

**CHELSEA<sup>®</sup>**

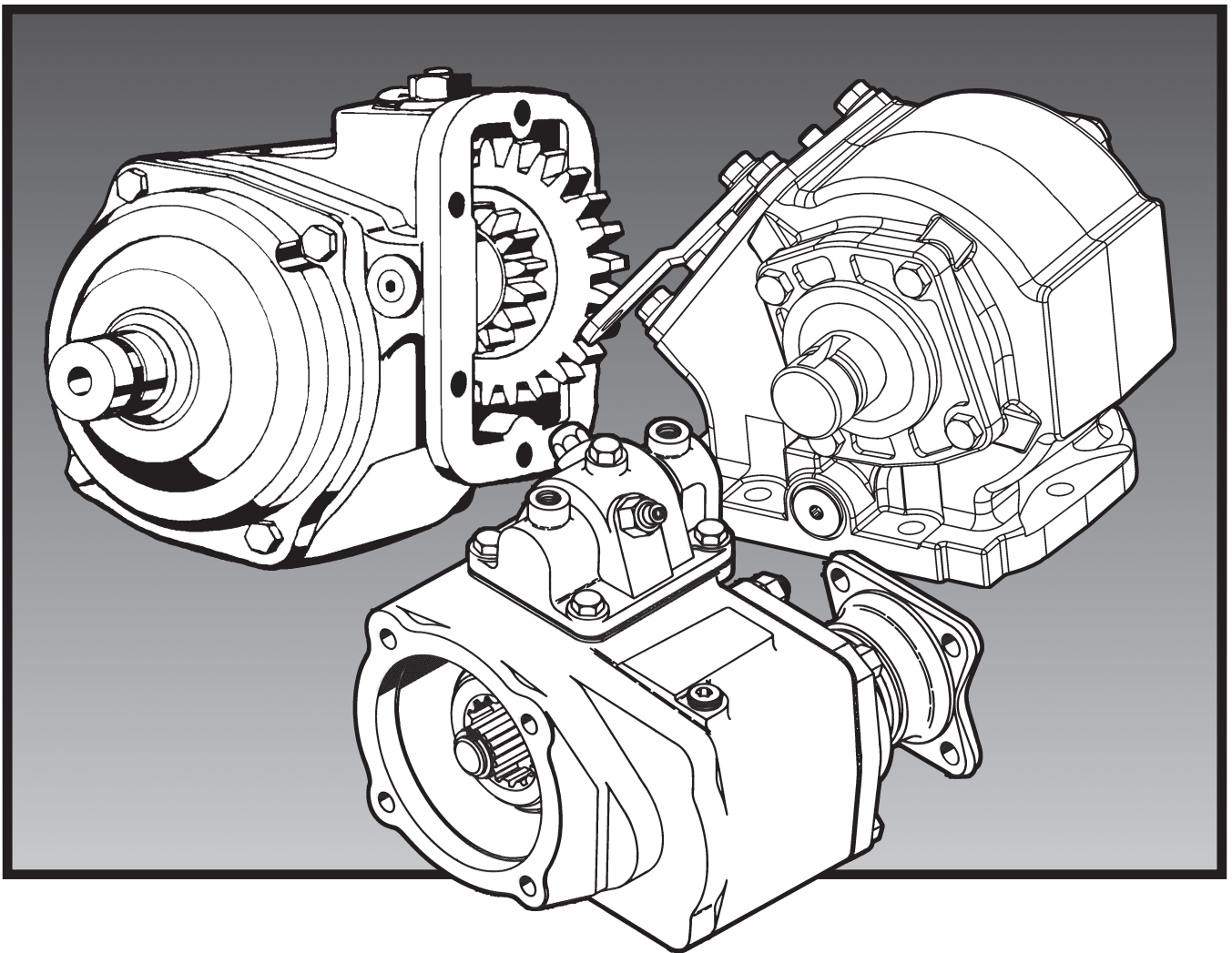
Bulletin HY25-2290-M1/US

## Parts List 290 Series

Effective: August 15, 2004

Supersedes: HY25-2290-M1/US Dated Feb. 15, 2002

