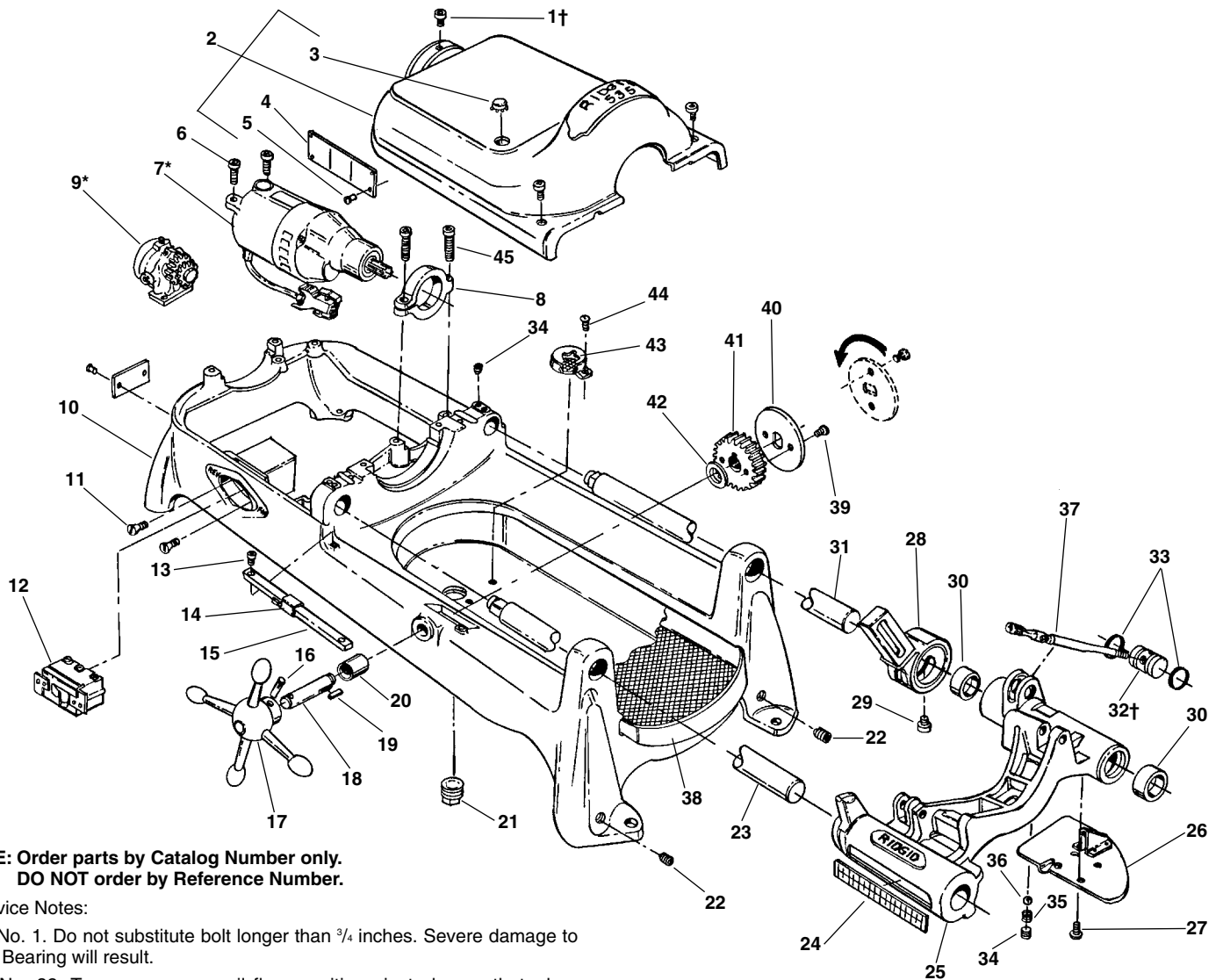


Main Components – Early Style



**NOTE: Order parts by Catalog Number only.
DO NOT order by Reference Number.**

†Service Notes:

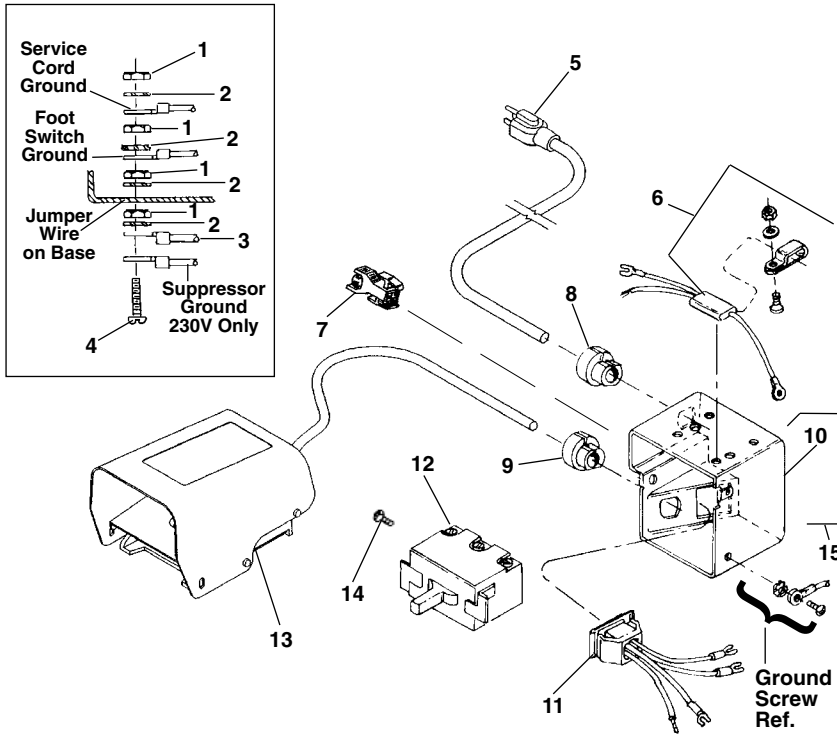
Ref. No. 1. Do not substitute bolt longer than $\frac{3}{4}$ inches. Severe damage to Rear Bearing will result.

