

GP POWERTRAIN

**OPERATIONS AND MAINTENANCE MANUAL
FOR
POWER TAKE OFF**

MODELS

GP 1060 CP

GP 1070 CP

GP 1080 CP

GP 1100 CP

GP 1110 SP

GP 2110 SP

GP 1140 SP

GP 2140 SP

GP 3140 SP

**GP POWERTRAIN (NORTH AMERICA) INC.
BETHELHEM, PA 18017: U.S.A.**

OPERATIONS AND MAINTENANCE MANUAL

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PREVENTIVE MAINTENANCE - TROUBLE SHOOTING

Familiarization of this manual with regard to daily operation etc. will help in providing trouble free operation. Maintaining the schedules as per GP Powertrain's recommendations will result in minimum normal wear. A trouble-shooting chart is provided to help identify the problem and aid in determining the extent of the repairs necessary to put a unit back into operation.

LIFTING BOLT HOLES

Lifting bolt holes have been provided on the Power Take Offs to safely lift it.

PLEASE NOTE THAT

Lifting bolt holes are designed to lift Power take off unit only. Do not overload. Proper fitment of eye bolts must be ensured while lifting.

SAFETY

Safe and proper operating practices should be maintained by Service Mechanics/ Engineers to avoid personnel injury from improper usage of tools. GP Powertrain will not be responsible for such injuries.

It is important to use correct procedures as per the Engineering information provided. Pre installation inspection in prevailing conditions, proper installation, scheduled maintenance will ensure safe operations and will avoid possible danger/ injury to operating person/s or property. It is imperative to follow safety codes by taking safety precautions such as protection guards and other devices etc. GP Powertrain does not provide these devices.

This manual is latest at the time of printing. However changes are made to incorporate latest upgradations of the products as required from time to time. As such, contact GP Powertrain or our authorised dealer near you, for latest information.

TROUBLE SHOOTING

This section will aid in trouble shooting the product covered in this manual. While trouble shooting, always consider the entire power train.

SYMPTOMS	CAUSE	SOLUTION
a. Lever does not remain in engaged load	a. Linkage* out of adjustment	a. Adjust linkage*
b. Clutch slippage, PTO not taking load	b-1 Linkage* out of adjustment b-2 Clutch under adjusted Driving plates worn out	b-1 Adjust linkage* b-2 Adjust clutch to compensate for wear. Replace the driving Plate if slippage continues.
c. Clutch dragging, PTO heating or smoke generation	c-1 Clutch parts are unclean c-2 Driving/ Floating/ Centre plates are bent or warped	c-1 Disassemble the clutch, clean and ensure that all moving parts are free. c-2 Replace defective parts
d. Excessive noise and Vibration	d-1 No Grease. Parts jammed d-2 Pilot bearing is worn out	d-1 Grease the Bearing and ensure that all moving parts are free d-2 Replace the Pilot Bearing

Table 1. Trouble Shooting Chart for Power Take-Offs.

* Operating Mechanism, not supplied alongwith PTO

ADJUSTMENTS

CLUTCH

Periodic clutch adjustment is necessary for efficient functioning of the Power Take Off.

CAUTION

Adjust the clutch when engine is off, else it may result in personnel injury and/or damage to the entire power train.

NOTE :

Clutches in new Power Take Offs need adjustment after installation and prior to operation.

Initially, newly installed clutch plates may require several adjustments. New PTO needs clutch adjustment after first 10 Hours of operation and subsequently at intervals of ten to fifteen hours, till operating torque value stabilizes i.e. until the high points of the plates set (Refer Figure 1).

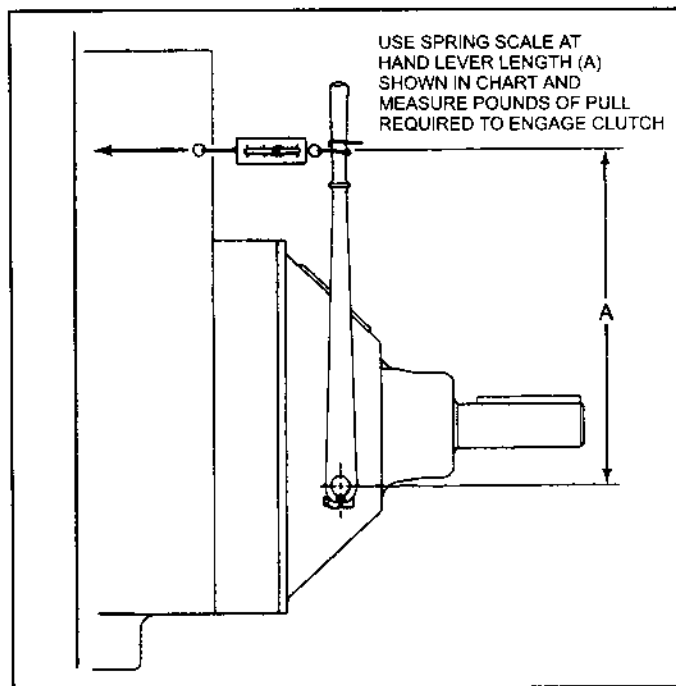


Figure No. 1 - Clutch adjustment of Power Take Off

PTO & CLUTCH MODEL	OPERATING SHAFT TORQUE LBFT. (NM)		HAND LEVER EFFORT LB (KGF)		HAND LEVER LENGTH Inches (Centimeter)
	MIN	MAX	MIN	MAX	
GP 1060 CP	66 (89.6)	86 (116.7)	58 (26.4)	76 (34.5)	13.6 (35)
GP 1070 CP	66 (89.6)	86 (116.7)	58 (26.4)	76 (34.5)	13.6 (35)
GP 1080 CP	71 (96.4)	94 (127.4)	63 (28.6)	83 (37.7)	13.6 (35)
GP 1100 CP	88 (119.4)	117 (158.11)	78 (35.5)	103 (46.8)	13.6 (35)
GP 1110 SP	108 (146.6)	142 (192.7)	95 (43.2)	125 (56.8)	13.6 (35)
GP 2110 SP	134 (181.9)	177 (240.2)	118 (53.6)	156 (70.9)	13.6 (35)
GP 1140 SP	218 (295.9)	289 (392.2)	123 (55.9)	163 (74.1)	21.3 (54)
GP 2140 SP	218 (295.9)	289 (392.2)	123 (55.9)	163 (74.1)	21.3 (54)
GP 3140 SP	218 (295.9)	289 (392.2)	123 (55.9)	163 (74.1)	21.3 (54)

Table No. 2 Operating Shaft Torque, Hand Lever Effort Values

Clutch adjustment should be checked regularly. For heavy duty applications (rock crushers, etc.) with frequent engagements for long periods, clutch will need more frequent adjustments as compared to Light duty applications. Need for clutch adjustment is also indicated if any of the symptoms mentioned in the trouble shooting chart are observed.

In order to determine if clutch adjustment is necessary, operating shaft torque must be measured as shown in Figure 1. If operating shaft torque or hand lever effort is below minimum, adjust clutch until maximum force is attained to engage the clutch.

IMPORTANT

OVER-ADJUSTMENT OF THE CLUTCH MAY FORCE CLUTCH COMPONENT FAILURE.

Clutch Adjustment

For clutch adjustment, proceed as follows : Refer Exploded view page Nos. 8,10,12,14,16,18,20,22,24.

1. Remove the Inspection Cover Plate (5) and turn the Clutch so that the Adjusting Lock Pin (22) is approachable.
2. For all models except GP 2140 SP and GP 3140 SP, pull & disengage the Adjusting Lock Pin and insert a wire or nail into the small hole provided in the Adjusting Lock Pin (22) to hold in disengaged position. For GP 2140 SP and GP 3140 SP push the Adjusting Pin with Screw Driver.
3. Turn the Adjusting Yoke (20) for CP Models/ Adjusting Ring (21) for SP Models clockwise one or two notches to tighten the Clutch.
4. The Clutch should be tightened until torque value as given in the Table No. 2 is attained.
5. Check the torque by removing the Hand Lever (2).
6. Turn the cross shaft/ operating shaft (45) with a torque wrench with a 1/2 inch male adapter.
7. Remove the wire or nail (inserted to keep the adjusting lock pin disengaged) and engage the lock pin.

BEARING END PLAY ADJUSTMENT

(Not required for GP-1060 CP & GP- 1070 CP Power Take offs, which has single ball bearing. Other PTO's have 2 taper roller bearings as main bearings, which require end play adjustment).

The method for adjusting taper roller bearing is as follows- (refer Figure - 2).

- 1) Do not grease the main bearing before adjustment.
- 2) Unscrew bolt 50, and remove bearing retainer lock (36)
- 3) Rotate clockwise and tighten the adjusting yoke (20) for CP models or Adjusting ring (21) for SP models. Rotate the shaft by hand till a torque of 60 Lb. Inch is needed to turn the shaft. Mark the notch used on the Adjusting Yoke (20) / Adjusting Ring (21).

