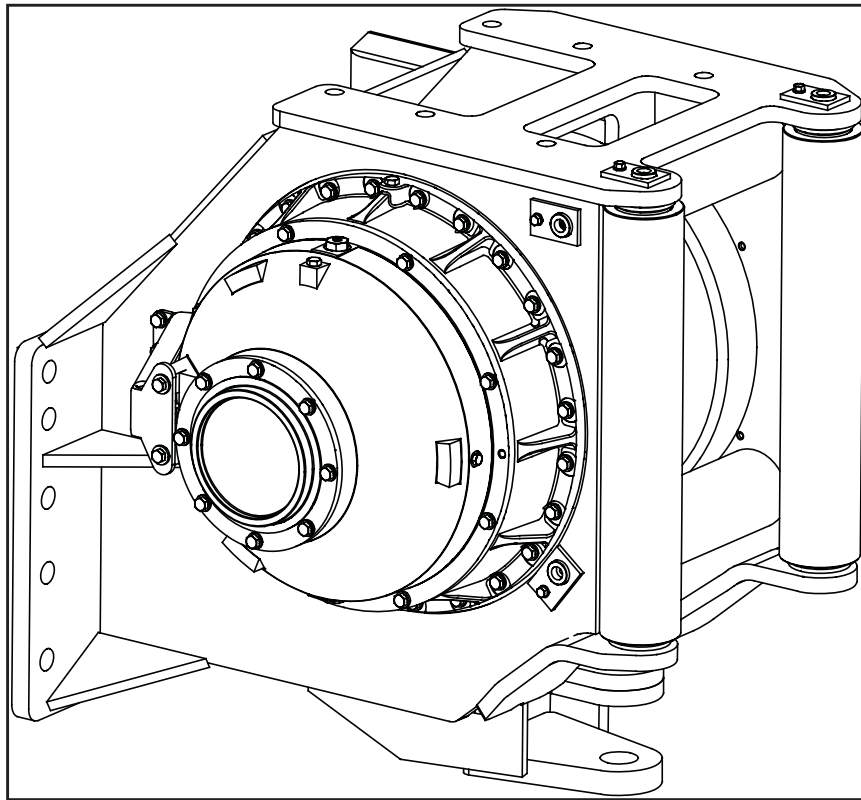


BASE WINCH PARTS LIST

MODELS PA110 AND PA140
COVERING RATIO VARIANTS 156:1, 245:1, and 316:1



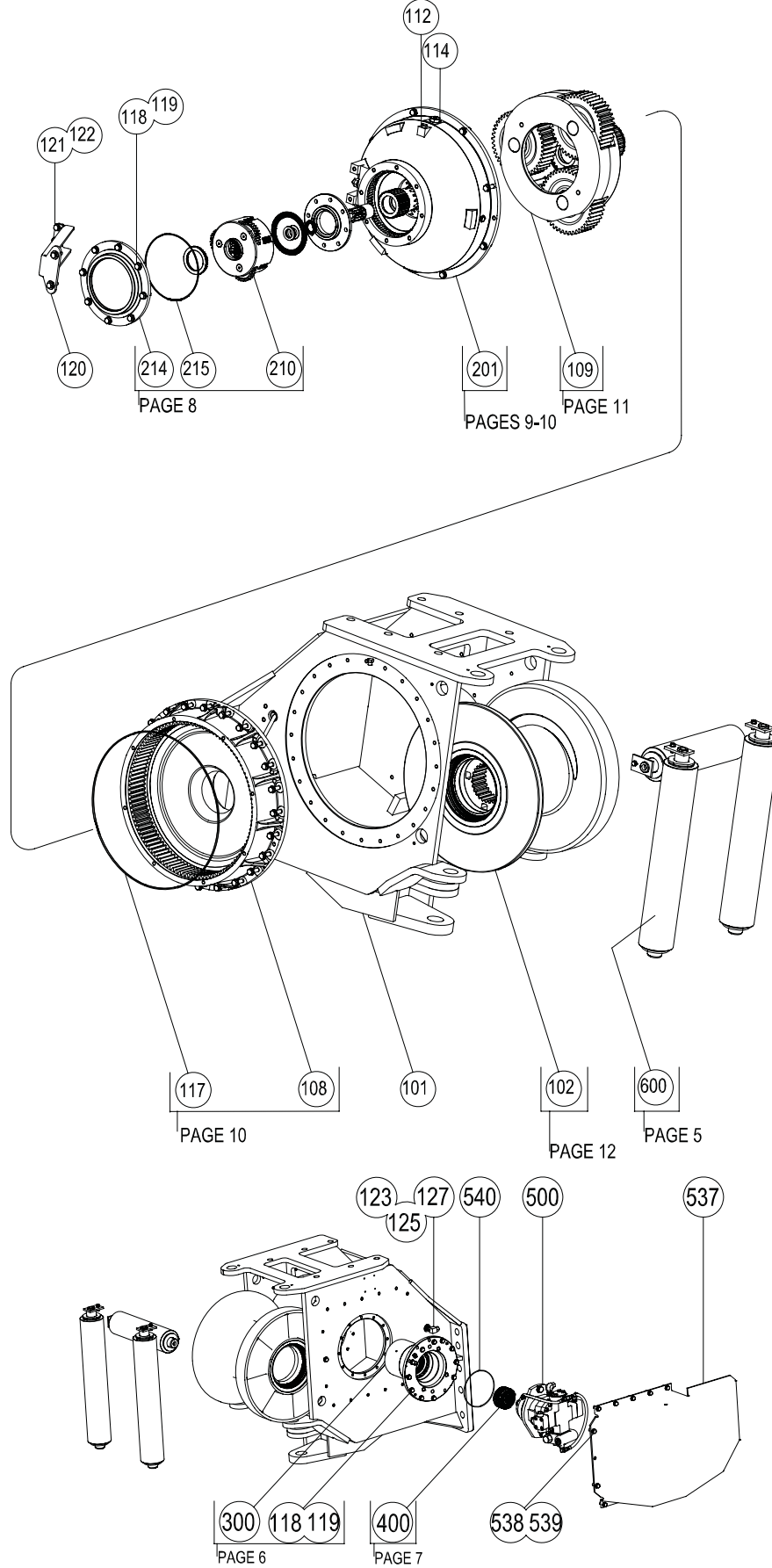
MODEL NUMBER DESCRIPTION

PA110	156	V	065/ 022	0	3
BASIC WINCH MODEL PA110 110,000 LBS MAX PA140 140,000 LBS MAX	OVERALL GEAR RATIO 156:1 245:1 316:1	MOTOR TYPE F- FIXED DISPLACEMENT V- VARIABLE DISPLACEMENT	MOTOR SIZE CU. IN. DISPLACEMENT PER REVOLUTION EXAMPLE 065= 6.5 CU. IN. MAX 022= 2.2 CU IN MAX	CONTROL OPTION 0 - AUTO SPEED/ LOCK IN LOW SPEED 2 - 2 SPEED	FAIRLEAD 3 - 3 ROLLER 4 - 4 ROLLER

