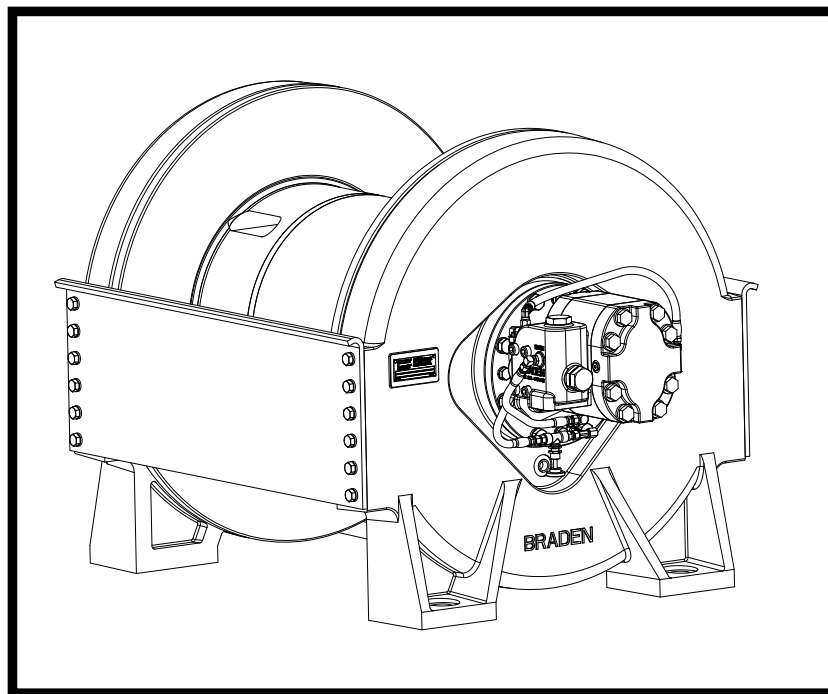


BRADEN[®]

CH280

MATERIAL LIST



Authorized Distributor:
Pacific Marine & Industrial
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PACCAR WINCH

P.O. Box 547 Broken Arrow, OK 74013
Tel 918-251-8511 / Fax 918-259-1575
www.paccarwinch.com

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TABLE OF CONTENTS

OIL RECOMMENDATION	2
MODEL CODE	3
MAIN ASSEMBLY - STANDARD	4
MAIN ASSEMBLY - AUX BRAKE	6
OVERRUNNING CLUTCH ASSEMBLY	8
BRAKE CYLINDER ASSEMBLY	9
PRIMARY PLANET CARRIER	10
OUTPUT PLANETARY CARRIER.....	11
HYDRAULIC MOTOR ASSEMBLY.....	12
BRAKE VALVE	18
RATCHET & PAWL ASSEMBLY	20
AUXILIARY BRAKE ASSEMBLY	22
METRIC CONVERSION CHART	24



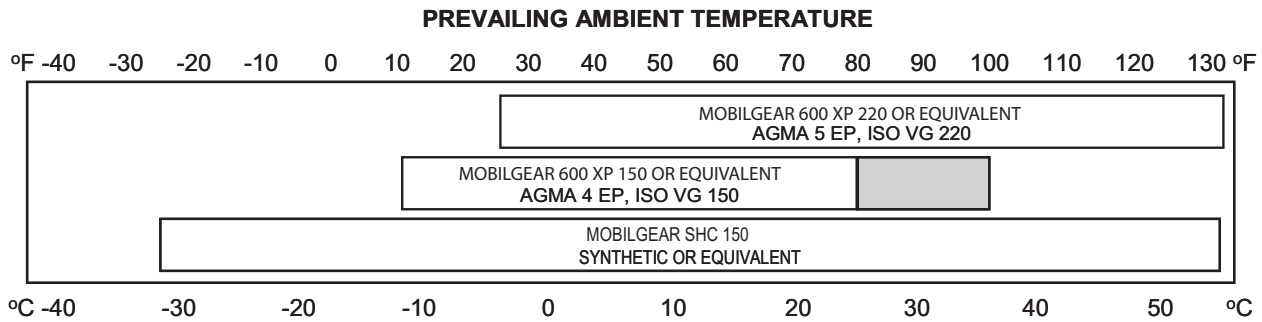
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RECOMMENDED PLANETARY GEAR OIL

Field experience, supported by engineering endurance tests, indicates 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 that is equivalent to those products listed below.



i NOTE: SHADED TEMPERATURE RANGE IN THE CHART ABOVE NOT RECOMMENDED FOR SEVERE APPLICATIONS SUCH AS: OFFSHORE CRANES, SUSTAINED FAST DUTY CYCLES OR FREQUENT LIFTING.

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

Mobil	Shell	Chevron	Texaco
Mobilgear 600 XP 150	Omala 150	Gear Compounds EP 150	Meropa 150
Mobilgear 600 XP 220	Omala 220	Gear Compounds EP 220	Meropa 220

Unless otherwise specified, it is recommended that the gear oil be changed after the first one hundred (100) hours or thirty (30) days of machine operation, then every one thousand (1,000) hours or twelve (12) months, whichever occurs first. The gear oil should also be changed whenever the ambient temperature changes significantly and an oil from a different temperature range would be more appropriate.

A warm-up procedure is recommended at each start-up and is essential at ambient temperatures below +40°F (4°C).

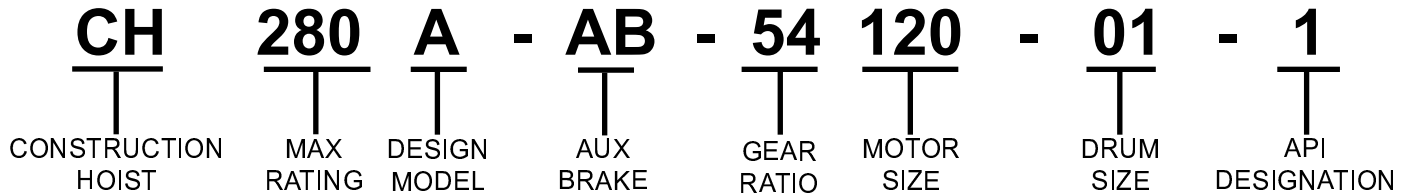
The prime mover should be run at its lowest recommended RPM with the hydraulic winch control valve in neutral allowing sufficient time to warm up the system. The winch should then be operated at low speeds, forward and reverse, several times to prime all lines with warm hydraulic oil and to circulate gear lubricant through the planetary gear sets.

If you have any questions regarding your BRADEN planetary winch, please contact the BRADEN Technical Support Department at 1-918-251-8511, Monday through Friday from 08:00 to 16:30 hours CT, or by fax at 1-918-259-1575



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EXPLANATION OF MODEL CODE



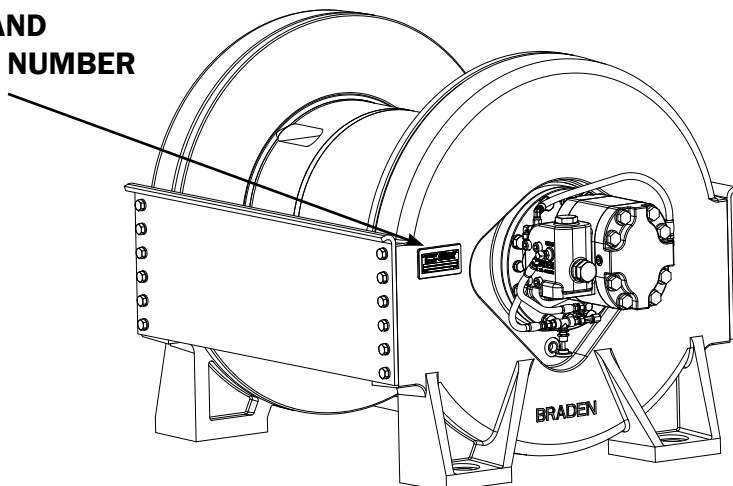
- CH** DESIGNATES CONSTRUCTION HOIST
- 280** DESIGNATES 28,000 FIRST LAYER LINE PULL
- A** DESIGNATES MODEL SERIES RELATING TO DESIGN CHANGES
- AB** DESIGNATES UNIT BUILT WITH OPTIONAL AUXILIARY BRAKE
- 54** DESIGNATE TOTAL GEAR REDUCTION; 54:1
- 120** DESIGNATES HYDRAULIC MOTOR DISPLACEMENT 12.0 CUBIC INCHES/ REV
- 01** DESIGNATES DRUM SIZE
- 1** API DESIGNATION (P= OPTIONAL RATCHET & PAWL ASSEMBLY, G= OPTIONLA GROOVED DRUM)

FOR BEST RESULTS, ALWAYS USE GENUINE BRADEN REPLACEMENT PARTS

TO ORDER PARTS:

1. List model and serial numbers of the winch.
2. Refer to drawings and select the component(s) needed and list the item number(s).
3. Find item number(s) on material list; show part number, description and quantity required on your order.
4. Refer to parts price list and show price for each part or assembly.