Ref. No. 32. To assure proper oil flow, position pivot plug so that when spout is in up position, oil flow hole is visible in carriage slot below spout.

| Ref. No. | Catalog No. | Description | Ref. No. | Catalog No. | Description |
|----------|-------------|--|----------|-------------|--|
| 1† | 46760 | Screw $\frac{3}{8}$ " - 16 x $\frac{3}{4}$ " (3) | 24 | 46370 | Scale |
| 2 | 43190 | Cover (Incls. Ref. No. 3, 4, 5) | 25 | 62057 | Carriage Assy. (Includes Ref. Nos. 24, 26, 27, 28, 29, 30, 34, 35, 36) |
| 3 | 89310 | Plug Button | 26 | 45195 | Drip Plate |
| 4 | 88690 | Warning Plate | 27 | 46270 | Screw $\frac{1}{4}$ " - 20 x $\frac{1}{2}$ " Pan Head (4) |
| 5 | 85920 | Pop Rivet (8) | 28 | 43690 | Cutter Arm |
| 6 | 46745 | Screw $\frac{3}{8}$ " - 16 x $1\frac{1}{4}$ " (2) | 29 | 44930 | Screw, $\frac{5}{16}$ " x $\frac{9}{32}$ " |
| 7* | 88125 | Motor Model 1177, 115V | 30 | 46720 | Oil Seal (2) |
| | 88165 | Motor Model 2377, 230V | 31 | 45220 | Support Bar - Rear |
| 8 | 43795 | Motor Bracket | 32† | 44340 | Pivot Plug |
| 9* | 47195 | Model A Oil Pump | 33 | 44470 | O-Ring (2) |
| 10 | 43030 | Base (Incls. Ref. No. 20, 21, 22, 44) | 34 | 46800 | Set Screw $\frac{3}{8}$ " - 16 x $\frac{3}{8}$ " (3) |
| 11 | 45280 | Screw #8-32 x $\frac{5}{8}$ " Flat Head (2) | 35 | 46680 | Spring |
| 12 | 44505 | Switch | 36 | 46925 | Ball |
| 13 | 45615 | Screw #10-32 x $\frac{1}{2}$ " Flat Head (2) | 37 | 44495 | Oil Spout Assembly |
| 14 | 47110 | Indicator Slide | 38 | 43355 | Chip Tray |
| 15 | 47105 | Indicator Bar | 39 | 46785 | Screw #10-32 x $\frac{3}{8}$ " |
| 16 | 47165 | Pin | 40 | 47120 | Lock Plate |
| 17 | 46510 | Handwheel | 41 | 45430 | Pinion |
| 18 | 47115 | Pinion Shaft | 42 | 47145 | Spacer |
| 19 | 46930 | Key $\frac{3}{16}$ " Square | 43 | 46655 | Filter |
| 20 | 46540 | Bushing | 44 | 45420 | Screw #10-24 x $\frac{3}{8}$ " |
| 21 | 44485 | Drain Plug | 45 | 44220 | Screw $\frac{3}{8}$ " - 16 x $1\frac{1}{2}$ " |
| 22 | 42037 | Set Screw $\frac{1}{2}$ " - 13 x $\frac{1}{2}$ " (4) | | | |
| 23 | 45440 | Support Bar - Front | | | |

*Refer to Motor Model No./Refer to Model "A" Oil Pump for Component Parts

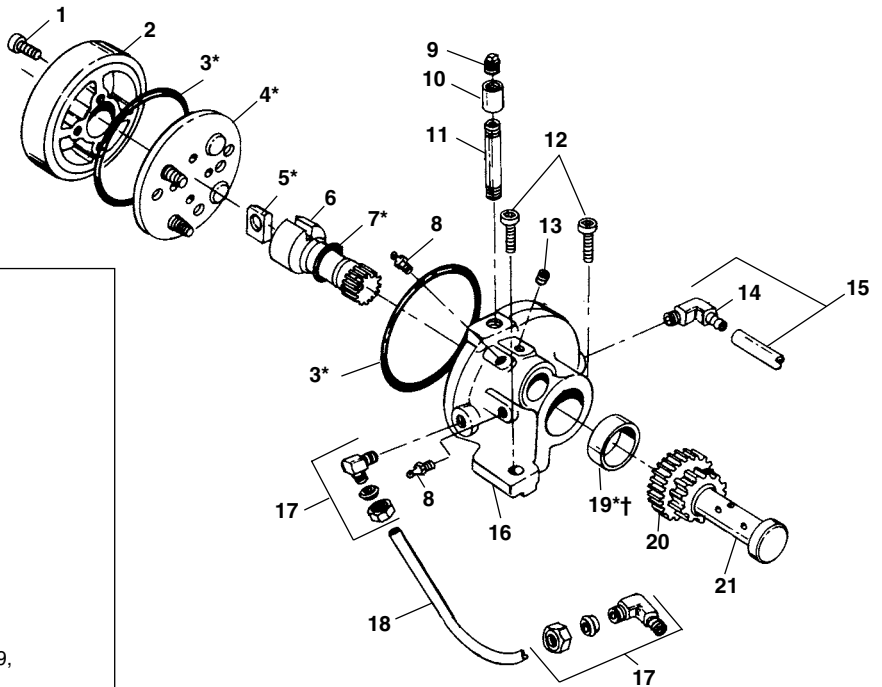
Electrical Components



NOTE: Order parts by Catalog Number only. DO NOT order by Reference Number.

| Ref. No. | Catalog No. | Description |
|----------|-------------|---|
| 1 | 44695 | Hex Nut #10 - 24 (4) |
| 2 | 46985 | Ext. Tooth Washer #10 (4) |
| 3 | 85925 | Jumper Wire |
| 4 | 92455 | Screw #10 - 24 x 3/8" |
| 5 | 46740 | Power Cord w/Plug (115V) |
| | 46410 | Power Cord w/Plug (230V) |
| | 75045 | Power Cordless Plug (230V Europe/S. Africa) |
| 6 | 46320 | Suppressor Kit (230V Europe) |
| | 99170 | Suppressor (230V S. Africa) |
| 7 | 50552 | Plug |
| 8 | 46735 | Cord Grommet |
| | 46730 | Cord Grommet (230V Europe/S. Africa) |
| 9 | 46735 | Cord Grommet |
| 10 | 50612 | Switch Box |
| 11 | 50617 | Outlet Jumper Assembly |
| 12 | 44505 | Switch |
| 13 | 36642 | B-294 Foot Switch |
| 14 | 44180 | Screw |
| 15 | 91187 | Switch Box Kit (Includes Ref. Nos. 7-11) |

