMATIC CONTROL:

Example: A burner requires 200 gph of No. 2 fuel oil at high fire with a 40 psig pressure drop across the valve.

1. Using the equation found below, calculate the Chart gph knowing the Actual gph and actual pressure drop through the valve as shown:

$$Q\,Actual\ gph = Q\,Chart\ gph\ x\ \sqrt{\Delta P\ psig / 25\,psig}$$

$$Q\,Chart\ gph = Q\ Actual\ gph \div \sqrt{\Delta P\ psig / 25\,psig}$$

$$= 200\,gph \div \sqrt{40\ psig / 25\,psig}$$

$$= 158\ gph$$

2. Using the B-Series graph found on MCOV-2.1, locate Valve Dial Position 9 on the x-axis, and move vertically up the graph to the position which equals 158 gph on the y-axis.

3. From this point, move vertically up the graph until you intercept the next valve flow curve line which is B-1/2-24.

(Metric Selection on Reverse Side)

SELECTION

When choosing the proper Micro-Cam Oil Valve (MCOV) for a particular application, three basic criteria must be considered; actual pressure drop allowable through the valve in mbar, maximum oil flow capacity in lph, and manual or automatic valve control. To select the proper MCOV use the appropriate flow Curve in MCOV-2.1, MCOV-2.2 and MCOV-2.4.

TO SELECT A MCOV WITH MANUAL CONTROL:

1. Read horizontally across the top of the table, locate the column representing the actual pressure drop allowable through the valve.
2. Read vertically down the column until you reach a capacity which equals or just exceeds your computed maximum capacity.
3. Read horizontally to the left to determine the model number of the micro oil valve which meets your requirements.

TO SELECT A MCOV VALVE WITH AUTOMATIC CONTROL:

Example: A burner requires 757 lph of No. 2 fuel oil at high fire with a 2760 mbar pressure drop across the valve.

1. Using the equation found below, calculate the Chart lph knowing the Actual lph and actual pressure drop through the valve as shown:

$$Q\,Actual\,lph = Q\,Chart\,lph\ x\ \sqrt{\Delta P\,mbar\,/1720 mbar}$$

$$Q\,Chart\,lph = Q\,Actual\,lph \div \sqrt{\Delta P\,mbar\,/1720 mbar}$$

$$= 757\,lph \div \sqrt{2760\,mbar\,/1720 mbar}$$

$$= 598\ lph$$

2. Using the B-Series graph found on MCOV-2.1, locate Valve Dial Position 9 on the x-axis, and move vertically up the graph to the position which equals 598 lph on the y-axis.

3. From this point, move vertically up the graph until you intercept the next valve flow curve line which is B-1/2-24.

MCOV MICRO-CAM OIL VALVES

B SERIES VALVES

There are five sizes of B valves available. B valves are designed for use with any type of fuel oil and have 1/2 inch NPT connections. B valves are UL listed and feature a linear flow characteristic. Valve travel is from 0 to 180° for full capacity. Suggested applications for B valves include burner flow control, bypass flow settings, proportional fuel metering, and return valves on pump systems. Flow for the B valves, for example, flow at position 18 will be twice that of position 9, at a constant differential pressure.

FULL OPEN VALVE CAPACITY

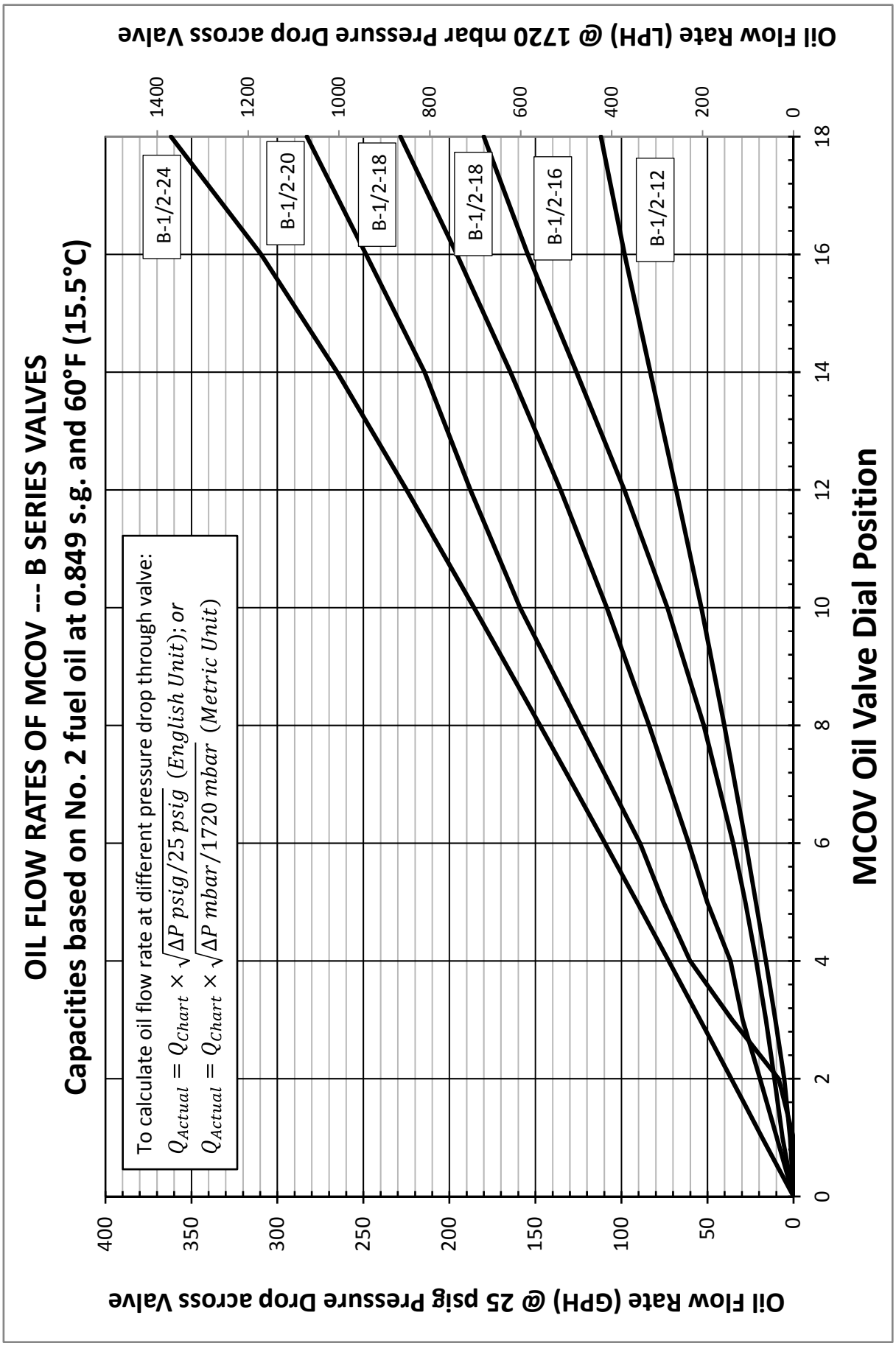
BASED ON NO.2 FUEL OIL, @ 180° (FULL OPEN) VALVE POSITION

