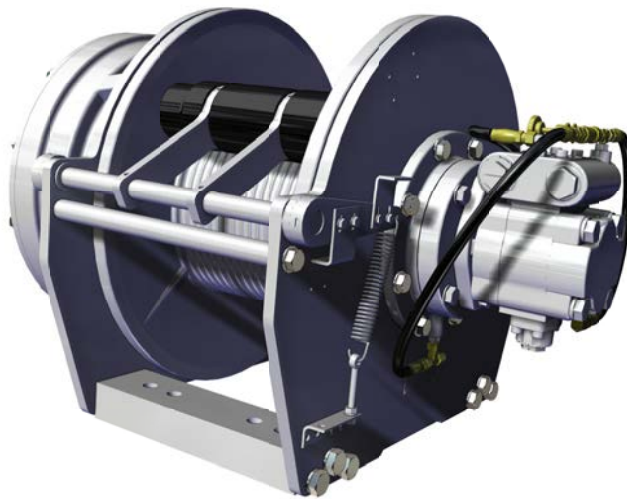


PD12C-CW

PARTS LIST



WRITE HOIST SERIAL NUMBER BELOW

--	--	--	--	--	--	--



**First 2 numbers indicate
year manufactured**

For serial number location see page 3

Visit our website at www.paccarwinch.com for the most comprehensive collection of winch, hoist, and drive information on the Internet. Most publications and specification sheets are available for downloading.

Table of Contents

Foreword	2
Model Identification.....	3
Explanation of Model Number	3
Recommended Planetary Gear Oil.....	4
Service Kits.....	5
BRADEN PD12C-CW Cross-section.....	6
Main Assembly Components	7
Base Configurations	8
Drum Rotation	9
Overrunning Clutch Components	9
Brake Clutch Rotation and Assemblies	10
Brake Cylinder Assembly.....	11
Auxiliary Brake Cylinder Assembly	12
Sprag Clutch Assembly	13
Planet Carrier Assemblies	14
Motor Groups – Standard	15
Motor Groups – Personnel-handling Option	19
Hydraulic Motor Assembly	21
Brake Valve Assembly	22
Tension Roller Group.....	23
Fasteners, Adapters, and Hose Assemblies.....	24
Fittings	25
Metric Conversion Table	27

FOREWORD

Read this entire publication and retain it for future reference.

For inquiries regarding your BRADEN PD12C-CW hoist or this publication, please contact the BRADEN Service Department at 918-251-8511, Monday through Friday, 8:00 a.m. to 4:30 p.m. (CST).

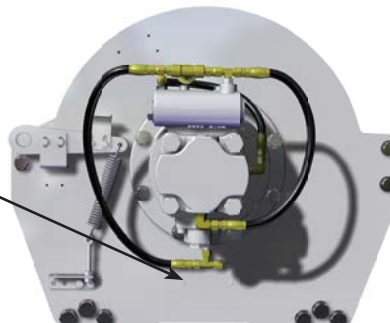
The following parts list has been prepared to provide maintenance information for the BRADEN PD12C-CW hoist.

Some illustrations in this manual may show details or attachments different from your hoist. Some components have been removed for illustrative purposes. Drawings in this manual represent a typical unit sold through our distribution channels. Some hoists, particularly those sold directly to original equipment manufacturers, may differ in appearance and options.

MODEL IDENTIFICATION

Model numbers and serial numbers are located on the motor end. They are stamped into the nameplate below the hydraulic motor.

Always refer to the model number and serial number when requesting information or service parts.



EXPLANATION OF MODEL NUMBER

PD		12		C	-	CW	-	AB
POWER		MAX		DESIGN		COLD		AUXILIARY
DRUM		RATING		MODEL		WEATHER		BRAKE

PD	Power drum
12	12,000-pound first-layer line pull
C	Model series relating to design changes
CW	Cold-weather design
AB	With auxiliary brake option

TO ORDER:

1. List model and serial numbers of the hoist.
2. Refer to cross-section drawing (exploded view), select the component(s) needed, and note item number.
3. Find item number on parts list. Show part number, description, and quantity required on your order.
4. Refer to Parts List and show price for each component or assembly.

RECOMMENDED PLANETARY GEAR OIL

Field experience, supported by engineering endurance tests, indicates that the use of the proper gear oil and a program of regular preventive maintenance will help provide extended gear-train life and reliable winch brake performance. For this reason, BRADEN has published the following specifications to assist in determining which lubricant is best suited to your application.

For simplicity, BRADEN has listed available products in each temperature range that have been tested and found to meet our specifications. This is not to say that other lubricant brands would not perform equally as well.

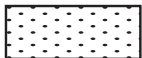
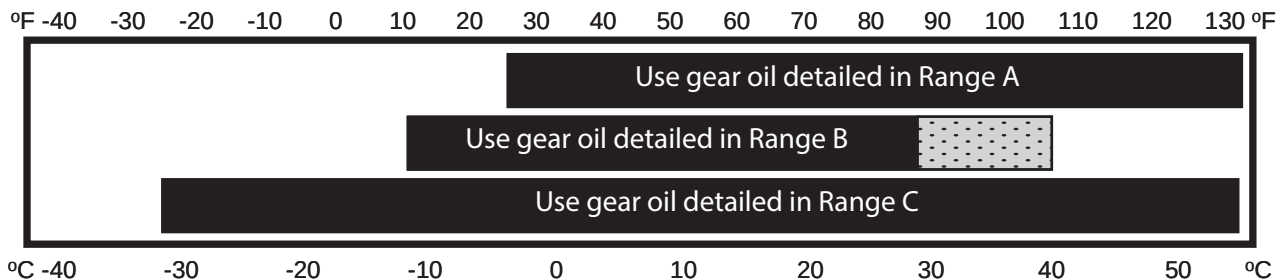
If the following lubricant brands are not available in your area, make certain your lubricant vendor supplies you with oil equivalent to those products listed below.

⚠ WARNING ⚠

Failure to use the proper type and viscosity of planetary gear oil may contribute to intermittent brake clutch slippage, which could result in property damage, severe personal injury, or death. Some gear lubricants contain large amounts of extreme-pressure (EP) and antifriction additives, which may contribute to brake clutch slippage or damage to brake friction discs or seals. **NOTE: DO NOT use oil that is labeled as meeting "API Service GL-5."** Oil viscosity, affected by ambient temperature, is also critical to reliable brake clutch operation. Our tests indicate excessively heavy or thick gear oil may contribute to intermittent brake clutch slippage. Make certain the gear oil viscosity used in your hoist is correct for your prevailing ambient temperature.

RECOMMENDED GEAR OIL

PREVAILING AMBIENT TEMPERATURE



SHADED TEMPERATURE RANGE IN THE CHART ABOVE NOT RECOMMENDED FOR SEVERE APPLICATIONS SUCH AS SUSTAINED FAST DUTY CYCLES OR FREQUENT WINCHING.

Winches are factory filled with Mobilgear 600 XP 150 or equivalent. Consult your oil supplier for other equivalent oils if required.

	Mobil	Shell	Chevron	Texaco
Range A	Mobilgear 600 XP 220	Omala S2 G 220	Gear Compounds EP 220	Meropa 220
Range B	Mobilgear 600 XP 150	Omala S2 G 150	Gear Compounds EP 150	Meropa 150
Range C	Mobilgear SHC 150	Omala S4 GX 150		

⚠ WARNING ⚠

Failure to properly warm up the hoist, particularly under low ambient temperature conditions, may result in temporary brake slippage due to high back pressures attempting to release the brake. This also could result in property damage, severe personal injury, or death.

SERVICE KITS

65276 – BEARING SERVICE KIT		
DESCRIPTION	PART NO.	QTY.
Ball bearing	24110	1
Thrust washer	40129	1
Thrust washer	40128	1
Bearing race	25361	6
Roller bearing	24175	3
Spirol pin	24113	3
Primary planet gear shaft	25614	3
Thrust washer	24306	6
Roller bearing	25292	6
Bearing spacer	25443	3
Spirol pin	23584	3
Planet gear shaft	25616	3
Bearing, ball	105637	2

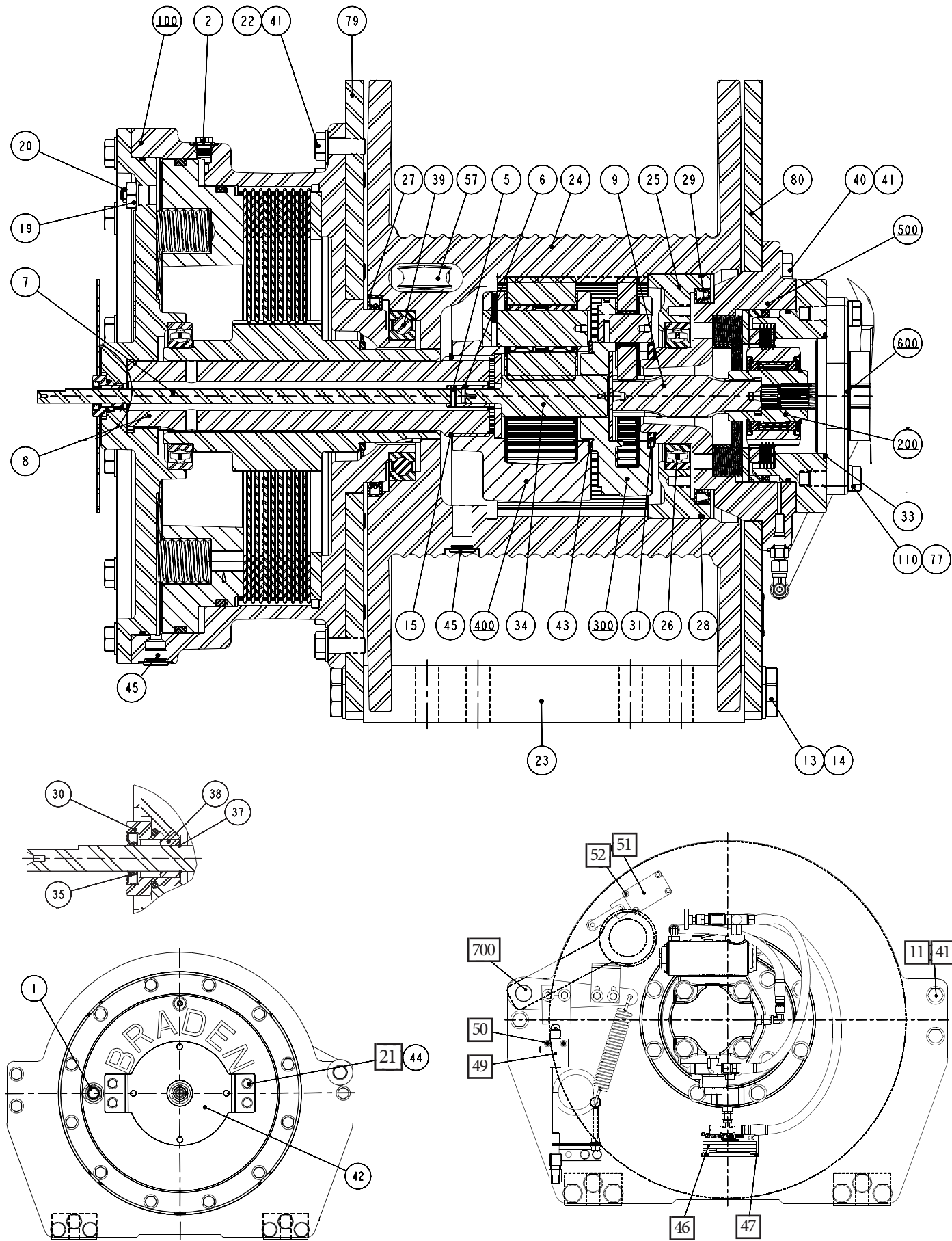
65278 – BRAKE SERVICE KIT		
DESCRIPTION	PART NO.	QTY.
Seal	25642	1
Die spring	25644	12
850170 Disc, friction	21036	4
Brake disc	100027	5
O-ring	24981	1
Backup O-ring	25643	1
O-ring	22586	1

