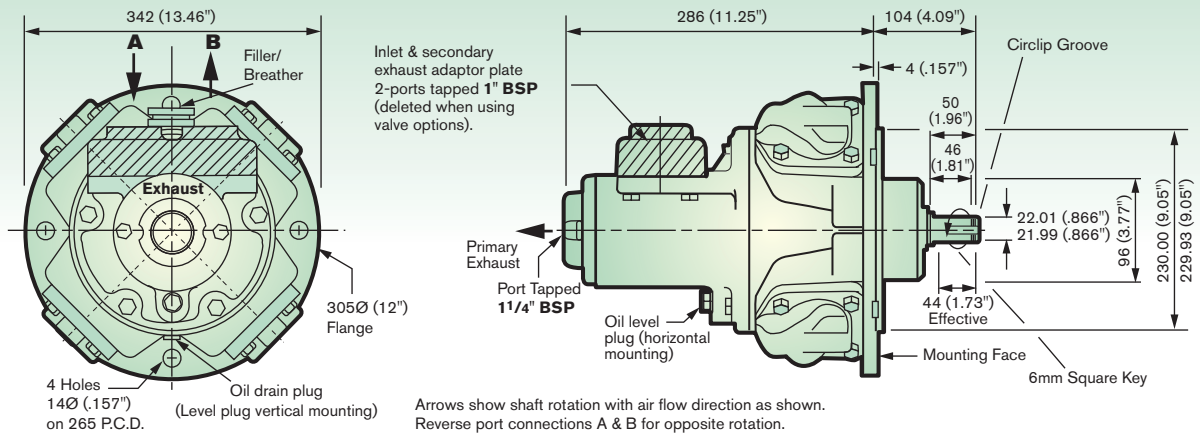
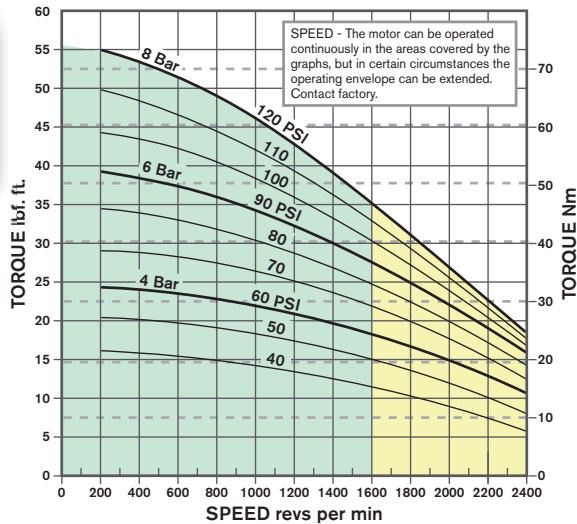


# RM310 PEAK POWER 7.5kW (10HP) PERFORMANCE DATA

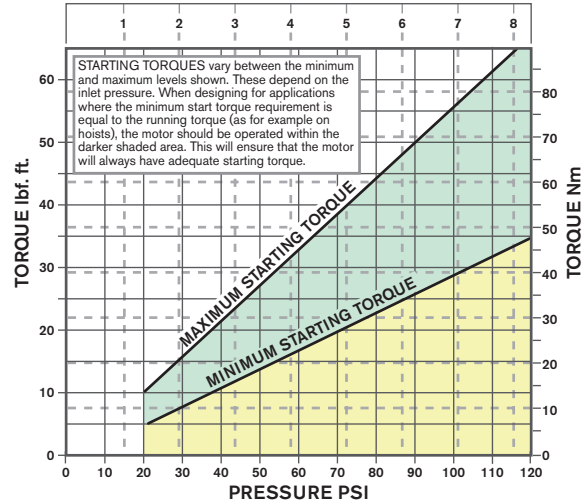


**Reading Graphs** - Scales have been adjusted to enable bar and psi to be read from a common curve. Therefore only read psi with the left hand axis and bar with the right hand axis.