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	401	491	567
		(lph)	216	481	678	829	958	1,071	1,173	1,268	1,355	1,438	1,518	1,859	2,146
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

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.

(Flow Rates on Reverse Side)


OIL FLOW RATES OF MCOV --- B SERIES VALVES
Capacities based on No. 2 fuel oil at 0.849 s.g. and 60°F (15.5°C)
To calculate oil flow rate at different pressure drop through valve:
$Q_{Actual} = Q_{Chart} \times \sqrt{\Delta P\ psig/25\ psig}\ (English\ Unit)$; or
$Q_{Actual} = Q_{Chart} \times \sqrt{\Delta P\ mbar/1720\ mbar}\ (Metric\ Unit)$
B-1/2-24
B-1/2-20
B-1/2-18
B-1/2-18
B-1/2-16
B-1/2-12
Oil Flow Rate (GPH) @ 25 psig Pressure Drop across Valve
Oil Flow Rate (LPH) @ 1720 mbar Pressure Drop across Valve
MCOV Oil Valve Dial Position
0
50
100
150
200
250
300
350
400
0
200
400
600
800
1000
1200
1400
0
2
4
6
8
10
12
14
16
18

MCOV MICRO-CAM OIL VALVES

F SERIES VALVES

There are four sizes of F valves available. F valves are designed for use with any type of fuel oil and have 1/2 inch NPT connections. F valves are UL listed. Flow characteristics for this valve type are non-linear. Valve travel is from 0 to 120° for full capacity. Suggested applications for F valves include burner flow control or return valves on pump systems.

G & K SERIES VALVES

There are three sizes of G and K valves available. G and K valves are designed for use with any type of fuel oil and have 1 inch NPT connections. Flow characteristics for these valve types are non-linear. Valve travel is from 0 to 120° for full capacity. For best results, use in burner flow control applications.