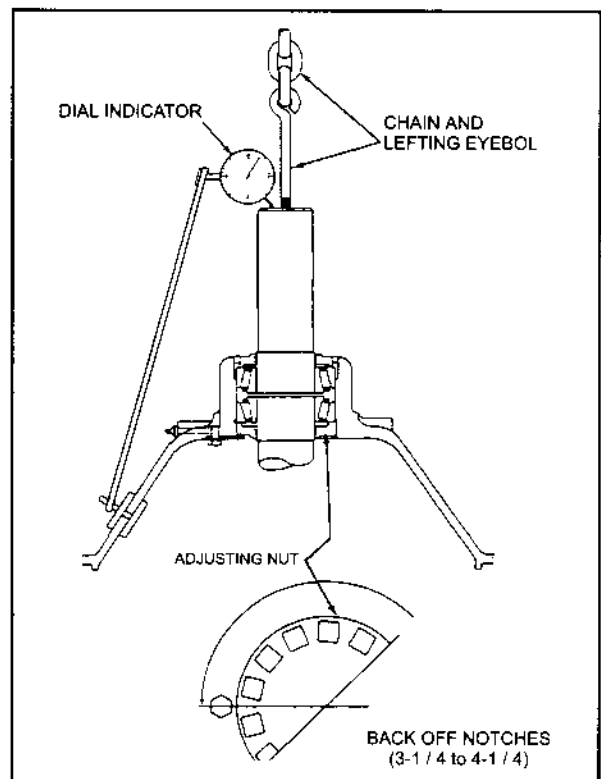


Figure No. 2 - Adjustment of End Play

- 4) Unscrew the Adj. Yoke (20)/ Adj. Ring (21) by 3 to 4 notches.
- 5) Lightly hammer the output end of the shaft to ensure desired end play.
- 6) Check the end play as follows :
 - a. Mount a dial indicator with the stem riding the shaft end. Mark a spot.
 - b. Use a 200 lb hoist to raise the shaft.
 - c. Rotate the shaft two revolutions in each direction, stop on the spot, and zero the indicator.
 - d. Load the shaft by 200 lb. force and rotate two times in each direction. Stop with stem on the spot.
 - e. This indicator reading is the end play.
 - f. Tighten or loosen the Bearing Retainer (37) to obtain 0.004 to 0.007 inch endplay . Lift the shaft (plus the weight of the PTO) to seat the forward bearing outer race against the retainer. Recheck endplay.
- 7) After adjusting endplay, remove the load, lock the Bearing Retainer (37) with the use of Bearing Retainer Lock (36) and grease the bearing.

Note :

BEFORE STARTING NORMAL OPERATIONS, RUN THE PTO AT HALF THE RECOMMENDED SPEED FOR ABOUT 10 MINUTES; WIPE OFF EXCESS GREASE THAT COMES OUT.

Caution : Excessive side pull can damage parts of the Power Take Off and Engine. Deflection must be ensured within allowable values before operating the PTO.

A support plate must be used when side loads are being applied to the Clutch shaft.

To measure side pull, fix a dial gauge on the Engine rigid with stem on PTO housing at bearing. Set '0' on the dial, apply load and check the deflection. Repeat this for reading at 90-degree location. Deflection should not exceed 0.010".

(Refer fig.3)

DRIVING PLATE REPLACEMENT

Driving Plates (29) need replacement when Adjusting Yoke (20)/ Adjusting Ring (21) cannot be adjusted any further. For ease of replacement, unbolt the PTO from Engine and replace with split type driving plates. For Solid plates, Power Take Off needs further dismantling.

THROWOUT COLLAR

Grease bronze-type-collar (13) daily or after every 10 hours of operation and the Ball Bearing type every 100 hours of operation, through the Fitting provided on the tapered part of the Housing.

ANTIFRICTION BEARINGS

Grease the Pilot Bearing (34) approximately every 100 hours of operation through hole on the clutch shaft and, shaft bearings through fitting located at the housing hub.

Caution

The 'Sealed for life' Pilot Bearing should not be lubricated during service else trapped grease pressure may damage engine crank shaft.

LUBRICANT

Use any high grade, high temperature, grade 2 or better Lithium based grease as recommended by the Antifricition Bearing manufacturers.

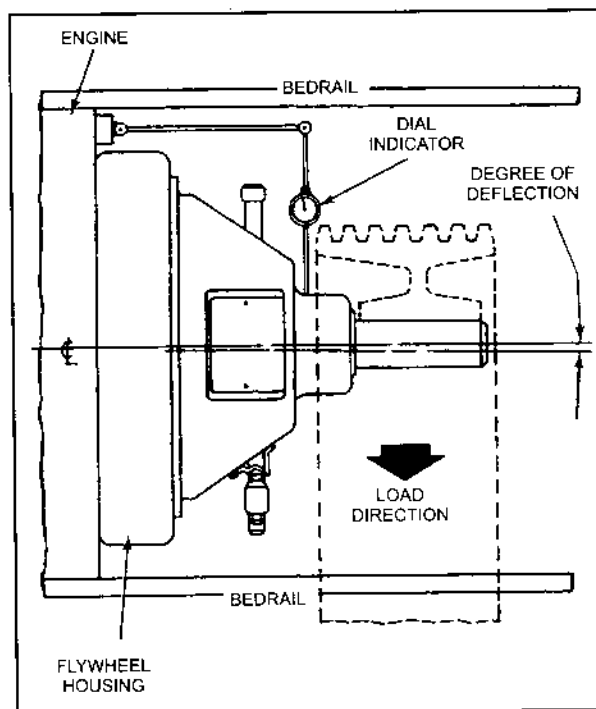


Figure No. 3

TORQUE VALUES

FORTIGHTENING CAPSCREWS, BOLTS & NUTS

Table 3 : TORQUE FOR COARSE AND FINE THREADS (1)

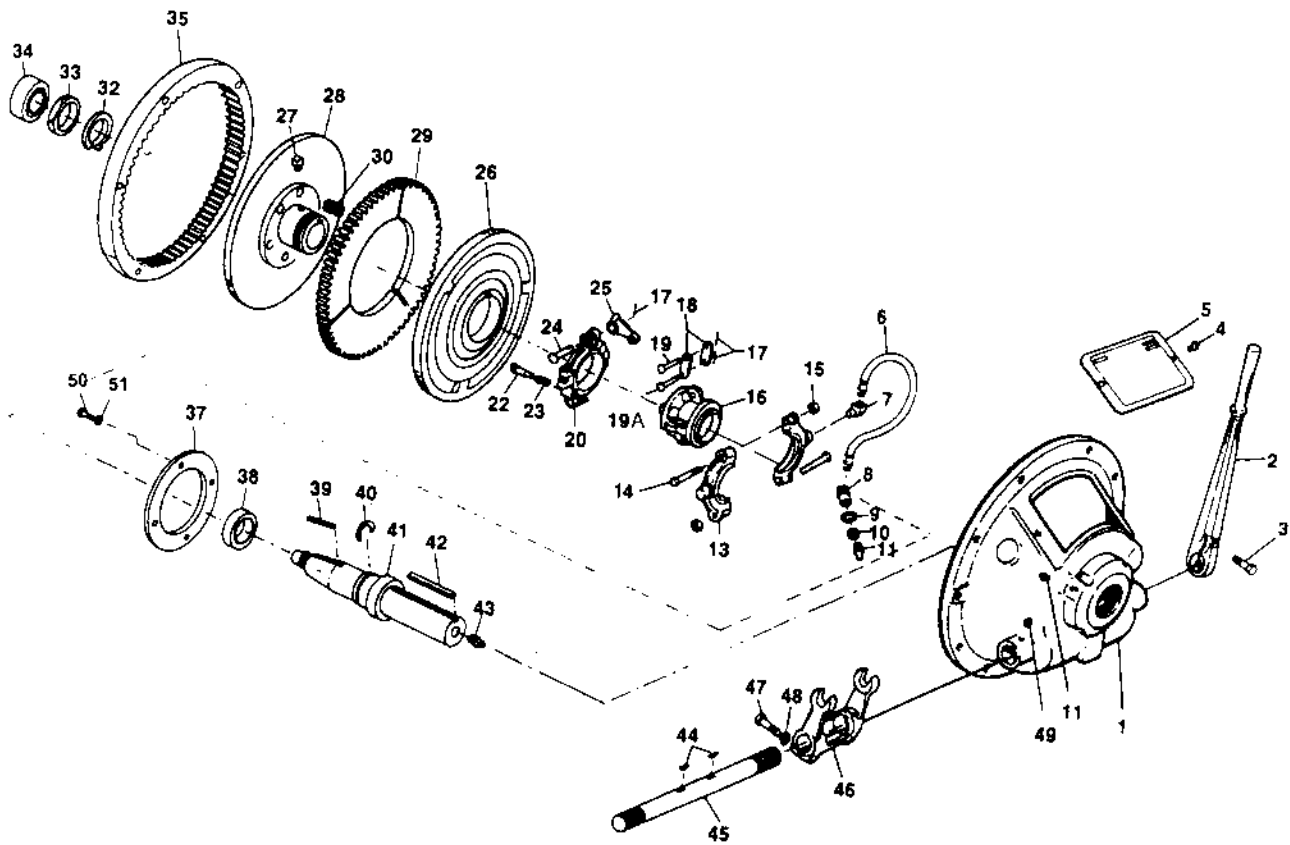
NORMAL THREAD DIAMETER in (mm)	SAE GRADE 5 Value in LbFt. (Nm)		SAE GRADE 8 Value in LbFt. (Nm)	
	As Received (non lubricated) Refer Note (2)	Lubricated Refer Note (3)	As Received (non lubricated) Refer Note (2)	Lubricated Refer Note (3)
1/4 (6.35)	9 ± 1 (12.20 ± 1.40)	7 ± 1 (9.50 ± 1.40)	14 ± 1 (19 ± 1.40)	11 ± 1 (15 ± 1.40)
5/16 (7.94)	19 ± 2 (25.80 ± 2.7)	15 ± 2 (20.40 ± 2.7)	27 ± 2 (36.70 ± 2.7)	22 ± 2 (29.90 ± 2.7)
3/8 (9.525)	33 ± 3 (84.80 ± 4.10)	27 ± 3 (36.70 ± 4.10)	46 ± 3 (62.40 ± 4.10)	38 ± 3 (51.60 ± 4.10)
7/16 (11.11)	52 ± 4 (70.60 ± 5.40)	40 ± 3 (54.30 ± 4.10)	73 ± 6 (99.10 ± 8.20)	60 ± 6 (81.50 ± 8.20)
1/2 (12.7)	80 ± 6 (108.60 ± 8.20)	64 ± 5 (88.20 ± 6.80)	112 ± 8 (152 ± 10.90)	90 ± 7 (122.20 ± 9.50)
9/16 (14.28)	112 ± 8 (152 ± 10.90)	90 ± 8 (120.20 ± 10.90)	158 ± 12 (214.50 ± 16.30)	130 ± 10 (176.50 ± 13.60)
5/8 (15.875)	158 ± 12 (214.50 ± 16.30)	130 ± 10 (176.50 ± 13.60)	224 ± 16 (304.10 ± 21.70)	180 ± 15 (244.40 ± 20.40)
3/4 (19.05)	280 ± 12 (380 ± 16.30)	225 ± 20 (305.40 ± 27.15)	390 ± 25 (592.40 ± 33.90)	320 ± 25 (434.40 ± 33.90)
7/8 (22.225)	448 ± 32 (608.20 ± 16.30)	360 ± 30 (488.70 ± 40.10)	630 ± 50 (855.20 ± 67.90)	510 ± 40 (692.30 ± 54.30)
1 (25.4)	680 ± 50 (923.10 ± 67.90)	540 ± 45 (733 ± 61)	960 ± 70 (1303.20 ± 10.95)	775 ± 60 (1052.10 ± 10.90)
1 1/8 (28.575)	850 ± 60 (1153.9 ± 81.50)	675 ± 60 (916.3 ± 81.50)	1360 ± 100 (1846.2 ± 135.8)	1100 ± 85 (1493.3 ± 115.40)
1 1/4 (31.75)	1175 ± 85 (1595 ± 115.4)	925 ± 75 (1255.7 ± 101.8)	1850 ± 150 (2511.4 ± 203.6)	1500 ± 125 (2036.3 ± 169.70)