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Winch Housing Group.....	3-4
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Brake Assembly.....	6
Overrunning Clutch Assembly.....	7
Carrier Clutch Assembly.....	8
Input Shaft Assembly.....	9
Secondary Planet Carrier Assembly.....	10
Output Planet Carrier Assembly.....	11
Cable Drum Assembly.....	12

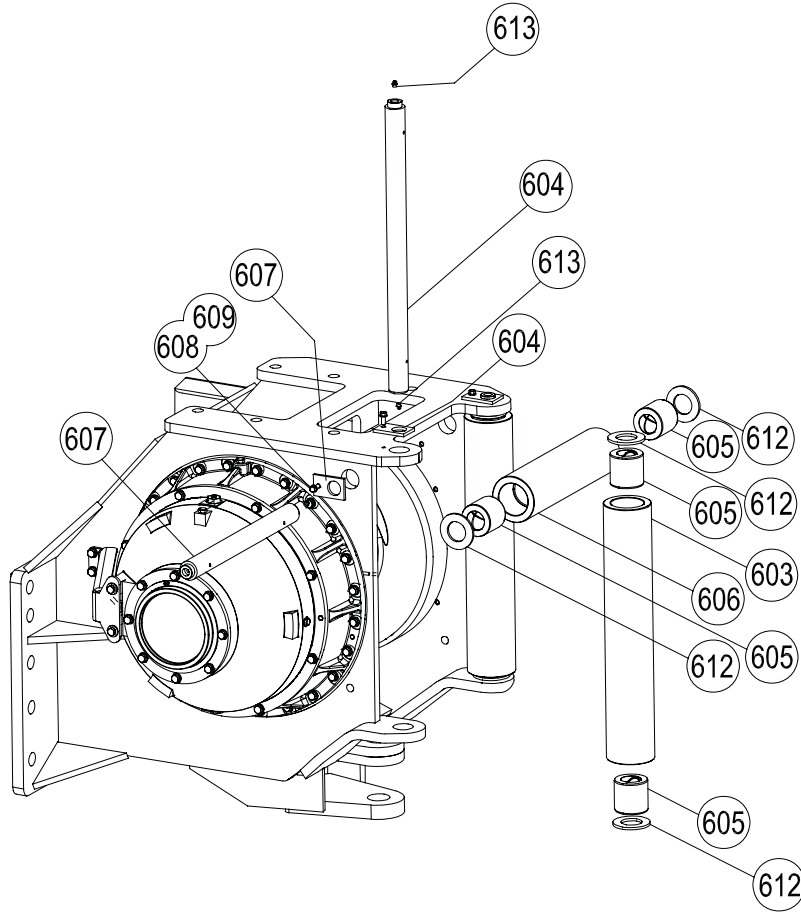
MODEL PA110B AND PA140A
WINCH ASSEMBLY
MAIN GROUPS