65277 – SEAL SERVICE KIT		
DESCRIPTION	PART NO.	QTY.
O-ring	24186	1
Seal	25642	1
Seal, lip	108738	1
O-ring	21033	1
Seal, oil	22818	1
Backup ring	25643	1

65279 – AUXILIARY BRAKE SERVICE KIT		
DESCRIPTION	PART NO.	QTY.
O-ring	72113	1
O-ring	29856	1
O-ring	26459	1
Ball bearing	24110	1
Backup O-ring	29858	1
Backup O-ring	29857	1
50497 Divider plate	72204	9
Brake plate	100024	8
Spring, die	104168	18

BRADEN PD12C-CW CROSS-SECTION

Part number 06995



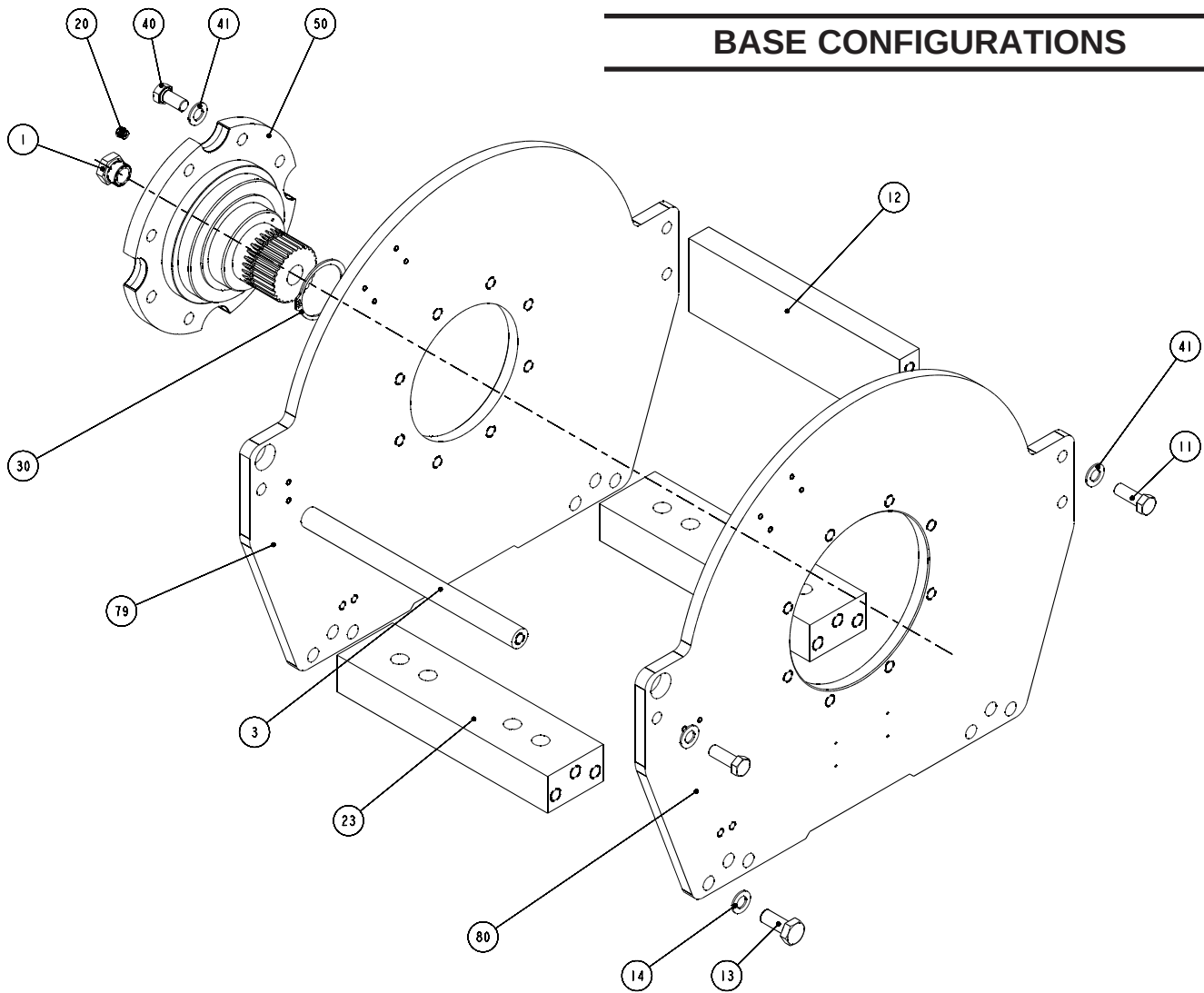
BRADEN PD12C-CW COMPONENTS

Part number 06995

ITEM NO.	DESCRIPTION	PART NO.	QTY.
000	Gear oil, Mobil SHC150 Synthetic	LU48672-55	
001	16574-0012 Sight gauge	70193	1
002	Shipping plug	25881	1
003	Tie bar	111721	1
005	Spirol pin	24113	1
006	Encoder shaft collar	111528	1
007	Encoder shaft	111527	1
008	Reaction shaft	111069	1
009	Primary sun gear	111212	1
011	Cap screw	111163	4
012	Tie bar	111209	1
013	Cap screw	111298	12
014	Washer	111299	12
015	Retaining ring	70575	1
019	Reducer str thread adapter	26868	1
020	Relief valve	18062	11
021	HM10-1.50 20 Grade 10.9Z	103230	4
022	Cap screw	111458	12
023	Base	111208	2
024	Cable drum	111165	1
025	Drum closure	111154	1
026	Ball bearing	24110	1
027	Seal, 6.00, 7.00, .50	111764	1
028	O-ring	21033	1
029	Seal-oil	22818	1
030	Adapter	108989	1
031	Thrust washer	40128	1
033	O-ring	21063	1
034	Output sun gear	111320	1
035	Seal, lip	105501	1

ITEM NO.	DESCRIPTION	PART NO.	QTY.
037	Ring, external retaining	101082	1
038	Bushing	105500	1
039	Bearing, ball	105637	1
040	Cap screw	111162	1
041	Washer	111164	24
042	Encoder mount	111530	1
043	Thrust washer	40129	1
044	Washer, M10 hard Z	102126	4
045	16496-8 Plug, O-ring flush	32411	2
046	Nameplate	108591	1
047	Drive screw	11842	4
049	Limit switch assembly	106306	1
050	Cap screw SM04-.7 20 Grade 8.8	112160	2
051	Limit switch	107445	1
052	Cap screw SM04-.7 55 Grade 8.8	112161	4
057	Cable wedge	111178	1
077	Lockwasher	11026	2
079	Sideplate, support end	110990	1
080	Sideplate, motor end	110991	1
100	Auxiliary brake sub-assembly	84604	1
110	Cap screw	104322	2
200	Sprag clutch assembly (B spl shaft)	81774	1
300	Primary planet carrier assembly	81801	1
400	Output planet carrier assembly	84639	1
500	Brake cylinder sub-assembly	84603	1
600	Hydraulic motor group	65323	1
700	Tension roller group	65167	1

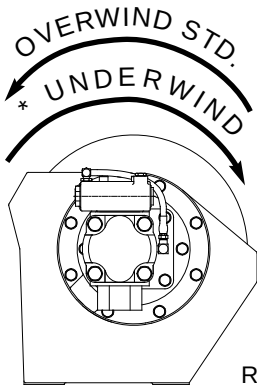
BASE CONFIGURATIONS



ITEM NO.	DESCRIPTION	PART NO. / MODEL UNIT NO.						QTY.
		06934*	06950	06951	06976*	06995	06996	
1	Sight glass	70193	70193	70193	70193	70193	70193	1
3	Tie bar	111721	111721	112801	111721	111721	112801	1
11	Cap screw (M14 - 2.0 X 40 mm ISO 898-1 class 8.8)	111163	111163	111163	111163	111163	111163	4 (8)
12	Tie bar	111209	111209	111210	111209	111209	111210	1 (2)
13	Cap screw (M16 - 2.0 X 40 mm ISO 898-1 class 8.8)	111298	111298	111298	111298	111298	111298	12
14	Washer	111299	111299	111299	111299	111299	111299	12
20	Relief valve	18062	18062	18062	18062	18062	18062	1
22	Cap screw (M14 - 2.0 X 35 mm ISO 898-1 class 8.8)	—	111458	111458	—	111458	111458	12
23	Base	111208	111208	111207	111208	111208	111207	2
30	Retaining ring, external	70575	70575	70575	70575	70575	70575	1
40	Cap screw (M14 - 2.0 X 30 mm ISO 898-1 class 8.8)	111162	111162	111162	111162	111162	111162	8
41	Washer	111164	111164	111164	111164	111164	111164	24 (20)
50	Bearing support	111392	—	—	111319	—	—	1
79	Sideplate, support end	111204	110990	110990	111204	110990	110990	1
80	Sideplate, motor end	110991	110991	110991	110991	110991	110991	1

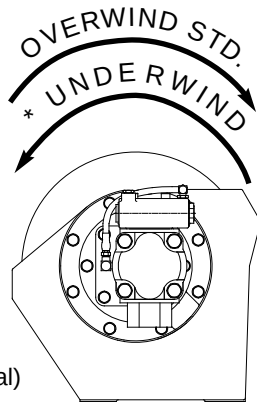
* Quantities for part numbers 06934 and 06976 are included in parentheses.

