

Section 12

Technical Information

RA 09 907/07.04

The Drive & Control Company

Section 12 Index

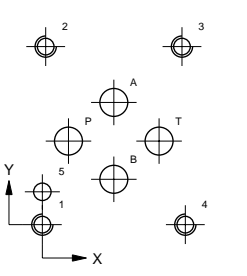
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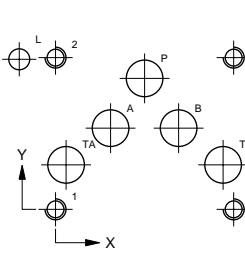
Blackening

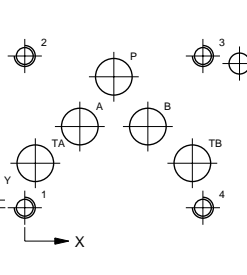
All Rexroth Standard Manifolds constructed of ductile iron material are blackened prior to shipment. After the manifold block is cleaned with a high-pressure detergent solution, the manifold is immersed into two room-temperature tanks that contain a blackening agent. The first tank conditions the part to accept the blackening and removes any surface rust. The second tank blackens the part by adding a thin surface layer approximately 5 millionths of an inch. Once blackened, the manifold is then immersed into a water-displacing rust preventative solution, which leaves a thin dry film on the manifold. The rust preventative coating is designed to last up to 25 days when exposed to the ASTM-D-1748 humidity test and 50 hours of the ASTM-B-117 salt spray test. Some of the chemicals used to blacken the manifold will temporarily inhibit the oxidation process, however a permanent coating such as paint is recommended for long-term rust protection.

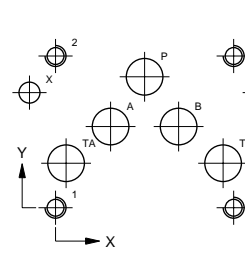


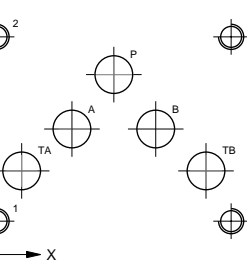
Hydraulic Fluid Power Valves Mounting Interfaces

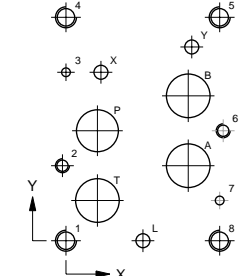
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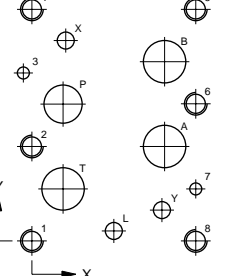
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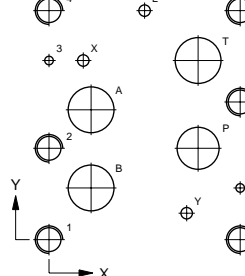
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	<table border="1"> <thead> <tr> <th></th> <th>X</th> <th>Y</th> <th>Dia.</th> </tr> </thead> <tbody> <tr><td>1</td><td>0.000</td><td>0.000</td><td>3/4-10</td></tr> <tr><td>2</td><td>0.000</td><td>2.992</td><td>3/4-10</td></tr> <tr><td>3</td><td>0.000</td><td>5.866</td><td>0.281</td></tr> <tr><td>4</td><td>0.000</td><td>7.500</td><td>3/4-10</td></tr> <tr><td>5</td><td>6.260</td><td>7.500</td><td>3/4-10</td></tr> <tr><td>6</td><td>6.260</td><td>4.508</td><td>3/4-10</td></tr> <tr><td>7</td><td>6.260</td><td>1.693</td><td>0.281</td></tr> <tr><td>8</td><td>6.260</td><td>0.000</td><td>3/4-10</td></tr> <tr><td>A</td><td>1.378</td><td>4.252</td><td>1.5</td></tr> <tr><td>B</td><td>1.378</td><td>1.693</td><td>1.5</td></tr> <tr><td>P</td><td>4.882</td><td>2.992</td><td>1.375</td></tr> <tr><td>T</td><td>4.882</td><td>5.866</td><td>1.5</td></tr> <tr><td>X</td><td>1.122</td><td>5.866</td><td>0.375</td></tr> <tr><td>Y</td><td>4.508</td><td>0.866</td><td>0.375</td></tr> <tr><td>L</td><td>3.122</td><td>7.500</td><td>0.375</td></tr> </tbody> </table>		X	Y	Dia.	1	0.000	0.000	3/4-10	2	0.000	2.992	3/4-10	3	0.000	5.866	0.281	4	0.000	7.500	3/4-10	5	6.260	7.500	3/4-10	6	6.260	4.508	3/4-10	7	6.260	1.693	0.281	8	6.260	0.000	3/4-10	A	1.378	4.252	1.5	B	1.378	1.693	1.5	P	4.882	2.992	1.375	T	4.882	5.866	1.5	X	1.122	5.866	0.375	Y	4.508	0.866	0.375	L	3.122	7.500	0.375
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Hydraulic Fluid Power Valves Mounting Interfaces