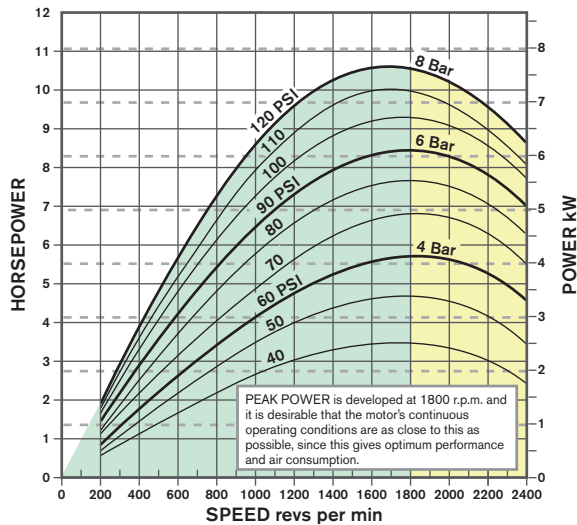
**GRAPH 1 TORQUE - SPEED**



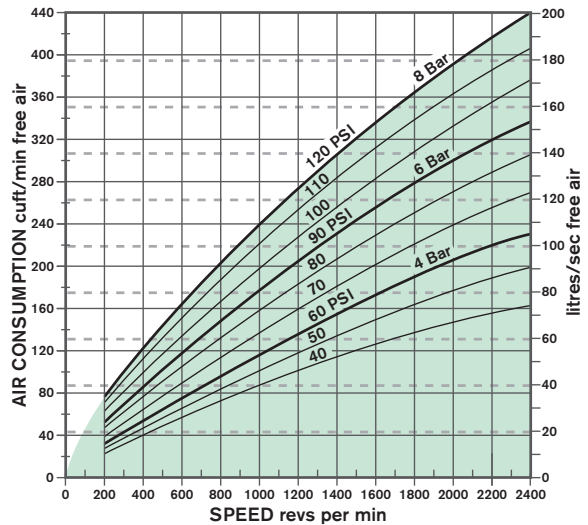
**GRAPH 2 STARTING TORQUE - PRESSURE**



**GRAPH 3 POWER - SPEED**



**GRAPH 4 CONSUMPTION - SPEED**



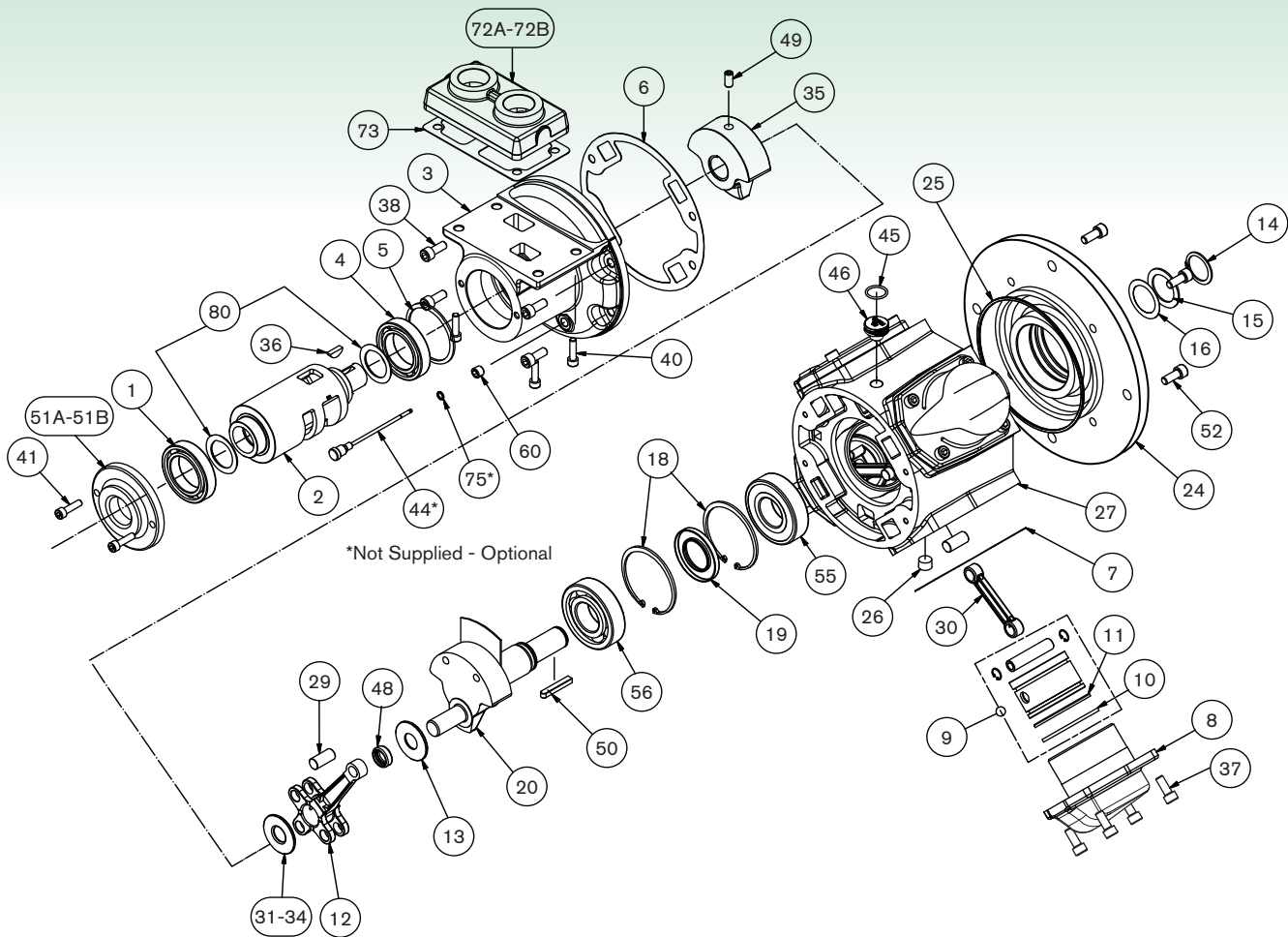
**Lubricating Oil Capacities** - Horizontal 350 ml / 12.5 fl. oz., Vertical 600 ml / 21 fl. oz. Use a good quality hydraulic oil with a viscosity of around 100cSt (460SSU) at 40° C / 104° F.

**Airline Filtration and Lubrication** - Use 64 micron filtration or better. Choose a lubricator suitable for the flow required. Prior to initial start-up, inject oil into the inlet port. Lubricator drop rate: 3-4 drops/minute continuous operation. Lubricator drop rate 6-10 drop/minute intermittent operation.

**General Data -**

- Mass** (motor only) 48 kgs / 106 lbs.
- Moment of Inertia** of rotating parts 1.8 gm<sup>2</sup> / 6 lb. in<sup>2</sup> (motor only)
- Max Overhung Force** on motor shaft 1330 N / 300 lbf.
- Temperature Range** -20° C to +80° C / -4° F to +176° F

# RM310 MOTOR SPARE PARTS LIST



ITEM	PART NO.	DESCRIPTION	QTY.	KIT NO.
1	807-020	Rotary Valve Bearing (Outer)	1	
2	330-059	Rotary Valve	1	
3	330-011	Rotary Valve Housing	1	
4	807-001	Rotary Valve Bearing (Inner)	1	
5	804-054	Rotary Valve Bearing Circlip	1	
6	300-001	Rotary Valve Housing Gasket	1*	339-911
7	310-030	Cylinder Gasket	4*	339-911
8	310-082	Cylinder	4	
9	330-902A	Piston Assembly	4	
10	300-024	Compression Ring	4*	339-911
11	300-022	Oil Control Ring	4*	339-911
12	320-077	King Rod	1	
13	320-013	Crankshaft Spacer	2	
14	804-012	Crankshaft Circlip	1	
15	310-036	Crankshaft Spacer	1	
16	310-049	Crankshaft Spacer Shim	5	
18	804-062	Crankshaft Bearing Circlip	2	
19	808-045	Crankshaft Oilseal	1*	339-911
20	330-911	Std. Crankshaft Assembly	1	
24	330-076	Std. Flange Plate	1	
25	808-026	Flange Plate Seal	1*	339-911
26	816-071	Plug	1	
27	330-012	Engine Case	1	
29	320-081	Queen Rod Pivot	3	
30	330-078	Queen Rod	3	
31	320-052	Crank Spacer SELECT	1	
32	320-053	Crank Spacer ON	1	
33	320-054	Crank Spacer ASSEMBLY	1	