**MODEL NUMBER
AND
SERIAL NUMBER**



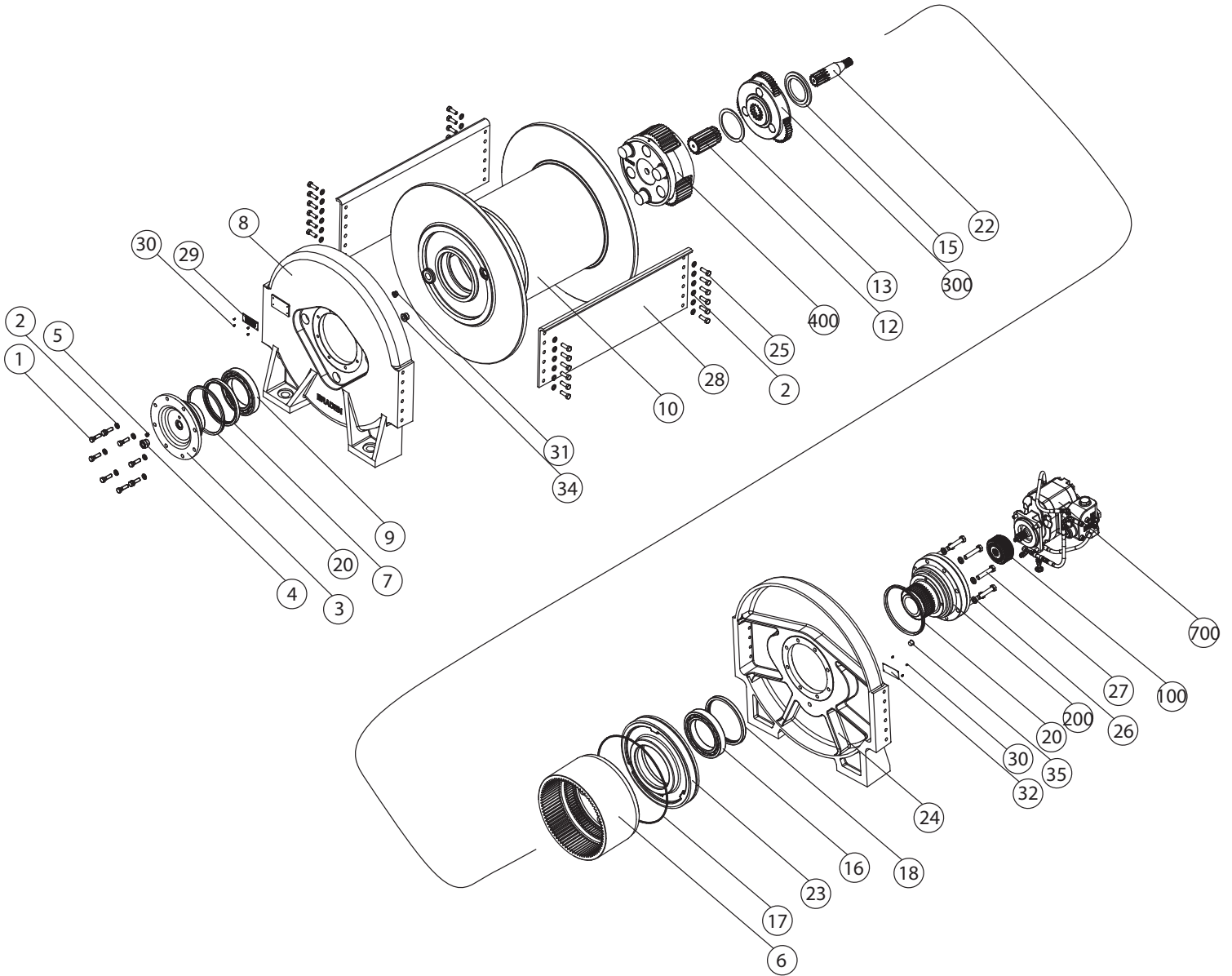
**MODEL NUMBER AND
SERIAL NUMBER**

When information on a hoist is needed, always refer to the model number and serial number. Both are located on the top of the motor side end plate as indicated.



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MAIN HOIST ASSEMBLY- STANDARD



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MAIN HOIST ASSEMBLY- STANDARD

ITEM	PART	DESCRIPTION	QTY.
1	104323	Capscrew, HEX (1/2-13 x 1 3/4 GD8)	8
2	11026	Lockwasher (1/2-inch)	32
3	106597	Bearing Support	1
4	70193	Sight Gauge	1
5	18062	Relief Valve	1
6	106641	Ring Gear	1
7	10427	Seal	1
8	106671	End Plate, Support	1
9	24487	Ball Bearing	1
10	106682	Cable Drum (-01)	1
	83539	Cable Drum (-01P)	
	83536	Cable Drum (-02)	
12	106621	Output Sun Gear	1
13	104365	Thrust Washer	1
15	106670	Thrust Washer	1
16	106673	Ball Bearing	1
17	103317	O'Ring	1
18	70167	Seal	1
20	103393	V-Ring Seal	2
22	106626	Primary Sun Gear SAE C	1
	107983	Primary Sun Gear SAE D	
23	106625	Drum Closure	1
24	106642	End Plate, Motor	1
25	103314	Capscrew, Special	24
26	102423	Lockwasher, 5/8-inch	8
27	23578	Capscrew, Hex 5/8-18 x 3 1/4 GD8	8
28	106911	Tie Plate (-02)	2
	106647	Tie Plate (-01/ -01P)	2
29	NSS	Approval Plate	1
30	11842	Drive Screw	8
31	32411	Plug, O'Ring Flush	1
32	NSS	Nameplate	1
33	24494	Cable Wedge (NS)	1
34	22450	Plug	1
35	70686	Closure	1
100	-	Overrunning Clutch Assembly - see page 8	1
200	-	Brake Cylinder Assembly- see page 9	1
300	83483	Primary Planet Carrier Assembly- see page 10	1
400	83484	Output Planet Carrier Assembly- see page 11	1
700	-	Hydraulic Motor Assembly- see pages 12-15	1

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MAIN HOIST ASSEMBLY WITH AUXILIARY BRAKE