2F06 (SIZE 5)

	X	Y	Dia.
1	0.000	0.000	5/16-18
2	-0.134	0.937	0.265
3	0.000	3.248	5/16-18
4	2.992	3.248	5/16-18
5	2.992	0.000	5/16-18
A	0.823	0.429	0.625
B	2.614	2.063	0.625

2F07 (SIZE 10)

	X	Y	Dia.
1	0.000	0.000	3/8-16
2	-0.035	1.126	0.312
3	0.000	3.996	3/8-16
4	3.996	3.996	3/8-16
5	4.028	1.126	0.312
6	3.996	0.000	3/8-16
A	1.043	0.433	0.937
B	3.189	3.406	0.937

P06 (SIZE 10)

	X	Y	Dia.
1	0.000	0.000	3/8-16
2	0.000	0.437	0.265
3	0.000	1.689	3/8-16
4	2.626	1.689	3/8-16
5	2.626	0.000	3/8-16
A	1.313	1.406	0.562
B	1.313	0.280	0.562
X	0.311	0.843	0.25
Y	2.315	0.843	0.25

P08 (SIZE 20)

	X	Y	Dia.
1	0.000	0.000	3/8-16
2	0.000	0.622	0.265
3	0.000	2.374	3/8-16
4	3.126	2.374	3/8-16
5	3.126	0.000	3/8-16
A	1.563	1.937	0.937
B	1.563	0.437	0.937
X	0.252	1.563	0.25
Y	2.874	0.811	0.25

P10 (SIZE 30)

	X	Y	Dia.
1	0.000	0.000	3/8-16
2	0.000	0.846	0.265
3	0.000	1.657	3/8-16
4	0.000	3.315	3/8-16
5	3.811	3.315	3/8-16
6	3.811	1.657	3/8-16
7	3.811	0.000	3/8-16
A	1.906	2.657	1.25
B	1.906	0.657	1.25
X	0.157	2.346	0.25
Y	3.661	0.972	0.25

R06 (SIZE 10)

	X	Y	Dia.
1	0.000	0.000	1/2-13
2	0.000	1.252	0.265
3	0.000	2.126	1/2-13
4	2.126	2.126	1/2-13
5	2.126	0.000	1/2-13
A	1.063	1.252	0.562
B	1.063	0.252	0.562
X	1.063	2.126	0.25

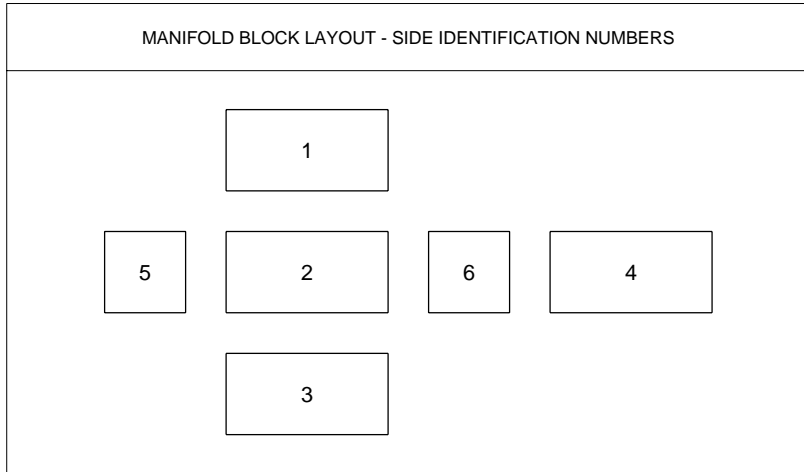
RO8 (SIZE 20)