ITEM	PART NO.	DESCRIPTION	QTY.	KIT NO.
35	330-010	Balance Weight	1	
36	811-010	Woodruff Key	1	
37	802-053	Cylinder Bolts	16	
38	802-053	Valve Housing Bolts	4	
40	802-032	Adaptor Plate Bolt	4	
41	802-032	Exhaust Cover Bolts	2	
44	300-040	Dipstick (vertical mounting)	1	
45	808-004	Seal (transit only)	1	
46	130-066	Breather Plug	1	
48	807-065	Needle Bearing	1	
49	815-002	Grub Screw	1	
50	811-003	Key	1	
51A	330-005	Rotary Valve Exhaust Cover BSP	1	
51B	330-105	Rotary Valve Exhaust Cover NPT	1	
52	810-002	Flange BoltS	8	
55	807-009	Output Shaft Brg. (Outer)	1	
56	807-009	Output Shaft Brg. (Inner)	1	
60	816-063	Oil Level Plug	1	
72A	330-003	Inlet Adaptor Plate BSP	1	
72B	230-103	Inlet Adaptor Plate NPT	1	
73	330-004	Inlet Adaptor Plate Gasket	1*	339-911
75	808-008	Dipstick Seal	1*	339-911
	339-911	Seal Kit	1	
80	330-060	Rotary Valve Spacer	2	

Please note item 339-911 (Seal Kit) includes all items marked thus:\*  
Items marked thus select on assembly.

# RM310 GEARED MOTOR INSTALLATION DETAILS

Maximum performance details listed below are at 6 bar / 90 psi. The performance under different conditions can be obtained by using the curves on page 22. A typical minimum gearbox efficiency of 90% can be expected. For higher pressures contact SPX Hydraulic Technologies.

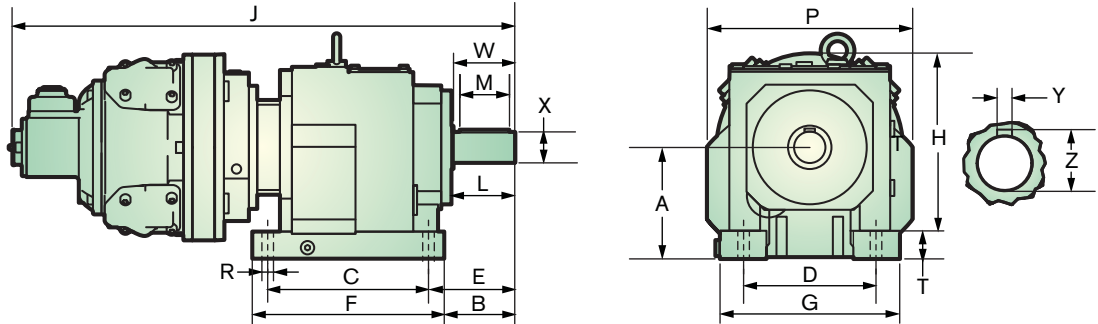
The maximum overhung force is assumed acting midway along the output shaft; for other positions or higher loads on intermittent applications; contact SPX Hydraulic Technologies.

## PERFORMANCE SUMMARY

GEARBOX RATIO	MAXIMUM POWER CONDITIONS					APPROX. MIN. START TORQUE		MAX. CONT. rmp	MAX. OVERHUNG FORCE		WEIGHT			
	kW	hp	rpm	TORQUE		Nm	lbf. ft		N	lbf.	GEARBOX	ADAPTER	GEARBOX KIT	MOTOR & GEARBOX
				Nm	lbf. ft									
5.15	6.37	8.5	350	165	122	170	125	461	2350	528	38	14	52	100
25.01	6.37	8.5	72	800	591	824	608	95	14060	3161	92	14	106	154
51.97	6.37	8.5	35	1663	1227	1713	1264	46	18830	4233	130	14	144	192
78.06	6.37	8.5	23	2498	1843	2573	1899	30	26070	5861	194	14	208	256
103.80	6.37	8.5	17	3322	2451	3421	2525	23	26070	5861	194	14	208	256
123.37	6.37	8.5	15	3948	2914	4066	3001	19	27600	6205	312	14	326	374
156.38	6.37	8.5	12	5004	3693	5154	3804	15	35280	7932	312	14	326	374
178.38	6.37	8.5	10	5708	4213	5879	4339	13	86311	19404	475	14	489	537
198.71	6.37	8.5	9	6359	4693	6549	4834	12	86311	19404	475	14	489	537
253.08	6.37	8.5	7	8099	5977	8342	6156	9	86311	19404	475	14	489	537

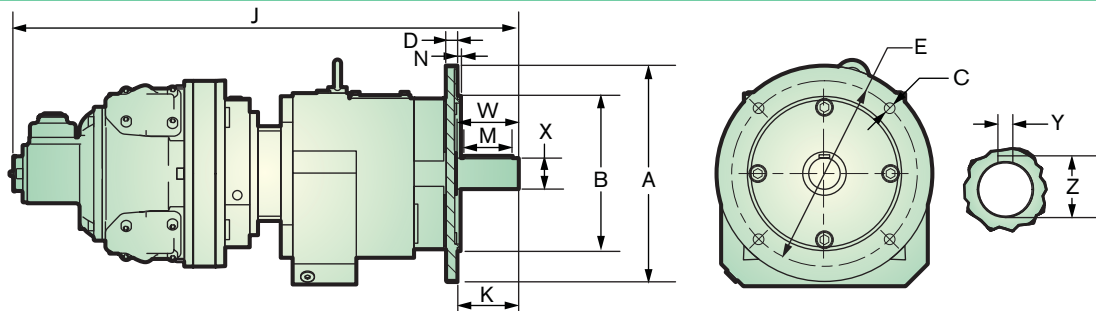
## BASE MOUNTED GEAR BOX DIMENSIONS

For additional types and ratios contact SPX Hydraulic Technologies.