- (1) Torque values apply for use in irons and steels. The best thread engagement length in aluminium to be twice the nominal thread diameter, and engagement length ratio is to be 1.5 for irons and soft steel when zinc plating is used. Lubricate the zinc plated surfaces of the screws and / or nuts and use specified torque values.
- (2) Use rust preventive oil recommended by fastner manufactures for all cap-screws, bolts and nuts and parts wipes or washed nearly free of oil. Do not use for plated parts.
- (3) Use for all cap-screws, bolts and nuts whose threads are lubricated & for screws or nuts whose washer face is assembled against a hardened washer or smooth finished hard part.

Lubricating the threads and screw or nut face with SAE 20 or 30 oil is recommended for best results for all the grade 8 screws and all the universal joint bearing cap screws.

Do not use moly-disulfide, white, lead, copper filled or other such filled lubricants at these torque values. Such lubricants require special torque values.

Model GP 1060 CP

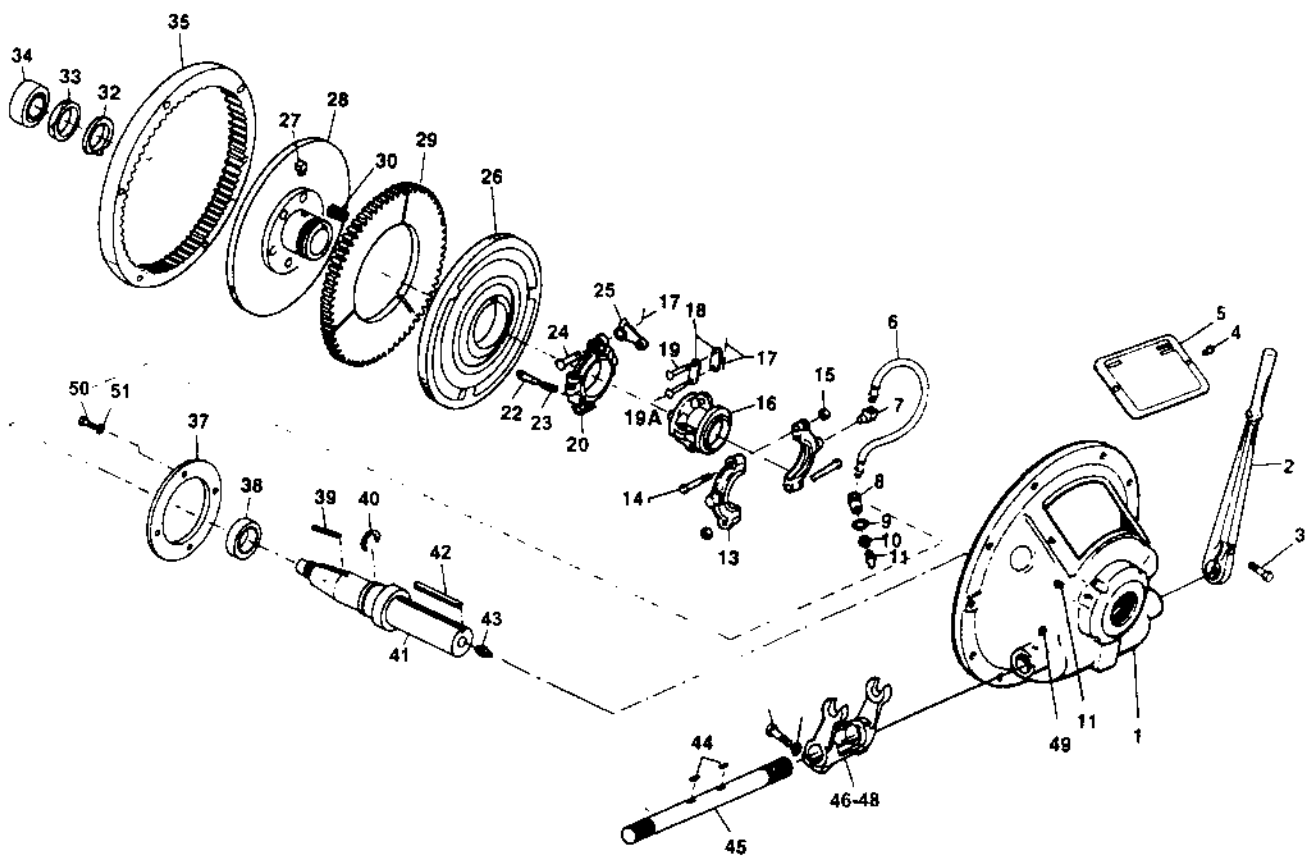


Model GP 1060 CP Parts List.

Item No.	Description	Part No.
1	Housing SAE 4	GP 79570
1	Housing SAE 5	GP 79580
1	Housing SAE 6	GP 85390
2-3	Hand Lever Assembly	GP X37990E
4-5	Inspection Plate Cover SAE 6	GP 19650A
4-5	Inspection Plate Cover SAE 4, 5	GP 19650
6-8	Grease Hose Assembly	GP A16630
6	Grease Hose	GP M1292A
7	Fitting(Elbow)	GP M12840
8	Fitting(Block)	GP M12830
9	Lock Washer	GP M 20460AF
10	Jam Nut	GP M20270AN
11	Grease Fitting	GP M2680
13-15	Bronze Release Collar Assembly	GP X117C80
13-19A	Sliding sleeve Assembly	GP S3870
13-30	Clutch Pack Assembly	GP CX1060 C0010
16	Sliding sleeve	GP 29690
17	Cotter Pins	GP B15350B
18	Lever Links	GP 29680
19	Lever Link Pins	GP B15370R
19A	Lever Links Pin	GP B15370Q
20-25	Adjusting Yoke Assembly	GP A160
20	Adjusting Yoke	GP 32060
22	Adjusting Lock Pin	GP 20420
23	Adjusting Yoke Spring	GP 13820
24	Lever Pin	GP B 15370 Q
25	Lever	GP 24110

Item No.	Description	Part No.
26	Floating Plate	GP 39510
27	Pin	GP 1100D3
27-28	Hub & Black Plate Assembly	GP H230
28	Hub & Back Plate	GP A30240
29	Drive Plate Solid	GP A35070D
29	Drive Plate Split	GP A35070E
30	Release Springs	GP A22860
32	Lock Washer	GP A15870
33	Lock Nut	GP 27270
34	Pilot Bearing for solid shaft	GP M1410A
34	Pilot Bearing for drilled shaft	GP M1410
35	Drive Ring	GP 69390
37	Bearing Retainer	GP A11810
38	Main Bearing	GP M1770
39	Hub Key	GP M20320X
40	Snap Ring	GP A10020
41	Clutch Shaft (1-7/16 Solid)	GP XA30260BM
41	Clutch Shaft (1-7/16 drilled)	GP XA30260BM
42	Output Key	GP M20320 BE
43	Fitting	GP M2870
44	Woodruff Keys	GP M20220 Z
45	Operating Shaft	GP 27570
46-47-48	Throwout yoke Assembly	GP X10370
49	Fitting Grease	GP M5030
50	Cap screw	GP M20010E
51	Lock Washer	GP M20460L