Model "A" Pump

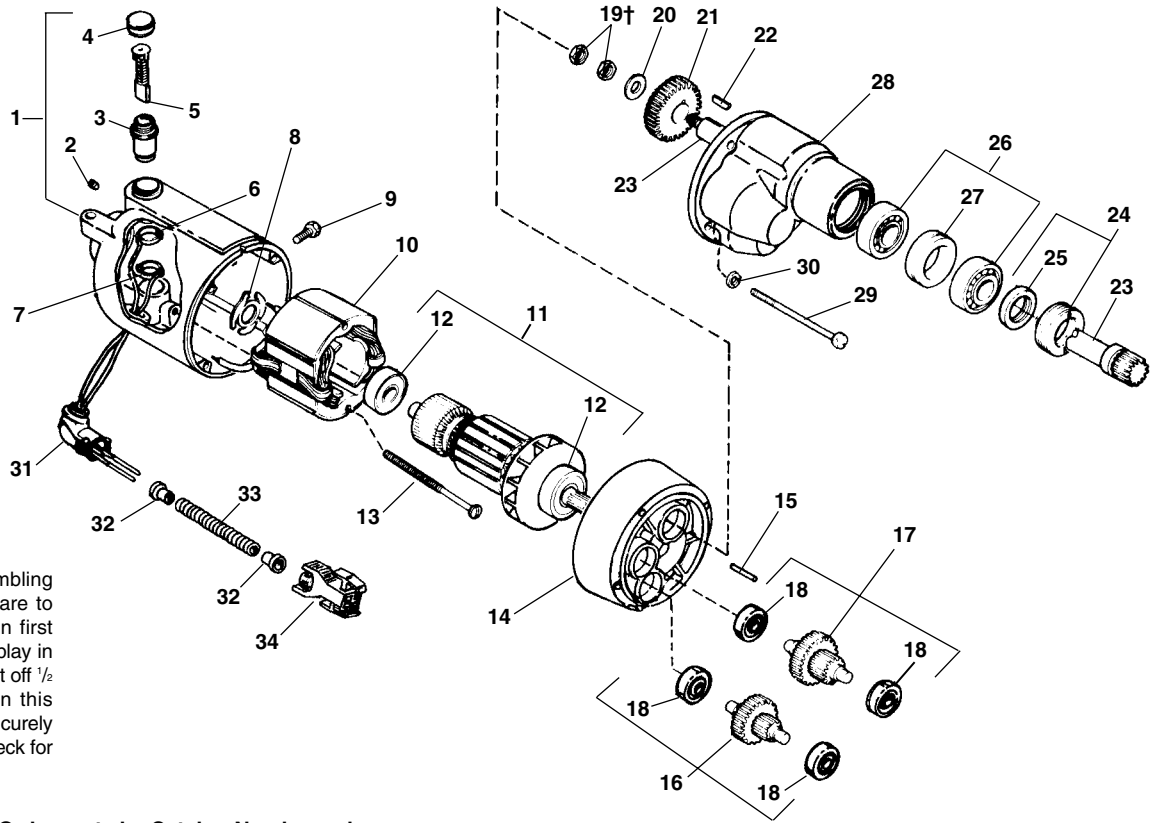


| Ref. No. | Catalog No. | Description |
|----------|-------------|---|
| 1 | 46770 | Screw #10-32 x 1" SHCS (4) |
| 2 | 46350 | Cover |
| 3* | 44650 | O-Ring (2) |
| 4* | 46645 | Valve Assembly |
| 5* | 47100 | Rotor Blade |
| 6 | 46355 | Pinion Shaft |
| 7* | 44645 | O-Ring |
| 8 | 46860 | Grease Fitting |
| 9 | 46815 | Pipe Plug |
| 10 | 89725 | Coupling |
| 11 | 89730 | Nipple |
| 12 | 46750 | Screw 3/8"-16 x 1" SHCS (2) |
| 13 | 44455 | Set Screw 5/16" x 3/8" |
| 14 | 87945 | 90° Fitting |
| 15 | 75065 | Intake Line |
| 16 | 43470 | Pump Body (Incls. Ref. Nos. 3, 8, 16, 19, Roller Bearing) |
| 17 | 46840 | 90° Fitting (2) |
| 18 | 44105 | Feed Line |
| 19*† | 46715 | Oil Seal |
| 20 | 44350 | Idler Gear |
| 21 | 44345 | Gear Shaft |
| — | 91055 | Repair Kit (Includes items marked with *) |

†Service Note: When replacing Oil Seal, open side should face towards outside of Pump Body. Use care in installing Seal so that lip is not damaged.

1157
1177
2357
2377

Motors



†Service Note: When reassembling Drive Pinion Assembly, take care to set Jam Nuts properly. Tighten first nut moderately to take up end play in Pinion Shaft Assembly. Back nut off 1/2 turn. While holding first nut in this position, tighten second nut securely against first to lock in place. Check for free rotation of Drive Pinion.