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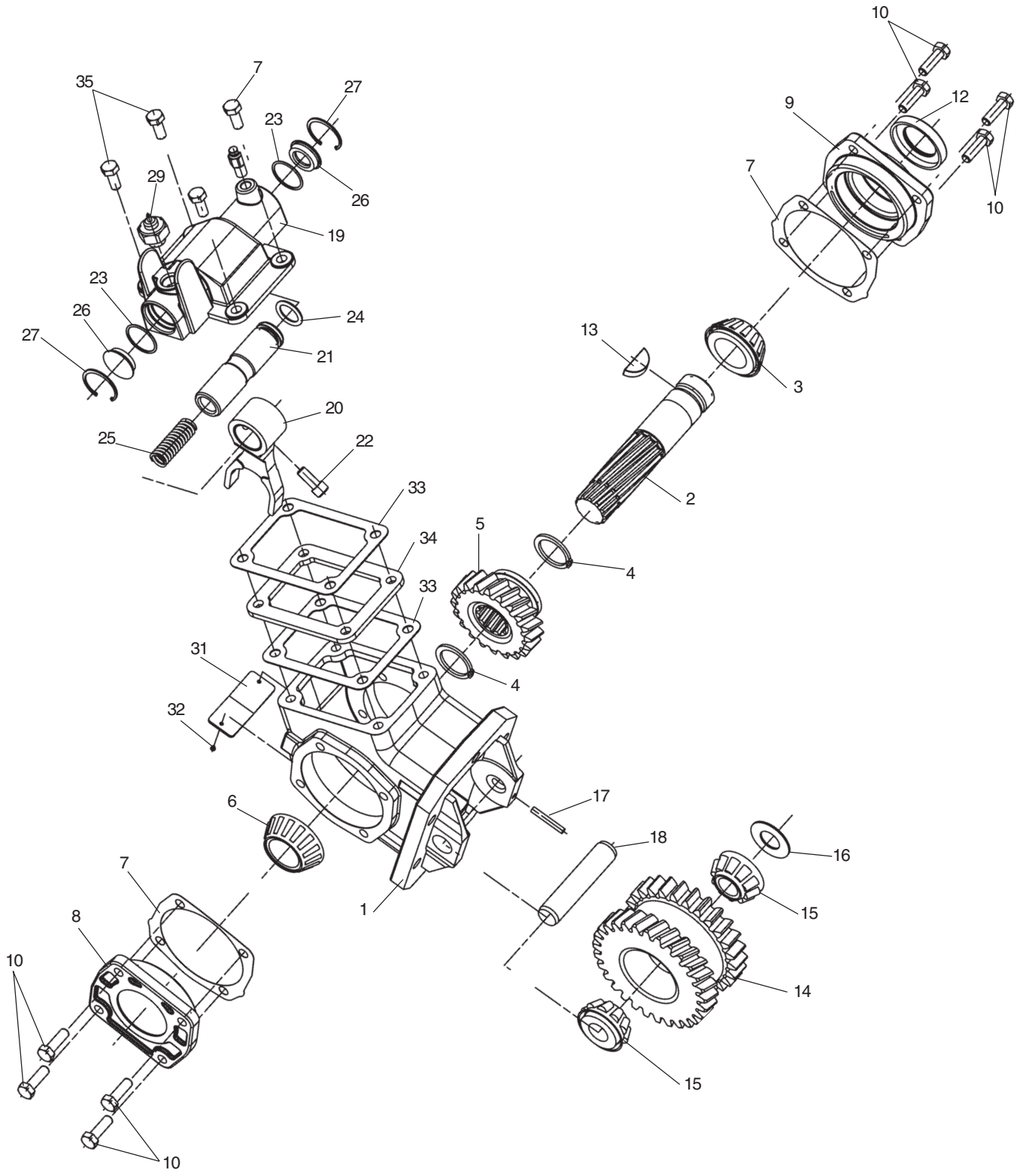
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**Contents**