DRUM ROTATION TO HOIST (04 AND 05 DRUM/BASE SHOWN)



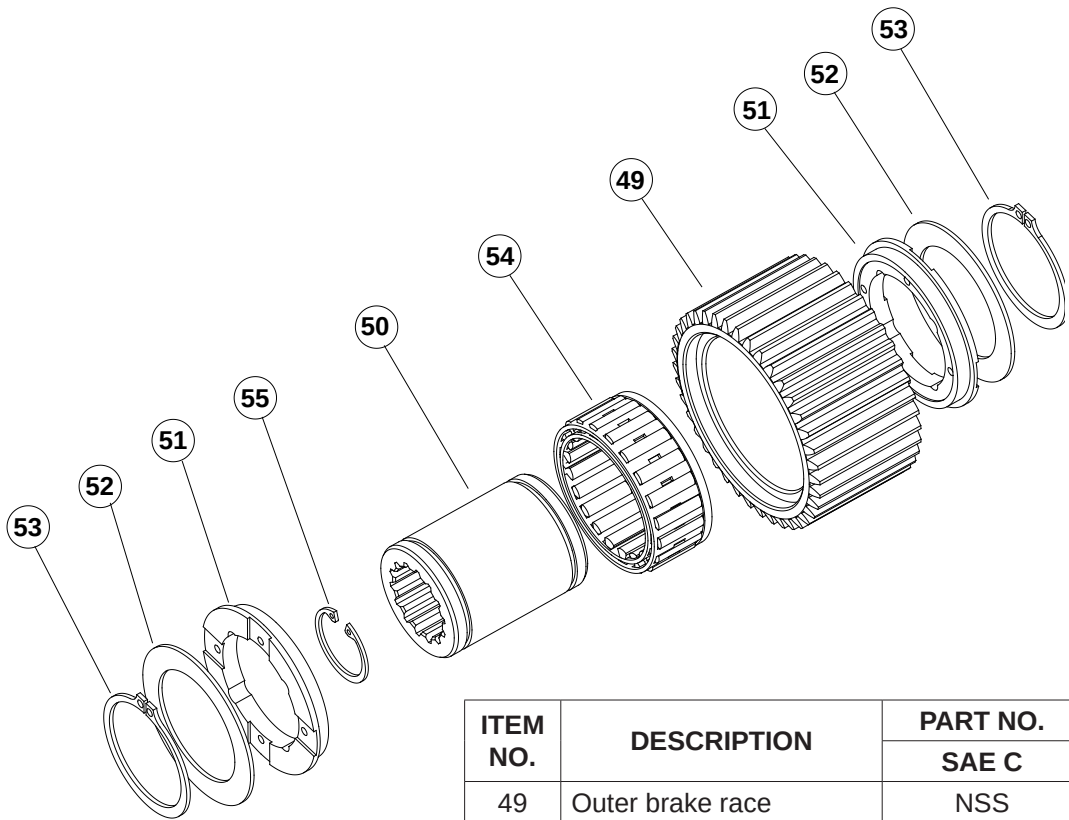
RH BASE (Standard)

Underwound models
Designated by -U
(Example: PD12C-41051-04U)



LH BASE (Optional)

OVERRUNNING CLUTCH COMPONENTS



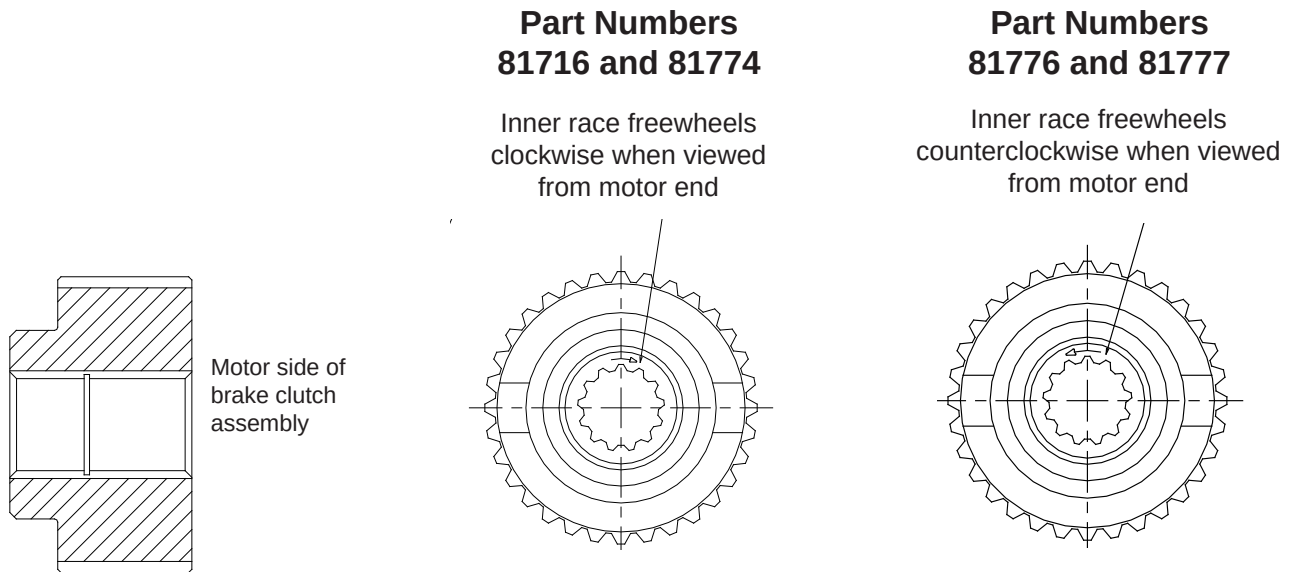
ITEM NO.	DESCRIPTION	PART NO.	PART NO.	QTY.
		SAE C	SAE B	
49	Outer brake race	NSS	NSS	1
50	Inner brake race	NSS	NSS	1
51	Sprag bearing	27684	27684	2
52	Thrust bearing	24581	24581	2
53	Retaining ring	12034	12034	2
54	Sprag clutch	NSS	NSS	1
55	Retaining ring	24506	24031	1

NSS – not serviced separately. Order entire brake clutch assembly.

BRAKE CLUTCH ROTATION

NOTE: Designation of cable drum rotation is determined by viewing hoist from hydraulic motor end while hoisting.

On the BRADEN PD12C-CW, the inner race of the brake clutch sprag assembly, when viewed from the motor side, must freewheel in the direction opposite as the cable drum during hoisting

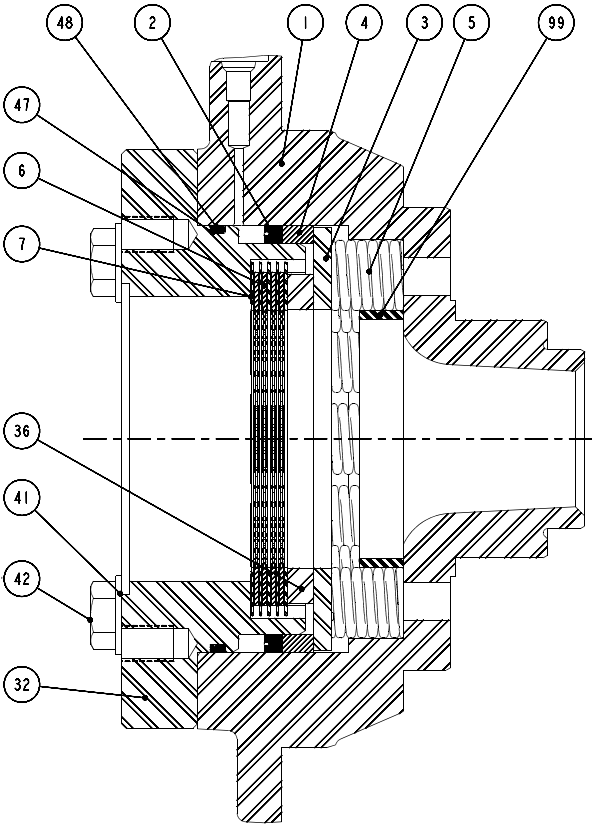


COMPLETE BRAKE CLUTCH ASSEMBLIES

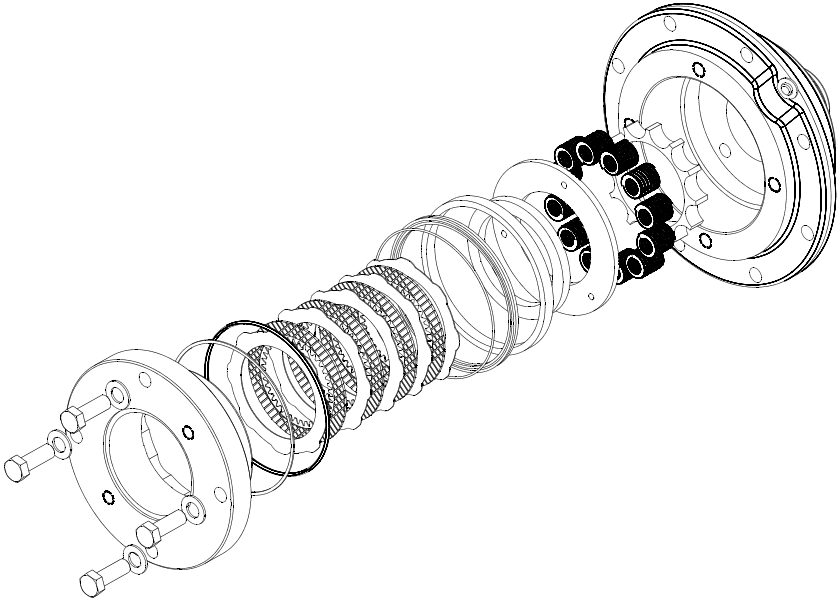
DESCRIPTION	APPLICATION	PART NO.
SAE C 14T	RH base overwind, LH base underwind	81716
	RH base underwind, LH base overwind	81776
SAE B 13T	RH overwind, LH underwind	81774
	RH underwind, LH overwind	81777

BRAKE CYLINDER ASSEMBLY

Part number 84603

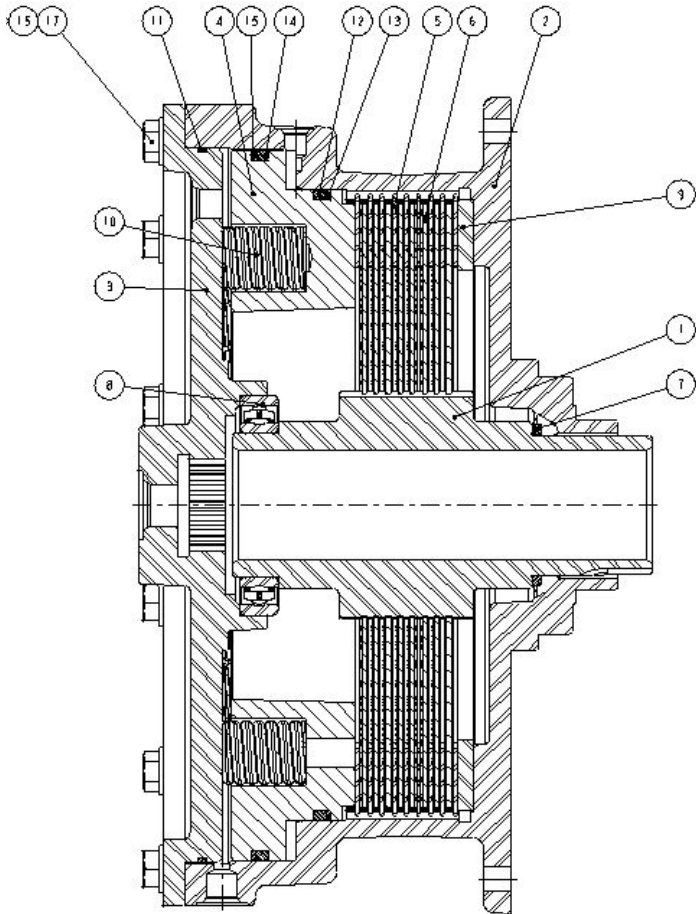


ITEM NO.	DESCRIPTION	PART NO.	QTY.
1	Brake cylinder	111070	1
2	Seal	25642	1
3	Pressure plate	25635	1
4	Piston backup ring	25636	1
5	Die spring	25644	12
6	850170 Disc, friction	21036	4
7	Brake disk	100027	5
32	Motor support	111071	1
36	Spacer	25637	1
41	Washer	111164	4
42	Cap screw	111163	4
47	O-ring	24981	1
48	Backup ring	25643	1
56	Shipping plug, hydraulic	25403	1
99	Spring spacer	100200	1