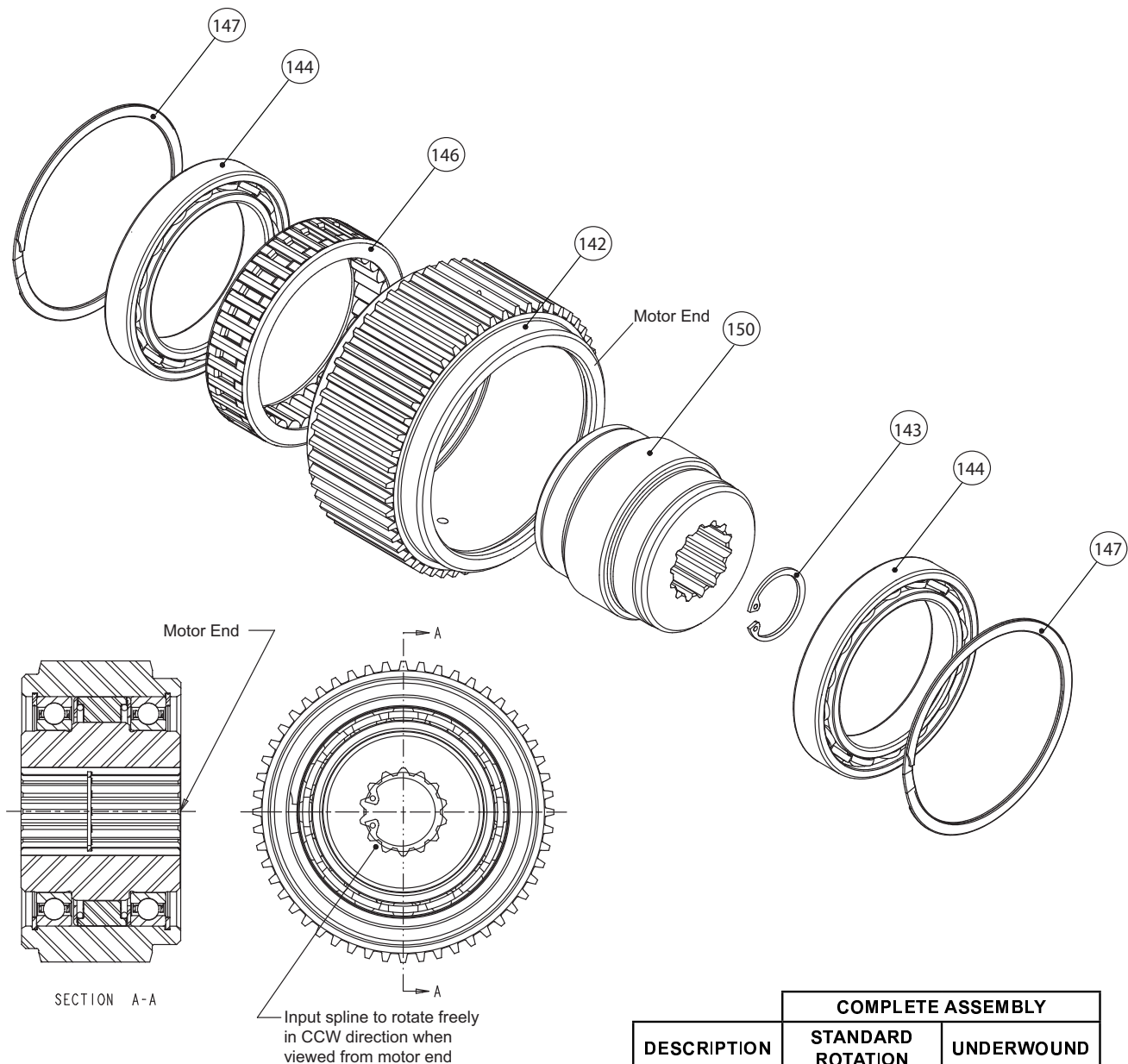
ITEM	PART	DESCRIPTION	QTY.
1	106721	Capscrew, Hex (5/8 - 13 X 2 1/2 GD8 Z)	8
3	100860	Washer, Hardened (5/8)	8
6	106641	Ring Gear	1
8	106702	End Plate, Support	1
9	27152	Lockwasher (3/8)	2
10	106710	Cable Drum (-01)	1
	108071	Cable Drum (-02)	
20	103393	V-Ring Seal	2
16	106673	Ball Bearing	1
17	103317	O'Ring	1
18	70167	Seal	1
23	106625	Drum Closure	1
24	106642	End Plate, Motor	1
26	102423	Lockwasher (5/8)	8
27	23578	Capscrew, Hex (5/8-18 X 3 1/4 GD8 Z)	8
28	106647	Tie Plate	2
30	11842	Drive Screw	8
32	NSS	Nameplate	1
35	70686	Closure	1
36	27989	Hose Assembly	1
37	105357	Valve, Combination	1
38	11024	Lockwasher (5/16)	2
39	104307	Capscrew, Hex (5/16 - 18 X 4 GD8 Z)	2
40	29908	Cap	1
41	70109	Male Elbow	1
42	25869	Hose Clamp	2
43	70273	Hose Assembly	1
44	69526	Hose Assembly	1
45	70100	Adapter	1
46	106723	Tie Plate	1
47	104135	Capscrew, Hex (3/8 - 16 X 3/4 GD8 Z)	2
48	70100	Adapter	3
49	29046	Elbow, 90°	2
100	-	Overrunning Clutch Assembly (Page 8)	1
200	-	Brake Cylinder Assembly (Page 9)	1
700	-	Hydraulic Motor Assembly (Page 12-15)	1
800	83503	Auxiliary Brake Assembly (Page 20)	1

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OVERRUNNING CLUTCH ASSEMBLY



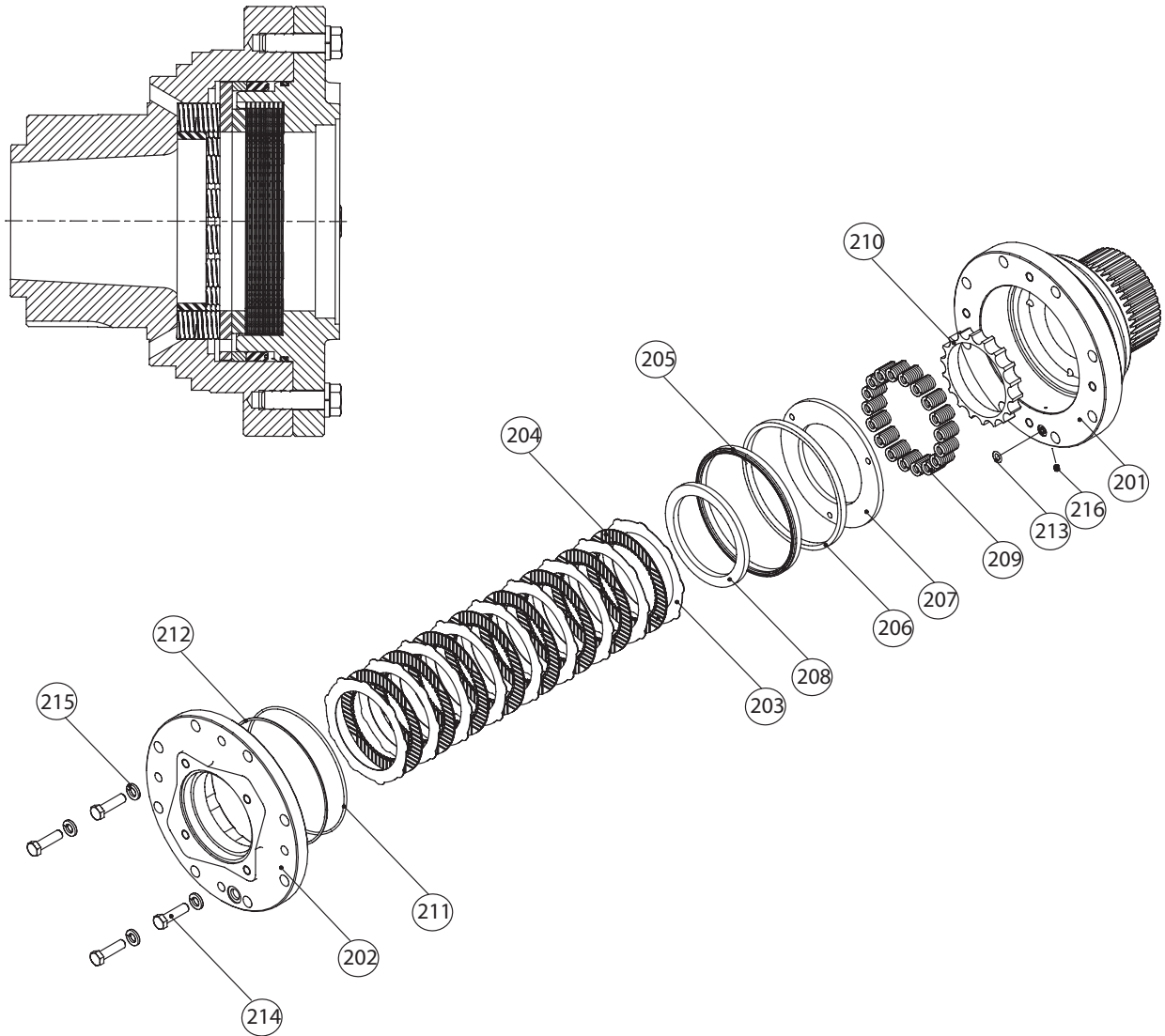
DESCRIPTION	COMPLETE ASSEMBLY	
	STANDARD ROTATION	UNDERWOUND
SAE "C"	82908	83148
SAE "D"	82907	83170