RANGE RATIO	A	B	C	D	E	F	G	H	J	L	M	P	R	T	W	X	Y	Z	MASS
4.28 - 6.9:1	115 + 35	92.5	165	135	110	200	195	265 + 35	722	83	70	300	13.5	25	70	40.01	12	43	96 kg
	4.5" + 1.4"	3.0"	6.5"	5.3"	4.3"	7.9"	7.7"	10.4" + 1.4"	28.4"	3.3"	2.8"	11.8"	0.5"	1.0"	2.8"	1.585"	0.5"	1.7"	212 lb
8.11 - 16.45	140 + 10	95	205	170	115	245	235	290 + 10	748	84	70	290	17.5	30	80	40.01	12	43	113 kg
	5.5" + 0.4"	3.7"	8.1"	6.7"	4.5"	9.6"	9.3"	11.4" + 0.4"	29.4"	3.3"	2.8"	11.4"	0.7"	1.2"	3.1"	1.585"	0.5"	1.7"	250 lb
20.81 - 31.32	180	115	260	215	140	310	290	364	806	104	80	332	17.5	45	100	50.01	14	53.5	150 kg
	7.1"	4.5"	10.2"	8.5"	5.5"	12.2"	11.4"	14.3"	31.7"	4.1"	3.1"	13.1"	0.7"	1.8"	3.9"	1.985"	0.6"	2.1"	330 lb
35.14 - 60.9:1	225	132	310	250	159.5	365	340	445	891	125	100	410	22	50	120	60.02	18	64	184 kg
	8.9"	5.2"	12.2"	9.8"	6.3"	14.4"	13.4"	17.5"	35.0"	4.9"	3.9"	16.1"	0.9"	2.0"	4.7"	2.38"	0.7"	2.5"	406 lb
78.06 - 88.46:1	250	150	370	290	185	440	400	507	965	145	110	462	26	55	140	70.02	20	74.5	252 kg
	9.8"	5.9"	14.6"	11.4"	7.3"	17.3"	15.7"	20.0"	38.0"	5.7"	4.3"	18.2"	1.0"	2.2"	5.5"	2.78"	0.8"	2.9"	556 lb

## FLANGE MOUNTED GEAR BOX DIMENSIONS



RANGE RATIO	A	B	C	D	E	J	K	M	N	W	X	Y	Z	MASS
4.28 - 6.9:1	300	230.00	13.5	15	265	721	80	70	4	80	40.01	12.0	43	96 kg
	11.8"	9.1"	0.5"	0.6"	10.4"	28.4"	3.1"	2.8"	0.2"	3.1"	1.6"	0.5"	1.7"	212 lb
8.11 - 16.45:1	300	230.00	13.5	16	265	749	80	70	4	80	40.01	12.0	43	113 kg
	11.8"	9.1"	0.5"	0.6"	10.4"	29.5"	3.1"	2.8"	0.2"	3.1"	1.6"	0.5"	1.7"	250 lb
20.81 - 31.32:1	350	250.01	17.5	18	300	806	100	80	5	100	50.01	14	53.5	150 kg
	13.8"	9.8"	0.7"	0.7"	11.8"	31.7"	3.9"	3.1"	0.2"	3.9"	2.0"	0.6"	2.1"	330 lb
35.14 - 60.9:1	450	350.00	17.5	20	400	891	120	100	5	120	60.02	18	64	188 kg
	17.7"	13.8"	0.7"	0.8"	15.7"	35.1"	4.7"	3.9"	0.2"	4.7"	2.4"	0.7"	2.5"	414 lb
78.06 - 88.46:1	550	450.00	17.5	22	500	969	140	110	5	140	70.02	20	74.5	252 kg
	21.7"	17.7"	0.7"	0.9"	19.7"	38.1"	5.5"	4.3"	0.2"	5.5"	2.8"	0.8"	2.9"	556 lb

Detailed drawings and CAD models available on request. Ratios above the basic range shown are available on request. Alternative gearbox types and arrangements i.e. right angle output, hollow shaft etc. also available.

Modified dimensions for shafts and flanges available on request.

# RM310 VALVE OPTIONS

This range of bolt on valves offers very sensitive speed and directional control. One frictionless matched spool and sleeve assembly is offered with two alternative means of actuation.

## CONFIGURATION

As standard these valves can be supplied with either EQUAL POWER or BIASED POWER spools, the latter is suitable for hoisting applications (normal power for lifting - reduced power for lowering).

The direction of reduced power must be stated when ordering CW or CCW, when viewed on the output shaft of the motor or geared motor.