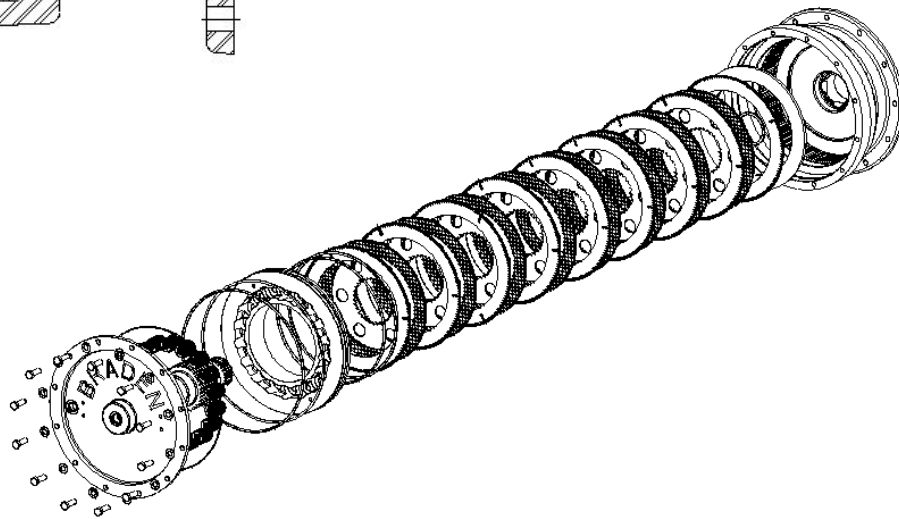


AUXILIARY BRAKE CYLINDER ASSEMBLY

Part number 84604

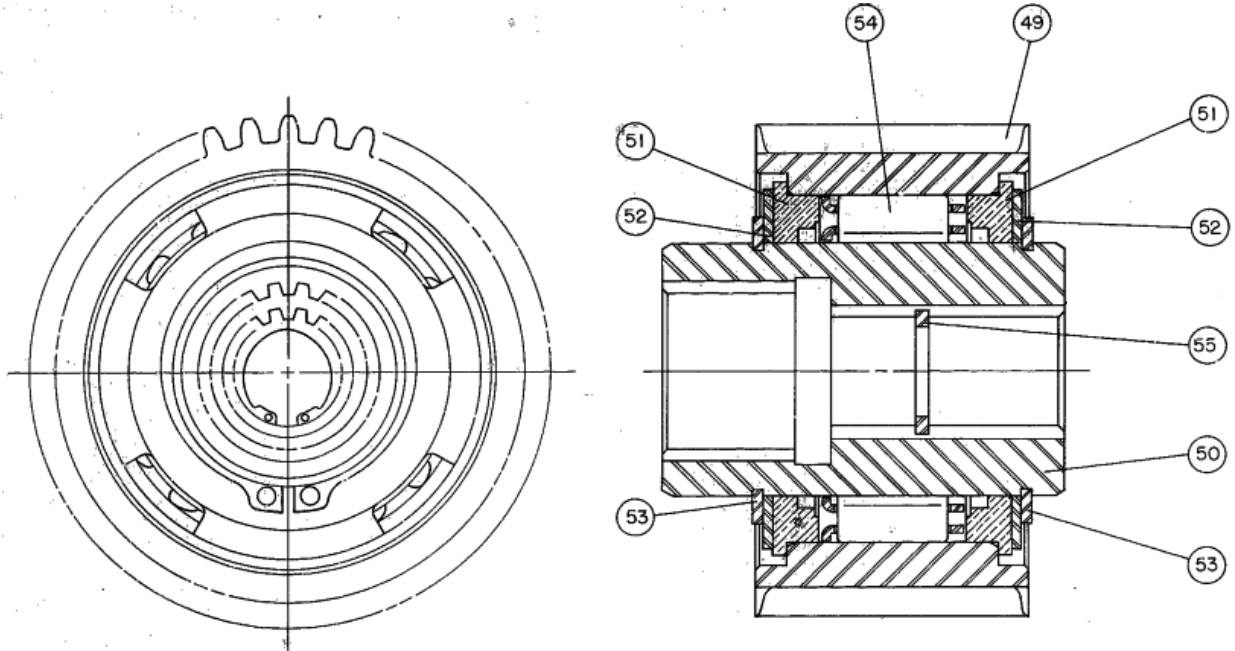


ITEM NO.	DESCRIPTION	PART NO.	QTY.
1	Shaft, brake	111068	1
2	Brake housing	111065	1
3	Housing cover	111064	1
4	Piston	111066	1
5	50497 Divider plate	72204	9
6	Brake plate	100024	8
7	Thrust spacer	104740	1
8	Ball bearing	24110	1
9	Spacer	29757	1
10	Spring, die	104168	18
11	O-ring	72113	1
12	O-ring	26459	1
13	Backup, O-ring	29857	1
14	O-ring	29856	1
15	Backup, O-ring	29858	1
16	Washer	111164	12
17	Cap screw	111163	12



SPRAG CLUTCH ASSEMBLY

Part number 81774



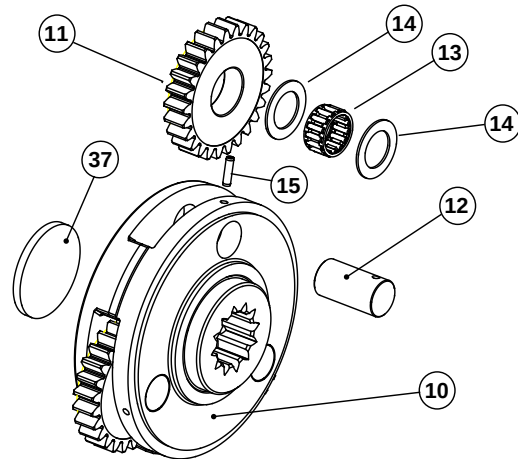
ITEM NO.	DESCRIPTION	PART NO.	QTY.
49	Outer brake race	25075	1
50	Inner brake race	26141	1
51	Sprag bearing	27684	2
52	Thrust bearing	24581	2
53	21-B3-1 snap ring	12034	2
54	Sprag clutch	24839	1
55	Snap ring	24031	1

PLANET CARRIER ASSEMBLIES

PRIMARY PLANET CARRIER ASSEMBLY

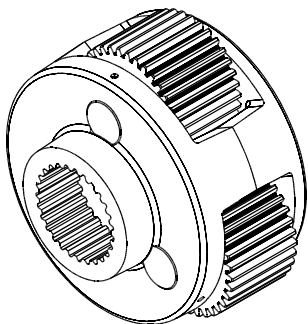
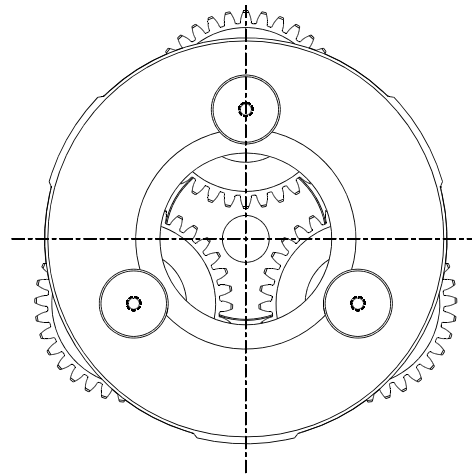
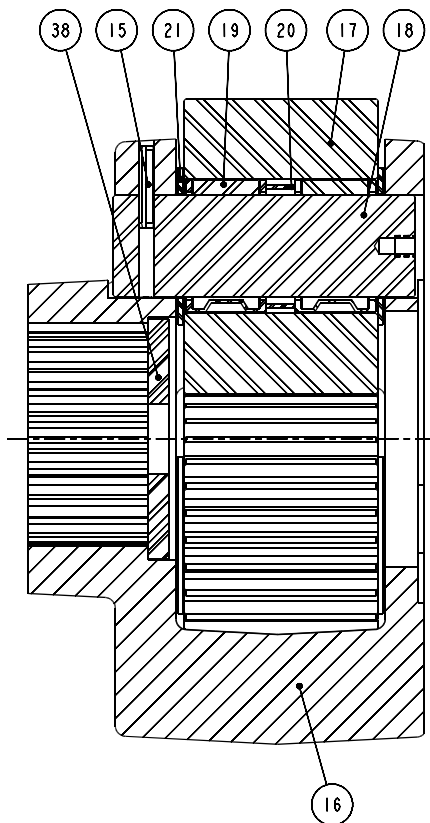
Part number 81801

ITEM NO.	DESCRIPTION	PART NO.	QTY.
10	Primary planet carrier	25604	1
11	Planet gear	26276	3
12	Primary planet gear shaft	25614	3
13	Roller bearing	24175	3
14	Thrust washer	25361	6
15	Spirol pin	24113	3
37	Spacer, primary	25729	1