ITEM	PART NO	DESCRIPTION	QTY
142	NSS	Outer Race	1
143	24506	Retaining Ring (Assembly 82908) SAE "C"	1
	28734	Retaining Ring (Assembly 82907) SAE "D"	
144	103104	Ball Bearing	1
146	NSS	Over-running Clutch	1
147	103110	Retaining Ring	2
150	NSS	Inner Race	1

NSS - Not Serviced Separately

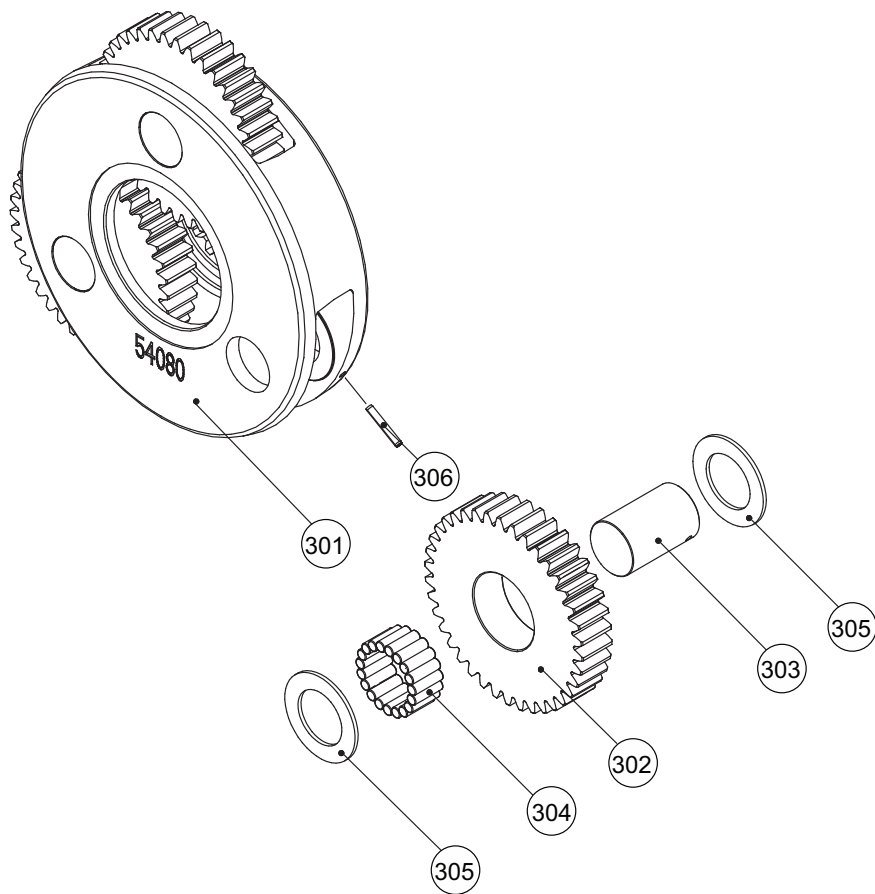


BRAKE CYLINDER ASSEMBLY



ITEM	PART	DESCRIPTION	QTY.
201	106599	Brake Cylinder	1
202	106652	Motor Adapter - SAE C	1
	107954	Motor Adapter - SAE D	
203	102954	Brake Disc	9
204	103167	Friction Disc	8
205	103441	Seal, U-Cup	1
206	25746	Piston Back-Up Ring	1
207	103168	Pressure Plate	1
208	103169	Brake Plate Spacer	1
209	24108	Brake Spring	18
210	103147	Spring Spacer	1
211	22357	O-Ring	1
212	77278	Back-Up Washer	1
213	13017	O'Ring	1
214	104323	Capscrew, Hex 1/2-13 x 1 3/4-inch GD8	4
215	11026	Lockwasher, 1/2-inch hardened	4
216	103379	Expansion Plug	1

PRIMARY PLANET CARRIER ASSEMBLY

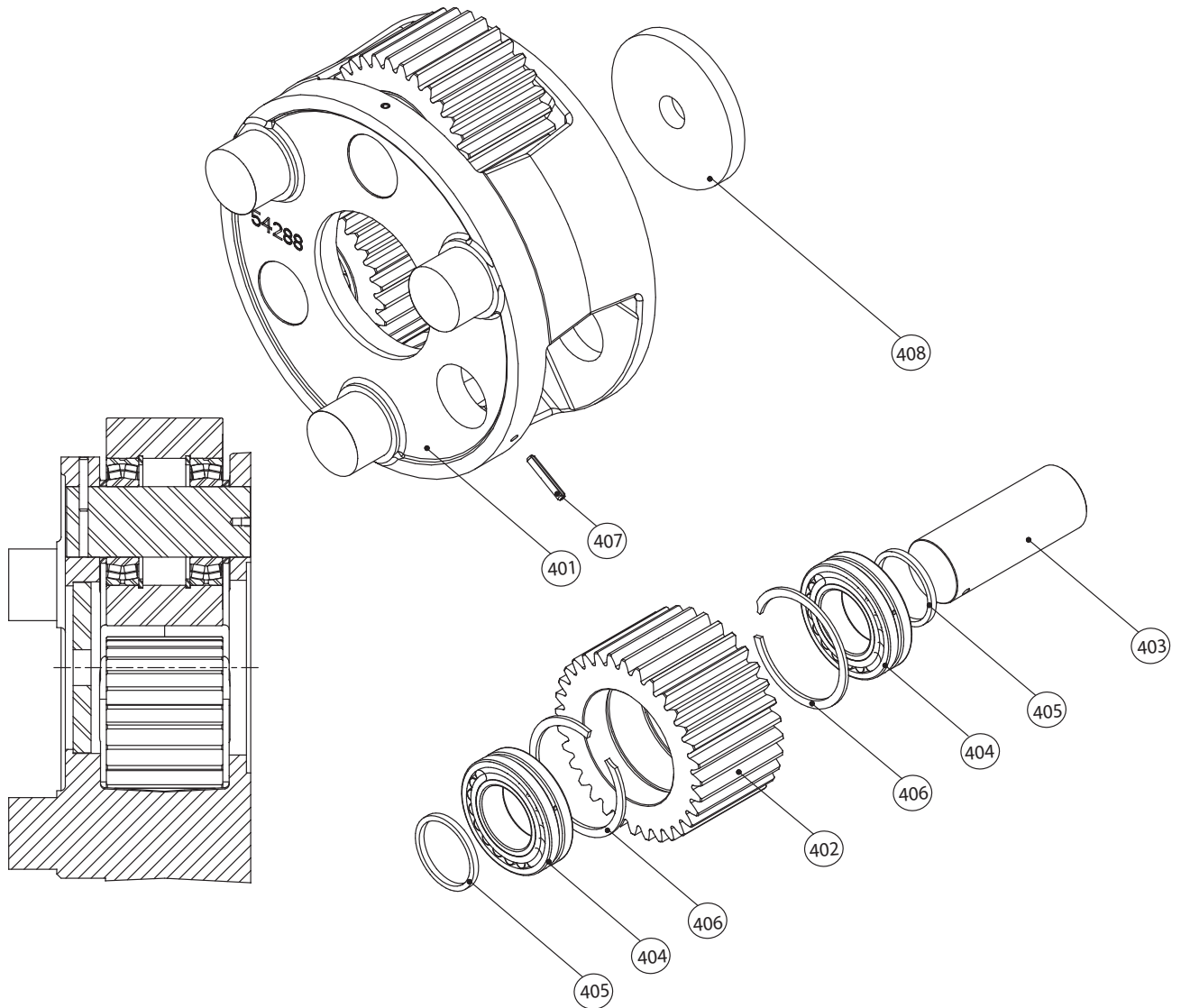


ITEM	PART	DESCRIPTION	QTY.
301	106648	Primary Planet Carrier	1
302	104151	Primary Planet Gear	3
303	104355	Primary Planet Shaft	3
304	11104	Roller	57
305	103681	Thrust Washer	6
306	24582	Spirol Pin	3