FULL OPEN VALVE CAPACITY

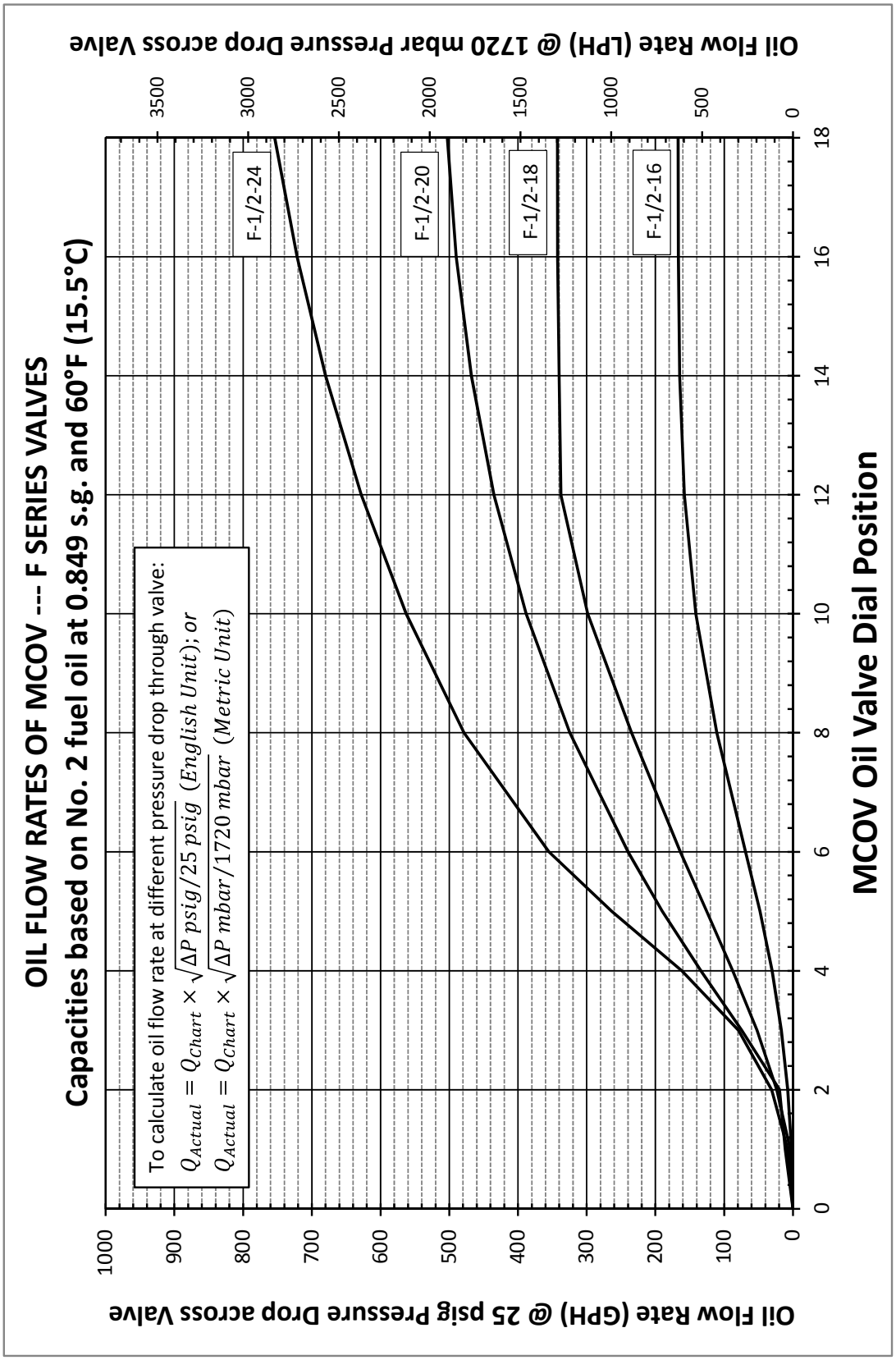
BASED ON NO.2 FUEL OIL, @ 180° (FULL OPEN) VALVE POSITION

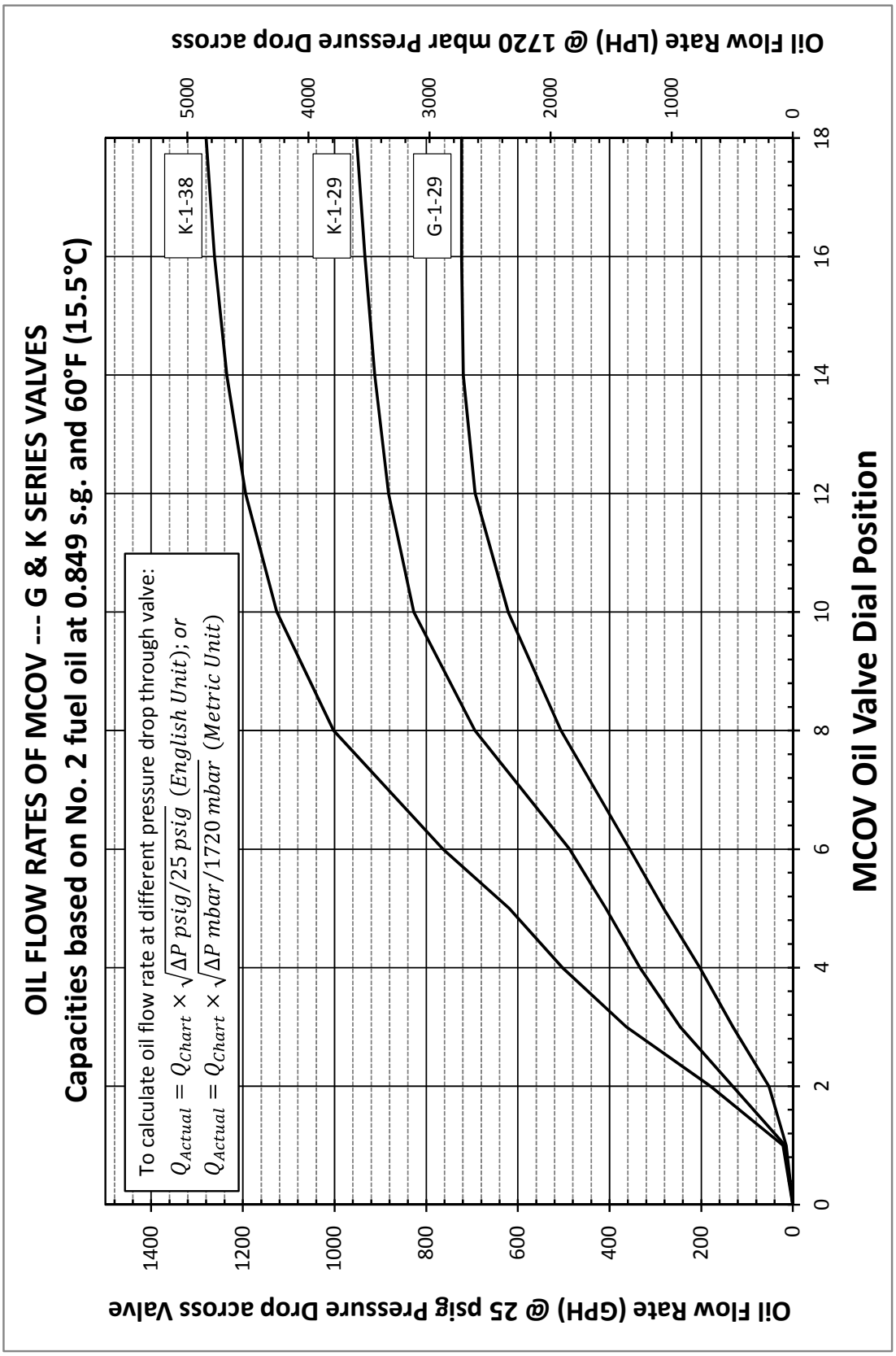
			PRESSURE DROP												
VALVE MODEL #	PIPE SIZE NPT	(psig)	1	5	10	15	20	25	30	35	40	45	50	75	100
		(mbar)	70	340	690	1,030	1,380	1,720	2,070	2,410	2,760	3,100	3,450	5,170	6,890
			VALVE FLOW CAPACITY												
F-1/2-16	1/2	(gph)	33	74	104	128	147	165	180	195	208	221	233	285	329
		(lph)	125	279	394	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
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.