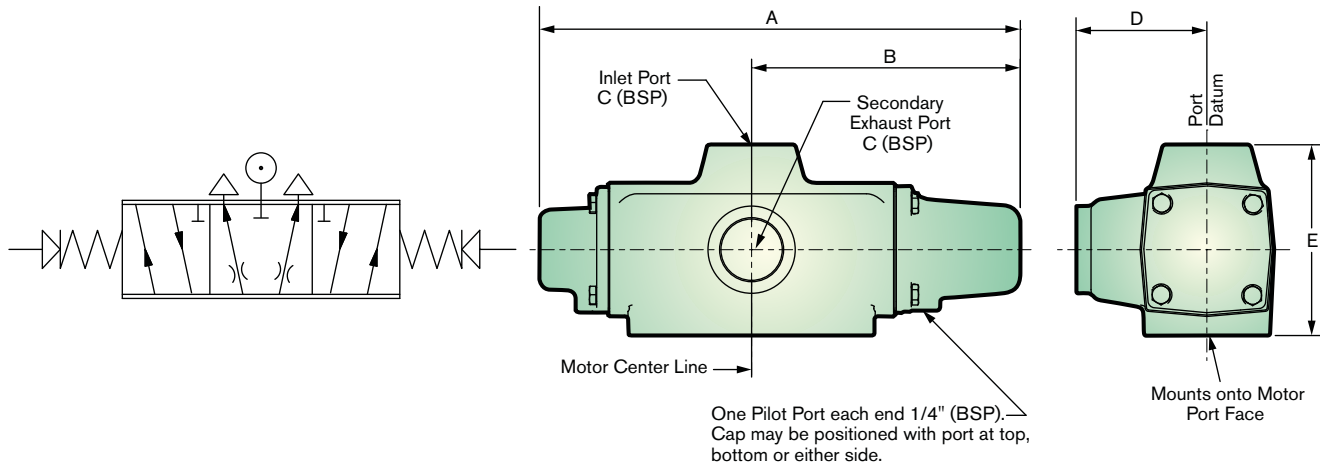
**1. Remotely Controlled (RCV)** - This option is usually controlled from a remote position by one of the PC series or LC2 units. A variable air pilot signal is

applied to either end of the valve spool, depending on the required direction of motor rotation. The pilot pressure range is between 1.4 bar / 20 psi and 4.8 bar / 70 psi, increased pilot pressure give increased speed. The valve is spring centered to neutral.

**2. Hand Controlled (HCV)** - The control valve spool is operated directly by a lever mechanism. Speed increase is obtained as the lever is moved in either direction from the center (neutral) position.

**Pressure Drop** - Minimal pressure drop will be experienced through the valves, having the effect of maintaining the output torque while reducing the motor output speed by approximately 10-15% at 6 bar / 90 psi at maximum power. The starting torque remains unaffected.

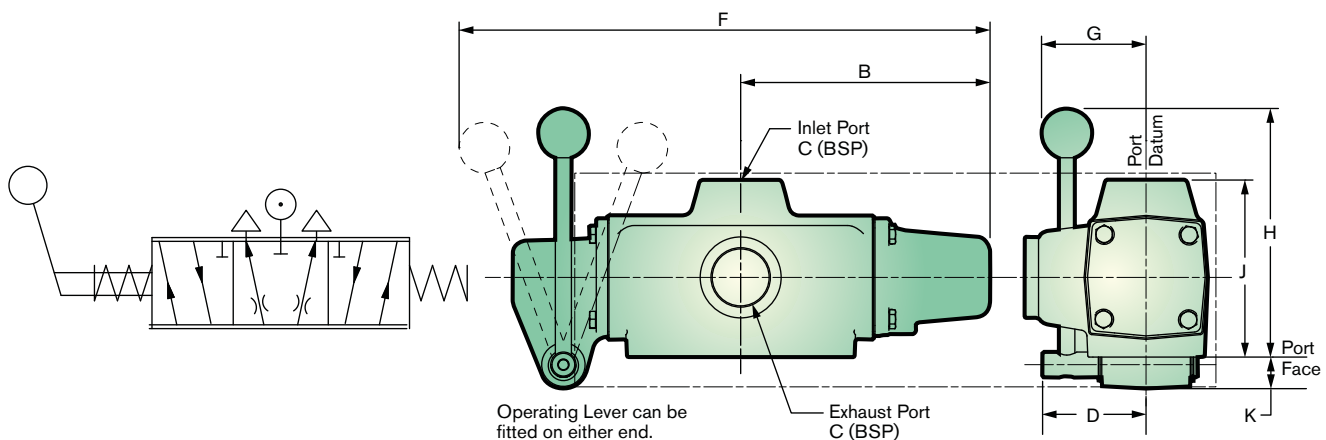
## REMOTE CONTROL VALVE - 1 BSP PORTS



Modified threads and other valve options are available upon request. Please contact SPX Hydraulic Technologies.

A	B	C (BSP)	D	E	Approx. WT.
279.4	160.0	1	71.1	104.1	7.938 kg
11.0"	6.3"		2.8"	4.1"	17.5 lbs.