Model GP 1070 CP

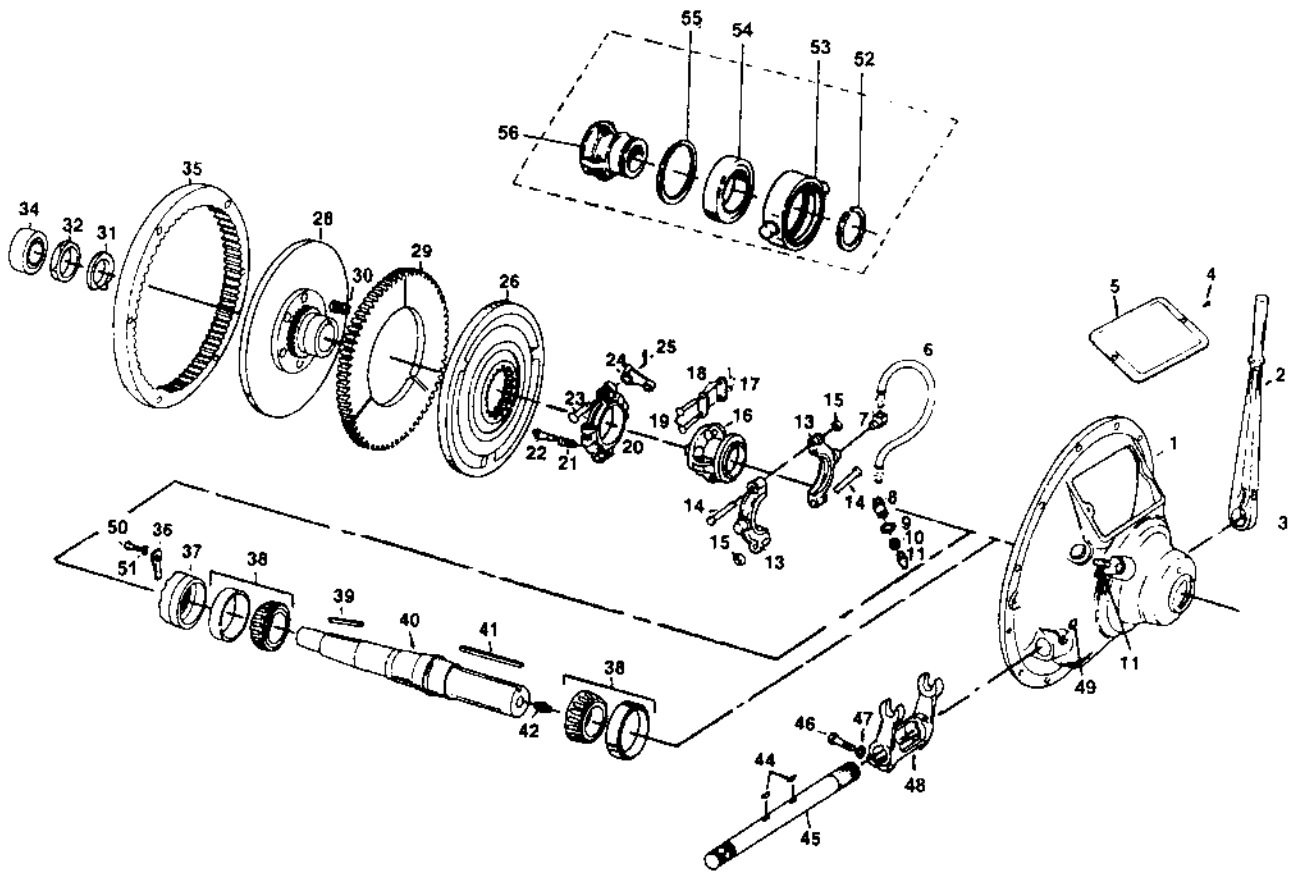


Model GP 1070 CP Parts List.

Item No.	Description	Part No.
1	Housing SAE 4	GP 79570
1	Housing SAE 5	GP 79580
1	Housing SAE 6	GP 85390
2-3	Hand Lever Assembly	GP X37990E
4-5	Inspection Plate Cover SAE 6	GP 19650A
4-5	Inspection Plate Cover SAE 4, 5	GP 19650
6-8	Grease Hose Assembly	GP A16630
6	Grease Hose	GP M1292A
7	Fitting (Elbow)	GP M12840
8	Fitting (Block)	GP M12830
9	Lock Washer	GP M 20460AF
10	Jam Nut	GP M20270AN
11	Grease Fitting	GP M2680
13-15	Bronze Release Collar Assembly	GP X117C80
13-19A	Sliding sleeve Assembly	GP S3870
13-30	Clutch Pack Assembly	GP CX1070 C001
16	Sliding sleeve	GP 29690
17	Cotter Pins	GP B15350B
18	Lever Links	GP 29680
19	Lever Link Pins	GP B15370R
19A	Lever Links Pin	GP B15370Q
20-25	Adjusting Yoke Assembly	GP A160
20	Adjusting Yoke	GP 32060
22	Adjusting Lock Pin	GP 20420
23	Adjusting Yoke Spring	GP 13820
24	Lever Pin	GP B 15370 Q
25	Lever	GP 24110

Item No.	Description	Part No.
26	Floating Plate	GP A 30870
27	Pin	GP 1100D3
27-28	Hub & Back Plate Assembly	GP H180
28	Hub & Back Plate	GP A 30880
29	Drive Plate Split	GP 54360F
30	Release Springs	GP A22860
32	Lock Washer	GP A15870
33	Lock Nut	GP 27270
34	Pilot Bearing for solid shaft	GP M1410A
34	Pilot Bearing for drilled shaft	GP M1410
35	Drive Ring	GP 66610
37	Bearing Retainer	GP A11810
38	Main Bearing	GP M1770
39	Hub Key	GP M20320X
40	Snap Ring	GP A10020
41	Clutch Shaft (1-7/16 Solid)	GP XA30260BM
41	Clutch Shaft (1-7/16 drilled)	GP XA30260
42	Output Key	GP M20320 BE
43	Fitting	GP M2870
44	Woodruff Keys	GP M20220 Z
45	Operating Shaft	GP 27570
46-47-48	Throwout yoke Assembly	GP X10370
49	Fitting Grease	GP M5030
50	Cap screw	GP M20010E
51	Lock Washer	GP M20460L

Model GP 1080 CP

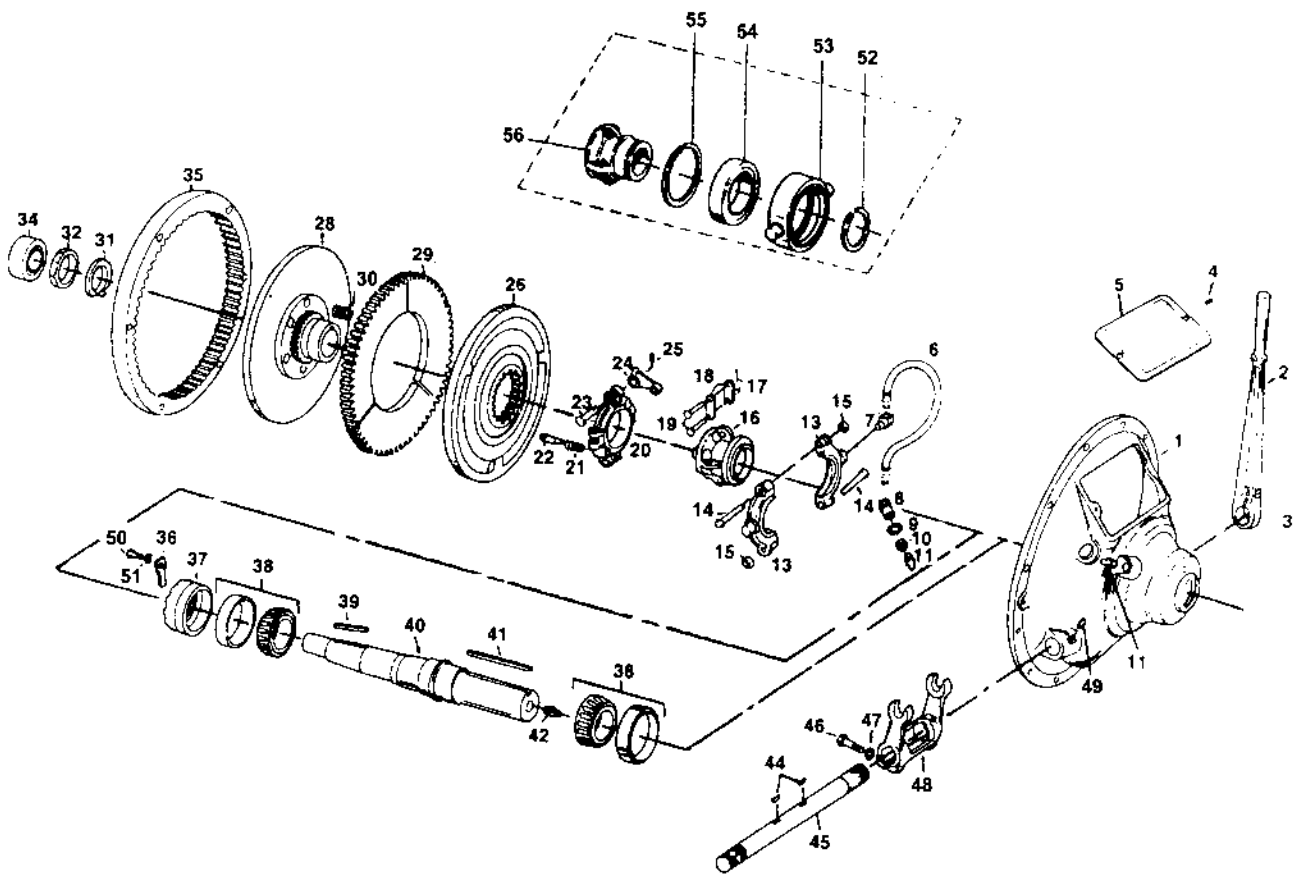


Model GP 1080 CP Parts List.

Item No.	Description	Part No.
1	Housing SAE 3	GP 91210
1	Housing SAE 4	GP 91200
1	Housing SAE 5	GP 91180
2-3	Hand Lever Assembly	GP X 37990 E
4-5	Inspection Plate Cover	GP 19650
6-8	Grease Hose Assembly	GP A 16630
6	Grease Hose	GP M 12920 A
7	Fitting (Elbow)	GP M 12840
8	Fitting (Block)	GP M 12830
9	Lock Washer	GP M 20460 AF
10	Jam Nut	GP M 20270 AN
11	Grease Fitting	GP M 2680
13-15	Bronze Collar Assembly	GP X 117 C 80
13-19	Sliding Sleeve Assembly	GP S 3840
13-30	Clutch Pack	GP CX 1080 C 0010
16	Sliding Sleeve	GP 21370
17	Cotter Pins	GP B 15350 B
18	Lever Links	GP 119 B 20
19	Lever Link Pins	GP B 15370 D
20-25	Adjusting Yoke Assembly	GP A 600
20	Adjusting Yoke	GP 19900
21	Adjusting Lock Pin Spring	GP 1150
22	Adjusting Lock Pin	GP 22450
23	Lever Pin	GP B 15380 D
24	Lever	GP 1030 F
25	Cotter Pin	GP B 15350 C
26	Floating Plate	GP A 31690
28	Hub & Back Plate	GP ZA 31770 C
29	Drive Plate Solid	GP 64790 D