	X	Y	Dia.
1	0.000	0.000	5/8-11
2	0.000	1.315	0.265
3	0.000	2.626	5/8-11
4	2.748	2.626	5/8-11
5	2.748	0.000	5/8-11
A	1.374	2.189	1
B	1.374	0.437	1
X	1.374	3.563	0.25

R10 (SIZE 30)

	X	Y	Dia.
1	0.000	0.000	3/4-10
2	0.000	1.744	0.265
3	0.000	3.492	3/4-10
4	3.248	3.492	3/4-10
5	3.248	0.000	3/4-10
A	1.624	2.992	1.25
B	1.624	0.492	1.25
X	1.624	4.740	0.25

Technical Reference



Conversion factors:

Volume:	Pressure
1 gallon = 231 in. ³	1 bar = 14.5 PSI
1 gallon = 3.785 liters	1 PSI = 6.89 kpa
1 liter = 61.02 in. ³	Length
	1 mm = 0.03937"
	0.001" = 0.0254 mm

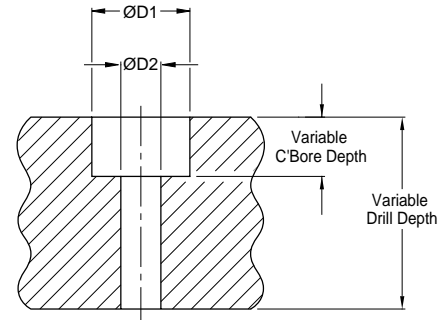
Weight Calculation (Raw Material)

Ductile Iron:	L x W x H x 0.26
ALUMINUM:	L x W x H x 0.0975
Steel:	L x W x H x 0.28

1 PSI = .0689655 Bar				1 Bar = 14.5 PSI			
PSI	Bar	PSI	Bar	Bar	PSI	Bar	PSI
20	= 1.379	1100	= 75.86	1	= 14.5	55	= 797.5
30	= 2.069	1200	= 82.76	2	= 29	60	= 870
40	= 2.759	1300	= 89.66	3	= 43.5	65	= 942.5
50	= 3.448	1400	= 96.55	4	= 58	70	= 1015
60	= 4.138	1500	= 103.5	5	= 72.5	75	= 1087.5
70	= 4.828	1600	= 110.3	6	= 87	80	= 1160
80	= 5.517	1700	= 117.2	7	= 101.5	85	= 1232.5
90	= 6.207	1800	= 124.1	8	= 116	90	= 1305
100	= 6.897	1900	= 131.0	9	= 130.5	95	= 1377.5
200	= 13.79	2000	= 137.9	10	= 145	100	= 1450
300	= 20.69	2250	= 155.2	15	= 217.5	150	= 2175
400	= 27.59	2500	= 172.4	20	= 290	200	= 2900
500	= 34.48	2750	= 189.7	25	= 362.5	250	= 3625
600	= 41.38	3000	= 206.9	30	= 435	300	= 4350
700	= 48.28	3500	= 241.4	35	= 507.5	350	= 5075
800	= 55.17	4000	= 275.9	40	= 580	400	= 5800
900	= 62.07	4500	= 310.3	45	= 652.5	450	= 6525
1000	= 68.97	5000	= 344.8	50	= 725	500	= 7250

1 GPM = 3.785 Litres/min				1 Litres/min = 0.2642 GPM			
GPM	L/min	GPM	L/min	L/min	GPM	L/min	GPM
1	= 3.785	75	= 283.9	5	= 1.32	300	= 79.3
2	= 7.57	80	= 302.8	10	= 2.64	350	= 92.5
3	= 11.36	85	= 321.7	20	= 5.28	400	= 106
4	= 15.14	90	= 340.7	30	= 7.92	450	= 119
5	= 18.93	95	= 359.6	40	= 10.56	500	= 132
10	= 37.85	100	= 378.5	50	= 13.2	550	= 145
15	= 56.78	125	= 473.1	60	= 15.84	600	= 159
20	= 75.7	150	= 567.8	70	= 18.48	650	= 172
25	= 94.63	175	= 662.4	80	= 21.12	700	= 185
30	= 113.6	200	= 757	90	= 23.76	750	= 198
35	= 132.5	225	= 851.6	100	= 26.4	800	= 211
40	= 151.4	250	= 946.3	125	= 33	900	= 238
45	= 170.3	275	= 1041	150	= 39.6	1000	= 264
50	= 189.3	300	= 1136	175	= 46.2	1100	= 291
55	= 208.2	325	= 1230	200	= 52.8	1200	= 317
60	= 227.1	350	= 1325	225	= 59.4	1300	= 343
65	= 246	375	= 1420	250	= 66.1	1400	= 370
70	= 265	400	= 1514	275	= 72.7	1500	= 396