(Flow Rates on Reverse Side)


OIL FLOW RATES OF MCOV --- F SERIES VALVES
Capacities based on No. 2 fuel oil at 0.849 s.g. and 60°F (15.5°C)
To calculate oil flow rate at different pressure drop through valve:
$Q_{Actual} = Q_{Chart} \times \sqrt{\Delta P\ psig/25\ psig}\ (English\ Unit)$; or
$Q_{Actual} = Q_{Chart} \times \sqrt{\Delta P\ mbar/1720\ mbar}\ (Metric\ Unit)$
F-1/2-24
F-1/2-20
F-1/2-18
F-1/2-16
Oil Flow Rate (GPH) @ 25 psig Pressure Drop across Valve
Oil Flow Rate (LPH) @ 1720 mbar Pressure Drop across Valve
MCOV Oil Valve Dial Position
0
100
200
300
400
500
600
700
800
900
1000
0
500
1000
1500
2000
2500
3000
3500
0
2
4
6
8
10
12
14
16
18


OIL FLOW RATES OF MCOV --- G & K SERIES VALVES
Capacities based on No. 2 fuel oil at 0.849 s.g. and 60°F (15.5°C)
To calculate oil flow rate at different pressure drop through valve:
$Q_{Actual} = Q_{Chart} \times \sqrt{\Delta P\ psig/25\ psig}\ (English\ Unit)$; or
$Q_{Actual} = Q_{Chart} \times \sqrt{\Delta P\ mbar/1720\ mbar}\ (Metric\ Unit)$
K-1-38
K-1-29
G-1-29
Oil Flow Rate (GPH) @ 25 psig Pressure Drop across Valve
Oil Flow Rate (LPH) @ 1720 mbar Pressure Drop across
MCOV Oil Valve Dial Position
0
200
400
600
800
1000
1200
1400
0
1000
2000
3000
4000
5000
0
2
4
6
8
10
12
14
16
18

MCOV MICRO-CAM OIL VALVES

L-CAM SERIES VALVES

The L-Cam series of valves is available in four sizes. These valves have a high gradient flow characteristic and can be used with any type of fuel oil. The BL valve can travel from 0 to 180°, while the FL valves and GL valve travel from 0 to 120° for full capacity. The BL and FL valves have 1/2 inch NPT connections, while the GL connection size is 1 inch NPT. L-Cam valves are specially suited for burner flow control applications where accurately setting the starting flow and high-fire capacity are most critical.