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OUTPUT PLANET CARRIER ASSEMBLY

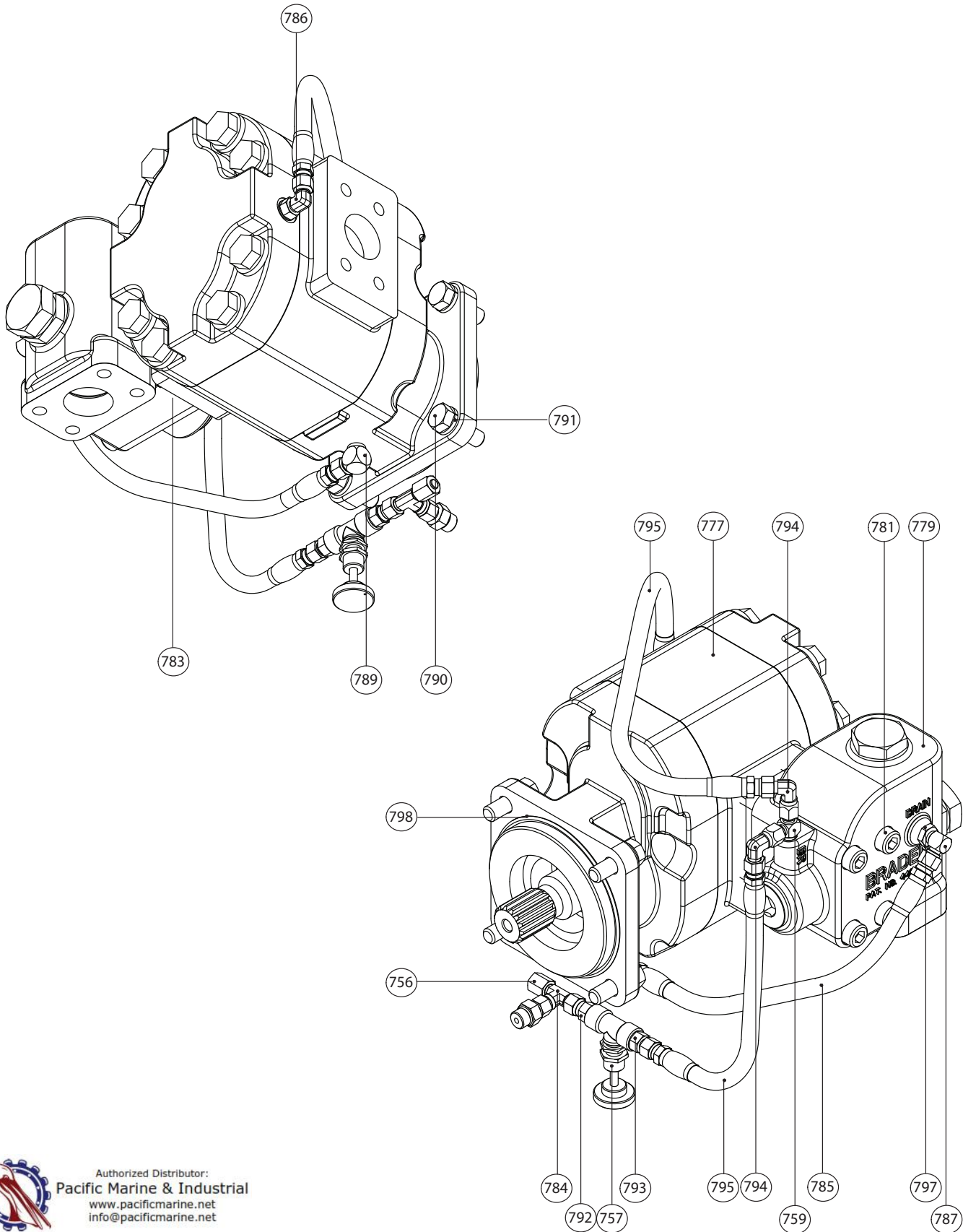


ITEM	PART	DESCRIPTION	QTY.
401	106634	Output Planet Carrier	1
402	106620	Output Planet Gear	3
403	106643	Output Planet Shaft	3
404	107715	Bearing	6
405	107713	Spacer	6
406	107716	Retaining Ring	3
407	18055	Rollpin	3
408	106649	Output Thrust Plate	1



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HYDRAULIC MOTOR ASSEMBLY, STANDARD



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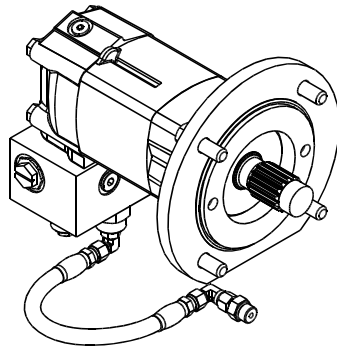
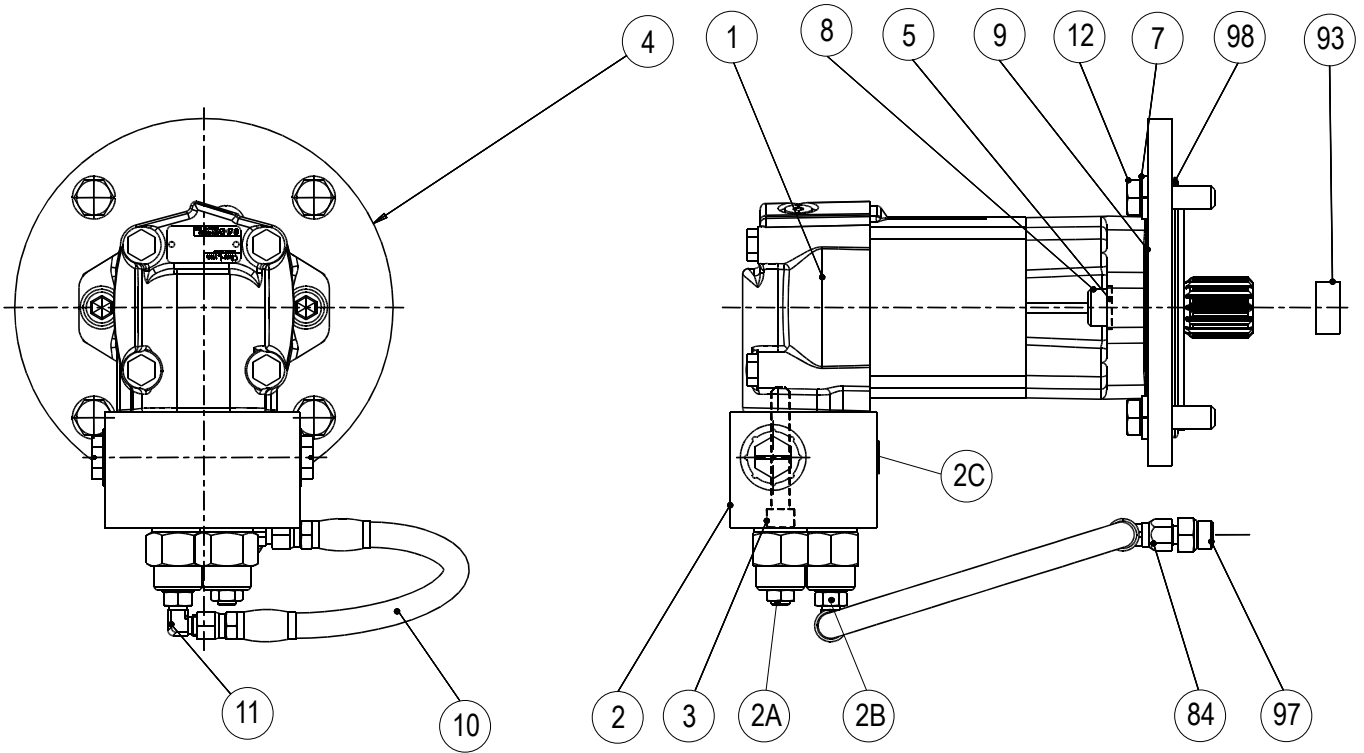
HYDRAULIC MOTOR ASSEMBLY, STANDARD