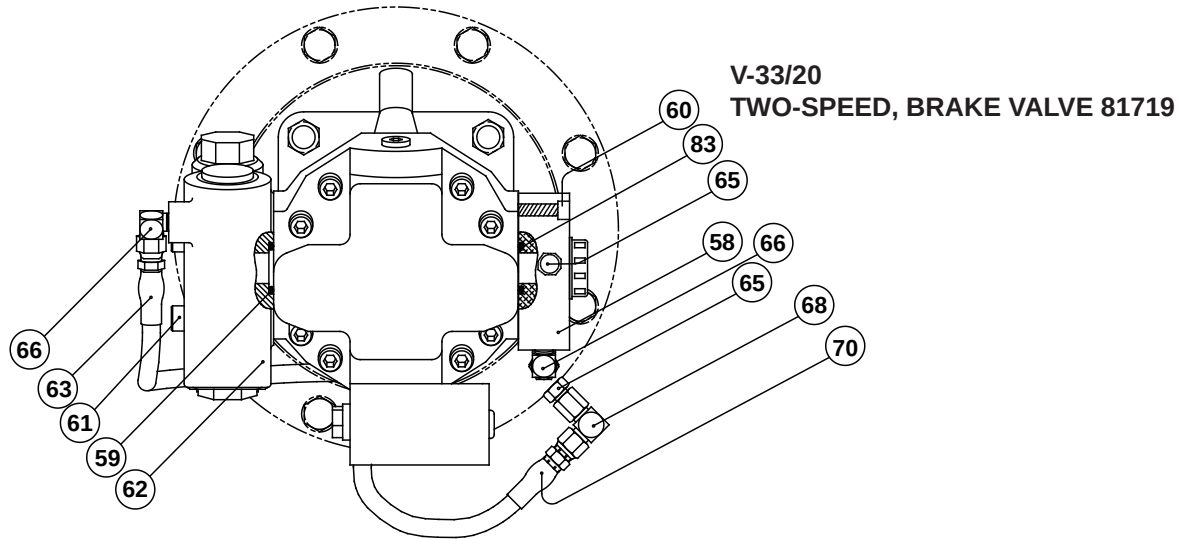
OUTPUT PLANET CARRIER ASSEMBLY

Part number 84639

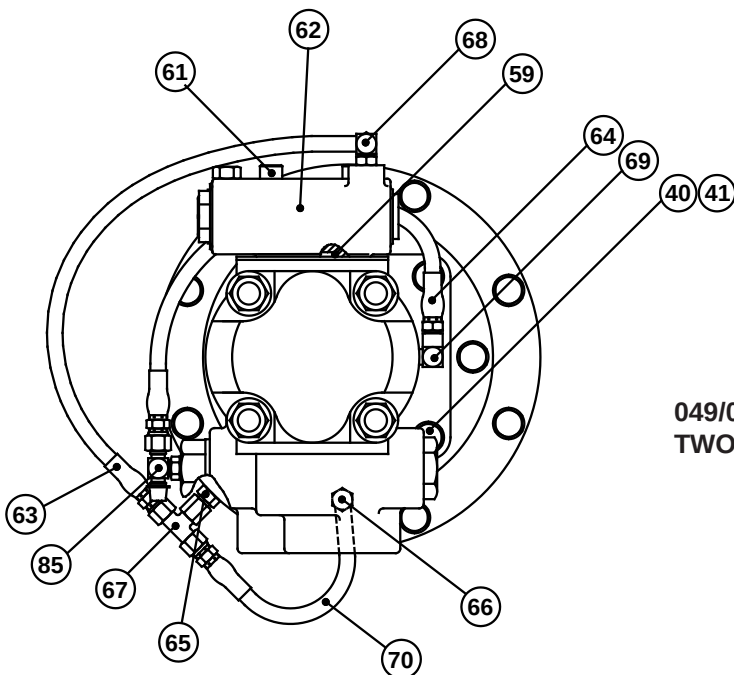
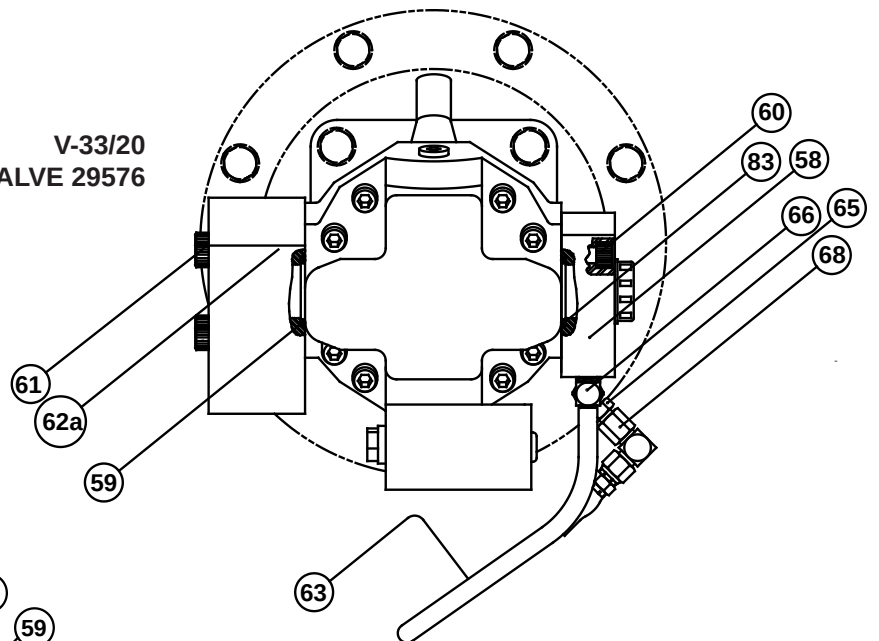


ITEM NO.	DESCRIPTION	PART NO.	QTY.
15	Pin, spirol	23584	3
16	Output planet carrier	25562	1
17	Planet gear	26277	3
18	Planet gear shaft	25613	3
19	Roller bearing	25292	6
20	Bearing spacer	25443	3
21	Thrust washer	111321	1
38	Thrust washer	24306	6

MOTOR GROUPS – STANDARD

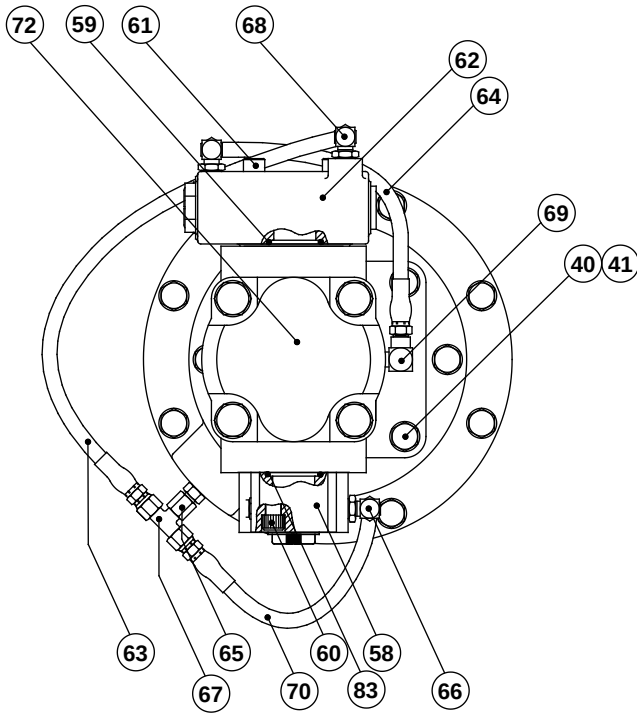


V-33/20
TWO-SPEED, BRAKE VALVE 29576

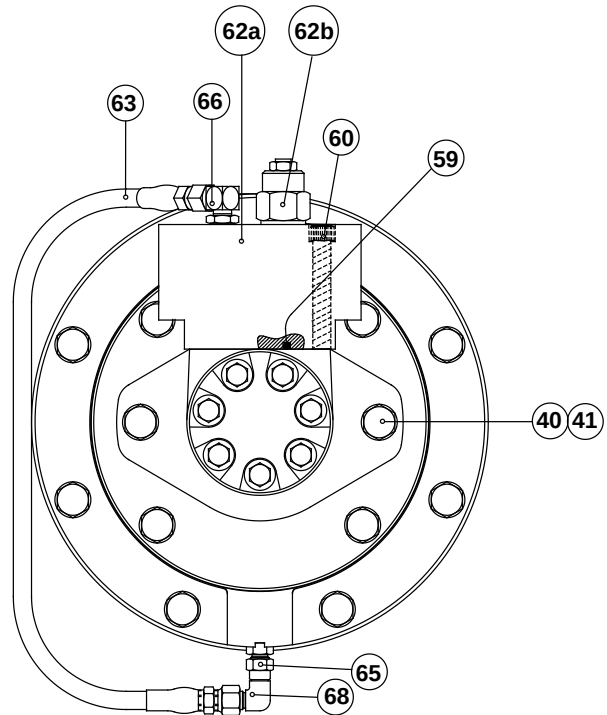


049/024 AND 064/032 MOTOR
TWO-SPEED

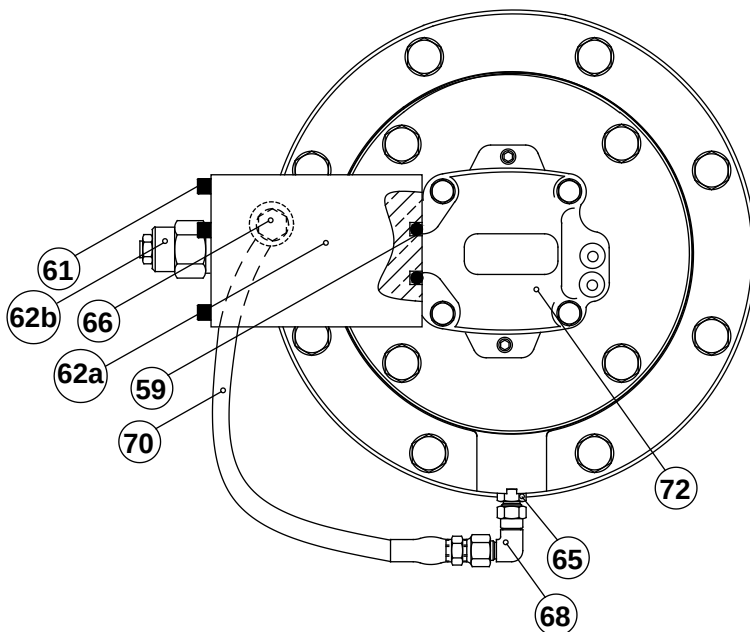
MOTOR GROUPS – STANDARD



**051 AND 064 MOTOR
SINGLE-SPEED**

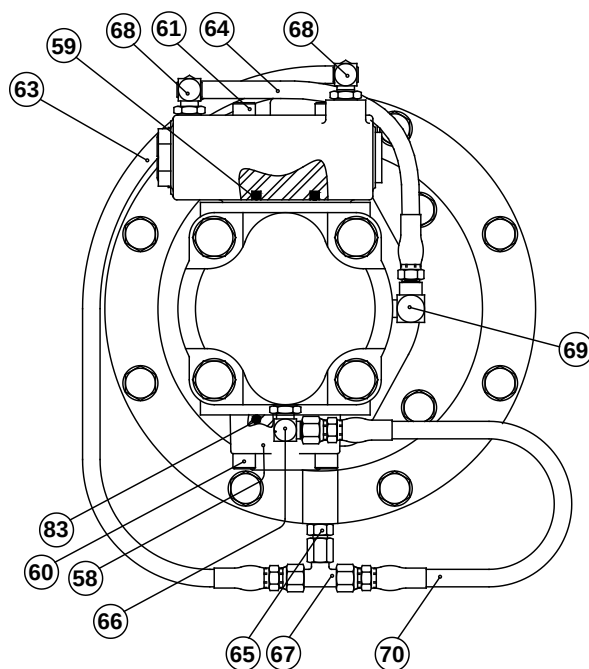


**071 AND 062 MOTOR
SINGLE-SPEED**



**080 MOTOR
SINGLE-SPEED**

MOTOR GROUPS – STANDARD



**029, 034, AND 039 MOTOR
SINGLE-SPEED**

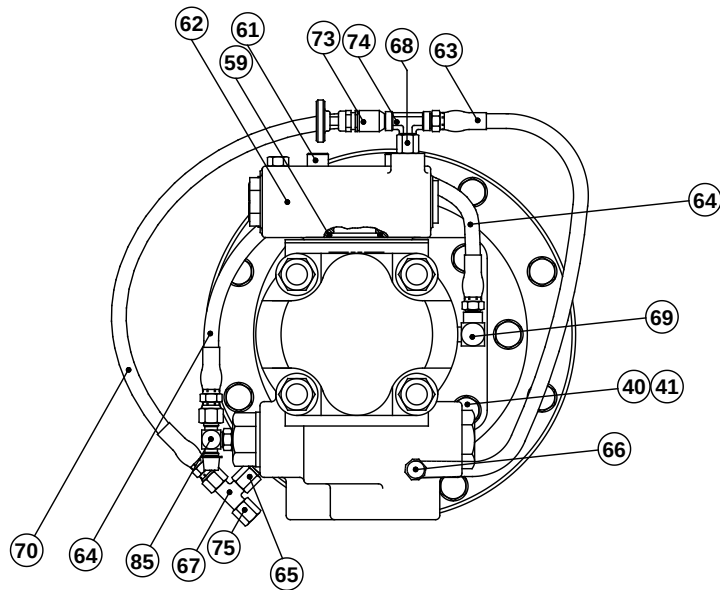
ITEM NO.	DESCRIPTION	PART NO.	QTY.	PILOT O-RING
5	029 (2-bolt B)	25385	1	21063
	034 (2-bolt B)	25912	1	21063
	034 (2-bolt B) underwound	103887	1	21063
	039 (2-bolt B)	25515	1	21063
	039 (4-bolt C) CT winches	25896	1	10330
	051 (4-bolt C)	25897	1	10330
	064 (4-bolt C)	25777	1	10330
	049/024 (4-bolt C)	26182	1	10330
	V33/20 (4-bolt C)	100714	1	10330
	064/032 (4-bolt C)	28956	1	10330
	071 Replaced by 062 (2-bolt B)	106079	1	21063
	080 (2-bolt A)	26124	1	22586

NOTE: These drawings are standard configurations. Verify hoses, fittings, and cap screws using tables found in the back sections of this publication.