## HAND CONTROL VALVE - 1 BSP PORTS

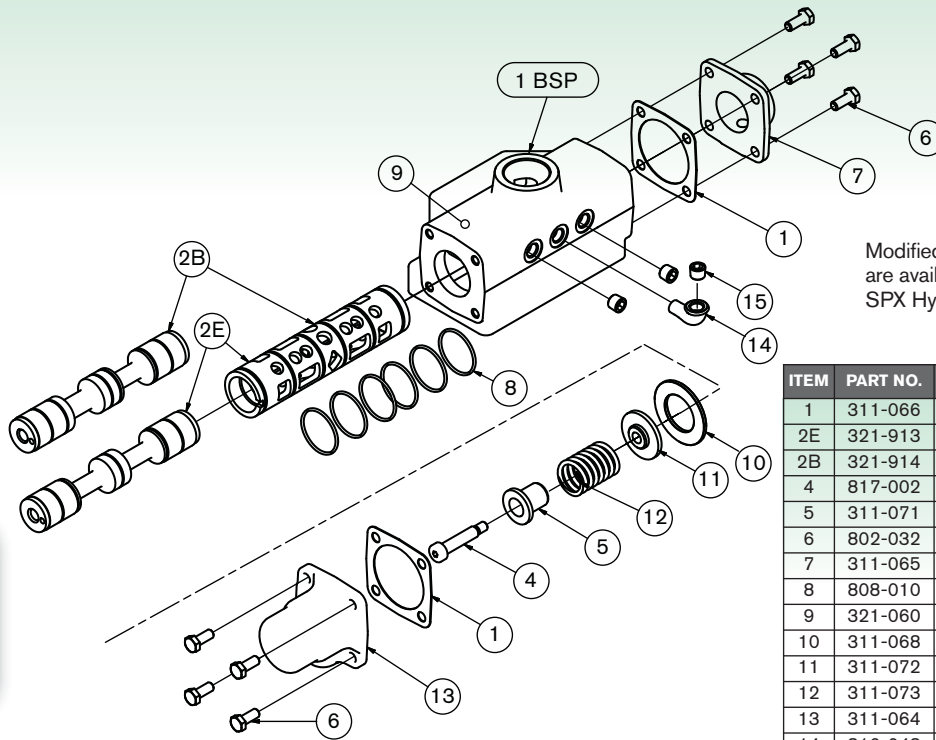


Modified threads and other valve options are available upon request. Please contact SPX Hydraulic Technologies.

B	C (BSP)	D	F	G	H	J	K	Approx. WT.
106.0	1	71.1	356.7	76.2	193.0	104.1	27.9	7.938 kg
6.3"		2.8"	14.4"	3.0"	7.6"	4.1"	1.1"	17.5 lbs.

# RM310 VALVE OPTIONS SPARE PARTS LISTS

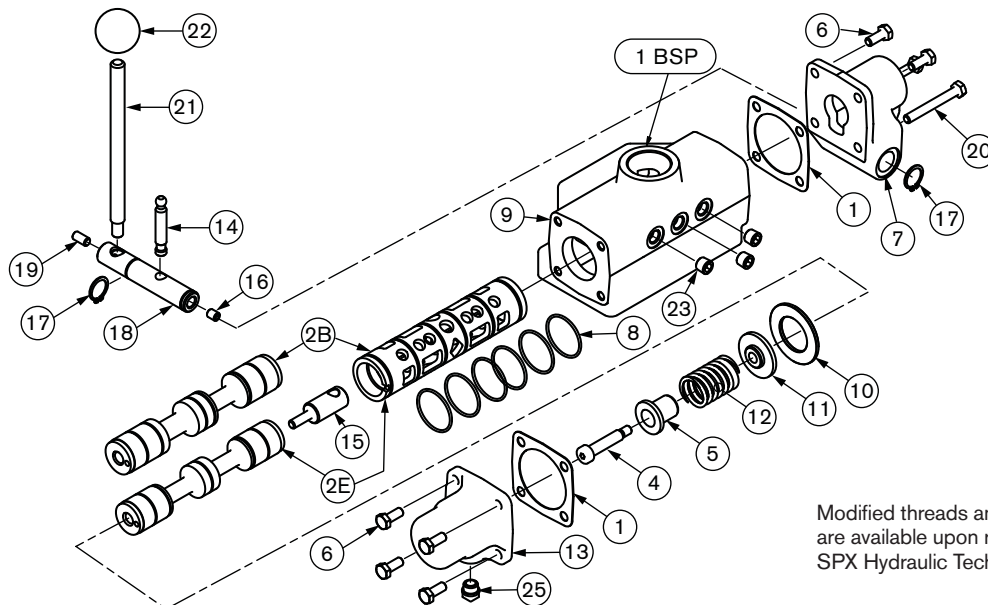
## REMOTE CONTROL VALVE - 1 BSP PORTS



Modified threads and other valve options are available upon request. Please contact SPX Hydraulic Technologies.

ITEM	PART NO.	DESCRIPTION	QTY.
1	311-066	End Cap Gasket	2
2E	321-913	Matched Spool and Sleeve (Equipower)	1
2B	321-914	Matched Spool and Sleeve (Biased)	1
4	817-002	Shoulder Screw 10mm	1
5	311-071	Centering Shaft Guide	1
6	802-032	Set Screw M8 x 20	8
7	311-065	End Cap - Plain End	1
8	808-010	O-Ring 1-9/16" x 1-11/16"	6
9	321-060	Valve Body	1
10	311-068	Valve Sleeve Spacer	1
11	311-072	Washer, Spring Centering	1
12	311-073	Spring, Control Spool	1
13	311-064	End Cap - Spring End	1
14	816-048	Elbow M/F 1/4" BSPT	1
15	816-061	Plug 1/4" BSPT	3

## HAND CONTROL VALVE - 1 BSP PORTS



Modified threads and other valve options are available upon request. Please contact SPX Hydraulic Technologies.

ITEM	PART NO.	DESCRIPTION	QTY.
1	311-066	End Cap Gasket	2
2E	321-913	Matched Spool and Sleeve (Equipower)	1
2B	321-914	Matched Spool and Sleeve (Biased)	1
4	817-002	Shoulder Screw 10mm	1
5	311-071	Centering Shaft Guide	1
6	802-032	Hex Head Screw M8 x 20	6
7	313-041	Hand Lever Cap	1
8	808-010	O-Ring 1-9/16" x 1-11/16"	6
9	321-060	Valve Body	1
10	311-068	Valve Sleeve Spacer	1
11	311-072	Washer, Spring Centering	1
12	814-015	Spring 323720	1