FULL OPEN VALVE CAPACITY

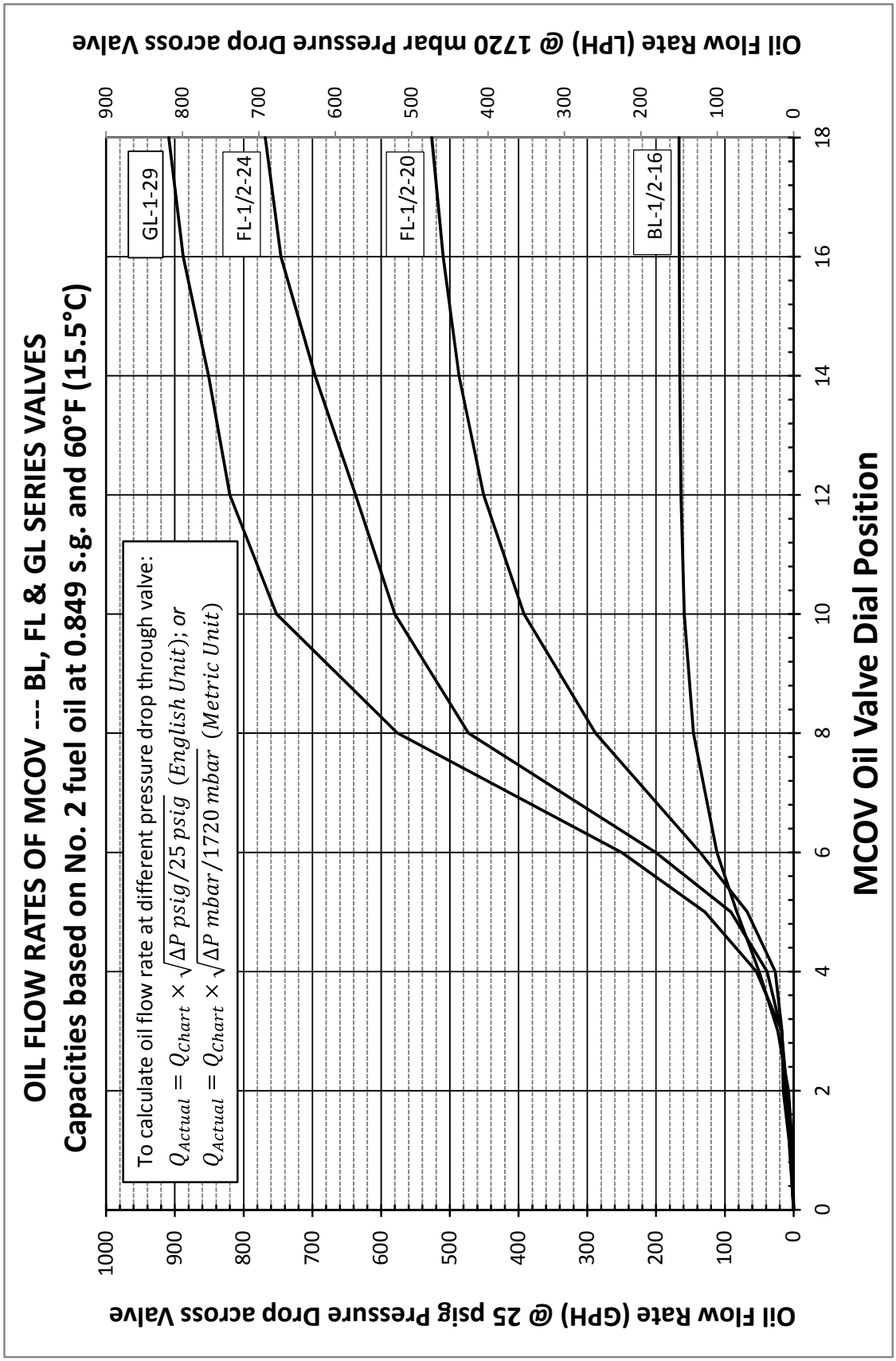
BASED ON NO.2 FUEL OIL, @ 180° (FULL OPEN) VALVE POSITION

			PRESSURE DROP												
VALVE MODEL #	PIPE SIZE NPT	(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												
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

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.

(Flow Rates on Reverse Side)


OIL FLOW RATES OF MCOV --- BL, FL & GL SERIES VALVES
Capacities based on No. 2 fuel oil at 0.849 s.g. and 60°F (15.5°C)
To calculate oil flow rate at different pressure drop through valve:
$Q_{Actual} = Q_{Chart} \times \sqrt{\Delta P\ psig/25\ psig}$ (English Unit); or
$Q_{Actual} = Q_{Chart} \times \sqrt{\Delta P\ mbar/1720\ mbar}$ (Metric Unit)
GL-1-29
FL-1/2-24
FL-1/2-20
BL-1/2-16
Oil Flow Rate (GPH) @ 25 psig Pressure Drop across Valve
Oil Flow Rate (LPH) @ 1720 mbar Pressure Drop across Valve
MCOV Oil Valve Dial Position
0
100
200
300
400
500
600
700
800
900
1000
0
2
4
6
8
10
12
14
16
18

MCOV MICRO-CAM OIL VALVES

LP SERIES VALVES

There are six sizes of LP valves available. All valves are designed for use with a liquid propane fuel supply. The H valves travel from 0 to 180° for full capacity and have ½ inch NPT connections, while the J and K valves travel from 0 to 120° and have 1 inch NPT connections. Flow characteristics for this type valve are non-linear. For best results, use in burner flow control applications. Because the K valves share a similar designation their oil counterparts, please specify the LP version at the time of order.