MOTOR GROUPS – STANDARD

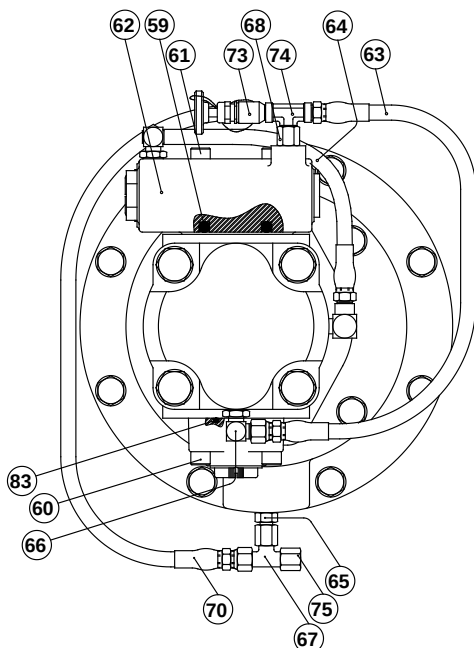
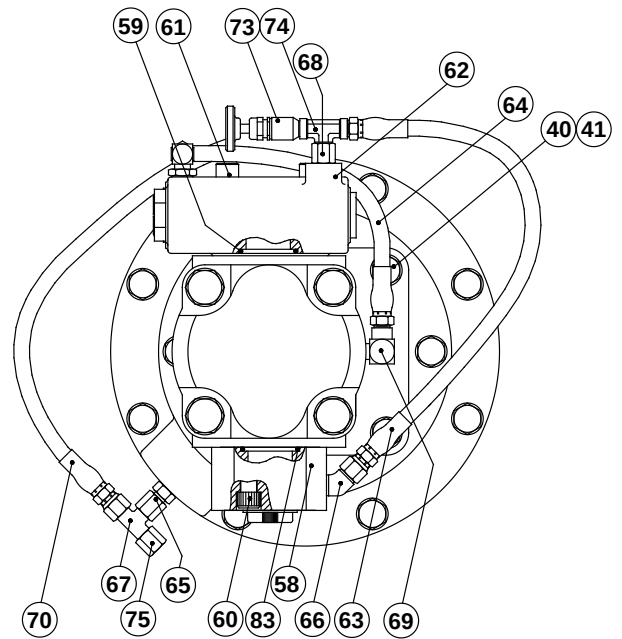
ITEM NO.	DESCRIPTION	039, 051, 064	049/024 064/032	029, 034, 039	080	071/062	V33/20	QTY.
		4-bolt-C	4-bolt-C	2-bolt-B	2-bolt-A	2-bolt-B	4-bolt-C	
40	Cap screw 1/2-13 X 1-1/2 Grade 8 Z hex head	104322	104322	104322		104322	104322	4
	Cap screw 1/2-13 X 1-1/2 ASTM A574 socket head	–	–	–	21908	–	–	
41	Lockwasher (1/2 Z)	11026	11026	11026	11026	11026	11026	4
58	Manifold	24779	–	25539	–	–	25664	1
59	O-ring	13838	13838	25366	78312	12273	12465	1
60	Cap screw 7/16 - 14 X 2 ASTM A574 socket head	21144	–	–	–	29631	–	4
	Cap screw (early) 3/8 - 16 X 1-1/2 ASTM A574 socket head			13544			13544	4
	Cap screw (current) 3/8 - 16 X 1-1/4 ASTM A574 socket head	–	–	13827	–	–	13827	4
61	Cap screw 7/16-14 X 3 ASTM A574 Z socket head	21134	21134			–	–	4
	Cap screw 3/8-16 X 2-3/4 ASTM A574 socket head	–	–	25622	–	–	–	
	Cap screw 3/8-16 X 4 ASTM A574 socket head	–	–	–	29630	–	–	
	Cap screw 3/8-16 X 3 ASTM A574 socket head						13587	
62	Brake valve assembly	81712	81984	81715		–	81719	1
62A	Brake valve block	–	–	–	26125	27403	29576	1
62B	Brake valve cartridge	–	–	–	26126	27258	29598	1
63	Hose assembly	25749	25749	25749	–	25952	25952	1
64	Hose assembly	13704	13707	13704	–	–	–	1
65	Adapter	25864	25864	25864	25864	25864	25864	1
66	Fitting	21163	25864	25131	31284	25302	25302	1
67	Swivel tee	25748	25748	25748	–	–	–	1
68	Connector	25302	25302	25302	26140	26140	26140	1
69	Reducer elbow	24236	24236	24236	–	–	–	1
70	Hose assembly	25750	25750	25750	25750	–	25952	1
72	Hydraulic motor	–	–	–	–	–	–	1
73	Needle valve	–	–	–	–	–	–	1
74	Tee-male branch	–	–	–	–	–	–	1
75	Cap nut	–	–	–	–	–	–	1
76	Warning tag	–	–	–	–	–	–	1
83	O-ring	21150	–	25366	–	–	12465	1
85	Tee, -4 ORB	–	29078	–	–	–	–	1

MOTOR GROUPS – PERSONNEL-HANDLING OPTION



**049/024 AND 064/032 MOTOR
TWO-SPEED PERSONNEL-HANDLING**

**051 AND 064 MOTOR
TWO-SPEED PERSONNEL-HANDLING**



**029, 034 AND 039 MOTOR
SINGLE-SPEED PERSONNEL-HANDLING**

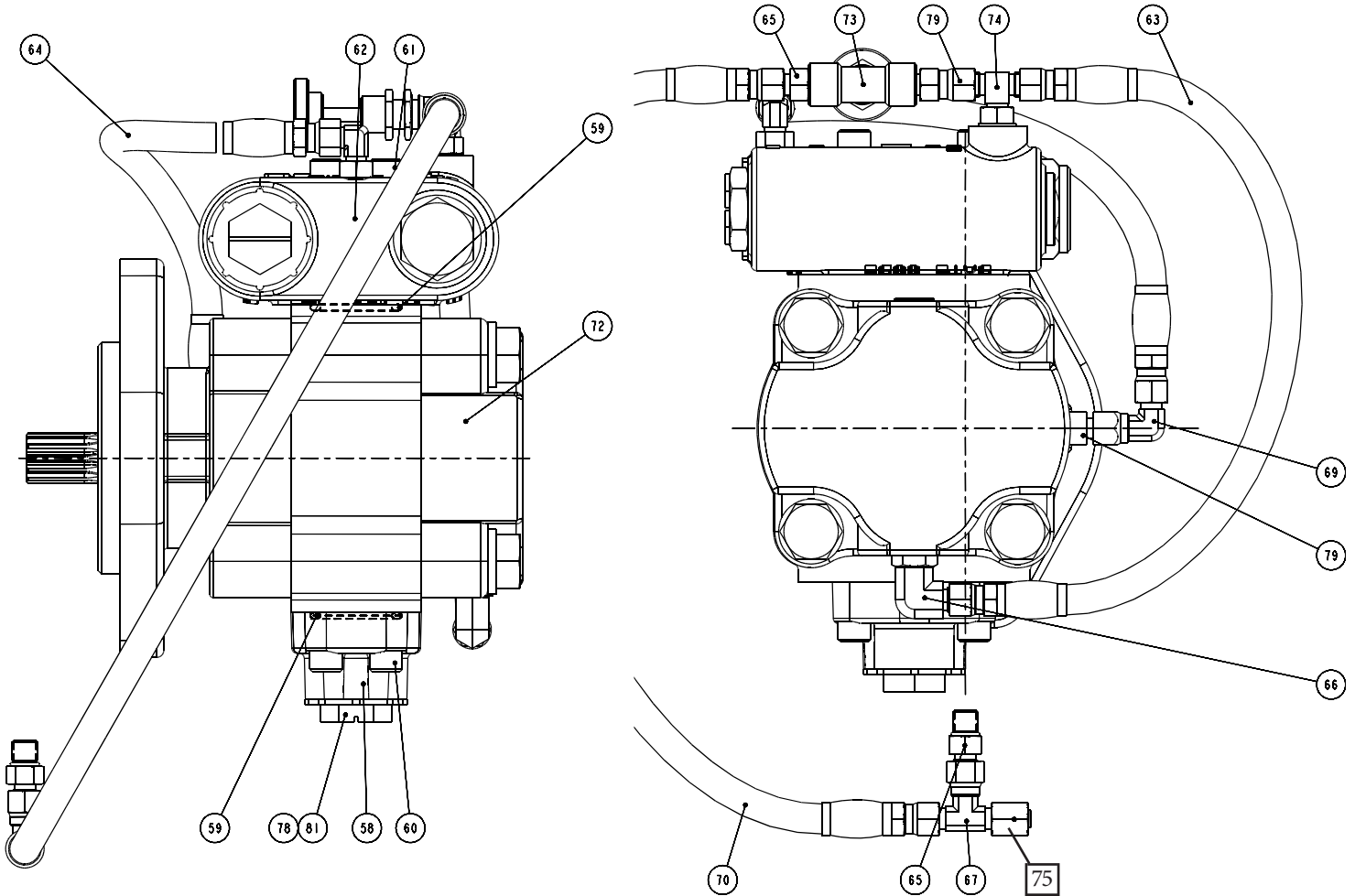
MOTOR GROUPS – PERSONNEL-HANDLING OPTION

		051/ 64	064/ 032 049/ 024	029/ 034/ 039	
ITEM NO.	DESCRIPTION	PART NO.			QTY.
40	Cap screw 1/2-13 X 1-1/2 Grade 8 Z hex head	104322	104322	104322	4
41	Lockwasher 1/2 Z	11026	11026	11026	4
58	Manifold	24779	–	25539	1
59	O-ring	13838	13838	25366	1
60	Cap screw 7/16-14 X 2 Grade 5 socket head ASTM A574 Z	21144	–	–	4
	Cap screw 3/8-16 X 1-1/2 ASTM A574 socket head (early)	–	–	13544	
	Cap screw 3/8-16 X 1-1/4 ASTM A574 socket head (current)	–	–	13827	
61	Cap screw 7/16-14 X 3 ASTM A574 Z socket head	21134	21134	–	4
	Cap screw 3/8-16 X 2-3/4 ASTM A574 socket head	–	–	25622	
62	Brake valve assembly	81712	81984	81715	1
62A	Brake valve block	–	–	–	1
62B	Brake valve cartridge	–	–	–	1
63	Hose assembly	13707	13707	13707	1
64	Hose assembly	13704	13704	13704	1
65	Adapter	25864	25864	25864	1
66	Fitting	21165	25302	25131	1
67	Swivel tee	25748	25748	25748	1
68	Connector	24784	24784	24784	1
69	Reducer elbow	24236	24236	24236	1
70	Hose assembly	13731	13731	13731	1
72	Hydraulic motor	–	–	–	1
73	Needle valve	25258	25258	25258	1
74	Tee-male branch	22934	22934	22934	1
75	Cap nut -4	70182	70182	70182	1
76	Warning tag	25257	25257	25257	1
83	O-ring	21150	–	25366	1
85	Tee, -4 ORB	–	29078	–	1

NOTE: These drawings are standard configurations. Verify hoses, fittings, and cap screws using tables found in the back sections of this publication.