**NOTE: Order parts by Catalog Number only.
DO NOT order by Reference Number.**

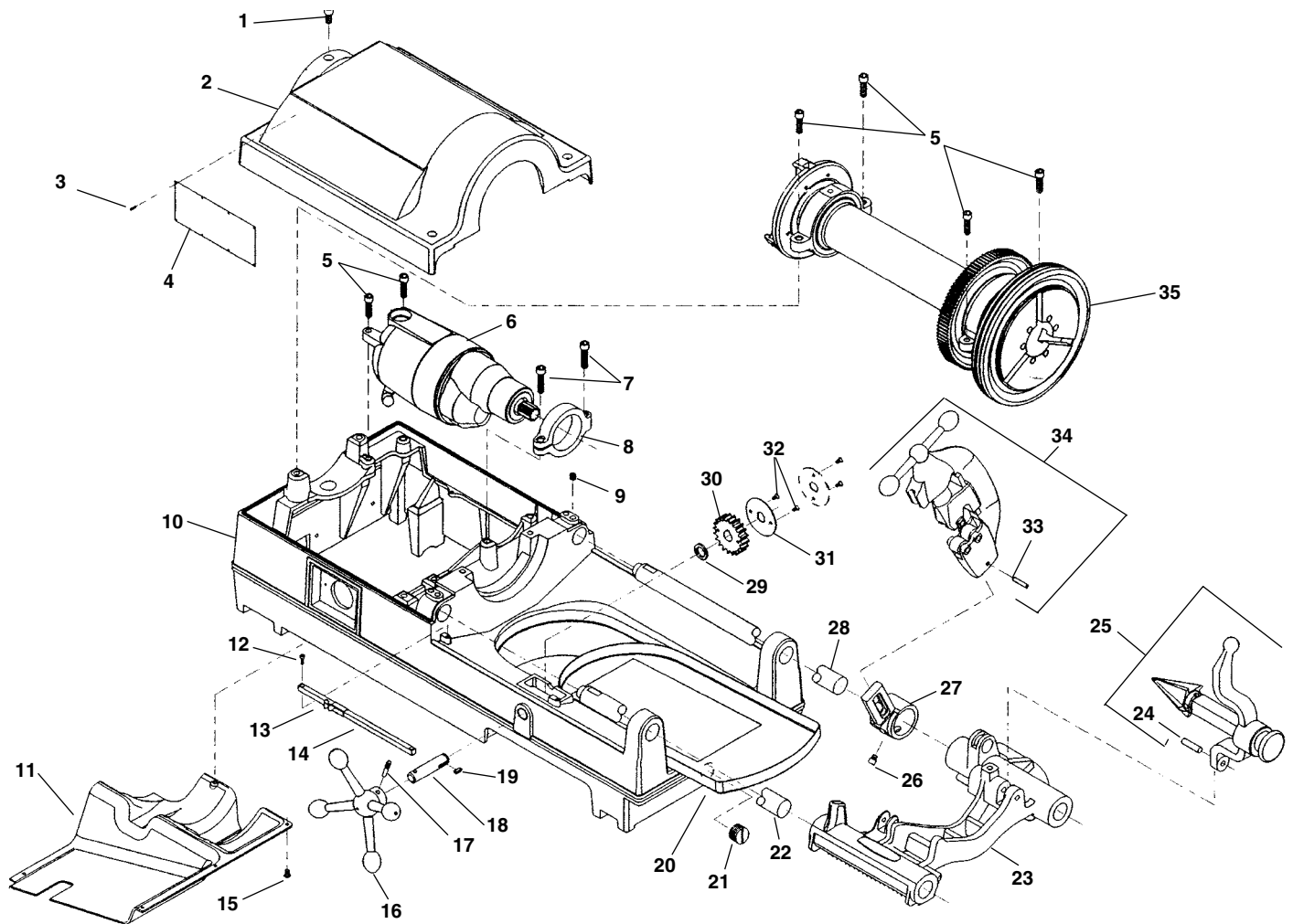
| Ref. No. | Catalog No. | Description | Ref. No. | Catalog No. | Description |
|----------|-------------|--------------------------------|----------|-------------|------------------------|
| 1 | 43160 | Housing | 18 | 45060 | Gear Bearing (4) |
| 2 | 39770 | Set Screw 1/4" - 20 x 1/4" (2) | 19† | 40350 | Lock Nut 3/8" - 24 (2) |
| 3 | 45025 | Brush Holder Set | 20 | 45035 | Washer |
| 4 | 44545 | Brush Cap Set | 21 | See Chart | Main Drive Gear |
| 5 | 44540 | Brush Set | 22 | 45015 | Key 3/32" Sq. |
| 6 | 87865 | White Upper Lead | 23 | 44960 | Drive Pinion |
| 7 | 87870 | Red Lower Lead | 24 | 45010 | Lock Nut w/Seal |
| 8 | 44580 | Loading Spring | 25 | 45085 | Seal |
| 9 | 83500 | Screw 1/4" - 20 x 3/4" | 26 | 45040 | Bearing Set w/Spacer |
| 10 | 44015 | Field - 115V | 27 | 45045 | Spacer |
| | 44035 | Field - 230V | 28 | 43170 | Housing |
| 11 | 44010 | Armature - 115V | 29 | 45075 | Screw 1/4" - 20 x 3" |
| | 44030 | Armature - 230V | 30 | 45150 | Lock Washer (4) |
| 12 | 44565 | Armature Bearing (2) | 31 | 46900 | Connector 90° |
| 13 | 44555 | Mounting Screw (2) | | 46905 | Connector 45° |
| 14 | 43165 | Fan Housing Assembly | 32 | 46890 | Insulator (2) |
| 15 | 45165 | Dowel Pin | 33 | 47412 | Flexible Conduit |
| 16 | See Chart | 1st Gear Assembly | 34 | 50552 | Plug |
| 17 | See Chart | 2nd Gear Assembly | | | |

SPEED CHANGE GEAR CHART MACHINE MODEL NO. 400A - 535 - 802

| Model No. | Volts | Spindle Speed | Ref. #11 | Ref. No. 16 - 1st Intermediate Gear Assembly | Ref. No. 17 - 2nd Intermediate Gear Assembly | Ref. No. 21 Drive Gear |
|----------------|--------------|-------------------|----------------------------|--|--|-------------------------------------|
| 1177 2377 | 115V 230V | 36 STD. | Armature Pinion - 14 T. | PART NO. 44985 (E-2600-X) 51 T. GEAR 12 T. PINION | PART NO. 45005 (E-2601-X) 42 T. GEAR 13 T. PINION | PART NO. 44965 (E-2597) 48 T. |
| 1177A 2377A | 115V 230V | 54 STD. ON 802 | | PART NO. 44985 (E-2600-X) 51 T. GEAR 12 T. PINION | PART NO. 44990 (E-2601-AX) 42 T. GEAR 18 T. PINION | PART NO. 44865 (E-1926) 43 T. |
| 1177B | 115V | 72 | | PART NO. 44975 (E-2600-BX) 51 T. GEAR 15 T. PINION | PART NO. 44995 (E-2601-BX) 39 T. GEAR 18 T. PINION | PART NO. 44865 (E-1926) 43 T. |
| 1177C 2377C | 115V 230V | 102 | | PART NO. 44980 (E-2600-CX) 51 T. GEAR 19 T. PINION | PART NO. 45000 (E-2601-CX) 35 T. GEAR 18 T. PINION | PART NO. 44865 (E-1926) 43 T. |