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|  |      |
|--|------|
| Exploded View .....                                | 1    |
| Bill of Materials .....                            | 2    |
| Model Number Designation.....                      | 3    |
| Input Gear Chart .....                             | 3    |
| Output Options Bills of Materials .....            | 4-6  |
| Direct Mount Pump Conversion Kits.....             | 7    |
| Pump Flange Conversion Kit Bill of Materials ..... | 7-11 |
| P.T.O. Housing Dimensions .....                    | 12   |
| Assembly Arrangements .....                        | 12   |
| Pump Flange & Shaft Dimensions .....               | 13   |
| Offer of Sale .....                                | 16   |

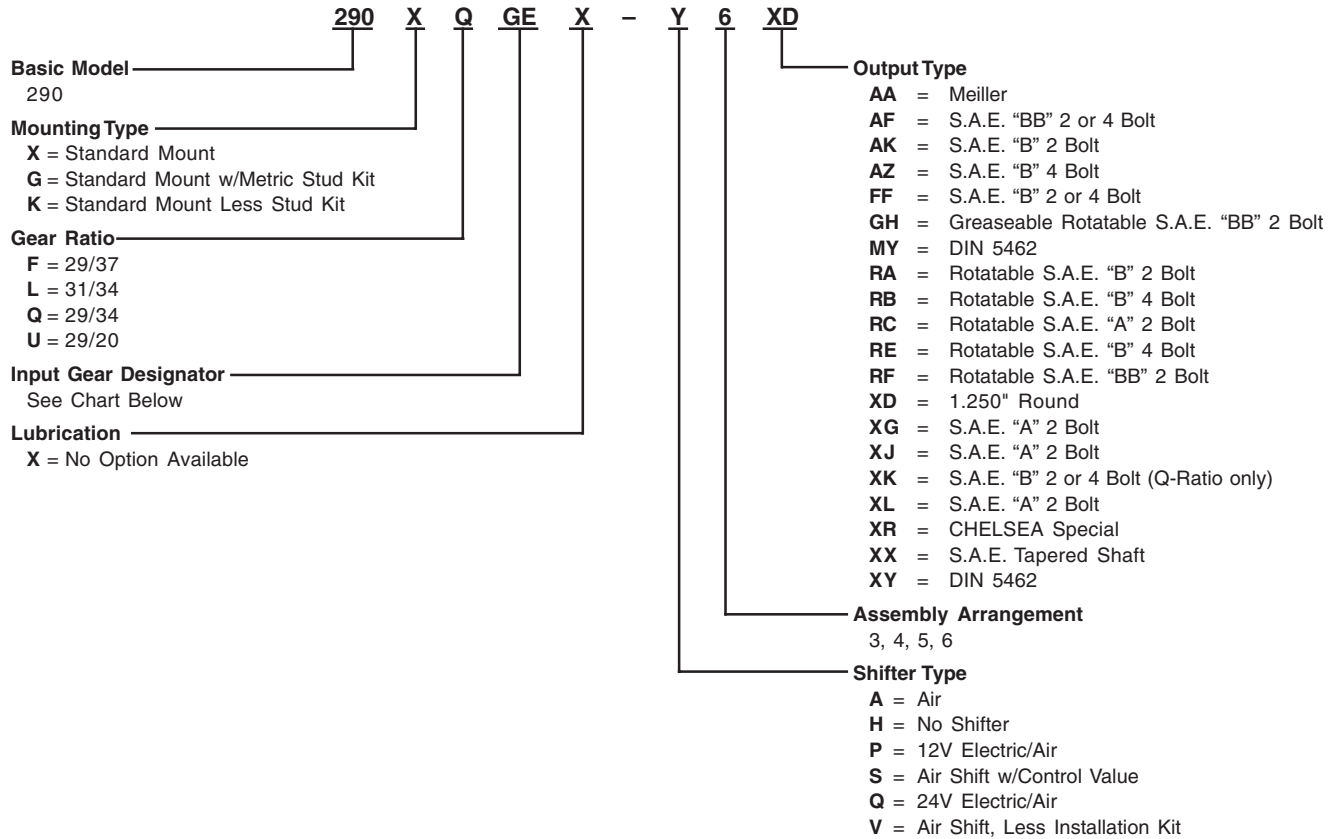


Bill of Materials

| Item | Part Number     | Description  | Quantity |
|------|-----------------|--|----------|
| 1    | 1-P-519X        | Housing, Standard (Includes Item 17) .....                       | 1        |
| 2    | 3-P-202         | Output Shaft, Standard ("XD") .....                              | 1 or     |
|      | See Chart Pg 4  | Other Output Shaft Options .....                                 | 1        |
| 3    | 550397          | Bearing Cone .....   | 1        |
| 4    | 378391          | Retaining Ring .....   | 2        |
| 5    | 2-P-770         | Gear, Output "F" Ratio (37 Teeth) .....                          | 1 or     |
|      | 2-P-771         | Gear, Output "L" Ratio (34 Teeth) .....                          | 1        |
|      | 2-P-697         | Gear, Output "Q" Ratio (24 Teeth) .....                          | 1        |
|      | 2-P-699         | Gear, Output "U" Ratio (20 Teeth) .....                          | 1        |
| 6    | 550532          | Bearing Cone .....   | 1        |
| 7    | 22-P-24-1       | Gasket, Bearing Cap .010" thick .....                            | A.R.     |
|      | 22-P-24-2       | Gasket, Bearing Cap .020" thick .....                            | A.R.     |
|      | 22-P-24-3       | Gasket, Bearing Cap .015" thick .....                            | A.R.     |
| 8    | 328274X         | Bearing Cap Assembly, Closed End .....                           | 1        |
| 9    | 328273X         | Bearing Cap Assembly, Open End .....                             | 1        |
|      | See Chart Pg. 4 | Other Output Flange Options                                      |          |
| 10   | 378430-10       | Capscrew, Hex Head (.312" - 18 x 1.0") .....                     | 8        |
|      | See Chart Pg. 4 | Other Flange Cap Screws  |          |
| 12   | 28-P-216        | Oil Seal, Standard Output .....                                  | 1        |
|      | See Chart Pg. 4 | Other Oil Seals  |          |
| 13   | 500007-29       | Woodruff Key, "XD" Output .....                                  | 1        |
| 14   | See Chart Pg. 3 | Gear, Input .....  | 1        |
| 15   | 550439          | Bearing Cone .....   | 2        |
| 16   | 14-P-15         | Spacer, Idler Gear .....   | A.R.     |
| 17   | 500597-16       | Pin, Slotted .....   | 1        |