Item No.	Description	Part No.
29	Drive Plate 3 Pce	GP 64790 E
30	Release Springs	GP 14730
31	Lock Washer	GP A 15880
32	Lock Nut	GP 10920 A
34	Pilot Bearing for Solid Shaft	GP M 1630 A
34	Pilot Bearing for drilled Shaft	GP M 1630
35	Drive Ring	GP 58050
36	Bearing Retainer Lock	GP A 19830
37	Bearing Retainer	GP A 26800
38	Main Bearings	GP M 15900
39	Hub Key	GP M 20320 Z
40	Clutch Shaft-Solid	GP A 38260 H
40	Clutch Shaft-Drilled	GP A 38260
41	Output Key	GP M 20330 AE
42	Grease Fitting	GP M 2870
44	Woodruff Keys	GP M 20220 Z
45	Operating Shaft (SAE 3)	GP 11440 F
45	Operating Shaft (SAE 4 & 5)	GP 27570
46-47-48	Throwout Yoke Assembly	GP X 10370
49	Grease Fitting	GP M 5030
50	Screw Hex Cap	GP M 20010 E
51	Lock Washer	GP M 20460 L
52-56	Ball Bearing Sleeve Assembly	GP S 6440
52	Snap Ring Sleeve	GP A 26220 C
53	Collar	GP A 42620 A
54	B B Bearing	GP M 22200
55	Snap Ring Collar	GP A 26690 AM
56	Sliding Sleeve	GP A 44550

Model GP 1100 CP

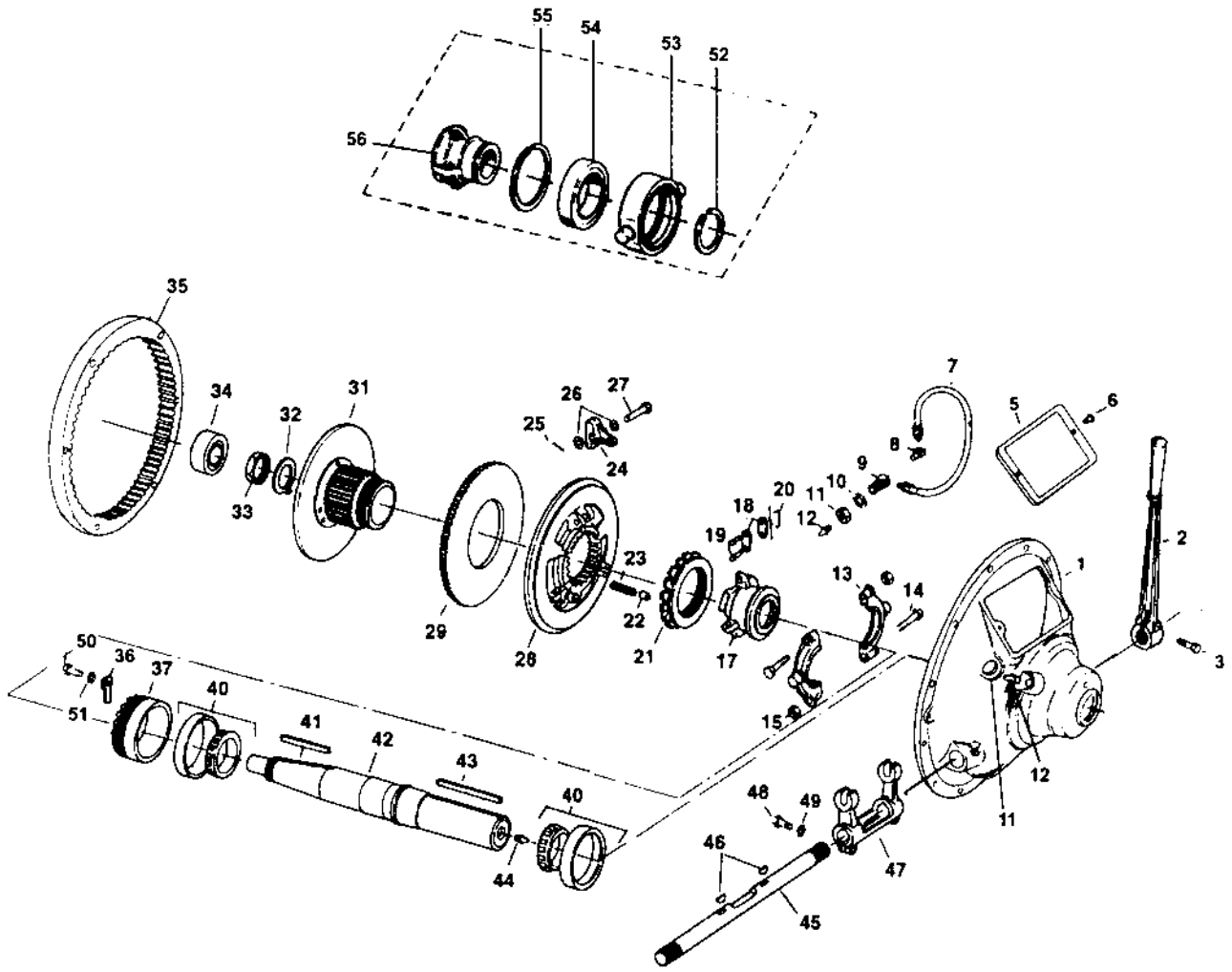


Model GP 1100 CP Parts List.

Item No.	Description	Part No.
1	Housing SAE 2	GP 82540
1	Housing SAE 3	GP 82550
1	Housing SAE 4	GP 88790
2-3	Hand Lever Assembly	GP X 37990 E
4-5	Inspection Plate Cover SAE 2 & 3	GP 28150
4-5	Inspection Plate Cover SAE 4	GP 19650
6-7-8	Grease Hose Assembly	GP A 16630
6	Grease Hose	GP M 12920 A
7	Fitting (Elbow)	GP M 12840
8	Fitting (Block)	GP M 12830
9	Lock Washer	GP M 20460 AF
10	Jam Nut	GP M 20270 AN
11	Grease Fitting	GP M 2680
13-15	Bronze Collar Assembly	GP X 117 C80
13-19	Sliding Sleeve Assembly	GP S 3840
13-30	Clutch Pack	GP CX 100C001
16	Sliding Sleeve	GP 21370
17	Cotter Pins	GP B 15350 B
18	Lever Links	GP 119 B 20
19	Lever Link Pins	GP B 15370 D
20-25	Adjusting Yoke Assembly	GP A 600
20	Adjusting Yoke	GP 19900
21	Adjusting Lock Pin Spring	GP 1150
22	Adjusting Lock Pin	GP 22450
23	Lever Pin	GP B 15380 D
24	Lever	GP 1030 F
25	Cotter Pin	GP B 15350 C
26	Floating Plate	GP 57520
28	Hub & Back Plate	GP 60300

Item No.	Description	Part No.
29	Drive Plate 3 Pce	GP 58780 G
29	Drive Plate Solid	GP 58780 F
30	Release Springs	GP A 10690
31	Lock Washer	GP A 15880
32	Lock Nut	GP 10920 A
34	Pilot Bearing for Solid Shaft	GP M 2240 A
34	Pilot Bearing Drilled Shaft	GP M 2240
35	Drive Ring	GP 61870 A
36	Bearing Retainer Lock	GP 12160
37	Bearing Retainer	GP B 21470
38	Main Bearings	GP M 2070
39	Hub Key	GP M 20320 Z
40	Clutch Shaft-Solid	GP 48790 AU
40	Clutch Shaft-Drilled	GP 48790
41	Output Key	GP M 20330 BE
42	Grease Fitting	GP M 2870
44	Woodruff Keys	GP M 20220 Z
45	Operating Shaft (SAE 2 & 3)	GP 11440 F
45	Operating Shaft (SAE 4)	GP 27570
46-47-48	Throwout Yoke Assembly	GP X 10370
49	Grease Fitting	GP M 5030
50	Screw Hex Head	GP M 20010 E
51	Washer Lock	GP M 20460 L
52-56	Ball Bearing Sleeve Assembly	GP S 6440
52	Snap Ring Sleeve	GP A 26220 C
53	Collar	GP A 42620 A
54	B B Bearing	GP M 22200
55	Snap Ring Collar	GP A 26690 AM
56	Sliding Sleeve	GP A 44550