**MODEL PA110B AND PA140A
WINCH HOUSING ASSEMBLY**

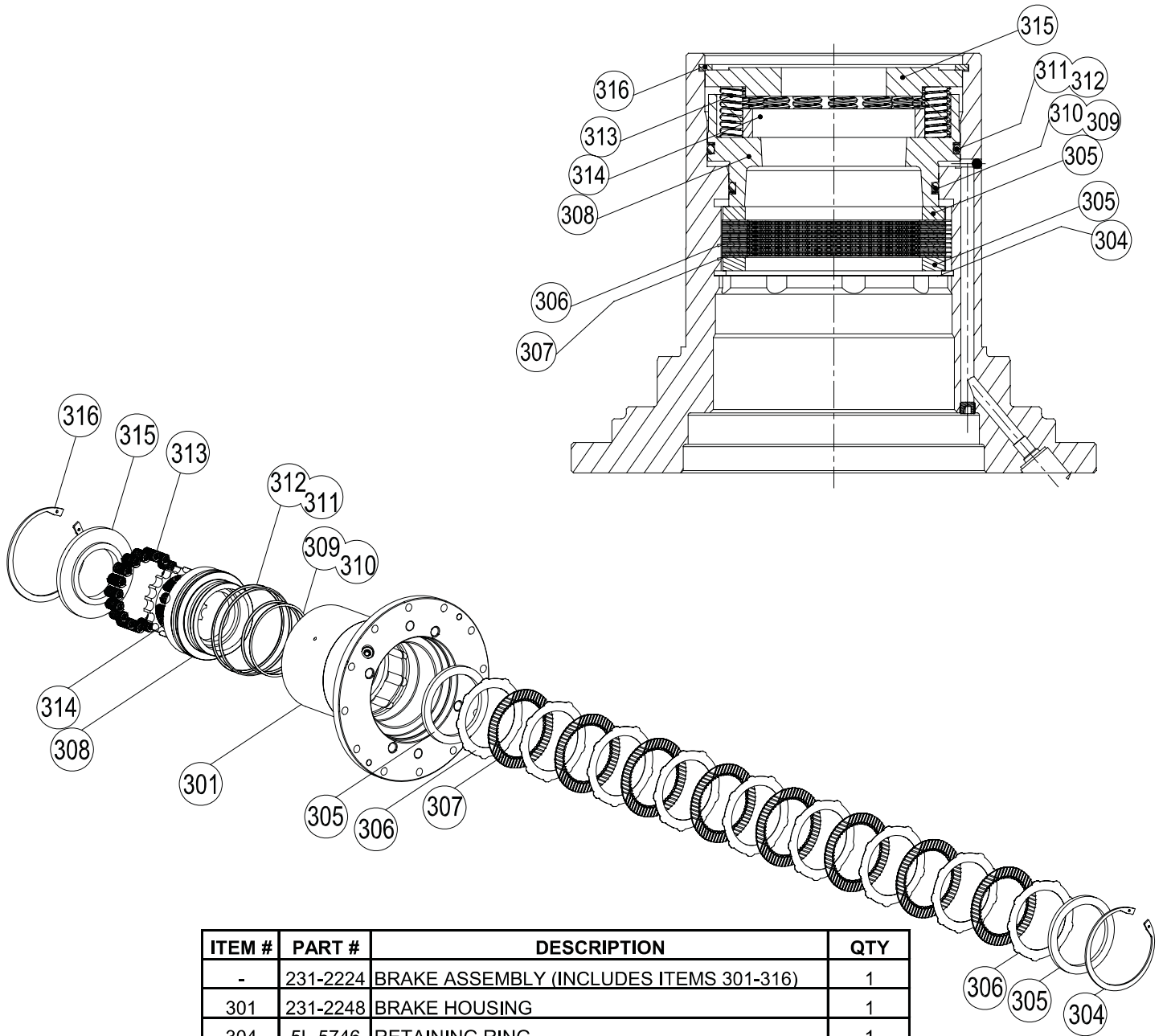
ITEM #	PART #	DESCRIPTION	QTY
101	126-2470	WINCH HOUSING	1
102	-	CABLE DRUM GROUP	1
108	-	RING GEAR GROUP	1
109	-	OUTPUT PLANET CARRIER ASSEMBLY 156:1 R	1
111	231-2229	SECONDARY PLANET CARRIER ASSEMBLY (N	1
112	148-8407	PLUG	1
113	126-0778	PLUG, MAGNETIC DRAIN	1
114	126-3230	PLUG, FILL-VENT	1
117	4H-6730	O-RING	1
118	5P-2566	CAPSCREW, 1/2-13 UNC X 1-1/2 HEX HD, GD8	8
119	8T-4223	WASHER, HARD FLAT, 1/2	8
120	126-0853	HOSE GUARD	1
121	8T-8917	CAPSCREW, 1/2-13 X 1-1/4 HEX HD, GD8	2
122	5P-1076	WASHER, HARD FLAT, 1/2	2
123	152-8360	HOSE ASSEMBLY, -6 X 34 IN (864 MM)	1
125	6V-9807	ELBOW, 90-DEGREE	1
126	148-8353	ELBOW, 45-DEGREE	1
127	6V-9829	PLUG	1
201	-	RING GEAR HOUSING	1
207	064-0011	*THRUST RACE	2
208	8H-9585	*BEARING	1
210	-	CARRIER CLUTCH ASSMEBLY GROUP	1
211	231-4087	THRUST WASHER	1
214	231-2247	COVER	1
215	1T-0132	O-RING	1
300	-	BRAKE ASSEMBLY	1
400	-	OVERRUNNING CLUTCH ASSMEBLY	1
500	-	*MOTOR GROUP*	1
537	126-0848	MOTOR COVER	1
538	5P-2566	CAPSCREW 1/2-13 X 1 1/2 HEX HD GD8	11
539	8T-4223	WASHER 1/2 HARDENED	11
540	119-1586	O-RING	1
600	-	FAIRLEAD PARTS GROUP	1