| 18   | 9-P-81          | Shaft, Idler .....   | 1        |
|      | 329363X         | Air Shift Control Assembly (includes items 19-28)                |          |
| 19   | 34-P-130        | Cover, Shift .....   | 1        |
| 20   | 32-P-180        | Shifter Fork .....   | 1        |
| 21   | 11-P-75         | Shaft, Shifter .....   | 1        |
| 22   | 378447-4        | Capscrew, Allen Head .....                                       | 1        |
| 23   | 28-P-42         | Oil Ring .....   | 2        |
| 24   | 28-P-41         | Oil Ring .....   | 1        |
| 25   | 37-P-21         | Spring, Shifter .....  | 1        |
| 26   | 378315          | Cover Plug .....   | 2        |
| 27   | 378316          | Snap Ring .....  | 2        |
| 28   | 379639          | Indicator Switch .....   | 1        |
| 29   | 35-P-8          | Gasket, Shift Cover (All Except "F" Ratio) .....                 | 2 or     |
|      | 35-P-8          | Gasket, Shift Cover ("F" Ratio Only) .....                       | 3        |
| 30   | 5-A-125         | Spacer, (All Except "F" Ratio) .....                             | 1 or     |
|      | 5-A-125         | Spacer, ("F" Ratio Only) .....                                   | 1        |
|      | 5-A-250         | Spacer, ("F" Ratio Only) .....                                   | 1        |
| 31   | 68-P-2          | Name Plate .....   | 1        |
| 32   | 378422          | Drive Screw .....  | 2        |
| 35   | 378430-8        | Capscrew, Hex Head (.312"-18 x .750") All Except "F" Ratio ..... | 4 or     |
|      | 378430-11       | Capscrew, Hex Head (.312"-18 x 1.125") "F" Ratio Only .....      | 4        |
|      |                 | <b>PARTS SHIPPED LOOSE</b>                                       |          |
|      | 328170-76X      | Stud Kit, Standard .....   | 1        |
|      | 7170-72X        | Stud Kit, Metric .....   | 1        |
|      | 328948-6X       | Gasket & Installation Instructions .....                         | 1        |
|      | 378414          | Pressure Protection Valve ("V" Shifter Only) .....               | 1        |
|      | 379640          | Booted Connector ("V" Shifter Only)                              |          |
|      | 328388-37X      | Installation Kit, Air Shift, "A" Shifter .....                   | 1        |
|      | 328388-47X      | Installation Kit, Air Shift, "P" Shifter .....                   | 1        |
|      | 328388-48X      | Installation Kit, Air Shift, "Q" Shifter .....                   | 1        |
|      | 328388-65X      | Installation Kit, Air Shift, "S" Shifter .....                   | 1        |
|      | 329166-12X      | Installation Kit, E-Z Shift, "Z" Shifter .....                   | 1        |
|      | 328751X         | Installation Kit, "Y" Shifter .....                              | 1        |
|      |                 | <b>SERVICE KITS</b>  |          |
|      | 328356-50X      | Gasket and Seal Kit  |          |
|      | 328356-71X      | Gasket and Seal Kit, Air Shift                                   |          |
|      | 328390-123X     | Air Shift Field Conversion Kit ( Wire to Air) .....              | 1        |