Model GP 1110 SP

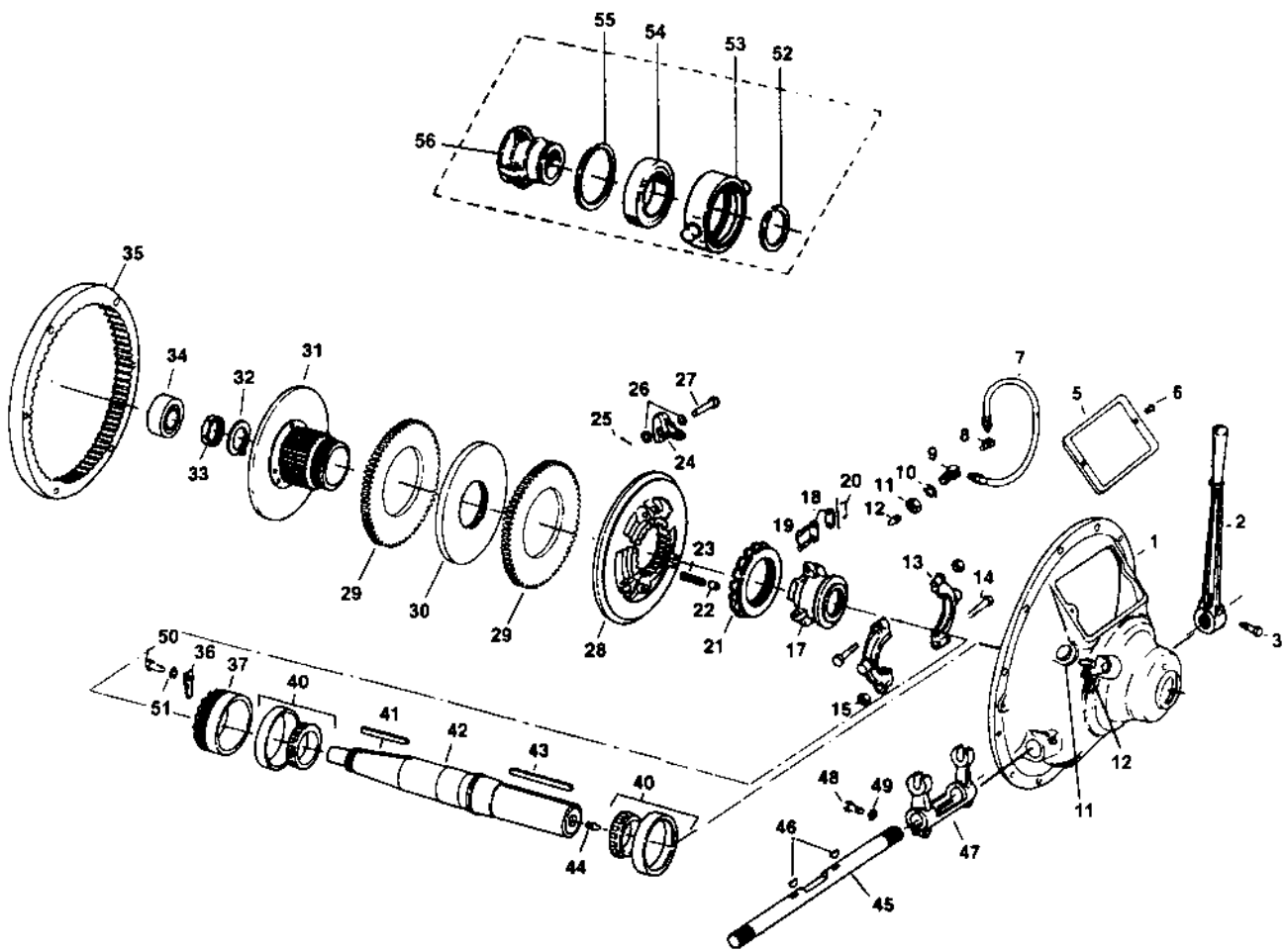


Model GP 1110 SP Parts List.

Item No.	Description	Part No.
1	Housing SAE 1	GP 82510
1	Housing SAE 2	GP 82470
1	Housing SAE 3	GP 82520
2-3	Hand Lever Assembly	GP X 37990 E
5-6	Inspection Plate	GP 28150
7	Grease Hose SAE 1	GP M 12920 B
7	Grease Hose SAE 2 & 3	GP M 12920 A
7-9	Grease Hose Assembly SAE 2 & 3	GP A 16630
7-9	Grease Hose Assembly SAE 1	GP A 16630 A
8	Fitting (Elbow)	GP M 12840
9	Fitting (Block)	GP M 12830
10	Lock Washer	GP M 20460 AF
11	Jam Nut	GP M 20270 AN
12	Grease Fitting	GP M 2680
13-15	Bronze Collar Assembly	GP X 1170
13-20	Sliding Sleeve Assembly	GP S 6010
13-31	Clutch Assembly	GP SP 1110 C 001
17	Sliding Sleeve	GP A 42370
18	Lever Link	GP 26170
19	Lever Link Pin	GP B 15370 D
20	Cotter Pin	GP B 15350 B
21	Adjusting Ring	GP A 42380
22	Adjusting Lock Pin	GP B 23400
22-23-28	Floating Plate	GP X B 23430
23	Adjusting Lock Pin Spring	GP A 27010 BD
24	Lever	GP B 13040
25	Cotter Pin	GP B 15350 C
26	Spring Washer	GP M 21150 C

Item No.	Description	Part No.
27	Lever Pin	GP B 15380 A
28	Floating Plate	GP A 65060 B
29	Drive Plate Solid	GP A 55790 D
29	Drive Plate-3 Pce.	GP A 55790 E
31	Hub & Back Plate	GP ZA 65050 A
32	Lock Washer	GP A 15880
33	Lock Nut	GP 10920
34	Pilot Bearing for Solid Shaft	GP M 2240 A
34	Pilot Bearing for Drilled Shaft	GP M 2240
35	Driving Ring	GP 66250 A
36	Bearing Retainer Lock	GP 12160
37	Bearing Retainer	GP B 21470
40	Main Bearing	GP M 2070
41	Hub Key	GP M 20320 BE
42	Clutch Shaft-Solid	GP A 51880 AZ
42	Clutch Shaft-Drilled	GP A 51880
43	Key	GP M 20330 BJ
44	Grease Fitting	GP M 2870
45	Operating Shaft	GP 11440 E
46	Woodruff Keep	GP M 20220 Z
47-48-49	Throwout Yoke Assembly	GP X 1250 A
50	Screw Hex Head Cap	GP M 20010 E
51	Washer Lock	GP M 20460 L
52-56	Ball Bearing Sleeve Assembly	GP S 6700
52	Snap Ring Sleeve	GP A 26220 C
53	Collar	GP A 44940
54	B B Bearing	GP M 22200
55	Snap Ring Collar	GP A 26690 AM
56	Sliding Sleeve	GP A 44340

Model GP 2110 SP

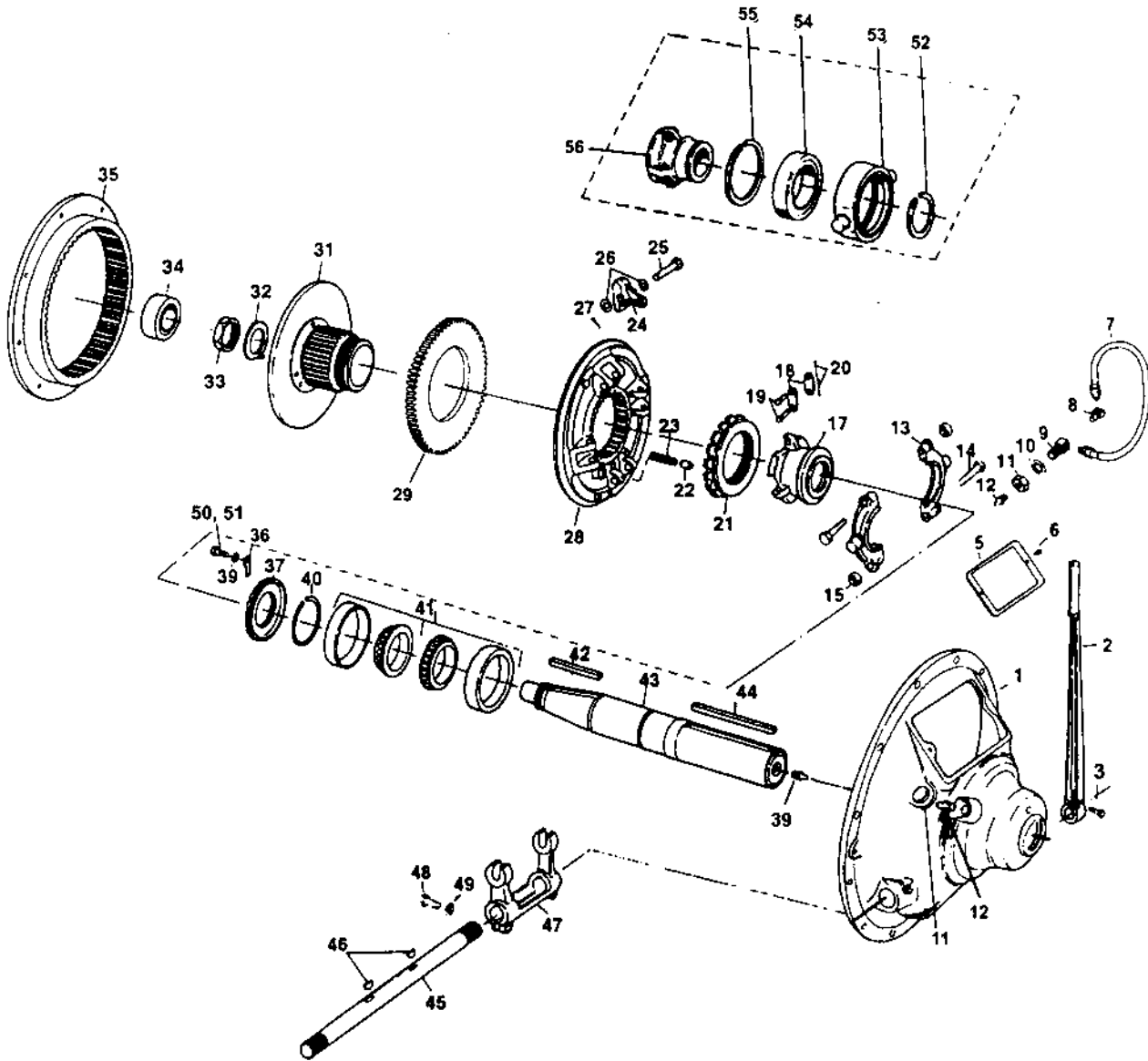


Model GP 2110 SP Parts List.

Item No.	Description	Part No.
1	Housing SAE 1	GP 97000
1	Housing SAE 2	GP 96820
1	Housing SAE 3	GP 99770 A
2-3	Hand Lever Assembly	GP X 37990 E
5-6	Inspection Plate	GP 28150
7-9	Grease Hose Assembly SAE 1	GP A 16630 A
7	Grease Hose SAE 1	GP A 12920 B
7-9	Grease Hose Assembly SAE 2 & 3	GP A 16630
7	Grease Hose SAE 2 & 3	GP M 12920 A
8	Fitting (Elbow)	GP M 12840
9	Fitting (Block)	GP M 12830
10	Lock Washer	GP M 20460 AF
11	Jam Nut	GP M 20270 AN
12	Grease Fitting	GP M 2680
13-31	Clutch Assembly	GP SP 2110 C 001
13-20	Sliding Sleeve	GP S 6340
13-15	Bronze Collar Assembly	GP X 117C100
17	Sliding Sleeve	GP A 44220
18	Lever Link	GP 26170
19	Lever Link Pin	GP B 15370 D
20	Cotter Pin	GP B 15350 B
21	Adjusting Ring	GP A 42380
22	Adjusting Lock Pin	GP B 23400
23	Adjusting Lock Pin Spring	GP A 27010 BD
22-23-28	Floating Plate	GP X B 23430
24	Lever	GP B 13040
25	Cotter Pin	GP B 15350 C
26	Spring Washer	GP M 21150 C