**MODEL PA110B AND PA140A
FAIRLEAD ASSEMBLY
CARCO PN #140-7267**



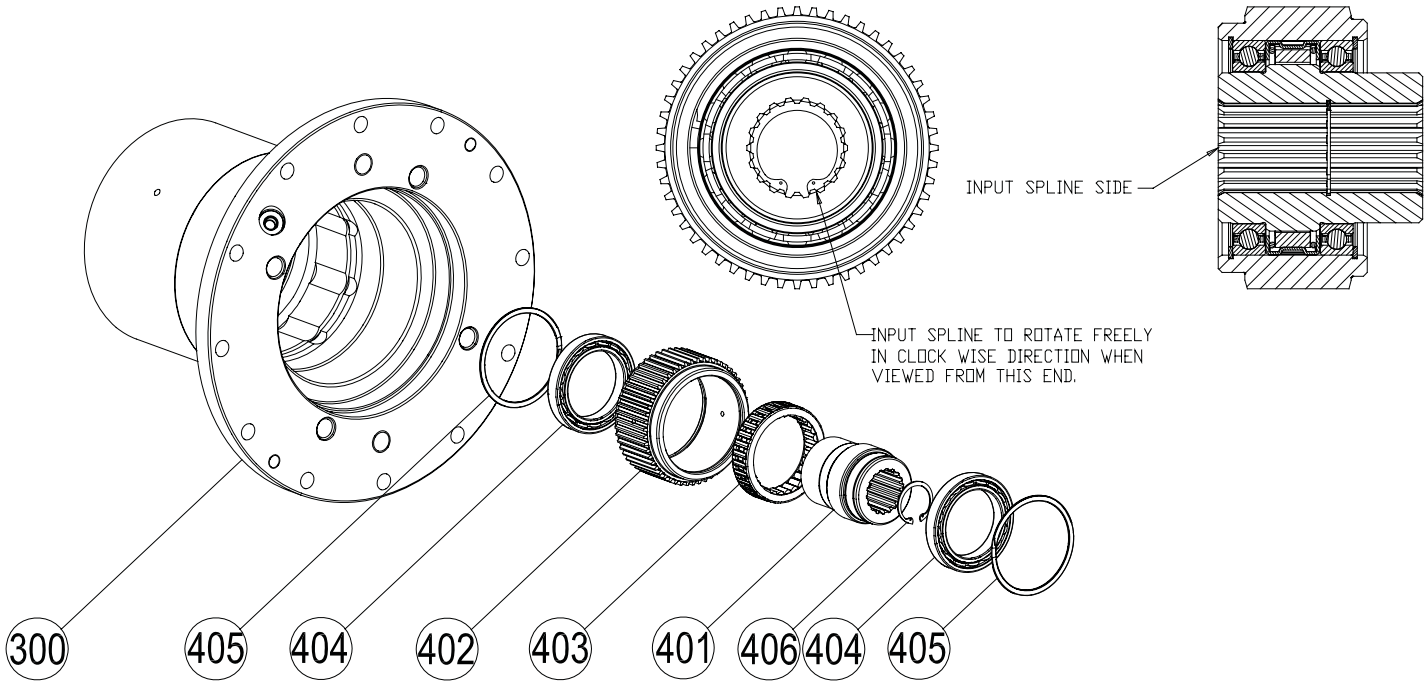
ITEM #	PART #	DESCRIPTION	QTY.	
			3 ROLLER	4 ROLLER
603	126-0536	VERTICAL ROLLER	2	2
604	126-0835	VERTICAL SHAFT	2	2
605	126-0794	BUSHING	6	8
606	126-0834	HORIZONTAL ROLLER	1	2
607	228-0767	HORIZONTAL SHAFT	1	2
608	4L-6454	CAPSCREW, 3/8-16 UNC X 1 in. HEX HD, GD8	3	4
609	8T-4896	WASHER, HARD FLAT, 3/8	3	4
612	126-0806	WASHER - ROLLER	6	8
613	3B-8489	GREASE FITTING	6	8

**MODEL PA110B AND PA140A
BRAKE ASSEMBLY
CAT PN # 231-2224**



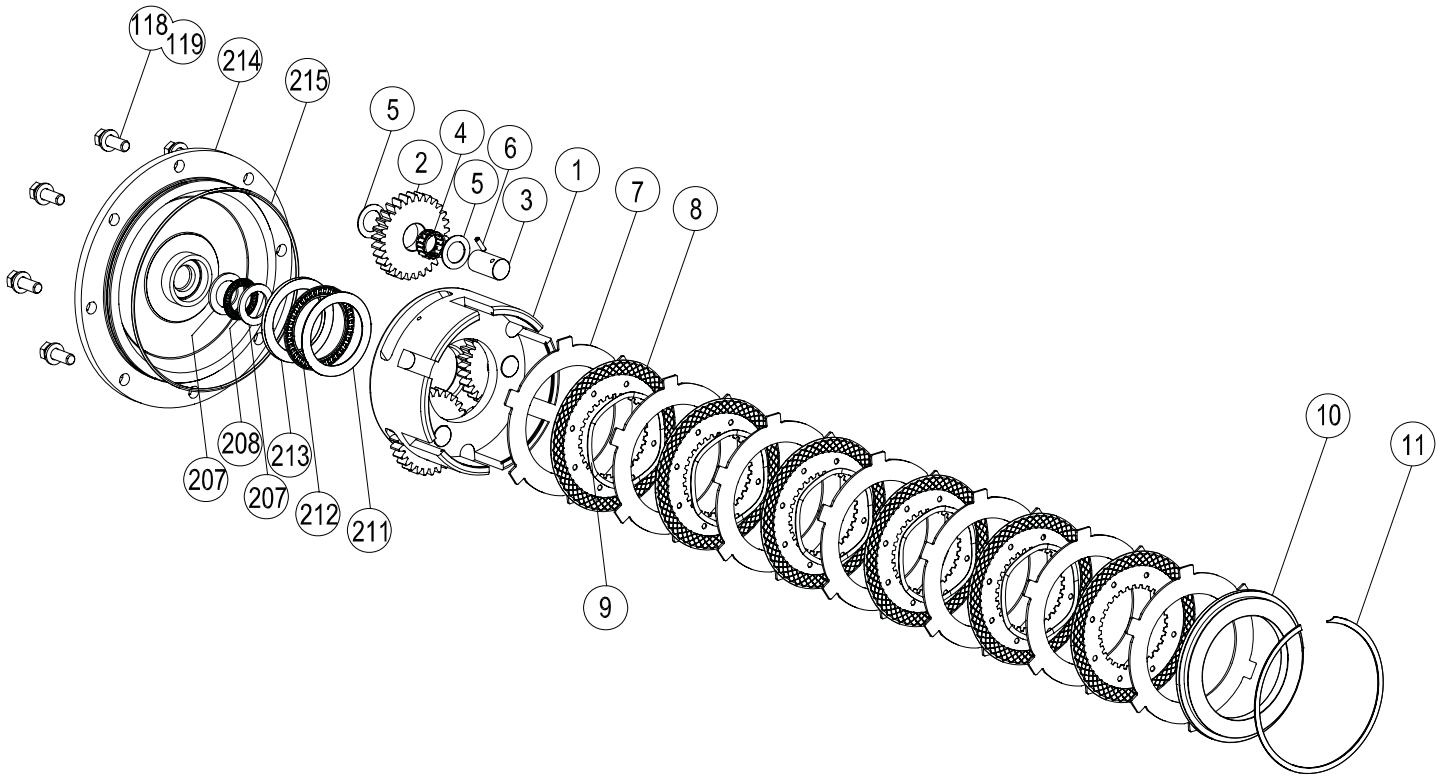
ITEM #	PART #	DESCRIPTION	QTY
-	231-2224	BRAKE ASSEMBLY (INCLUDES ITEMS 301-316)	1
301	231-2248	BRAKE HOUSING	1
304	5L-5746	RETAINING RING	1
305	231-2250	BRAKE PLATE SPACER	2
306	231-2251	BRAKE DISC	9
307	231-2252	FRICTION DISC	8
308	231-2253	BRAKE PISTON	1
309	8J-1688	O-RING	1
310	126-3170	BACK-UP RING, Part number 111854	1
311	8T-6444	O-RING	1
312	231-4091	BACK-UP RING	1
313	126-0798	SPRING	16
314	231-2254	SPRING SPACER	1
315	231-2256	SPRING RETAINER	1
316	231-4092	RETAINING RING	1