FULL OPEN VALVE CAPACITY

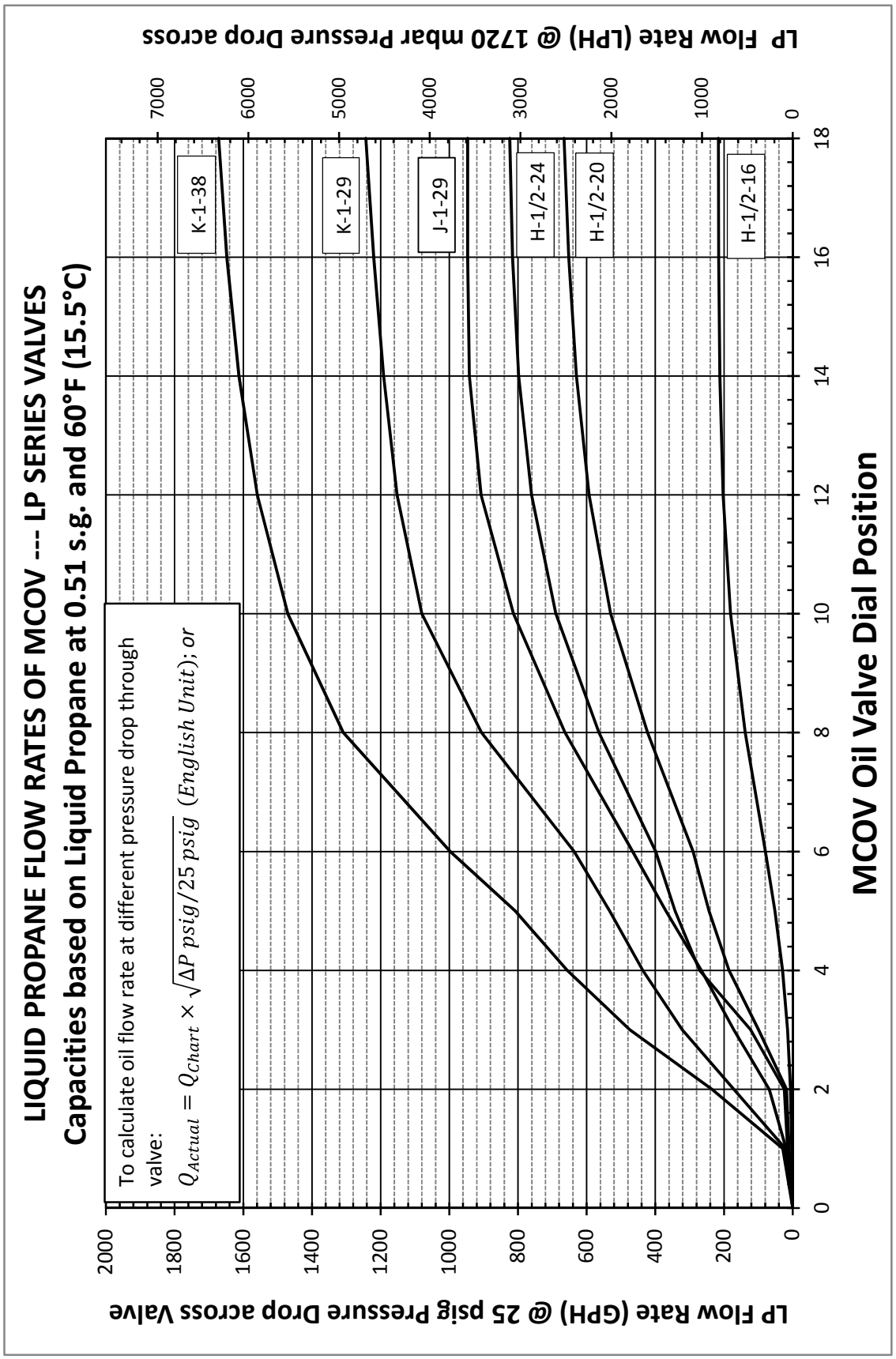
BASED ON LIQUID PROPANE, @ 180° (FULL OPEN) VALVE POSITION

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												
H-1/2-16	1/2	(gph)	43	96	136	167	192	215	236	254	272	289	304	373	430
		(lph)	163	364	515	631	728	814	892	963	1,030	1,092	1,151	1,410	1,628
H-1/2-20	1/2	(gph)	133	298	421	516	596	666	730	788	843	894	942	1,154	1,333
		(lph)	503	1,128	1,595	1,954	2,256	2,522	2,763	2,984	3,190	3,384	3,567	4,368	5,044
H-1/2-24	1/2	(gph)	157	368	520	637	735	822	901	973	1,040	1,103	1,163	1,424	1,644
		(lph)	593	1,392	1,968	2,411	2,783	3,112	3,409	3,682	3,936	4,175	4,401	5,390	6,224
J-1-29	1	(gph)	187	419	592	725	837	936	1,026	1,108	1,184	1,256	1,324	1,622	1,873
		(lph)	709	1,585	2,242	2,745	3,170	3,544	3,883	4,194	4,483	4,755	5,012	6,139	7,089
K-1-29	1	(gph)	249	556	786	963	1,112	1,243	1,362	1,471	1,573	1,668	1,758	2,153	2,487
		(lph)	941	2,105	2,977	3,646	4,210	4,706	5,156	5,569	5,953	6,314	6,656	8,152	9,413
K-1-38	1	(gph)	334	748	1,057	1,295	1,495	1,672	1,831	1,978	2,114	2,243	2,364	2,895	3,343
		(lph)	1,265	2,830	4,002	4,901	5,659	6,327	6,931	7,487	8,004	8,489	8,948	10,959	12,655