Item No.	Description	Part No.
27	Lever Pin	GP B 15380 A
28	Floating Plate	GP A 65060 B
29	Drive Plate-Solid	GP A 55790 D
29	Drive Plate-3 Pce.	GP A 55790 E
30	Centre Plate	GP A 66900
31	Hub & Back Plate	GP ZA 66840 A
32	Lock Washer	GP B 15110 E
33	Lock Nut	GP B 15090 B
34	Pilot Bearing for solid shaft	GP M 2240 A
34	Pilot Bearing for drilled shaft	GP M 2240
35	Driving Ring	GP 69310
36	Bearing Retainer Lock	GP 12160
37	Bearing Retainer	GP B 14300
40	Main Bearing	GP M 21960
41	Hub Key	GP M 20330 X
42	Clutch Shaft-Solid	GP A 66910 AC
42	Clutch Shaft-Drilled	GP A 66910
43	Key	GP M 20330 BJ
44	Grease Fitting	GP M 2870
45	Operating Shaft	GP 11440 E
46	Woodruff Key	GP M 20220 Z
47-48-49	Throwout Yoke Assembly	GP X 35070
50	Screw Hex Head Cap	GP M 20010 E
51	Washer Lock	GPM 20460 L
52-56	Ball Bearing Sleeve Assembly	GP S 7450
52	Snap Ring Sleeve	GP A 26690 CW
53	Collar	GP B 33720
54	B B Bearing	GP M A 3310
55	Snap Ring Collar	GP A 29030 BY
56	Sliding Sleeve	GP 33730

Model GP 1140 SP

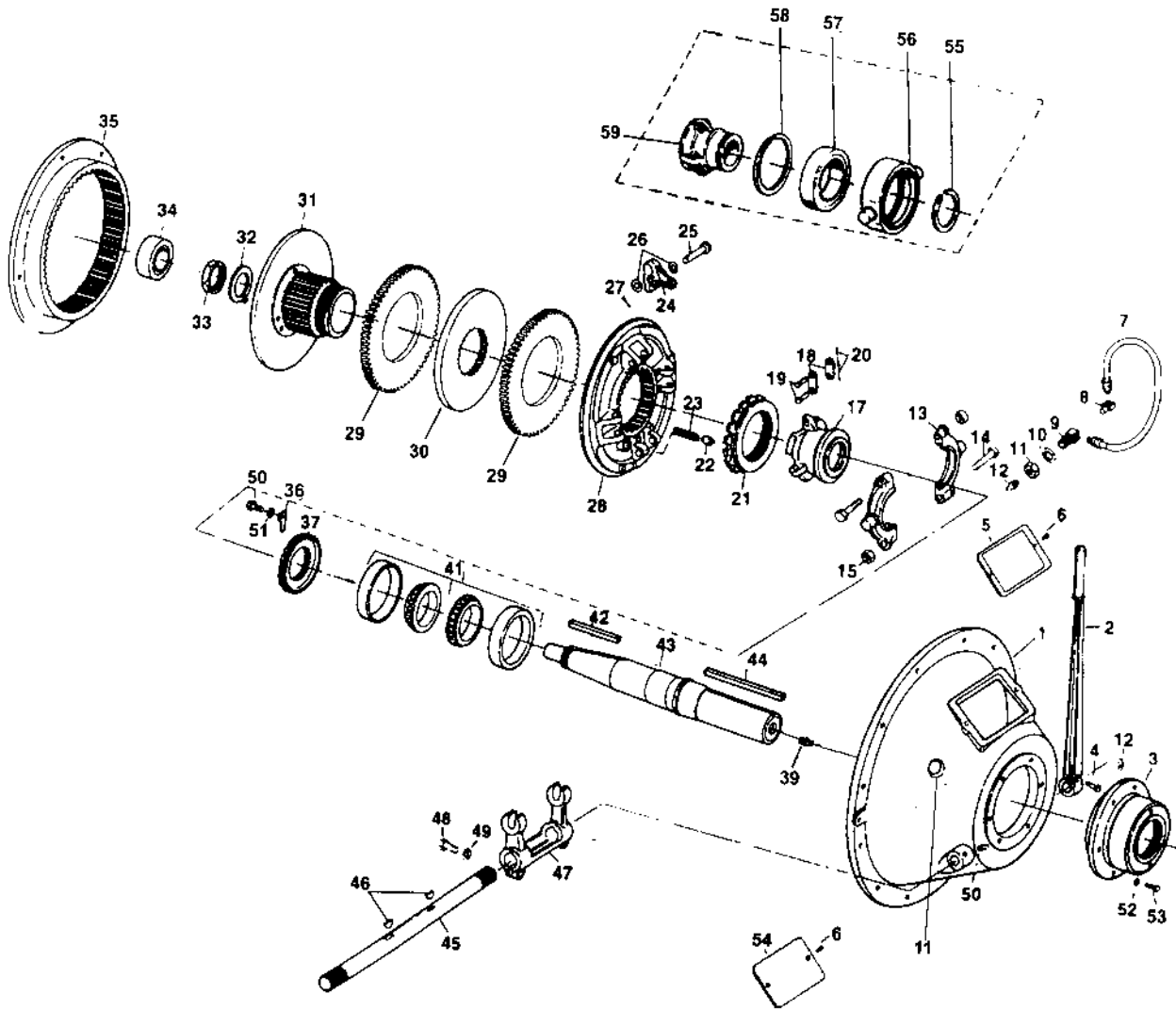


Model GP 1140 SP Parts List.

Item No.	Description	Part No.
1	Housing SAE 0	GP 84310
1	Housing SAE 1	GP 84240
2-3	Hand Lever Assembly	GP X 74410 T
5-6	Inspection Plate	GP A 48360
7	Grease Hose	GP M 12920 B
7-9	Grease Hose Assembly	GP A 16630 A
8	Fitting (Elbow)	GP M 12840
9	Fitting (Block)	GP M 12830
10	Lock Washer	GP M 20460 AF
11	Jam Nut	GP M 20270 AN
12	Grease Fitting	GP M 2680
13-15	Bronze Collar Assembly	GP X 117 B 140
13-20	Sliding Sleeve Assembly	GP S 6200
13-31	Clutch Assembly	GP SP 1140 C 001
17	Sliding Sleeve	GP A 65140 B
18	Lever Link	GP 119 B 140
19	Lever Link Pins	GP B 15380 B
20	Cotter Pin	GP B 15350 C
21	Adjusting Ring	GP A 42410
22	Adjusting Lock Pin	GP B 23410
23	Adjusting Lock Pin Spring	GP A 27020 BE
24	Lever	GP B 12840
25	Lever Pin	GP B 15400 A
22-23-28	Floating Plate	GP X B 23450

Item No.	Description	Part No.
26	Spring Washer	GP M 21150 D
27	Cotter Pin	GP B 15350 D
28	Floating Plate	GP A 65120 C
29	Drive Plate-Solid	GP 56590 K
29	Drive Plate-3 Pce.	GP 56590 L
31	Hub & Back Plate	GP ZA 66200 A
32	Lock Washer	GP A 15890
33	Lock Nut	GP 10860
34	Pilot Bearing for Solid Shaft	GP M 19850 A
34	Pilot Bearing for Drilled Shaft	GP M 19850
35	Driving Ring	GP 57120
36	Bearing Retainer Lock	GP A 19830
37	Bearing Retainer	GP A 30500
39	Grease Fitting	GP M 2870
40	Snap ring	GP A 26220 F
41	Main Bearing	GP M 2820
42	Hub Key	GP M 20350 AB
43	Clutch Shaft-Solid	GP A 51900 A
43	Clutch Shaft-Drilled	GP A 51900
44	Key	GP M 20340 P
45	Operating Shaft (SAE 0 Housing)	GP 15800 A
45	Operating Shaft (SAE 1 Housing)	GP 10940 C
46	Woodruff Key	GP M 20220 Z
47-48-49	Throwout Yoke Assembly	GP X 50910
50	Screw Hex Head Cap	GP M 20010 E
51	Washer Lock	GP M 20460 L