**MODEL PA110B AND PA140A
OVERRUNNING CLUTCH ASSEMBLY
CAT PN #231-2225**



ITEM #	PART #	DESCRIPTION	QTY.
-	231-2225	OVERRUNNING CLUTCH ASSEMBLY	1
401	NSS	INNER RACE	1
402	NSS	OUTER RACE	1
403	NSS	OVERRUNNING CLUTCH	1
404	292-2320	BALL BEARING	2
405	292-2921	RETAINING RING	2
406	1L-3768	RETAINING RING	1
NSS= NOT SERVICED SEPERATELY			

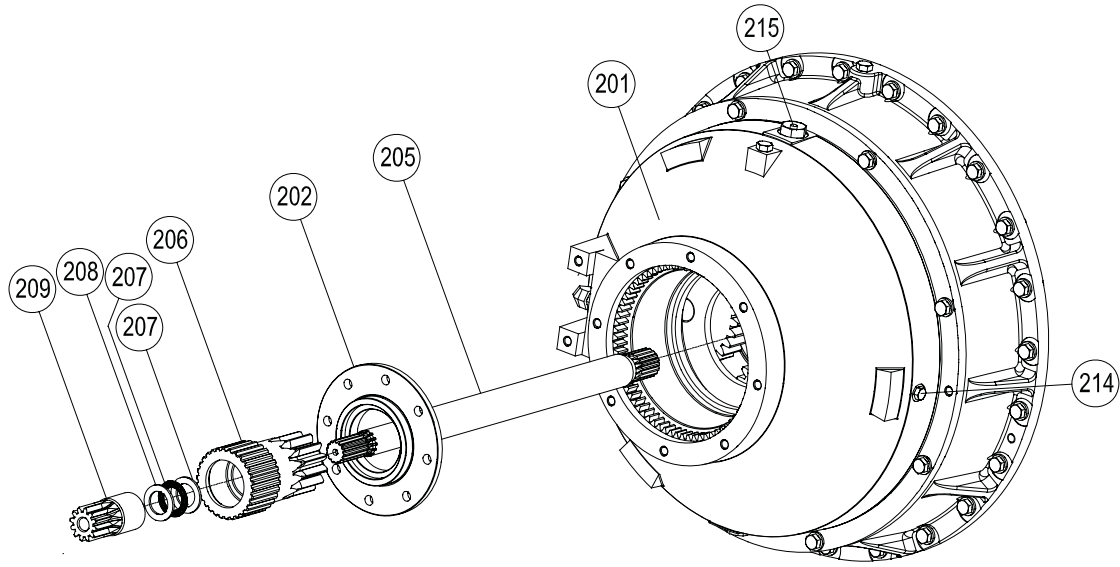
**MODEL PA110B AND PA140A
CARRIER CLUTCH ASSEMBLY**
PN# 242-2219= 156:1 RATIO; PN# 231-2242= 245:1 RATIO; PN# 231-2288= 316:1 RATIO