*Supplied with Motor Complete

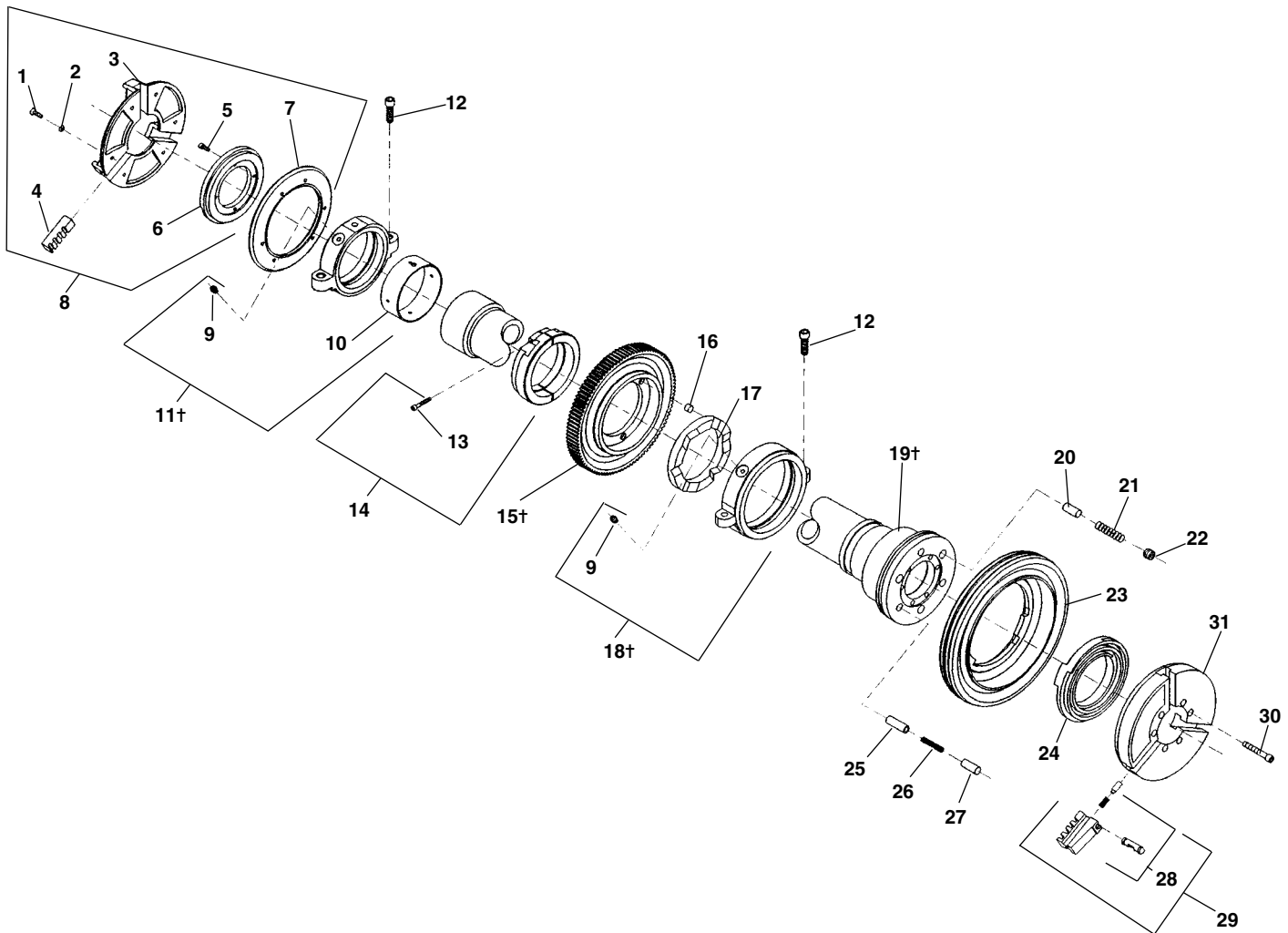
Main Components



**NOTE: Order parts by Catalog Number only.
DO NOT order by Reference Number.**

| Ref. No. | Catalog No. | Description | Ref. No. | Catalog No. | Description |
|----------|-------------|----------------------------|----------|-------------|--|
| 1 | 46760 | Screw (3) | 18 | 47115 | Pinion Shaft |
| 2 | 62062 | Top Cover | 19 | 46930 | Key $\frac{3}{16}$ " Sq. x $\frac{1}{2}$ " |
| 3 | 85920 | Pop Rivet (8) | 20 | 43355 | Chip Tray |
| 4 | 88690 | Warning Plate | 21 | 48337 | Drain Plug |
| 5 | 46745 | Screw | 22 | 45440 | Front Support Bar |
| 6 | 64447 | 1194 Motor, 115V, 36 RPM | 23 | 62057 | Carriage Assembly |
| — | 64452 | 1194 A Motor, 115V, 54 RPM | 24 | 47065 | Hinge Pin |
| — | 64457 | 2394 Motor, 230V, 36 RPM | 25 | 42365 | 341 Reamer Assembly |
| 7 | 44220 | Screw (2) | 26 | 44930 | Stop Screw |
| 8 | 43795 | Motor Bracket | 27 | 43690 | Cutter Arm |
| 9 | 46800 | Set Screw (2) | 28 | 45220 | Rear Support Bar |
| 10 | 61952 | Base | 29 | 47145 | Spacer |
| 11 | 61947 | Bottom Cover | 30 | 45430 | Pinion Gear |
| 12 | 45615 | Screw (2) | 31 | 47120 | Lock Plate |
| 13 | 47110 | Indicator Slide | 32 | 46785 | Screw 10 - 32 x $\frac{3}{8}$ " (2) |
| 14 | 47105 | Indicator Bar | 33 | 47135 | Stop Pin |
| 15 | 45420 | Screw (5) | 34 | 42390 | 820 Cutter Assembly |
| 16 | 46510 | Handwheel | 35 | 47585 | Drive Shaft Assembly |
| 17 | 47165 | Pin | | | |