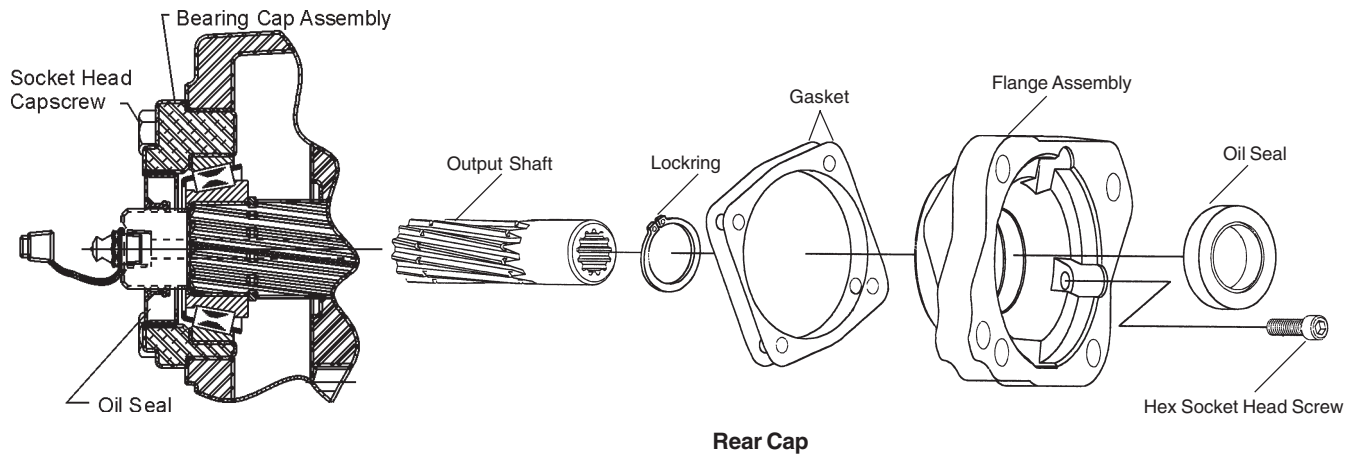
A.R. — As Required

Model Number Designation



Input Gear Chart

| Model Number | Part Number | Transmission Mating Gear | P.T.O. Output Mating Gear | Comments         |
|--------------|-------------|--------------------------|---------------------------|------------------|
| 290*QGE      | 5-P-992     | 32                       | 29                        | Eaton 4106 A & B |
| 290*QGF      | 5-P-993     | 26                       | 29                        | Eaton 4106 OD    |
| 290*UGE      | 5-P-1136    | 32                       | 29                        | Eaton 4106 A & B |
| 290*FHU      | 5-P-1221    | 26                       | 29                        | Mack T2060A      |
| 290*LHU      | 5-P-1222    | 26                       | 31                        | Mack T2060A      |
| 290*QHU      | 5-P-1223    | 26                       | 29                        | Mack T2060A      |
| 290*UHU      | 5-P-1224    | 26                       | 29                        | Mack T2060A      |
| 290*FHZ      | 5-P-1238    | 34                       | 29                        | CL-3905/FSO-4305 |
| 290*LHZ      | 5-P-1239    | 34                       | 31                        | CL-3905/FSO-4305 |
| 290*QHZ      | 5-P-1240    | 34                       | 29                        | CL-3905/FSO-4305 |
| 290*UHZ      | 5-P-1241    | 34                       | 29                        | CL-3905/FSO-4305 |
| 290*QJJ      | 5-P-1258    | 19                       | 29                        | ZED-F 6S-850     |



| Output    | Part Number                              | Description                                      | Qty  |
|-----------|--|--|------|
| AA        | 3-P-862                                  | Output Shaft .....                               | 1    |
|           | 28-P-216                                 | Oil Seal .....                                   | 1    |
|           | 239102X                                  | Bearing Cap Assy.(21-P-532) .....                | 1    |
|           | 378447-8                                 | Socket Head Capscrew (.312" - 18 x 1.5") .....   | 4    |
| AF        | 3-P-854                                  | Output Shaft .....                               | 1    |
|           | 28-P-219                                 | Oil Seal .....                                   | 1    |
|           | 329088X                                  | Bearing Cap Assy.(21-P-522) .....                | 1    |
|           | 378447-10                                | Socket Head Capscrew (.312" - 18 x 1.5") .....   | 4    |