HYDRAULIC MOTOR ASSEMBLY

Part number 65323

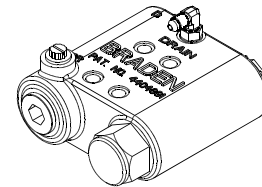
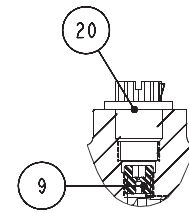
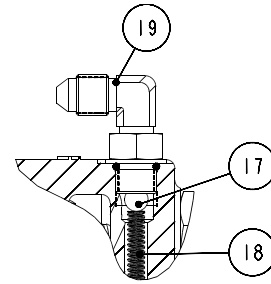
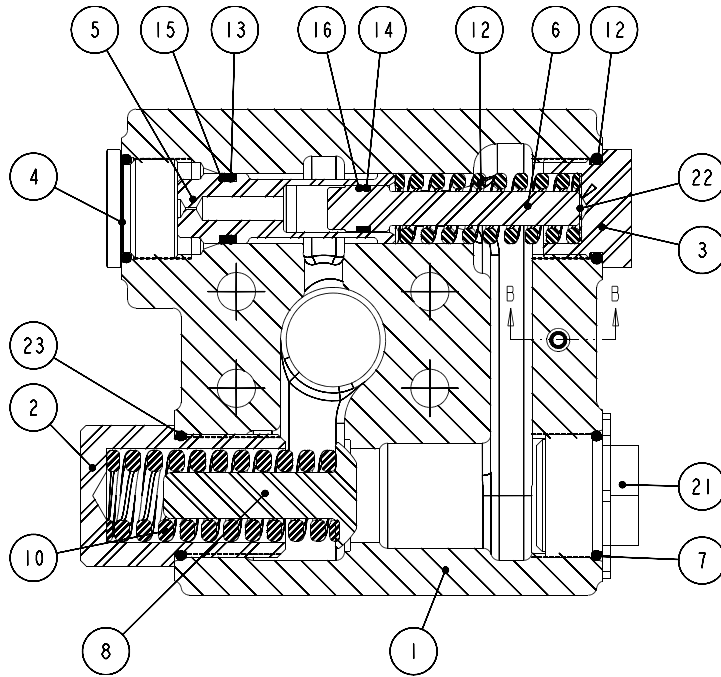


ITEM NO.	DESCRIPTION	PART NO.	QTY.
58	Split flange adapter	25539	1
59	O-ring	25366	2
60	Cap screw	13827	4
61	Cap screw	25622	4
62	Brake valve assembly	84739	1
63	Hose assembly	25749	1
64	Hose assembly	25935	1
65	Adapter	25864	1
66	Elbow/O-ring	25131	1
67	Swivel tee	25748	1
69	Swivel nut 90-deg. elbow	26140	1

ITEM NO.	DESCRIPTION	PART NO.	QTY.
70	Hose assembly	25749	1
72	Hydraulic motor, gear	25385	1
73	Needle valve	103936	1
74	Tee, -4 ORB	29078	1
75	16445-4 Cap nut	70182	1
76	Warning tag	25257	1
77	.035 Soft steel wire	94058	.5
78	Shipping plug	25487	1
79	Adapter	26001	1
81	O-ring	24186	1
82	Adapter - 40RB/-4JIC swivel	103947	1

BRAKE VALVE ASSEMBLY

Part number 84739

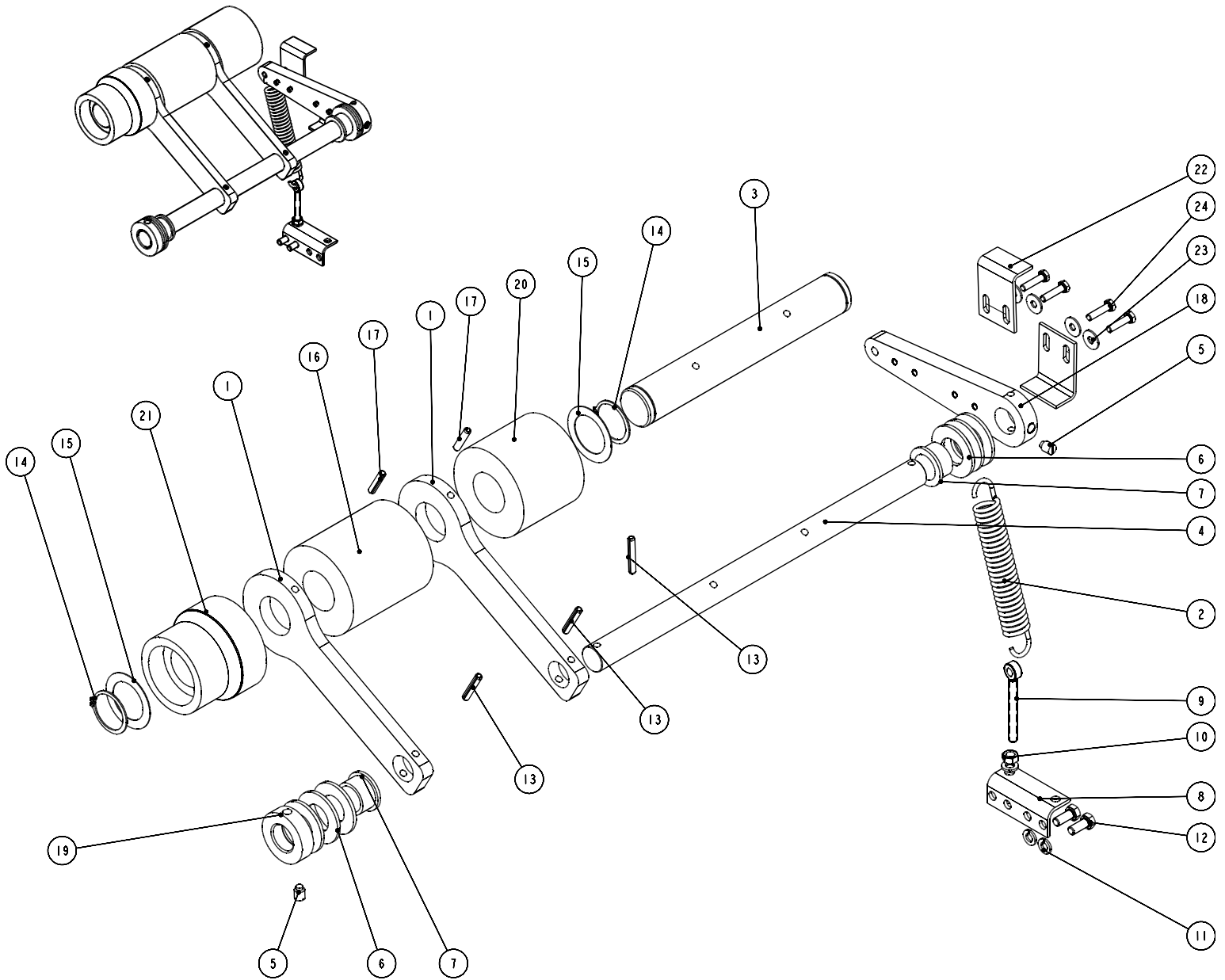


ITEM NO.	DESCRIPTION	PART NO.	QTY.
1	Brake valve housing	25517	1
2	Relief valve retainer	104384	1
3	Spring retainer	24183	1
4	Plug	22450	1
5	Spool	24184	1
6	Damper piston	24185	1
7	O-ring	24186	2
8	Back pressure poppet	104379	1
9	Pilot orifice	24200	1
10	Die spring	104385	1
11	Spool spring	24192	1
12	O-ring	23601	2
13	O-ring	24193	1
14	O-ring	24194	1
15	Backup ring	24195	1
16	Backup ring	24196	1
17	Ball, steel	21158	1
18	Compression spring	25480	1
19	Elbow fitting	25302	1
20	Shipping plug, hydraulic	25403	1
21	Shipping plug	25487	1
22	Shim, valve spring	25661	-

BRAKE VALVES	
FLANGE	PART NO.
1-1/4-inch, code 61	81712
1-inch, code 61	81715
3/4-inch, code 62	81719
1-1/4-inch, code 61	81984
Seal kit	61567

TENSION ROLLER GROUP

Part number 65167



ITEM NO.	DESCRIPTION	PART NO.	QTY.
1	Tension roller arm	111257	2
2	Tension spring	101879	1
3	Shaft, tension roller	111244	1
4	Tension arm shaft	111243	1
5	Setscrew, half dog point	101894	2
6	Washer	40162	5
7	Bushing, roller	101730	2
8	Spring anchor	101893	1
9	Rod end, roller	111255	1
10	Nut, hex	69644	2
11	Lockwasher	11024	2
12	Cap screw HM08-1.25 20 Grade 8	112158	2

ITEM NO.	DESCRIPTION	PART NO.	QTY.
13	Rollpin	18055	3
14	21-RD6-1 Snap ring	12035	2
15	1463002 Thrust race	11894	2
16	Roller	101873	1
17	Rollpin	11836	2
18	Lever arm	111758	1
19	Collar	102687	1
20	Roller	111248	1
21	Roller	111766	1
22	Bracket, limit switch	108536	2
23	M6 flat washer	111759	4
24	Cap screw, metric	104742	4
25	Plain washer PM8 HRD Z 16	112159	2

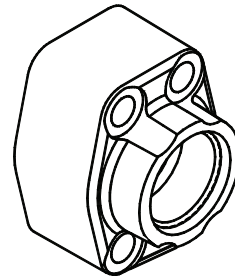
FASTENERS, ADAPTERS, AND HOSE ASSEMBLIES

CAP SCREWS AND LOCKWASHERS

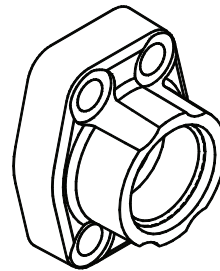
PART NO.	DESCRIPTION
29631	5/16 NC X 3 Grade 8, socket head
21654	3/8 NC X 3-1/2 Grade 8, socket head
25622	3/8 NC X 2-3/4 Grade 8, socket head
29630	3/8 NC X 4 Grade 8, socket head
13587	3/8 NC X 3 Grade 8, socket head
13544	3/8 NC X 1-1/2 Grade 8, socket head (early)
13827	3/8 NC X 1-1/4 Grade 8, socket head (current)
21135	7/16 NC X 1-1/2 Grade 8 Z socket head
104318	7/16 NC X 1-3/4 Grade 8 Z hex head
21144	7/16 NC X 2 Grade 8 Z socket head
21134	7/16 NC X 3 Grade 8 Z socket head
101150	7/16 NC X 3 3/4 Grade 8 Z socket head
104174	1/2 NC X 1-1/4 Grade 8 Z hex head
104322	1/2 NC X 1-1/2 Grade 8 Z hex head
21908	1/2 NC X 1-1/2 Grade 8 Z socket head
29855	1/2 NC X 2 Grade 8 Z hex head
103249	5/8 NC X 1-3/4 Grade 8 Z hex head
11026	Lockwasher 1/2 split, Z
102423	Lockwasher 5/8 split, Z