ITEM	PART	DESCRIPTION	QTY.
756	70182	Cap Nut	1
757	103936	Needle Valve	1
759	24526	Tee	1
777	25274	Hydraulic Motor (12.0 CID)	1
	25273	Hydraulic Motor (11.0 CID)	1
	25272	Hydraulic Motor (9.0 CID)	1
779	81609	Brake Valve Assembly	1
781	23690	Capscrew, Hex 1/2-13 x 4 1/2-inch	4
783	13542	O'Ring	1
784	25748	Swivel Tee	1
785	25935	Hose Assembly	2
786	25302	Elbow Fitting	1
787	21163	Elbow Fitting	1
789	31341	Elbow	1
790	104322	Capscrew, Hex head 1/2-13 x 1 1/2-inch	4
791	11026	Lockwasher, 1/2-inch	4
792	103947	Adapter	1
793	25864	Adapter	1
794	26140	Elbow	2
795	25750	Hose Assembly	1
797	31284	Adapter	1
798	10330	O'Ring	1



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HYDRAULIC MOTOR GROUP (LSHT)



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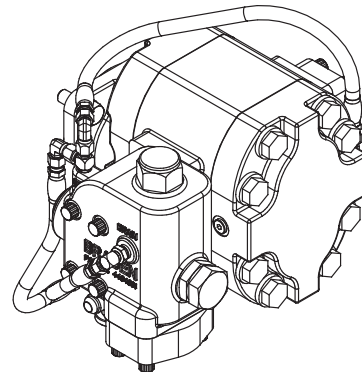
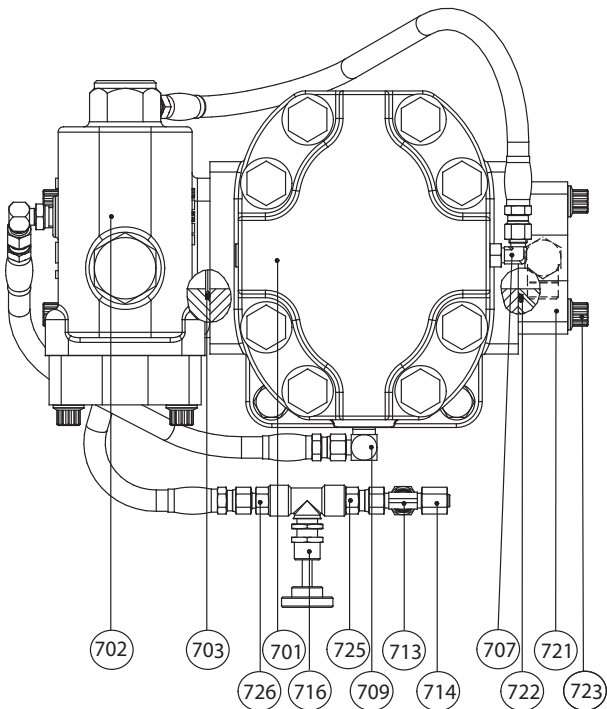
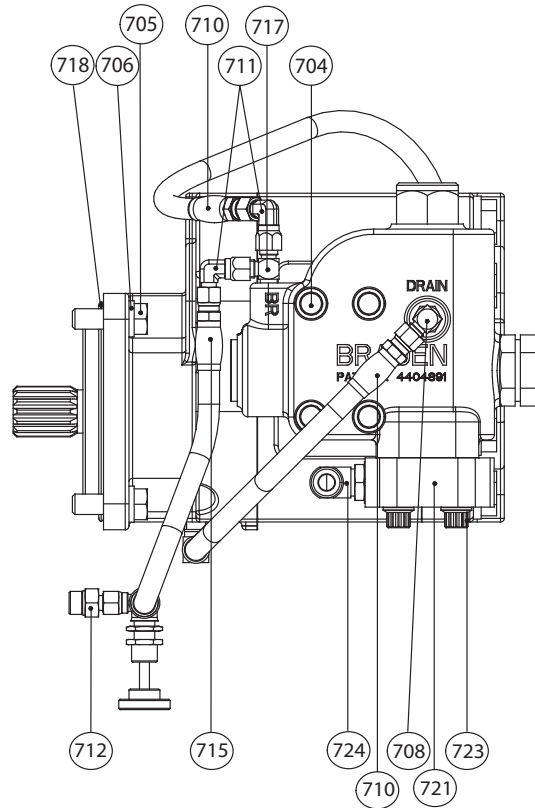
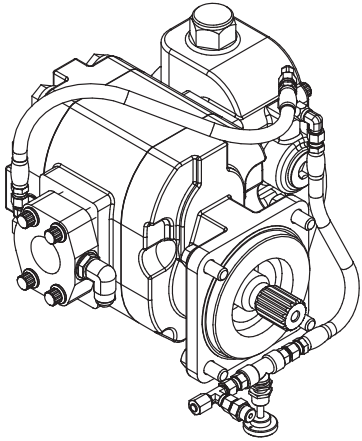
HYDRAULIC MOTOR GROUP (LSHT)

ITEM	PART NO.	DESCRIPTION	QTY
1	B688P	Gerotor Motor, LSHT 14.9 CID	1
2	82473	Brake Valve Assembly	1
2A	27258	Counterbalance Cartridge	1
2B	27259	Cavity Plug	1
2C	25665	Plug	1
3	25130	Capscrew, Socket Head 3/8 - 18 X 2-1/2 GD8	3
4	25076	Motor Adapter 4B-C To 2B-A	1
5	72144	Washer, Sealing 1/2	2
7	11026	Lockwasher, 1/2	4
8	103827	Capscrew, Socket Head 1/2 - 13 X 1-1/4 GD8 Z	2
9	23108	Gasket - Motor 2B A Mount	1
10	25935	Hose Assembly, 4 X 14	1
11	25302	Elbow Fitting, -4 ORB -4 JIC	1
12	104322	Capscrew, Hex Head 1/2 - 13 X 1-1/2 GD8 Z	4
84	106271	Elbow, JIC Swivel -4/-4	1
93	26350	Spacer	1
97	31284	Adapter, -4 JIC -6 ORB	1
98	10330	O-Ring	1