ITEM #	PART #	DESCRIPTION	QTY.		
			PA110B-156	PA110B-245	PA140A-316
	242-2219	CARRIER CLUTCH ASSEMBLY - 156:1 RATIO (INCLUDES ITEMS 1-10)	1	-	-
-	231-2242	CARRIER CLUTCH ASSEMBLY - 245:1 RATIO (INCLUDES ITEMS 1-10)	-	1	-
	231-2288	CARRIER CLUTCH ASSEMBLY - 316:1 RATIO (INCLUDES ITEMS 1-10)	-	-	1
1	240-8864	CARRIER CLUTCH - 156:1 RATIO	1	-	-
	231-2243	CARRIER CLUTCH - 245:1 RATIO	-	1	-
	231-2289	CARRIER CLUTCH - 316:1 RATIO	-	-	1
2	240-8863	PLANET GEAR - 156:1 RATIO	3	-	-
	231-2244	PLANET GEAR - 245:1 RATIO	-	3	-
	231-2292	PLANET GEAR - 316:1 RATIO	-	-	3
3	129-7306	PLANET GEAR SHAFT	3	3	3
4	129-7286	ROLLER BEARING	3	3	3
5	129-7307	BEARING RACE	6	6	6
6	126-0822	SPIROL PIN	3	3	3
7	161-6434	BRAKE PLATE	7	7	7
8	161-6435	FRICITION DISC	6	6	6
9	231-2245	WAVE SPRING	5	5	5
10	231-2246	THRUST RING	1	1	1
11	119-1534	RETAINING RING	1	1	1
118	5P-2566	CAPSCREW	8	8	8
119	8T-4223	WASHER 1/2 HARDENED	8	8	8
207	064-0011	*THRUST RACE	2	2	2
208	8H-9585	*THRUST BEARING	1	1	1
211	231-4087	*THRUST RACE, .039 in. (1 mm)	1	1	1
212	231-4085	NEEDLE ROLLER BEARING	1	1	1
213	231-4089	*THRUST RACE, .226 in. (5.75 mm)	1	1	1
214	231-2247	COVER	1	1	1
215	1T-0132	O-RING	1	1	1

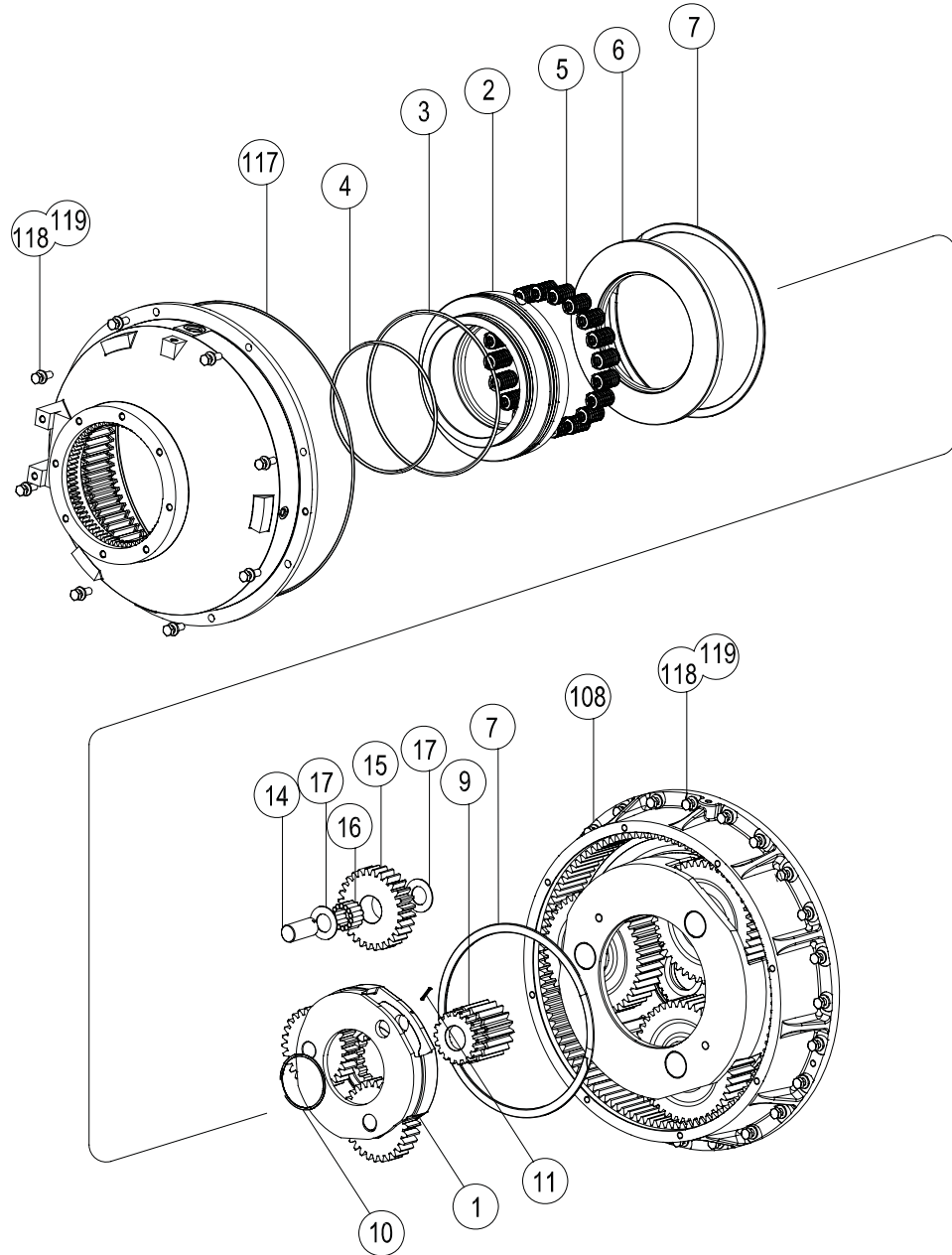
*Outer thrust bearing set shown above. Inner thrust bearing set shown on page 8