Mounting information



BOLT SIZE	D1	D2	BOLT SIZE	D1	D2
M5	0.406	0.218	#8	0.312	0.187
M6	0.437	0.265	#10	0.375	0.218
M8	0.562	0.343	1/4	0.437	0.281
M10	0.687	0.421	5/16	0.562	0.343
M12	0.812	0.531	3/8	0.625	0.406
M14	0.937	0.593	7/16	0.750	0.468
M16	1.031	0.687	1/2	0.812	0.531
M18	1.187	0.781	9/16	0.937	0.593
M20	1.250	0.843	5/8	1.000	0.656
M22	1.437	0.937	3/4	1.187	0.781
M24	1.562	1.000	7/8	1.375	0.906
M30	1.937	1.250	1	1.562	1.031
M36	2.250	1.500	1-1/8	1.750	1.156
			1-1/4	2.000	1.312
			1-3/8	2.187	1.437
			1-1/2	2.375	1.562

All dimensions in inches

Technical Reference

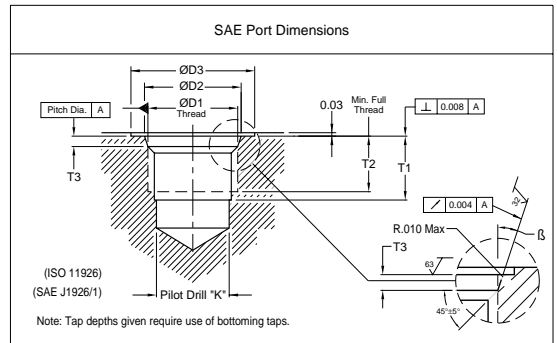
Fraction	DEC.	MM
1/32	1/64 - 0.01562	0.397
	0.03125	0.794
	3/64 - 0.04688	1.191
1/16	0.0625	1.588
	5/64 - 0.07812	1.984
3/32	0.09375	2.381
	7/64 - 0.10938	2.778
	0.125	3.175
1/8	9/64 - 0.14062	3.572
	0.15625	3.969
	11/64 - 0.17188	4.366
3/16	0.1875	4.763
	13/64 - 0.20312	5.159
7/32	0.21875	5.556
	15/64 - 0.23438	5.953
	0.25	6.35
1/4	17/64 - 0.26562	6.747
	0.28125	7.144
	19/64 - 0.29688	7.541
5/16	0.3125	7.938
	21/64 - 0.32812	8.334
11/32	0.34375	8.731
	23/64 - 0.35938	9.128
	0.375	9.525
3/8	25/64 - 0.39062	9.922
	0.40625	10.319
	27/64 - 0.42188	10.716
7/16	0.4375	11.113
	29/64 - 0.45312	11.509
15/32	0.46875	11.906
	31/64 - 0.48438	12.303
	0.5	12.7
1/2	33/64 - 0.51562	13.097
	0.53125	13.494
	35/64 - 0.54688	13.891
9/16	0.5625	14.288
	37/64 - 0.57812	14.684
19/32	0.59375	15.081
	39/64 - 0.60938	15.478
	0.625	15.875
5/8	41/64 - 0.64062	16.272
	0.65625	16.669
	43/64 - 0.67188	17.066
11/16	0.6875	17.463
	45/64 - 0.70312	17.859
23/32	0.71875	18.256
	47/64 - 0.73438	18.653
	0.75	19.05
3/4	49/64 - 0.76562	19.447
	0.78125	19.844
	51/64 - 0.79688	20.241
13/16	0.8125	20.638
	53/64 - 0.82812	21.034
27/32	0.84375	21.431
	55/64 - 0.85938	21.828
	0.875	22.225
7/8	57/64 - 0.89062	22.622
	0.90625	23.019
	59/64 - 0.92188	23.416
15/16	0.9375	23.813
	61/64 - 0.95312	24.209
31/32	0.96875	24.606
	63/64 - 0.98438	25.003
	1	25.4