SPLIT FLANGE ADAPTER

PART NO.	DESCRIPTION
25539	Split flange adapter



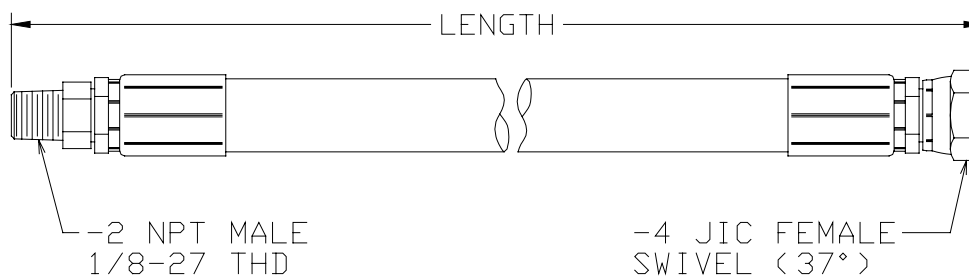
EARLY – Use socket head cap screws 13544.



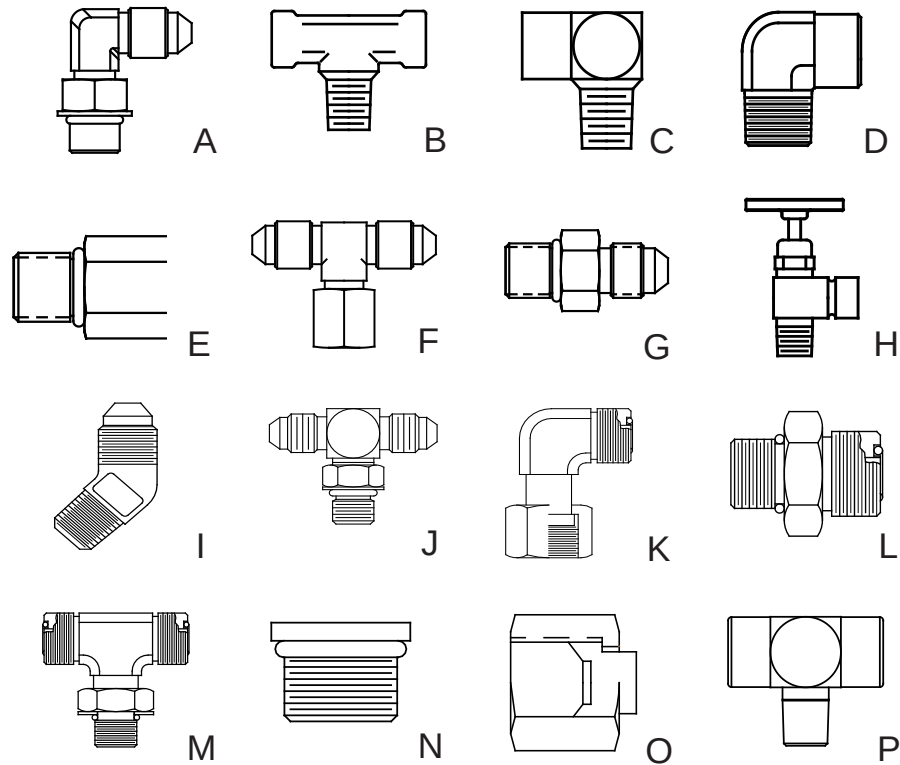
CURRENT – Use socket head cap screws 13827.

HOSE ASSEMBLIES

PART NO.	LENGTH	DESCRIPTION
13710	8 inches	NPT -2 to JIC -4
13711	10 inches	NPT -2 to JIC -4
13704	12 inches	NPT -2 to JIC -4
13706	16 inches	NPT -2 to JIC -4
13707	17 inches	NPT -2 to JIC -4
13731	22 inches	NPT -2 to JIC -4
24948	30 inches	NPT -2 to JIC -4
25750	17 inches	JIC -4 both ends
25952	20 inches	JIC -4 both ends
25749	22.5 inches	JIC -4 both ends
106269	14 inches	ORFS swivel -8
106270	17 inches	ORFS swivel -8



FITTINGS



ID	DESCRIPTION	PART NO.
A	Elbow -4 JIC to -4 ORB	25302
A	Elbow -4 JIC to -6 ORB	25131
B	Tee, 1/8-27 NPT-F run to 1/8-27 NPT-M branch	22934
C	Street elbow, reducer, 1/4-18-M to 1/8-27-F	24236
D	Street elbow, 1/8-27	13708
E	Adapter, -4 ORB to -2 NPT-F	24784
F	Swivel tee, -4 JIC M run x -4 JIC F swivel branch	25748
G	Adapter, -4 JIC to -4 ORB	25864
G	Adapter, -4 JIC to -6 ORB	31284
H	Needle valve	25258
I	Elbow (45°) -2 NPT to -4 JIC	21165
I	Elbow (90°) -2 NPT to -4 JIC	21163
J	Tee, -4 ORB to -4 JIC	29078
K	Elbow, ORFS swivel	100945
L	Adapter, -4 ORB to -6 ORFS	100946
M	Tee, -4 ORFS to -6 ORB	102632
N	Plug, -4 ORB	69325
O	Cap, -4 JIC	70182
P	Tee, female pipe to male pipe -2	22934
-	Reducer pipe -4 to -2	23508
-	Elbow JIC swivel -4/4	26140

THIS PAGE INTENTIONALLY LEFT BLANK

METRIC CONVERSION TABLE

English to Metric			Metric to English		
LINEAR					
inches (in.)	X 25.4	= millimeters (mm)	millimeters (mm)	X 0.03937	= inches (in.)
feet (ft.)	X 0.3048	= meters (m)	meters (m)	X 3.281	= feet (ft.)
miles (mi.)	X 1.6093	= kilometers (km)	kilometers (km)	X 0.6214	= miles (mi.)
AREA					
inches ² (sq.in.)	X 645.15	= millimeters ² (mm ²)	millimeters ² (mm ²)	X 0.000155	= inches ² (sq.in.)
feet ² (sq.ft.)	X 0.0929	= meters ² (m ²)	meters ² (m ²)	X 10.764	= feet ² (sq.ft.)
VOLUME					
inches ³ (cu.in.)	X 0.01639	= liters (l)	liters (l)	X 61.024	= inches ³ (cu.in.)
quarts (qts.)	X 0.94635	= liters (l)	liters (l)	X 1.0567	= quarts (qts.)
gallons (gal.)	X 3.7854	= liters (l)	liters (l)	X 0.2642	= gallon (gal.)
inches ³ (cu.in.)	X 16.39	= centimeters ³ (cc)	centimeters3 (cc)	X 0.06102	= inches ³ (cu.in.)
feet ³ (cu.ft.)	X 28.317	= liters (l)	liters (l)	X 0.03531	= feet ³ (cu.ft.)
feet ³ (cu.ft.)	X 0.02832	= meters ³ (m ³)	meters3 (m3)	X 35.315	= feet ³ (cu.ft.)
fluid ounce (fl.oz.)	X 29.57	= millileters (ml)	milliliters (ml)	X 0.03381	= fluid ounce (fl.oz.)
MASS					
ounces (oz.)	X 28.35	= grams (g)	grams (g)	X 0.03527	= ounces (oz.)
pounds (lbs.)	X 0.4536	= kilograms (kg)	kilograms (kg)	X 2.2046	= pounds (lbs.)
tons (2000 lbs.)	X 907.18	= kilograms (kg)	kilograms (kg)	X 0.001102	= tons (2000 lbs.)
tons (2000 lbs.)	X 0.90718	= metric tons (t)	metric tons (t)	X 1.1023	= tons (2000 lbs.)
tons (long) (2240 lbs.)	X 1013.05	= kilograms (kg)	kilograms (kg)	X 0.000984	= tons (long) (2240 lbs.)
PRESSURE					
inches Hg (60°F)	X 3600	= kilopascals (kPa)	kilopascals (kPa)	X 0.2961	= inches Hg (60°F)
pounds/sq.in. (PSI)	X 6.895	= kilopascals (kPa)	kilopascals (kPa)	X 0.145	= pounds/sq.in. (PSI)
pounds/sq.in. (PSI)	X 0.0703	= kilograms/sq.cm. (kg/cm ²)	kilograms/sq.cm. (kg/cm2)	X 14.22	= pounds/sq.in. (PSI)
pounds/sq.in. (PSI)	X 0.069	= bars	bars	X 14.5	= pounds/sq.in. (PSI)
inches H ₂ O (60°F)	X 0.2488	= kilopascals (kPa)	kilopascals (kPa)	X 4.0193	= inches H ₂ O (60°F)
bars	X 100	= kilopascals (kPa)	kilopascals (kPa)	X 0.01	= bars
POWER					
horsepower (hp)	X 0.746	= kilowatts (kW)	kilowatts (kW)	X 1.34	= horsepower (hp)
ft.-lbs./min.	X 0.0226	= watts (W)	watts (W)	X 44.25	= ft.-lbs./min.
TORQUE					
pound-inches (in.-lbs.)	X 0.11298	= newton-meters (N-m)	newton-meters (N-m)	X 8.851	= pound-inches (in.-lbs.)
pound-feet (ft.-lbs.)	X 1.3558	= newton-meters (N-m)	newton-meters (N-m)	X 0.7376	= pound-feet (ft.-lbs.)
pound-feet (ft.-lbs.)	X .1383	= kilograms/meter (kg-m)	kilogram/meter (kg-m)	X 7.233	= pound-feet (ft.-lbs.)
VELOCITY					
miles/hour (m/h)	X 0.11298	= kilometers/hour (km/hr)	kilometers/hour (km/hr)	X 0.6214	= miles/hour (m/h)
feet/second (ft./sec.)	X 0.3048	= meter/second (m/s)	meters/second (m/s)	X 3.281	= feet/second (ft./sec.)
feet/minute (ft./min.)	X 0.3048	= meter/minute (m/min)	meters/minute (m/min)	X 3.281	= feet/minute (ft./min.)
TEMPERATURE					
°Celsius = 0.556 (°F - 32)			°Fahrenheit = (1.8°C) + 32		
COMMON METRIC PREFIXES					
mega	(M)	= 1,000,000 or 10 ⁶	deci	(d)	= 0.1 or 10 ⁻¹
kilo	(k)	= 1,000 or 10 ³	centi	(c)	= 0.01 or 10 ⁻²
hecto	(h)	= 100 or 10 ²	milli	(m)	= 0.001 or 10 ⁻³
deka	(da)	= 10 or 10 ¹	micro	(μ)	= 0.000.001 or 10 ⁻⁶