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HYDRAULIC MOTOR ASSEMBLY, UNITS EQUIPPED WITH AUX BRAKE



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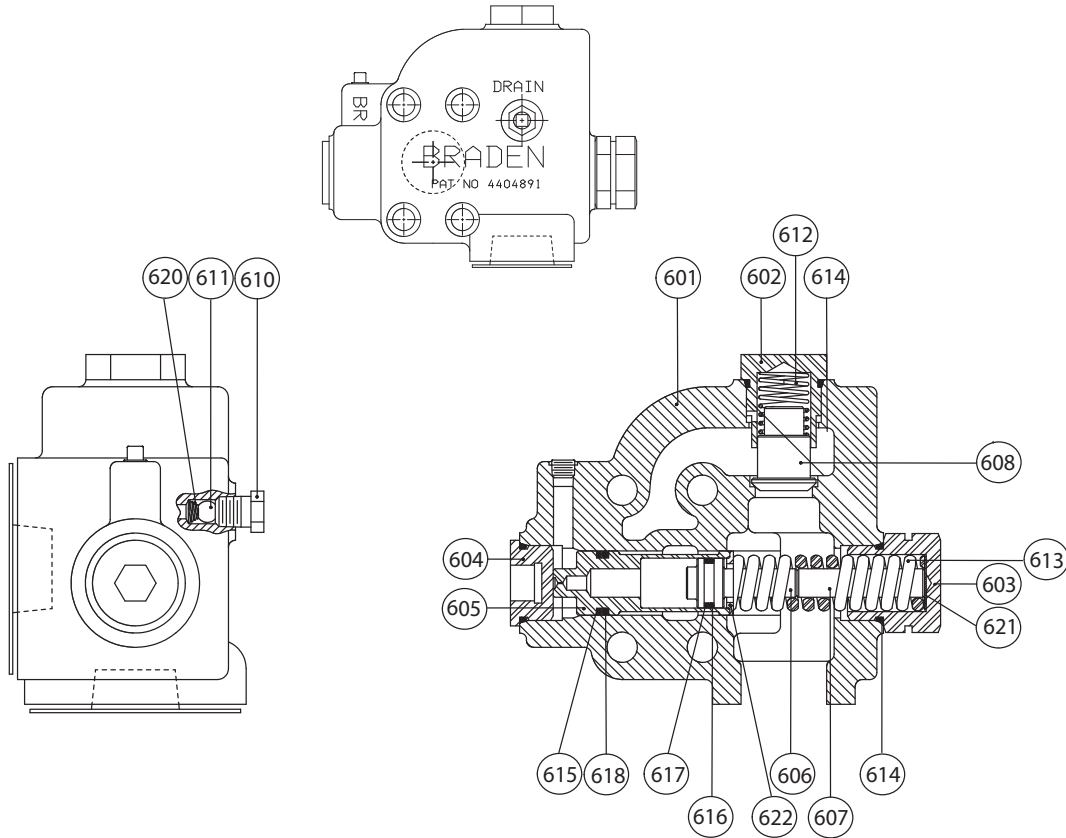
HYDRAULIC MOTOR ASSEMBLY, UNITS EQUIPPED WITH AUX BRAKE

ITEM	PART	DESCRIPTION	QTY.
701	25274	Hydraulic Motor (12.0 CID)	1
	25273	Hydraulic Motor (11.0 CID)	1
	25272	Hydraulic Motor (9.0 CID)	1
702	83133	Brake Valve Assembly	1
703	13542	O'Ring	1
704	103407	Capscrew, 12 pt 1/2-13 x 4 1/2-inch GD8	4
705	104322	Capscrew, Hex 1/2-13 x 1 1/2-inch GD8	4
706	11026	Lockwasher, 1/2-inch	4
707	25302	Elbow Fitting	1
708	21163	Elbow Fitting	1
709	31341	Elbow	1
710	25935	Hose Assembly	2
711	26140	Elbow	2
712	31284	Adapter	1
713	25748	Swivel Tee	1
714	70182	Cap Nut	1
715	25750	Hose Assembly	1
716	103936	Needle Valve	1
717	24526	Tee	1
718	10330	O'Ring	1
719	25257	Warning Tag (NS)	1
721	105245	Spacer Block	2
722	72101	O'Ring	2
723	102475	Capscrew, 12-pt 1/2-13 x 1 3/4-inch	8
724	70109	Elbow	2
725	103947	Adapter	1
726	25864	Adapter	1



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BRAKE VALVE ASSEMBLY



ITEM	PART	DESCRIPTION	QTY.
601	NSS	Brake Valve Housing	1
602	24424	Valve Spring Retainer	1
603	101016	Spring Retainer	1
604	24420	Plug	1
605	24419	Brake Valve Piston	1
606	24425	Damper Piston	1
607	101017	Damper Piston Extension	1
608	24423	Check Valve Poppet	1
610	24436	Reducer	1
611	24428	Ball, Steel	1
612	24190	Check Valve Spring	1
613	24434	Main Piston Spring	1
614	24186	O'Ring	2
615	24778	Back-Up Ring	1
616	24776	O'Ring	1
617	24777	Back-Up Ring	1
618	21123	O'Ring	1
620	25373	Check Spring	1
621	25662	Shim, Valve Spring	AR
622	101015	Spring Seat	1

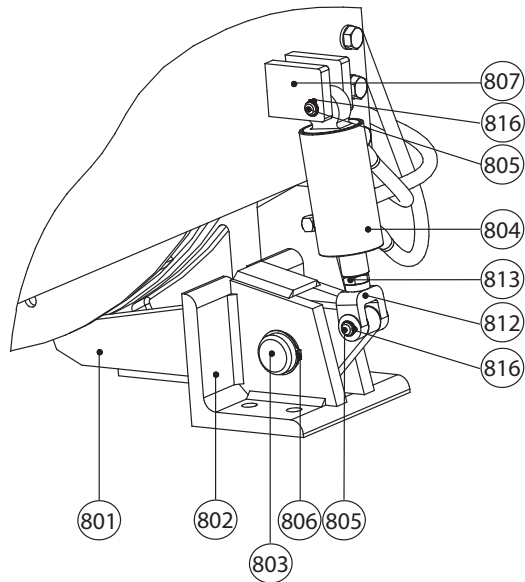
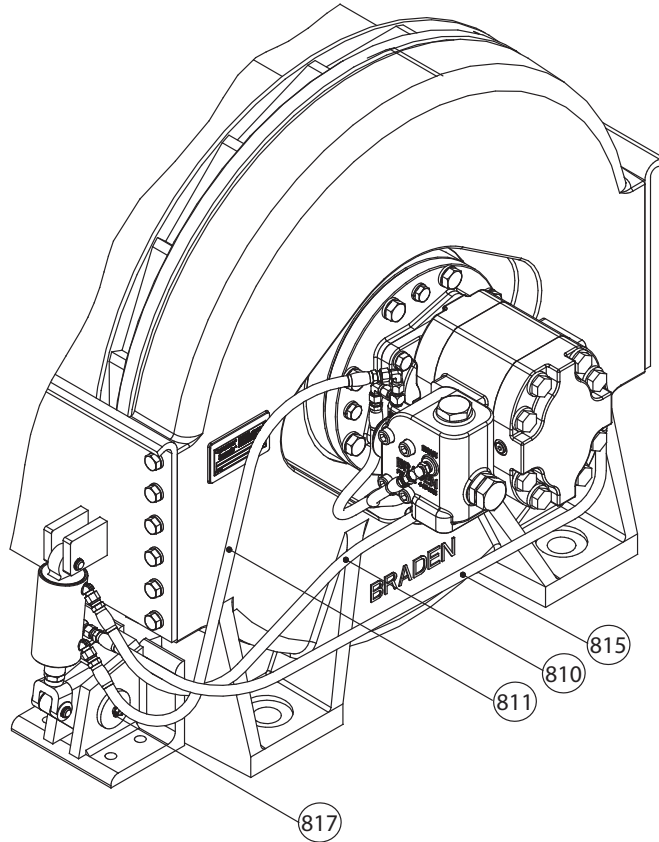
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BRAKE VALVE SEAL KIT #61616

PART	DESCRIPTION	QTY
24776	O-RING	1
21123	O-RING	1
24186	O-RING	3
24777	BACK-UP RING	1
24778	BACK-UP RING	1
13542	O-RING	1