Tap Drill Ø	Tap size UNC
0.04688	0-80
0.0595	1-64,72
0.0700	2-56,64
0.0785	3-84
0.0820	3-56
0.0890	4-40
0.0935	4-48
0.1015	5-40
0.1040	5-44
0.1065	6-32
0.1130	6-40
0.1360	8-32,36
0.1495	10-24
0.1590	10-32
0.1770	12-24
0.1820	12-28
0.2010	1/4-20
0.2130	1/4-28
0.257	5/16-18
0.2720	5/16-24
0.3125	3/8-16
0.3320	3/8-24
0.3680	7/16-14
0.3906	7/16-20
0.4219	1/2-13
0.4531	1/2-20
0.4844	9/16-12
0.5156	9/16-18
0.5312	5/8-11
0.5781	5/8-18
0.6562	3/4-10
0.6875	3/4-16
0.7656	7/8-9
0.8125	7/8-14
0.8750	1-8
0.9219	1-12
0.9844	1 1/8-7
1.0469	1 1/8-12
1.1094	1 1/4-7
1.1719	1 1/4-12
1.2188	1 3/8-6
1.2969	1 3/8-12
1.3438	1 1/2-6
1.4219	1 1/2-12

Tap Drill Ø	Tap size mm
0.0492	1.6x0.35
0.0571	1.8x0.35
0.0630	2x0.4
0.0689	2.2x0.45
0.0807	2.5x0.45
0.0984	3x0.5
0.1142	3.5x0.6
0.1299	4x0.7
0.1457	4.5x0.75
0.1654	5x0.8
0.1968	6x1
0.2362	7x1
0.2638	8x1.25
0.2756	8x1
0.3346	10x1.5
0.3425	10x1.25
0.4016	12x1.75
0.4252	12x1.25
0.4724	14x2
0.4921	14x1.5
0.5512	16x2
0.5709	16x1.5
0.6102	18x2.5
0.6496	18x1.5
0.6890	20x2.5
0.7283	20x1.5
0.7677	22x2.5
0.8071	22x1.5
0.8268	24x3
0.8661	24x2
0.9449	27x3
0.9843	27x2
1.0433	30x3.5
1.1024	30x2
1.1614	33x3.5
1.2205	33x2
1.2598	36x4
1.2992	36x3
1.3780	39x4
1.4173	39x3

Tap Drill Ø	Tap size NPT
0.25	1/16-27
0.3438	1/8-27
0.4375	1/4-18
0.5781	3/8-18
0.7187	1/2-14
0.9218	3/4-14
1.1562	1-11 1/2
1.5	1 1/4-11 1/2
1.75	1 1/2-11 1/2
2.2187	2-11 1/2
2.6562	2 1/2-8
3.25	3-8
3.75	3 1/2-8
4.25	4-8

Torque Values for plugs	
Tap size NPT	Max. Torque Inch-Pounds
1/16-27	150
1/8-27	250
1/4-18	600
3/8-18	1,200
1/2-14	1,800
3/4-14	3,000
1-11 1/2	4,200
1 1/4-11 1/2	5,400
1 1/2-11 1/2	6,900
2-11 1/2	8,500



Nominal Tube Size	SAE Size	ØD1 (CLASS-2B)	ØD2 +0.05 -0.00	ØD3 MIN	T1 MIN	T2 MIN	T3 +0.015 -0.000	±1°	Pilot Drill (K)
1/8	2	5/16-24 UNF	.358	.672	.472	.394	.075	12R	.250
3/16	3	3/8-24 UNF	.421	.748					.312
1/4	4	7/16-20 UNF	.487	.828					.375
5/16	5	1/2-20 UNF	.550	.906					.437
3/8	6	9/16-18 UNF	.614	.984	.610	.500			.468
1/2	8	3/4-16 UNF	.811	1.188	.689	.563	.098		.625
5/8	10	7/8-14 UNF	.941	1.344	.787	.658		.750	
3/4	12	1-1/16-12 UN	1.149	1.625				.937	
7/8	14	1-3/16-12 UN	1.272	1.772				1.000	
1	16	1-5/16-12 UN	1.398	1.929	.905	.750	.130	1.156	
1 1/4	20	1-5/8-12 UN	1.713	2.283				1.500	
1 1/2	24	1-7/8-12 UN	1.961	2.560				1.750	
2	32	2-1/2-12 UN	2.587	3.480				2.375	

All dimensions in inches