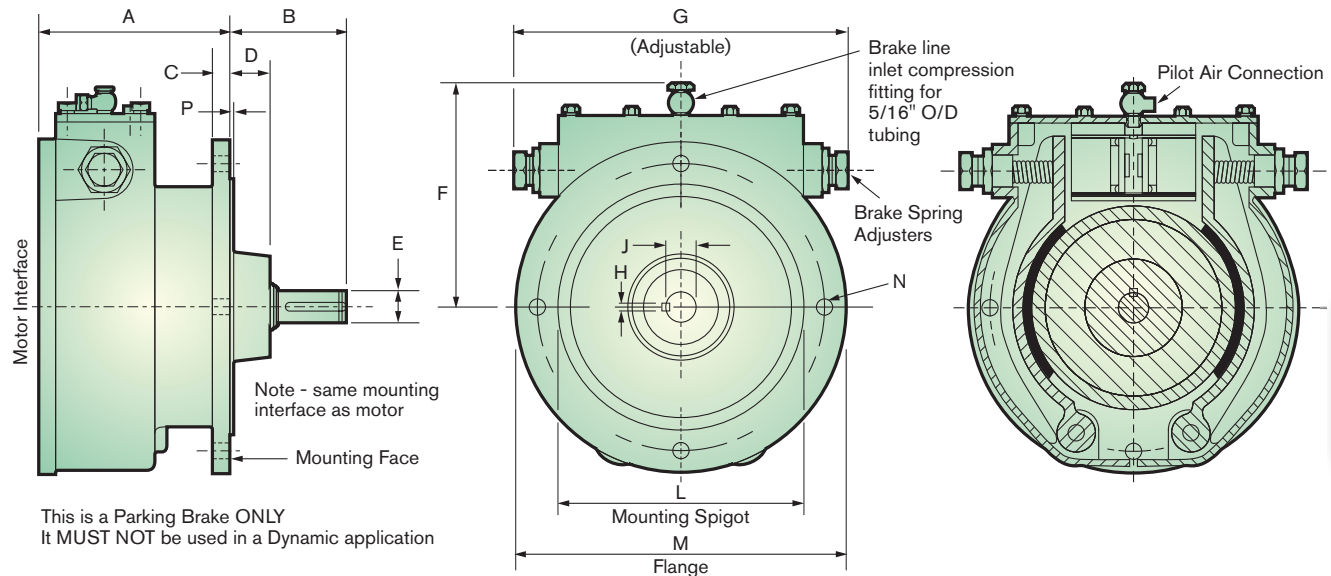
ITEM	PART NO.	DESCRIPTION	QTY.
13	311-064	End Cap - Spring End	1
14	313-026	Toggle Pin	1
15	313-024	Toggle Shaft	1
16	815-010	Grub Screw M8 x 10	1
17	804-013	Circlip 20mm External	2
18	313-008	Hand Lever Pivot	1
19	815-002	Grub Screw M8 x 16	1
20	802-045	Hex Bolt M8 x 60	2
21	313-002	Hand Lever	1
22	818-002	Black Plastic Knob 1-1/2"	1
23	816-061	Plug 1/4" BSPT	3
25	113-050	Vent Plug	1

# RM310 PARKING BRAKE INSTALLATION DETAILS

The brake module bolts directly onto the motor mounting face and has exactly the same interface as the motor. As shown on the drawing below, the brake consists of two spring applied shoes pressed against a central hub. These shoes are released by applying air pressure to the cylinder/piston assembly. The brake torque can be varied by means of two spring adjusters

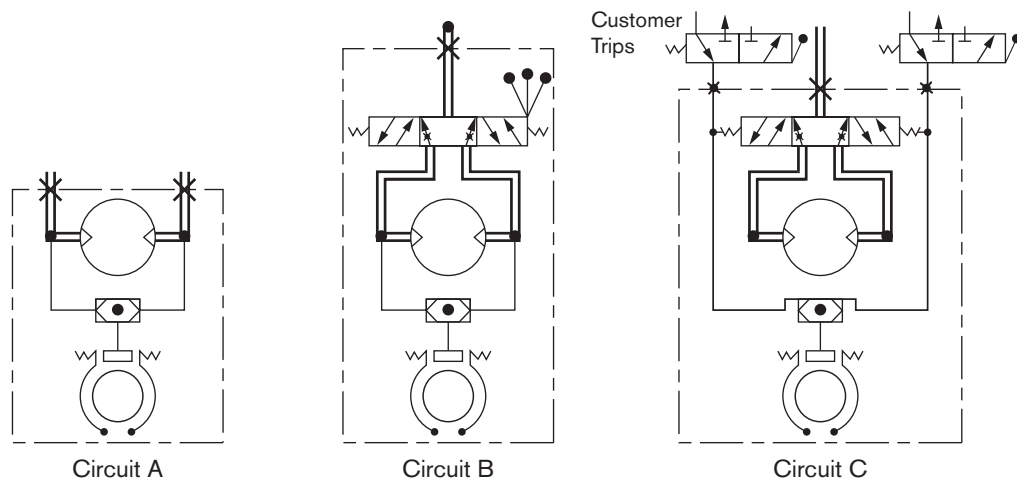
but it is normally set so that a pilot pressure of 4.1 bar / 60 psi will fully release it. Pressures below this level will progressively reduce the braking torque available. The brakes are set at the plant but it may be necessary to make adjustments on site to suit the individual application.

## BRAKE VIEW



A	B	C	D	E	F	G	P	H	J	L	M	N-MOUNTING HOLES			
												NO.	Ø	P.C.D.	BOLT LENGTH (MAX)
139.7	104.1	13.9	45.7	22.0	160.0	269.2	4.0	5.9	24.5	229.9	304.8	101.6	13.9	264.1	887.0
5.5"	4.1"	0.55"	1.8"	0.8665"	6.3"	10.6"	0.16"	0.236"	0.965"	9.0535"	12.0"	4"	0.55"	10.4"	34.925"