| AK        | 3-P-282                                  | Output Shaft .....                               | 1    |
|           | 28-P-216                                 | Oil Seal .....                                   | 1    |
|           | 328989X                                  | Bearing Cap Assy.(21-P-472) .....                | 1    |
|           | 378447-8                                 | Socket Head Capscrew (.312" - 18 x 1.5") .....   | 4    |
| AZ        | 3-P-844                                  | Output Shaft .....                               | 1    |
|           | 28-P-230                                 | Oil Seal .....                                   | 1    |
|           | 329052X                                  | Bearing Cap Assy.(21-P-508) .....                | 1    |
|           | 379982                                   | Hex Washer Flange Bolt (.312" - 18 x 2.5") ..... | 4    |
| FF        | 3-P-851                                  | Output Shaft .....                               | 1    |
|           | 28-P-219                                 | Oil Seal .....                                   | 1    |
|           | 329088X                                  | Bearing Cap Assy. (21-P-522) .....               | 1    |
|           | 378447-10                                | Socket Head Capscrew (.312" - 18 x 2.0") .....   | 4    |
| G*        | 3-P-938X                                 | "GM" .....                                       | 1 or |
|           | 3-P-941X                                 | "GH", "GJ" Shaft Assemblies .....                | 1    |
|           | 500168-2                                 | Lube Fitting (Zerk) .....                        | 1    |
|           | 379819                                   | Grease Fitting Cap .....                         | 1    |
|           | 379688                                   | Coupling Lube Pack (5/8 fl.oz) .....             | 1    |
|           | 28-P-268                                 | Rear Bearing Cap Shaft Oil Seal .....            | 1    |
|           | 328273X                                  | Rear Bearing Cap Assembly .....                  | 1    |
| 378430-10 | Rear Bearing Cap Hex Head Capscrew ..... | 4  |      |
| MY        | 3-P-768                                  | Output Shaft .....                               | 1    |
|           | 28-P-275                                 | Oil Seal .....                                   | 1    |
|           | 329412X                                  | Bearing Cap Assy. (21-P-675) .....               | 1    |
|           | 378447-6                                 | Socket Head Capscrew (.312" - 18 x 1.0") .....   | 4    |