**MODEL PA110B AND PA140A
INPUT SHAFT DETAIL**



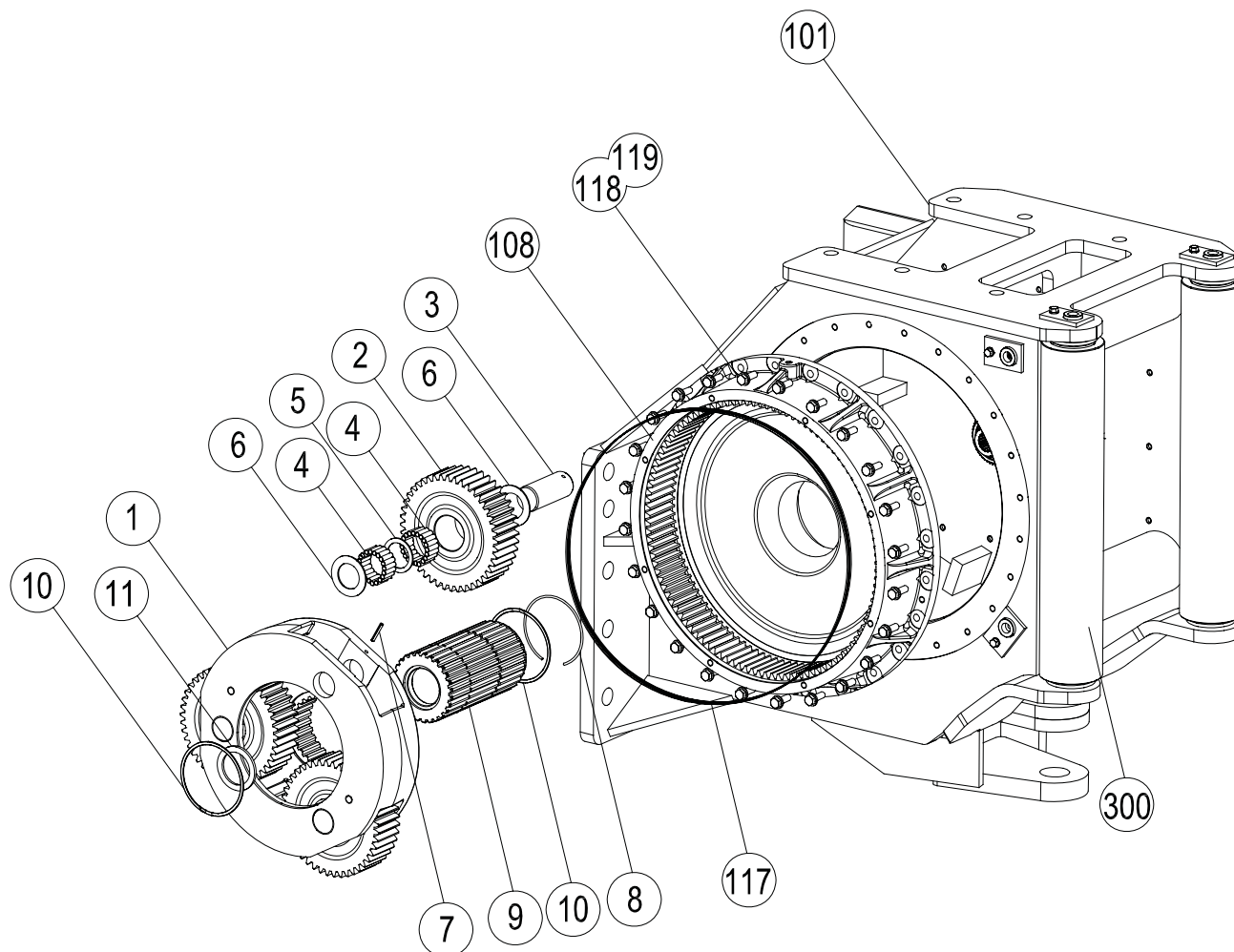
ITEM#	PART#	DESCRIPTION	PA110	PA140
201	231-2234	RING GEAR 156:1 RATIO, 245:1 RATIO	1	-
201	231-2270	RING GEAR 316:1 RATIO	-	1
202	231-2889	SPRING RETAINER	2	2
205	231-2239	INPUT SHAFT	1	1
206	231-2240	SECONDARY SUN GEAR	1	1
207	064-0011	THRUST RACE	4	4
208	8H-9585	BEARING	2	2
209	240-8861	PRIMARY SUN GEAR 156:1 RATIO	1	-
209	231-2241	PRIMARY SUN GEAR 245:1 RATIO	1	-
209	231-2281	PRIMARY SUN GEAR 316:1 RATIO	-	1
211	231-4087	THRUST WASHER	1	1
212	231-4085	NEEDLE BEARING	1	1
213	231-4089	THRUST WASHER	1	1