Drive Shaft



**NOTE: Order parts by Catalog Number only.
DO NOT order by Reference Number.**

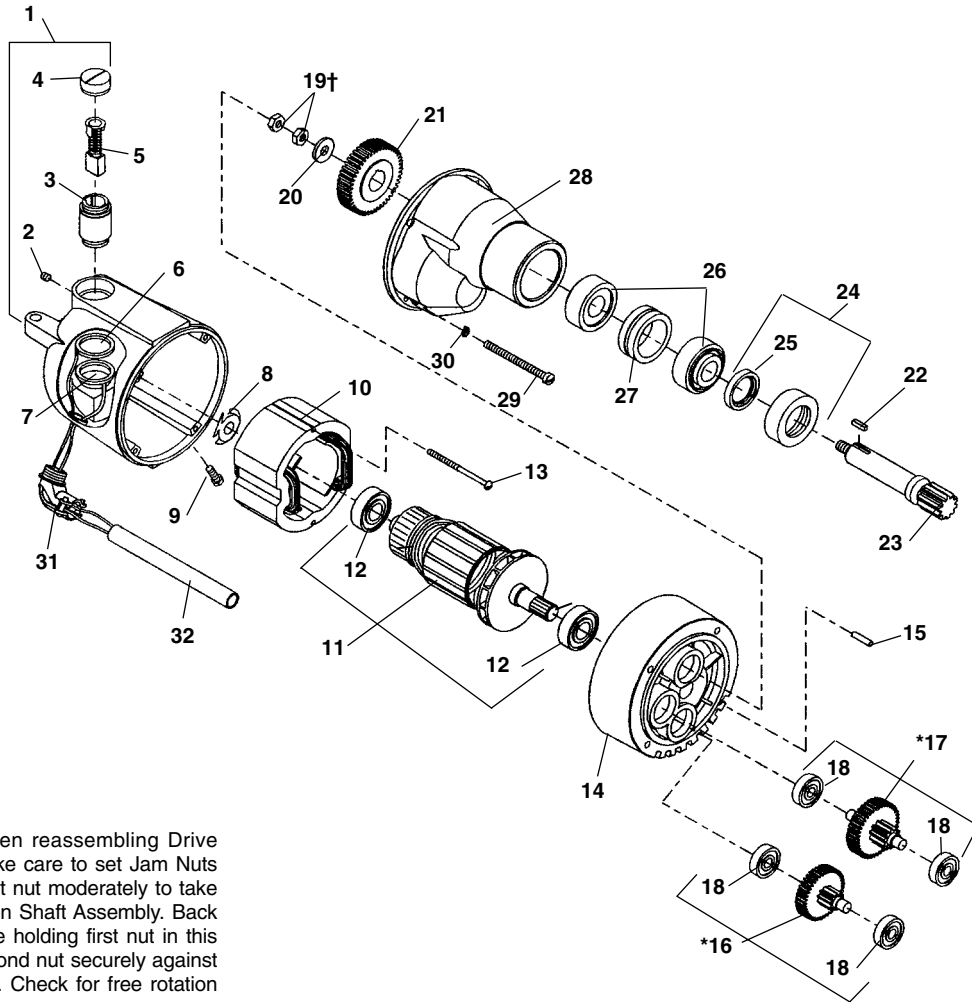
| Ref. No. | Catalog No. | Description | Ref. No. | Catalog No. | Description |
|----------|-------------|------------------------------|----------|-------------|------------------------------------|
| — | 47585 | Drive Shaft Assembly | 16 | 44490 | Drive Plug (3) |
| 1 | 46790 | Screw (6) | 17 | 43895 | Pressure Plate |
| 2 | 40270 | Lock Washer (6) | 18† | 43455 | Front Bearing Assembly |
| 3 | 43735 | Centering Head | 19† | 43105 | Drive Shaft |
| | 19346 | Centering Head (Europe) | 20 | 44320 | Pressure Plunger (3) |
| 4 | 46500 | Centering Jaw Set | 21 | 44325 | Pressure Spring (3) |
| 5 | 46765 | Screw 10 – 32 x 1/2" | 22 | 44330 | Pressure Set Screw (3) |
| 6 | 43750 | Scroll | 23 | 43420 | Handwheel |
| 7 | 43740 | Back Plate | 24 | 43450 | Scroll |
| | 19356 | Back Plate (Europe) | 25 | 44315 | Drive Wedge |
| 8 | 47570 | Centering Head Assembly | 26 | 44310 | Drive Spring |
| 9 | 46860 | Grease Fitting | 27 | 44305 | Drive Cap |
| 10 | 46545 | Bearing Sleeve | 28 | 44715 | Jaw Insert Set |
| 11† | 43730 | Rear Bearing Assembly | | 97365 | Jaw Insert Set f/Plas. Coated Pipe |
| 12 | 46745 | Screw 3/8" – 16 x 1 1/4" (4) | 29 | 43900 | Chuck Jaw Set |
| 13 | 90255 | Screw 10 – 32 x 1 1/4" | 30 | 45160 | Screw 3/16" – 18 x 2" (6) |
| 14 | 83525 | Split Ring Assembly | 31 | 43440 | Chuck Cap |
| 15† | 43460 | Drive Gear | | | |

† Service Notes: Ref. Nos. 15 & 19 - When installing gear on shaft, align "O" mark on front of gear with "O" mark on the rear of the drive shaft flange.

Ref. Nos. 11 & 18 - When replacing the front or rear bearing brackets, position grease fittings toward the operator's side of the machine.

Motor

**1194
1194A
2394**



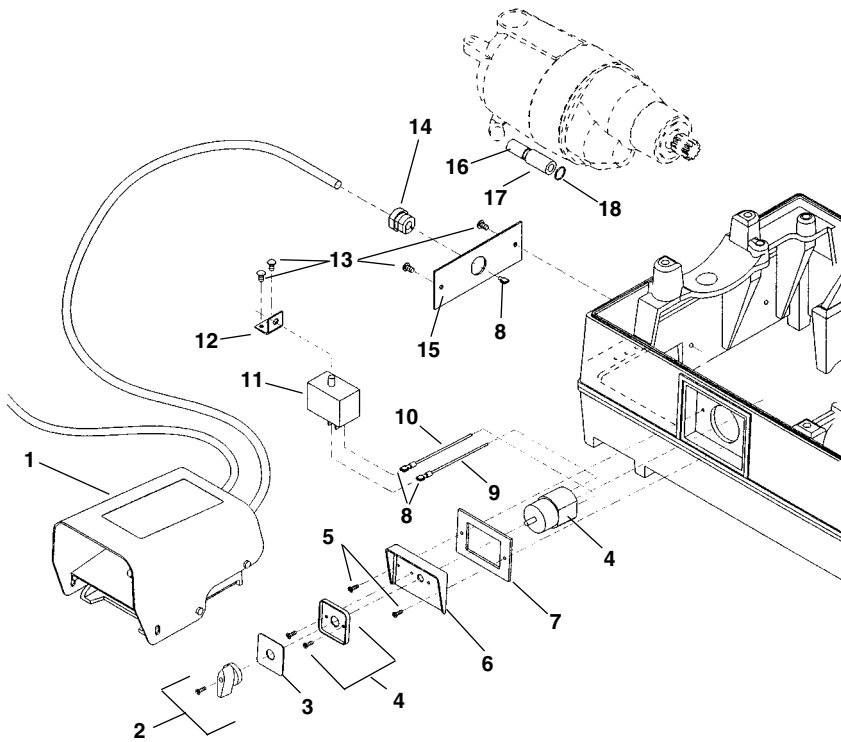
†Service Note: When reassembling Drive Pinion Assembly, take care to set Jam Nuts properly. Tighten first nut moderately to take up end play in Pinion Shaft Assembly. Back nut off 1/2 turn. While holding first nut in this position, tighten second nut securely against first to lock in place. Check for free rotation of Drive Pinion.