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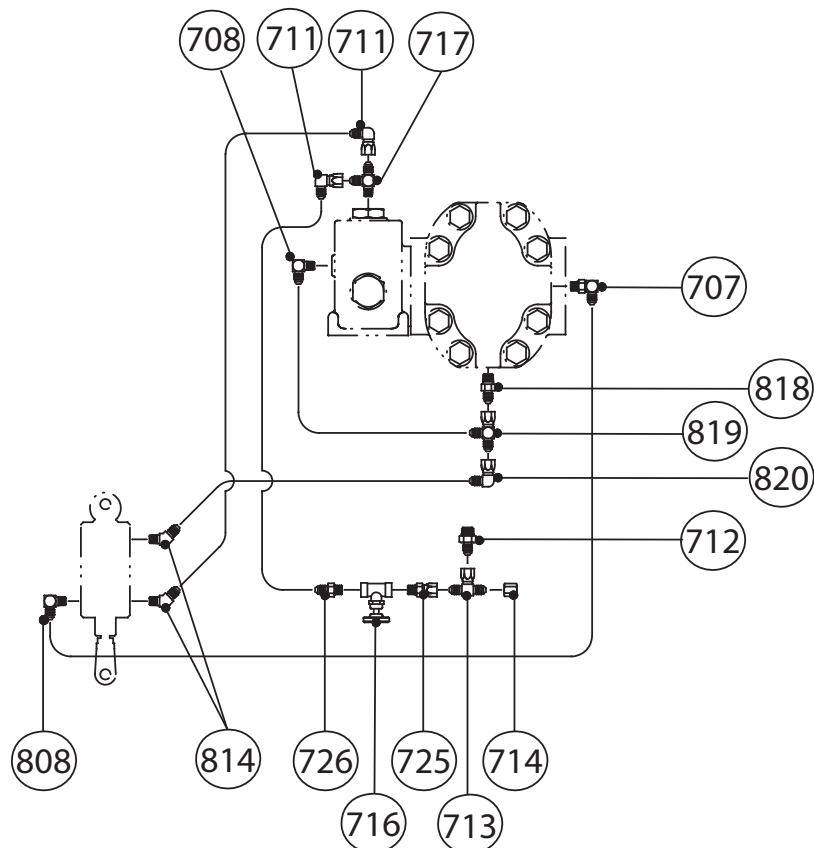
RATCHET & PAWL ASSEMBLY 64030



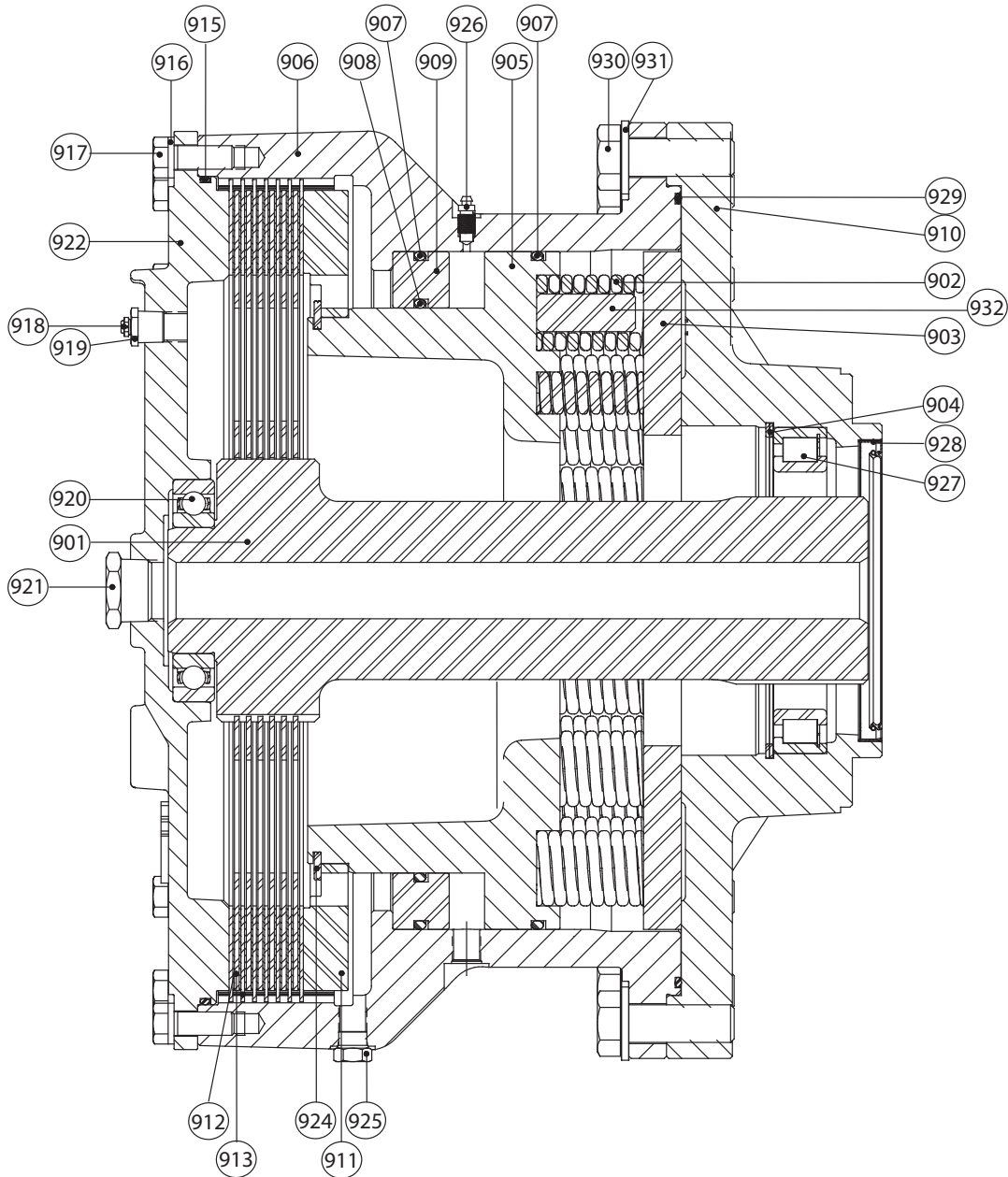
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RATCHET & PAWL ASSEMBLY 64030

ITEM	PART NO.	DESCRIPTION	QTY.
801	40155	Pawl Assembly	1
802	24871	Pivot Base	1
803	24876	Pin	1
804	81663	Cylinder Assembly	1
805	104153	Pivot Pin	2
806	12035	Snap Ring	1
807	52495	Mounting Plate	2
808	21163	Elbow	1
810	25749	Hose Assembly	1
811	34197	Hose Assembly	1
812	24882	Clevis	1
813	18004	Jam Nut 1/2-inch	1
814	21165	Elbow	2
815	40242	Hose Assembly	1
816	101082	Retaining Ring	4
817	18047	Grease Fitting	1
818	26001	Adapter	1
819	26002	Tee	1
820	26140	Elbow	1



AUXILIARY BRAKE ASSEMBLY 83503



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AUXILIARY BRAKE ASSEMBLY 83503

ITEM	PART	DESCRIPTION	QTY.
901	105596	Brake Shaft	1
902	106717	Die Spring	25
903	106706	Spring Plate	1
904	106716	Retaining Ring	1
905	106651	Piston	1
906	105157	Brake Housing	1
907	105233	O'Ring	2
908	106718	O'Ring	1
909	106707	Seal Ring	1
910	106699	Adapter Plate	1
911	106705	Pressure Plate	1
912	105134	Friction Disc	6
913	105133	Separator Plate	7
915	29296	O'Ring	1
916	102423	Lockwasher, 5/8-inch	16
917	103249	Capscrew, Hex 5/8-11 x 1 3/4-inch	16
918	18062	Relief Valve	1
919	10866	Reducer Bushing	1
920	24486	Ball Bearing	1
921	29102	Sight Gauge	1
922	105156	End Cover	1
924	106715	Retaining Ring	1
925	70117	Plug	1
926	27472	Bleeder Fitting	1
927	105232	Bearing	1
928	10427	Seal	1
929	26373	O'Ring	1
930	102597	Capscrew, 1-8 x 3-inch	16
931	101205	Washer, 1-inch	16
932	106722	Piston Stop Pin	5



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METRIC CONVERSION TABLE

English to Metric			Metric to English		
LINEAR					
inches (in.)	X 25.4	= millimeters (mm)	millimeters (mm)	X 0.3937	= 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)	centimeters ³ (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)	meters ³ (m ³)	X 35.315	= feet ³ (cu.ft.)
fluid ounce (fl.oz.)	X 29.57	= milliliters (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/cm ²)	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 X °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