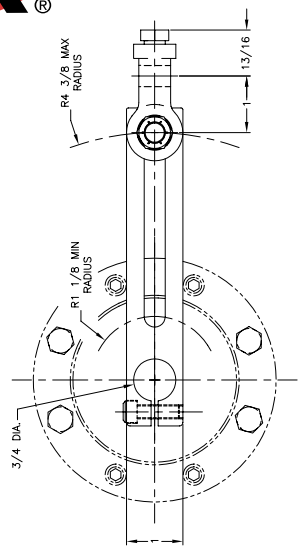
NOTES:

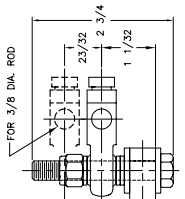
1. Capacities based on liquid propane (LP) at 0.507 s.g. and 60°F (15.5°C).
2. Pressure drop is measured across full-open valve (Dial position 18).
3. When ordering, specify if valve is to be equipped with hand lever, hand wheel or adjustable radius lever for automatic control.
4. RP thread adapters are available.

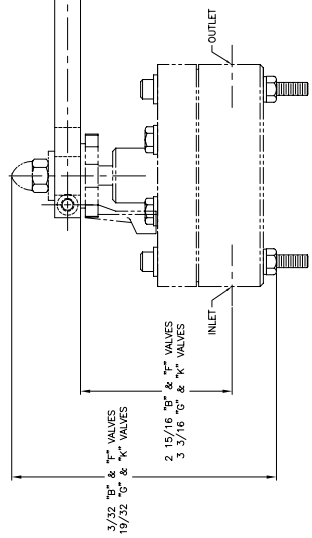
(Flow Rates on Reverse Side)


LIQUID PROPANE FLOW RATES OF MCOV --- LP SERIES VALVES
Capacities based on Liquid Propane at 0.51 s.g. and 60°F (15.5°C)
To calculate oil flow rate at different pressure drop through valve:
$Q_{Actual} = Q_{Chart} \times \sqrt{\Delta P\ psig/25\ psig}\ \ (English\ Unit)$; or
LP Flow Rate (GPH) @ 25 psig Pressure Drop across Valve
LP Flow Rate (LPH) @ 1720 mbar Pressure Drop across
MCOV Oil Valve Dial Position
K-1-38
K-1-29
J-1-29
H-1/2-24
H-1/2-20
H-1/2-16
0
200
400
600
800
1000
1200
1400
1600
1800
2000
1000
2000
3000
4000
5000
6000
7000
0
2
4
6
8
10
12
14
16
18

MCOV MICRO-CAM OIL VALVES

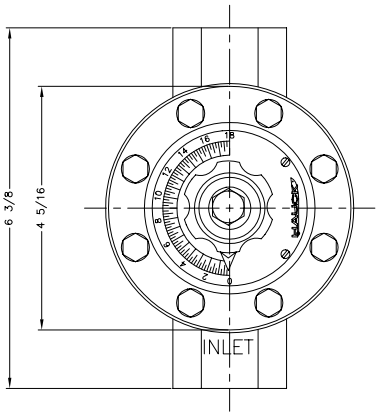


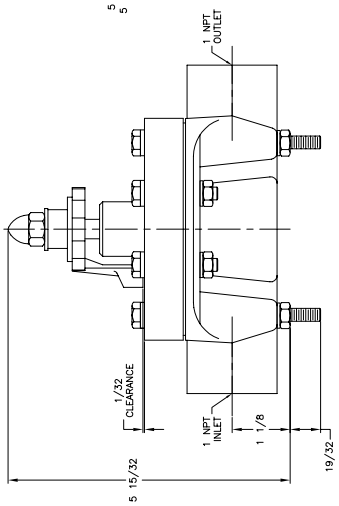




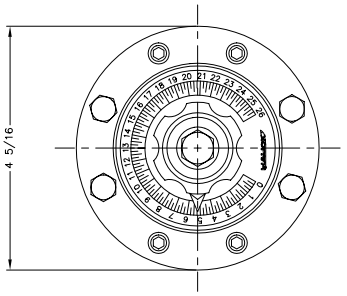
ADJUSTABLE RADIUS LEVER
FOR AUTOMATIC VALVES