## CIRCUITS



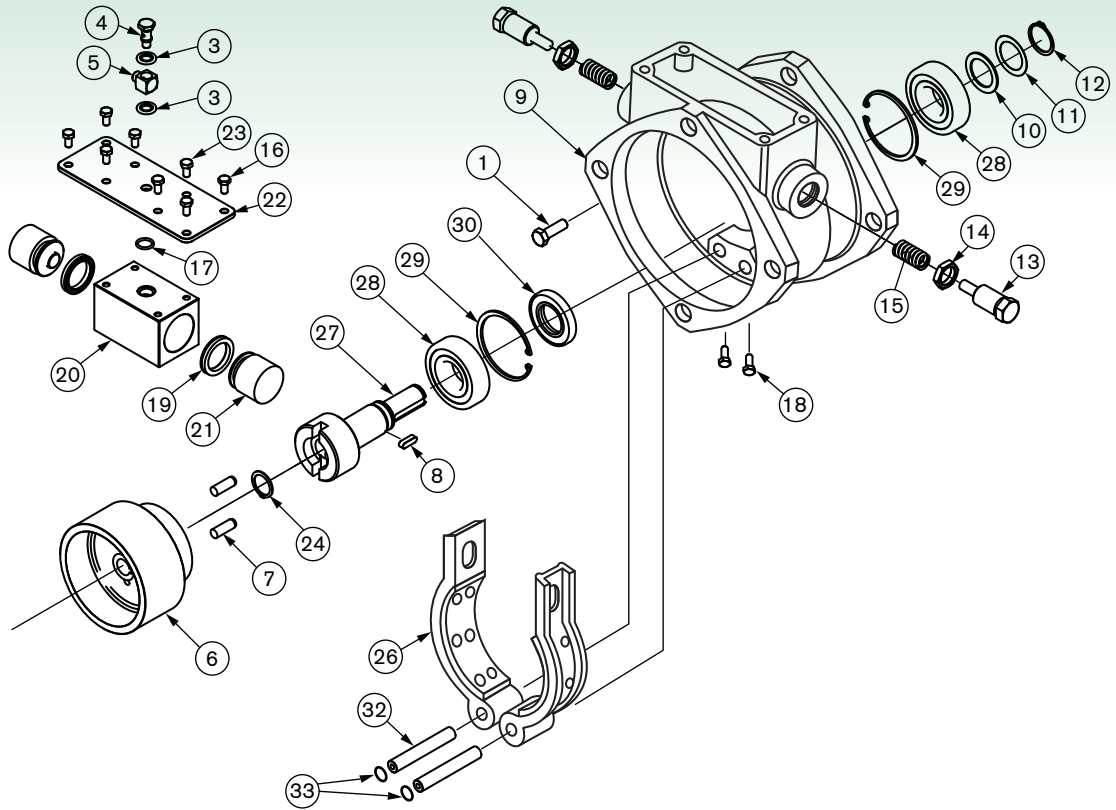
**Circuit (A)** - Applies to braked motors supplied without control valving. The unit will be fitted with a shuttle valve to allow brake operation for dual rotation.

**Circuit (B)** - Units supplied with hand (HCV) controlled reversible valves. If trips are required they must be of the mechanical style (customer's supply).

**Circuit (C)** - Units supplied with remotely controlled valves. When override trips are required, they must be superimposed in the signal line close to the motor unit and be of the 3 way style. (Signal lines cut and exhausted in the tripped position.)

# RM310 PARKING BRAKE SPARE PARTS LIST & FOOT BRACKET

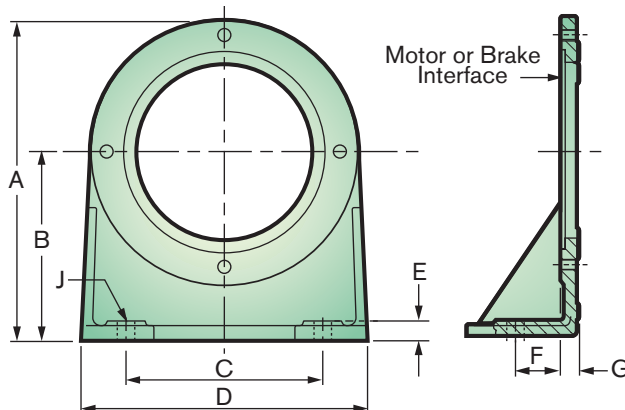
## PARKING BRAKE SPARE PARTS LIST



ITEM	PART NO.	DESCRIPTION	QTY.
1	802-073	Set Screw M12 x 30	4
3	808-090	Bonded Seal 1/4" BSP Dowty	2
4	816-004	Banjo Bolt Only 1/8" BXP	1
5	816-005	Banjo Body C/W Nut & Pin 5/16"	1
6	312-001	Brake Wheel	1
7	806-002	Dowel Dia 12 x 35 Lg	2
8	811-003	Key 6sq x 40mm	1
9	312-008	Brake Housing	1
10	320-049	Shim - Output	5
11	310-036	Output Shaft Spacer 3.55	1
11	310-037	Output Shaft Spacer 3.80	1
11	310-038	Output Shaft Spacer 4.05	1
12	804-012	Circlip 32mm External	1
13	102-009	Brake Spring Adjuster	2
14	102-024	1/2" BSP Hex Nut	2
15	814-008	Spring 243914	2

ITEM	PART NO.	DESCRIPTION	QTY.
16	802-031	Hex Head Screw M6 x 16	4
17	808-039	O-Ring 9/16" x 3/4"	1
18	802-020	Hex Head Screw M6 x 20	2
19	808-073	U Packing	2
20	312-014	Piston Block	1
21	302-011	Brake Piston	2
22	312-013	Block Support Plate	1
23	802-012	Hex Head Screw M8 x 12	2
24	804-007	Circlip 22mm External	1
26	312-901	Brake Shoe Assembly	2
27	312-005	Output Shaft	1
28	807-009	Ball Bearing	2
29	804-062	Circlip 72mm Internal	2
30	808-045	Oilseal 35 x 72 x 10/R4	1
32	312-003	Brake Shoe Pivot	2
33	804-122	Circlip 1/2" External	2

## FOOT BRACKET



A	B	C	D	E	F	G	H	J
370.8	214.7	228.0	330.2	18.7	52.0	22.8	-	2 x Ø 21.0
14.6"	8.455"	8.98"	13.0"	0.74"	2.05"	0.9"	-	2 x Ø 0.83