**MODEL PA110B AND PA140A
SECONDARY PLANET CARRIER ASSEMBLY**



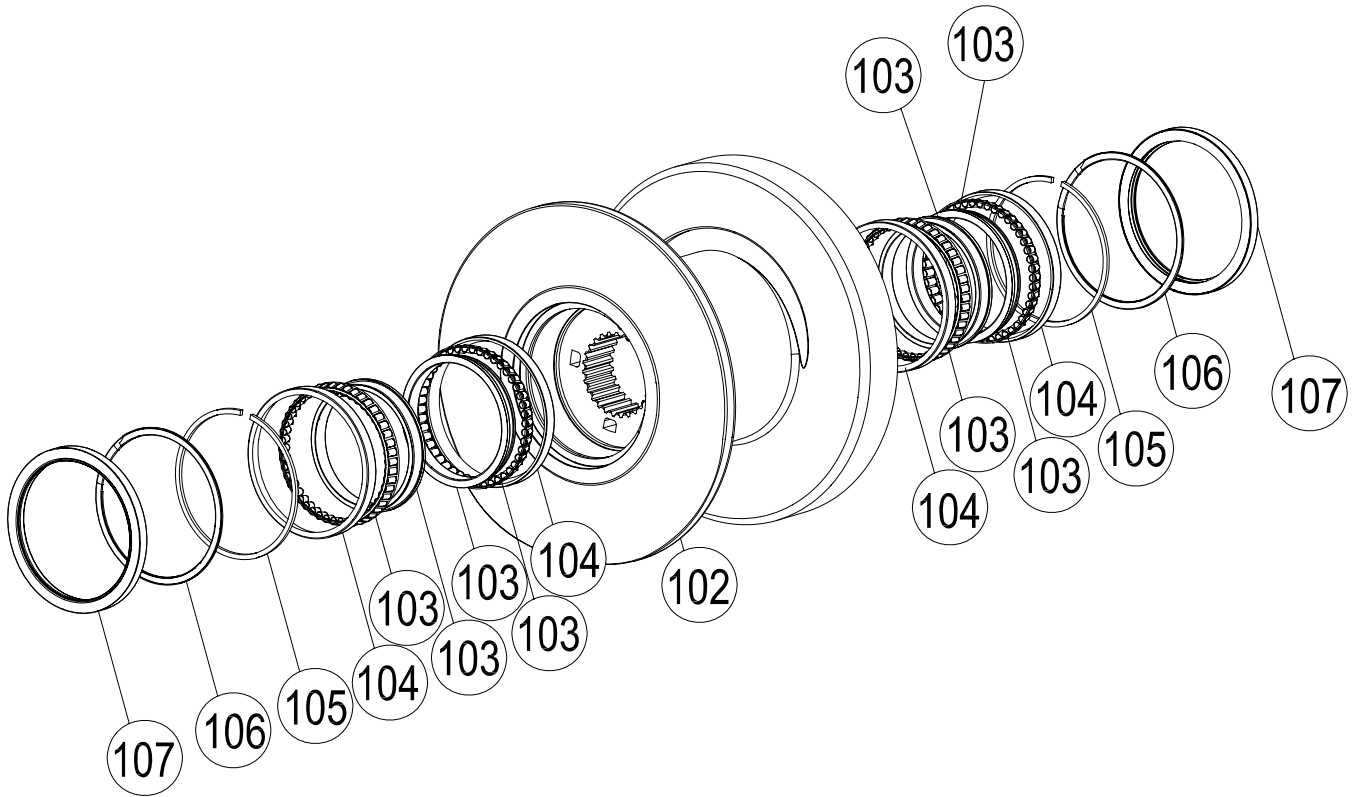
ITEM #	PART #	DESCRIPTION	QTY
1	231-2232	SECONDARY PLANET CARRIER	1
2	231-2237	CLUTCH PISTON	1
3	4M-0661	O-RING	1
4	1M-9015	O-RING	1
5	126-0780	SPRING	16
6	231-2238	PRESSURE PLATE	1
7	231-4083	RETAINING RING	2
9	231-2233	SUN GEAR	1
11	1H-1200	SPIROL PIN	3
14	231-2230	PLANET PIN	3
15	231-2231	PLANET GEAR	3
16	126-0785	ROLLER	42
17	231-4080	THRUST WASHER	6
117	4H-6730	O-RING	1
118	5P-2566	CAPSCREW 1/2-13 X 11/2 HEX HD GD8	46
119	8T-4223	WASHER 1/2 HARDENED	46
10	28736	SNAP RING, EXTERNAL, RETAINING	1

**MODEL H110B AND H140A
OUTPUT PLANET CARRIER ASSEMBLY**



ITEM #	PART #	DESCRIPTION	QTY.	
			PA110B	PA140A
-	231-2227	OUTPUT PLANET CARRIER ASSEMBLY (INCLUDES ITEMS 1-11)	1	-
-	231-2262	OUTPUT PLANET CARRIER ASSEMBLY (INCLUDES ITEMS 1-11)	-	1
1	126-7135	OUTPUT PLANET CARRIER	1	1
2	231-2228	PLANET GEAR	3	-
	231-2263	PLANET GEAR	-	3
3	126-0786	PLANET PIN	3	3
4	126-0785	ROLLER	120	120
5	126-0779	BEARING SPACER	3	3
6	126-0784	THRUST WASHER	6	6
7	4H-4737	ROLL PIN	3	3
8	126-0783	RETAINING RING	1	1
9	126-0847	DRUM SHAFT	1	1
10	126-0782	RETAINING RING	2	2
11	126-0781	THRUST RACE	1	1
101	126-2470	WINCH HOUSING	1	1
108	231-2274	RING GEAR HOUSING	-	1
	231-2235	RING GEAR HOUSING	1	-
117	4H-6730	O-RING	1	1
118	5P-2566	CAPSCREW 1/2-13 X 1 1/2 HEX HD GD8	24	24
119	8T-4223	WASHER 1/2 HARDENED	24	24

**MODEL H110B AND H140A
CABLE DRUM ASSEMBLY**



ITEM#	PART#	DESCRIPTION	QTY
102	126-7137	CABLE DRUM PA110	1
	231-2261	CABLE DRUM PA140	1
103	110-8366	BEARING CONE	4
104	110-8368	BEARING CUP	4
105	126-0774	SPACER RING	2
106	5P-9171	RETAINING RING	2
107	444-6451	OIL SEAL	2

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)	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°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