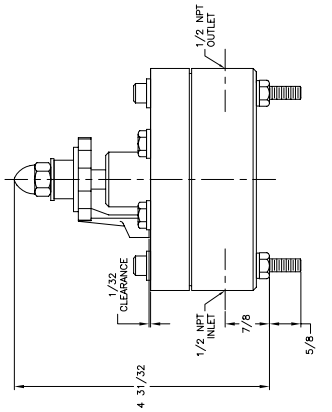
Y1388





"G & K" VALVES
MANUAL VALVES





"B & F" VALVES
MANUAL VALVES

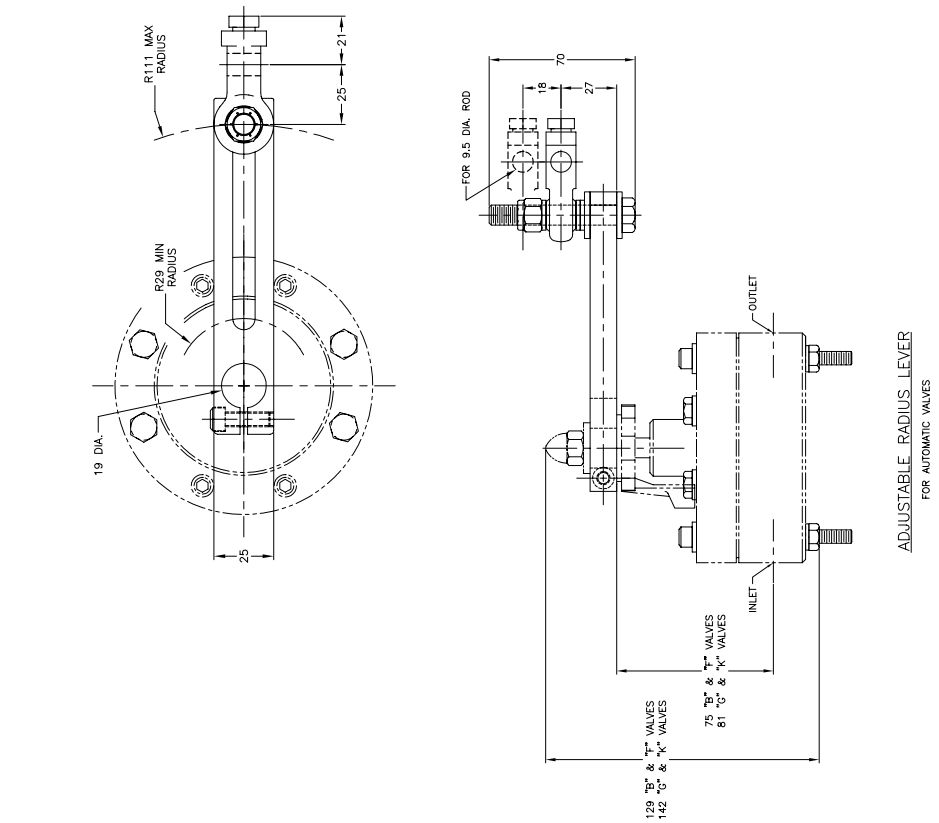
NOTES:
1. DIMENSIONS ARE IN INCHES.

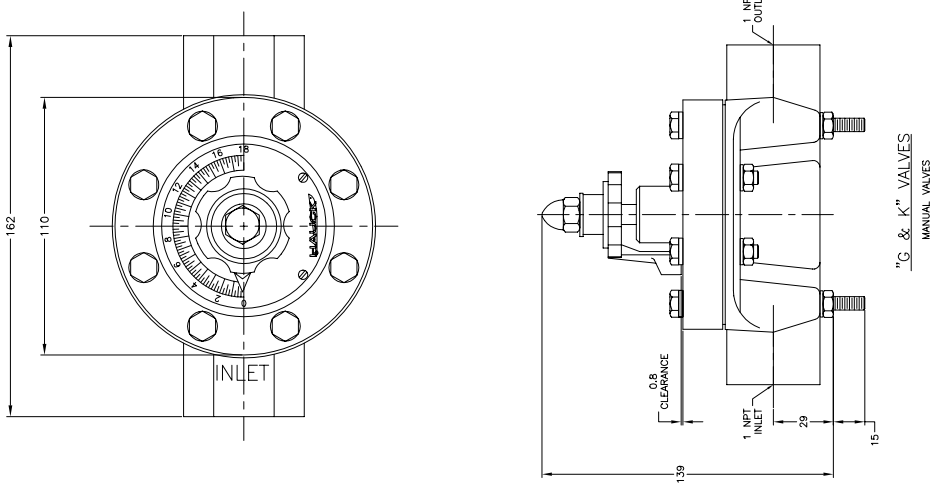
(See Reverse Side For Metric Dimensions)

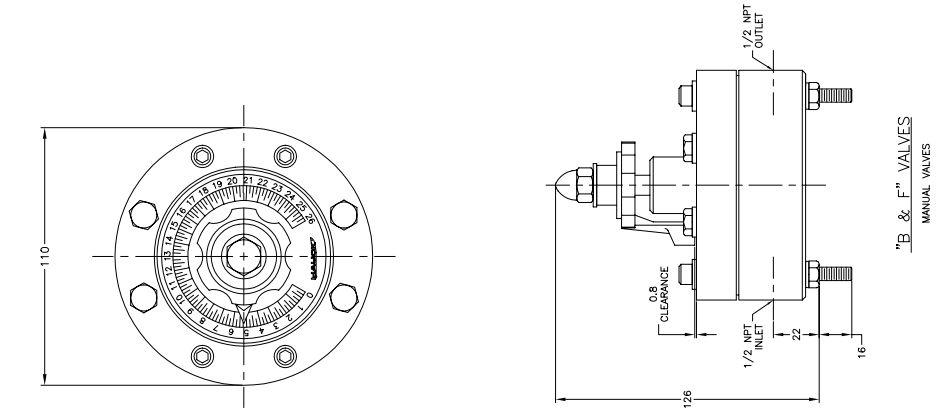
HAUCK MANUFACTURING CO., P.O. Box 90, Lebanon, PA 17042-0090 717-272-3051
Fax: 717-273-9882

METRIC DIMENSIONS

Y1388 METRIC







NOTES:

1. DIMENSIONS ARE IN MM.