**NOTE: Order parts by Catalog Number only.
DO NOT order by Reference Number.**

| Ref. No. | Catalog No. | Description | Ref. No. | Catalog No. | Description |
|----------|-------------|--------------------------------|----------|-------------|-----------------------------|
| — | 64447 | 1194 Motor, 115V, 36RPM | 16* | 62022 | 1st. Int. Gear Assy.— 36RPM |
| — | 64452 | 1194A Motor, 115V, 54RPM | | 44985 | 1st. Int. Gear Assy.— 54RPM |
| — | 64457 | 2394 Motor, 230V, 36RPM | 17* | 52527 | 2nd. Int. Gear Assy.— 36RPM |
| 1 | 43160 | Field Housing | | 44990 | 2nd. Int. Gear Assy.— 54RPM |
| 2 | 39770 | Set Screw 1/4" x 20 x 1/4" (2) | 18 | 45060 | Bearing (4) |
| 3 | 45025 | Brush Holder Set | 19† | 40350 | Lock Nut 3/8" — 54RPM |
| 4 | 44545 | Brush Cap Set | 20 | 45035 | Washer |
| 5 | 44540 | Brush Set | 21 | 44965 | Drive Gear — 36RPM |
| 6 | 87865 | White Upper Lead | | 44865 | Drive Gear — 54RPM |
| 7 | 87870 | Red Lower Lead | 22 | 45015 | Key 5/32" Square |
| 8 | 44580 | Load Spring | 23 | 44960 | Drive Pinion |
| 9 | 83500 | Screw 1/4" x 20 x 3/4" | 24 | 45010 | Lock Nut w/Seal |
| 10 | 44015 | Field 115V | 25 | 45085 | Seal |
| | 44035 | Field 230V | 26 | 45040 | Bearing Set w/Spacer |
| 11* | 52497 | Armature — 115V - 36RPM | 27 | 45045 | Spacer |
| * | 52492 | Armature — 230V | 28 | 43170 | Gear Housing |
| | 44010 | Armature — 115V - 54RPM | 29 | 45075 | Screw 1/4" - 20 x 3" (4) |
| 12 | 44565 | Armature Bearing (2) | 30 | 45150 | Lock Washer (4) |
| 13 | 44555 | Mounting Screw (2) | 31 | 46900 | Right Angle Connector |
| 14 | 54552 | Fan Housing Assembly | 32 | 64462 | PVC Tubing |
| 15 | 45165 | Dowel Pin | | | |

Note: *Helical gear not interchangeable with old style 535 machines.