Model GP 2140 SP

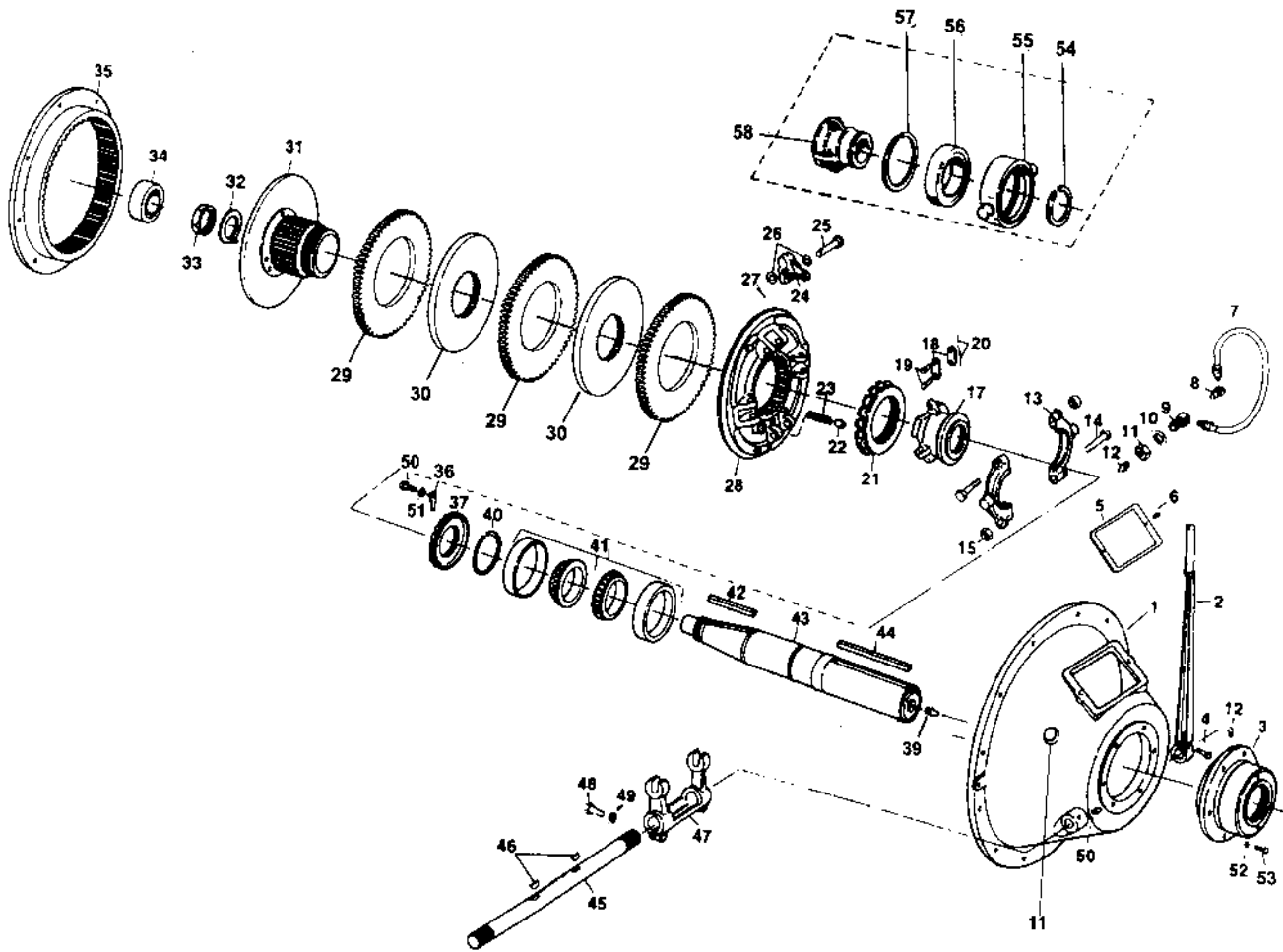


Model GP 2140 SP Parts List.

Item No.	Description	Part No.
1	Housing SAE 0	GP 87190
1	Housing SAE 1	GP 87180
2-4	Hand Lever Assembly	GP X 74410 T
3	Bearing Carrier	GP A 51950
5-6	Inspection Plate	GP 28150
7	Grease Hose	GP M 12920 B
7-9	Grease Hose Assembly	GP A 16630 A
8	Fitting (Elbow)	GP M 12840
9	Fitting (Block)	GP M 12830
10	Lock Washer	GP M 20460 AF
11	Jam Nut	GP M 20270 AN
12	Grease Fitting	GP M 2680
13-15	Bronze Collar Assembly	GP X 117 B 140
13-20	Sliding Sleeve Assembly	GP S 5980
13-31	Clutch Assembly	GP SP 2140 C 001
17	Sliding Sleeve	GP A 65140
18	Lever Link	GP 119 B 140
19	Lever Link Pins	GP B 15380 B
20	Cotter Pin	GP B 15350 C
21	Adjusting Ring	GP A 42410
22	Adjusting Lock Pin	GP B 23410
23	Adjusting Lock Pin Spring	GP A 27020 BE
24	Lever	GP B 12840
25	Lever Pin	GP B 15400 A
22-23-28	Floating Plate	GP X B 23450

Item No.	Description	Part No.
26	Spring Washer	GP M 21150 D
27	Cotter Pin	GP B 15350 D
28	Floating Plate	GP A 65120 C
29	Drive Plate-Solid	GP 56590 K
29	Drive Plate-3 Pce.	GP 56590 L
30	Centre Plate	GP A 65130
31	Hub & Back Plate (3.500 Bore)	GP ZA 65190 E
32	Lock Washer	GP B 15110 L
33	Lock Nut	GP B 15090 T
34	Pilot Bearing for Solid Shaft	GP M 19850 A
34	Pilot Bearing for Drilled Shaft	GP M 19850
35	Driving Ring	GP 57130
36	Bearing Retainer Lock	GP A 19830
37	Bearing Retainer	GP A 33080 B
39	Fitting	GP M 2870
41	Main Bearing	GP M 2150
42	Hub Key	GP M 20350 AC
43	Clutch Shaft-Solid	GP B 50270 A
43	Clutch Shaft-Drilled	GP B 50270
44	Key	GP M 20340 AL
45	Operating Shaft (SAE 0 Housing)	GP 15800 A
45	Operating Shaft (SAE 1 Housing)	GP 10940 C
46	Woodruff Key	GP M 20220 Z
47-48-49	Throwout Yoke Assembly	GP X 50910
50	Screw Hex Head cap	GP M 20010 H
51	Washer Lock	GP M 20460 L
52	Washer	GP M 20470 AA
53	Screw Hex Head Cap	GP M 20040 W
54	Cover Plate	GP 28160

Model GP 3140 SP



Model GP 3140 SP Parts List.

Item No.	Description	Part No.
1	Housing SAE 0	GP 96170
1	Housing SAE 1	GP 95840
2, 4	Hand Lever	GP X 74410 T
3	Bearing Carrier	GP A 51940
5-6	Inspection Plate	GP 28150
7	Grease Hose	GP M 12920 B
7-9	Grease Hose Assembly	GP A 16630 A
8	Fitting (Elbow)	GP M 12840
9	Fitting (Block)	GP M 12830
10	Lock Washer	GP M 20460 AF
11	Jam Nut	GP M 20270 AN
12	Grease Fitting	GP M 2680
13-15	Bronze Collar Assembly	GP X 117 B 140
13-20	Sliding Sleeve Assembly	GP S 5980
13-31	Clutch Assembly	GP SP 3140 C 001
17	Sliding Sleeve	GP A 65140
18	Lever Link	GP 119 B 140
19	Lever Link Pin	GP B 15380 B
20	Cotter Pin	GP B 15350 C
21	Adjusting Ring	GP A 42410
22	Adjusting Lock Pin	GP B 23410
23	Adjusting Lock Pin Spring	GP A 27020 BE
24	Lever	GP B 12840
25	Lever Pin	GP B 15400 A
22-23-28	Floating Plate	GP XB 23450

Item No.	Description	Part No.
26	Spring Washer	GP M 21150 D
27	Cotter Pin	GP B 15350 D
28	Floating Plate	GP A 65120 C
29	Drive Plate-Solid	GP 56590 K
29	Drive Plate-3 Pce.	GP 56590 L
30	Centre Plate	GP A 65130
31	Hub & Back Plate (3.500 Bore)	GP ZA 65110 A
32	Lock Washer	GP A 15900
33	Lock Nut	GP A 14420
34	Pilot Bearing for Solid Shaft	GP M 19850 A
34	Pilot Bearing for Drilled Shaft	GP M 19850
35	Driving Ring	GP A 65180
36	Bearing Retainer Lock	GP A 19830
37	Bearing Retainer	GP A 33080
39	Grease Fitting	GP M 2870
40	Snap Ring	GP A 26220 L
41	Main Bearing	GP M 2150
42	Hub Key	GP M 20330 BK
43	Clutch Shaft-Solid	GP A 65150 N
43	Clutch Shaft-Drilled	GP 65150
44	Key	GP M 20340 BF
45	Operating Shaft (SAE 0 Housing)	GP 15800 A
45	Operating Shaft (SAE 1 Housing)	GP 10940 C
46	Woodruff Key	GP M 20220 Z
47-48-49	Throwout Yoke Assembly	GP X 50910
50	Screw Hex Head Cap	GP M 20010 H
51	Washer Lock	GP M 20460 L
52	Washer	GP M 20470 AA
53	Screw Hex Head Cap	GP M 20040 W

Warranty

1. All assembled products and parts (except those components / parts which are directly covered under warranty to original customers by respective manufacturers) are warranted by GP Powertrain against defective materials or workmanship for a period of twenty- four (24) months from the date of original shipment by GP Powertrain, to the original customer, but not to exceed twelve (12) months of service, whichever occurs first. This is the only warranty made by GP Powertrain and is in lieu of any and all other warranties expressed or implied, including the warranties of merchantability or fitness for a particular purpose and no other warranties are implied or intended to be given by GP Powertrain.
2. GP Powertrain will make good the product, arising either within warranty period as specified or otherwise (including all liabilities) shall be at the sole discretion of GP Powertrain, be either the repair or replacement of GP Powertrain parts/products found defective. Labour hours required for job of removal, disassembly, repairs etc. for GP Powertrain products will not be reimbursed. GP Powertrain will not be liable for any consequential, incidental or punitive damages including economical losses.

Warranty claims are subject to following

- a) Defective parts/products, upon request must be returned to GP Powertrain on freight paid basis within warranty period (not later than sixty (60) days from date of failure falling within warranty period). Claims will not be accepted if proper care is not taken during transportation, storage from the date of shipment till it reaches GP Powertrain.
 - b) No warranty claims will be allowed if in the opinion of GP Powertrain, failure is due to either abuse, neglect of the product/part as a consequence of an accident.
 - c) The warranty is void if product/part is not properly installed, commissioned and maintained within the rated capacity as per the recommended procedure provided by GP Powertrain.
 - d) GP Powertrain will not entertain warranty claims if any of the part/product is modified without a written consent from GP Powertrain. GP Powertrain will also not warrant replacement for parts/products not of GP Powertrain origin.
3. As a consideration of this warranty, the original customer and subsequent purchaser agree to indemnify and hold GP Powertrain harmless from and against all and any loss, liability, damages or expenses for injury to persons or property, including without limitation, the original customers and subsequent purchasers employees and property, due to their acts or omissions of their agents, and employees in the installation, transportation, maintenance, use and operation of the said equipment.
 4. Only a GP Powertrain authorised representative shall have authority to assume any cost or expenses in the service, repair or replacement of any part or product within the warranty period, except when such cost or expense is authorised in advance in writing by GP Powertrain.
 5. GP Powertrain, reserves the right to improve the product through changes in design or material without being obligated to incorporate such changes in products of prior manufacture. The original Customer and subsequent purchasers will not use any such changes as evidence of insufficiency or inadequacy of prior designs or materials. i.e. If failure occurs within the warranty period, and constitutes a breach of warranty, repair or replacement, parts will be furnished on a "no-charge" basis and these parts will be covered by the remainder of the unexpired warranty, which remains in effect on the complete unit.

GP POWERTRAIN