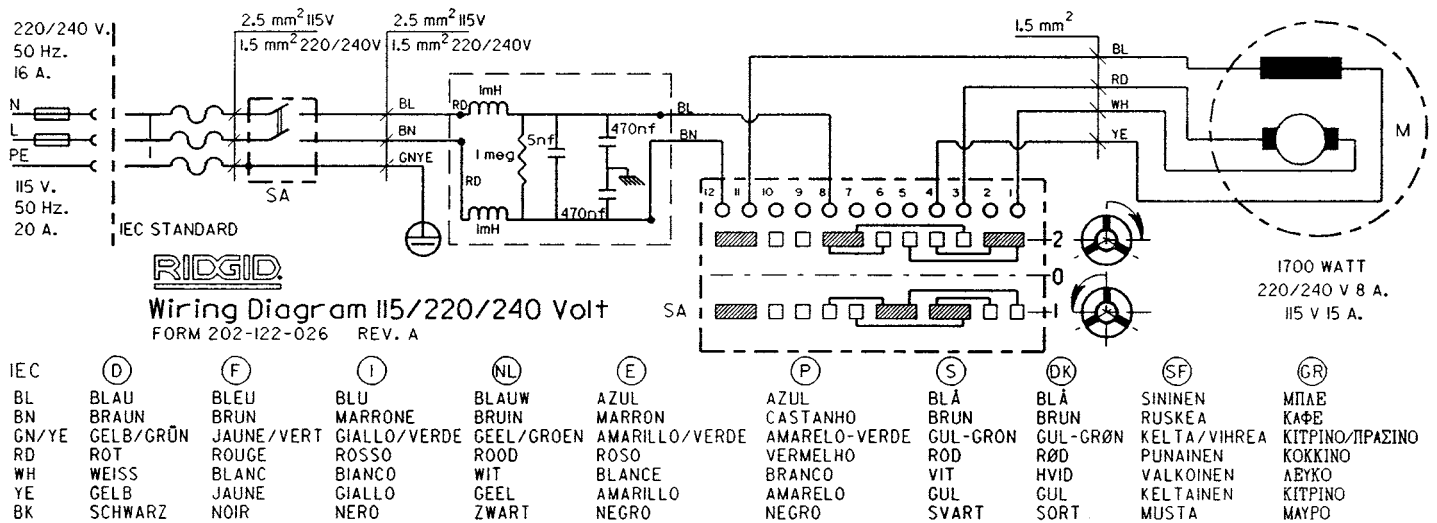
European Electrical Components



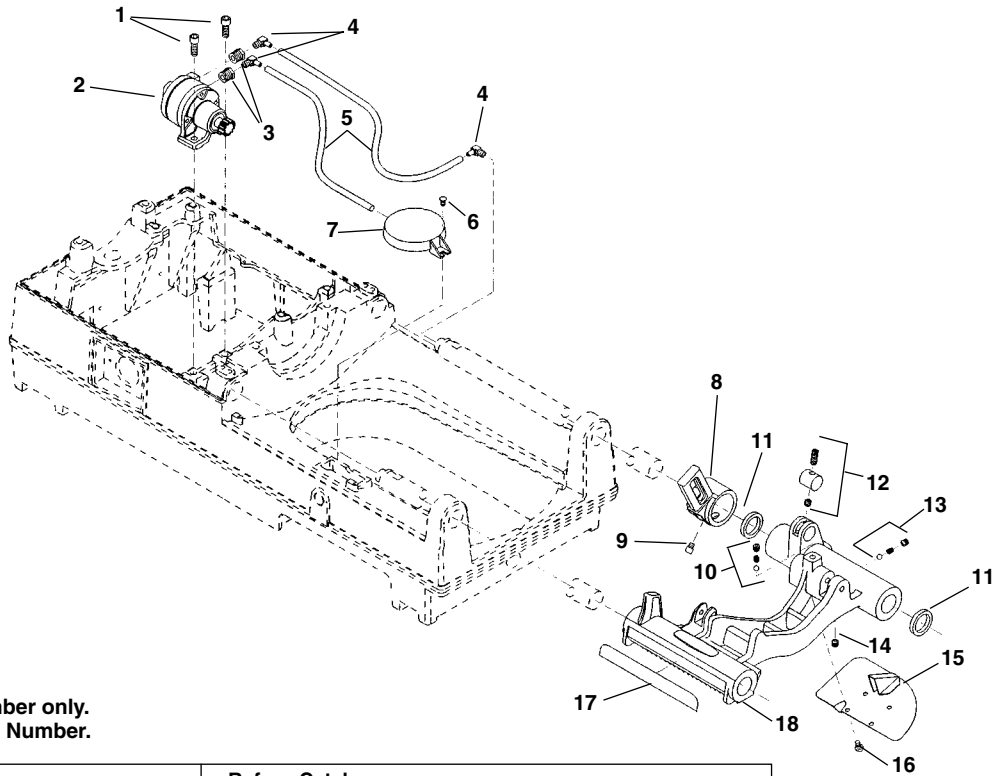
**NOTE: Order parts by Catalog Number only.
DO NOT order by Reference Number.**

| Ref. No. | Catalog No. | Description |
|----------|-------------|------------------------------------|
| 1 | 36652 | B-296 Foot Switch |
| 2 | 61397 | Switch Knob |
| 3 | 57517 | Switch Face Plate |
| 4 | 54157 | Switch Assy. (includes Ref. No. 2) |
| 5 | 54162 | Screw (2) |
| 6 | 61917 | Switch Plate |
| 7 | 54172 | Gasket |
| 8 | 89190 | Quick Disconnect Terminal (4) |
| 9 | 63392 | Blue Wire |
| 10 | 63387 | Brown Wire |
| 11 | 63372 | Suppressor |
| 12 | 61987 | Mounting Bracket |
| 13 | 45420 | Screw (4) |
| 14 | 54177 | Grommet |
| 15 | 62042 | Cord Mounting Plate |
| 16 | 64462 | PVC Tubing |
| 17 | 63377 | Ferrite Bead |
| 18 | 64467 | Cable Tie |

European Wiring Diagram



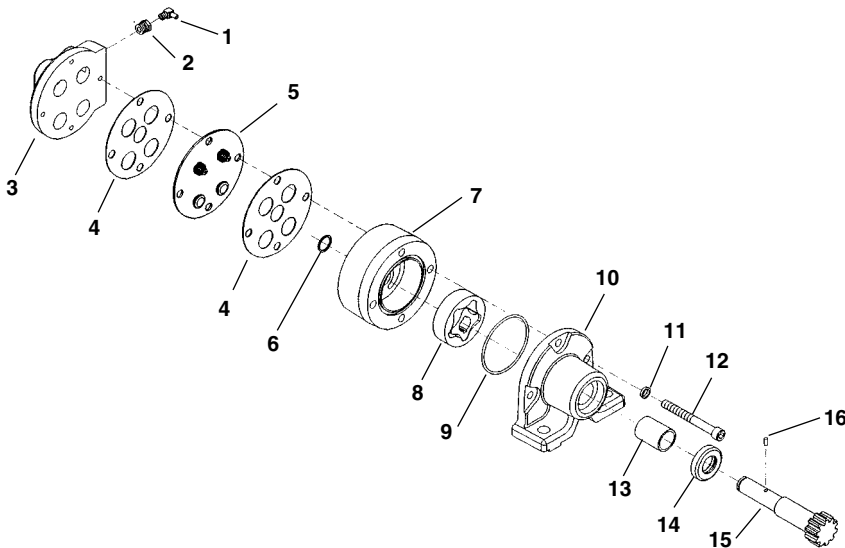
Carriage and Oiling System



**NOTE: Order parts by Catalog Number only.
DO NOT order by Reference Number.**

| Ref. No. | Catalog No. | Description | Ref. No. | Catalog No. | Description |
|----------|-------------|-------------------------|----------|-------------|---|
| 1 | 46750 | Screw (2) | 10 | 46810 | Detente Assembly |
| 2 | 62052 | Model MJ Oil Pump | 11 | 46720 | Oil Seal (2) |
| 3 | 62047 | Reducing Bushing (2) | 12 | 61957 | Plug Assembly |
| 4 | 87945 | Right Angle Fitting (3) | 13 | 35307 | Pressure Relief Assembly |
| 5 | 87950 | Oil Line (2) | 14 | 46815 | Pipe Plug 1/8" NPT |
| 6 | 45420 | Screw | 15 | 45195 | Drip Plate |
| 7 | 58467 | Oil Filter Assembly | 16 | 46270 | Screw (4) |
| 8 | 43690 | Cutter Arm | 17 | 46370 | Scale |
| 9 | 44930 | Stop Screw | 18 | 62057 | Carriage Assy. (Includes Ref. No. 8-17) |

Model MJ Oil Pump



| Ref. No. | Catalog No. | Description |
|----------|-------------|--|
| — | 62052 | Model MJ Oil Pump |
| 1 | 87945 | Right Angle Fitting (2) |
| 2 | 62047 | Reducing Bushing (2) |
| 3 | 33442 | Valve Body |
| 4 | 33457 | Gasket (2) |
| 5 | 33452 | Valve Body Assembly |
| 6 | 61997 | Retaining Ring |
| 7 | 62002 | Gerotor Housing |
| 8 | 62007 | Gerotor Set |
| 9 | 33477 | O-Ring |
| 10 | 62012 | Pump Body |
| 11 | 45150 | Lock Washer (3) |
| 12 | 62017 | Screw (3) |
| 13 | 61972 | Bushing |
| 14 | 33472 | Oil Seat |
| 15 | 61982 | Pump Shaft |
| 16 | 26907 | Drive Pin |
| 17 | 61977 | Pump Repair Kit (Includes Ref. No. 4-6, 9, 13, 14, and 16) |