Continued on following page

Output Options Bills of Materials

| Output | Part Number | Description                                    | Qty |
|--------|-------------|--|-----|
| RA     | 3-P-283     | Output Shaft .....                             | 1   |
|        | 28-P-216    | Oil Seal .....                                 | 1   |
|        | 329195X     | Bearing Cap Assy. (21-P-574) .....             | 1   |
|        | 21-P-628    | Pump Flange (Ship Loose with unit) .....       | 1   |
|        | 378447-6    | Socket Head Capscrew .....                     | 4   |
|        | 328170-207X | Capscrew Bag Kit .....                         | 1   |
|        | 378170-6    | Socket Head Capscrew .....                     | 3   |
| RB     | 3-P-283     | Output Shaft .....                             | 1   |
|        | 28-P-216    | Oil Seal .....                                 | 1   |
|        | 329195X     | Bearing Cap Assy. (21-P-574) .....             | 1   |
|        | 21-P-572    | Pump Flange (Ship Loose with unit) .....       | 1   |
|        | 378447-6    | Socket Head Capscrew .....                     | 4   |
|        | 328170-207X | Capscrew Bag Kit .....                         | 1   |
|        | 378170-6    | Socket Head Capscrew .....                     | 3   |
| RC     | 3-P-800     | Output Shaft .....                             | 1   |
|        | 28-P-216    | Oil Seal .....                                 | 1   |
|        | 329322X     | Bearing Cap Assy (21-P-640) .....              | 1   |
|        | 21-P-638    | Pump Flange .....                              | 1   |
|        | 378447-6    | Socket Head Capscrew (.312" - 18 x 1.0") ..... | 4   |
|        | 328170-210X | Capscrew Bag Kit .....                         | 1   |
|        | 378447-4    | Socket Head Capscrew (.312" - 18 x .75") ..... | 6   |
| RE     | 3-P-924     | Output Shaft .....                             | 1   |
|        | 28-P-219    | Oil Seal .....                                 | 1   |
|        | 329264X     | Bearing Cap Assy. (21-P-629) .....             | 1   |
|        | 21-P-654    | Pump Flange .....                              | 1   |
|        | 378447-6    | Socket Head Capscrew (.312" - 18 x 1.0") ..... | 4   |
|        | 28-P-271    | O-Ring.....                                    | 1   |
| RF     | 3-P-924     | Output Shaft .....                             | 1   |
|        | 28-P-219    | Oil Seal .....                                 | 1   |
|        | 329264X     | Bearing Cap Assy. (21-P-629) .....             | 1   |
|        | 21-P-626    | Pump Flange .....                              | 1   |
|        | 378447-6    | Socket Head Capscrew (.312" - 18 x 1.0") ..... | 7   |
|        | 28-P-271    | O-Ring.....                                    | 1   |
| XG     | 3-P-281     | Output Shaft .....                             | 1   |
|        | 28-P-216    | Oil Seal .....                                 | 1   |
|        | 328580X     | Bearing Cap Assy. (21-P-259) .....             | 1   |
|        | 378447-8    | Socket Head Capscrew (.312" - 18 x 1.5") ..... | 4   |
| XJ     | 3-P-284     | Output Shaft .....                             | 1   |
|        | 28-P-216    | Oil Seal .....                                 | 1   |
|        | 328580X     | Bearing Cap Assy.(21-P-259) .....              | 1   |
|        | 378447-8    | Socket Head Capscrew (.312" - 18 x 1.5") ..... | 4   |
| XK     | 3-P-282     | Output Shaft .....                             | 1   |
|        | 28-P-216    | Oil Seal .....                                 | 1   |
|        | 328333X     | Bearing Cap Assy.(21-P-424) .....              | 1   |
|        | 378447-8    | Socket Head Capscrew (.312" - 18 x 1.5") ..... | 4   |
| XL     | 3-P-283     | Output Shaft .....                             | 1   |
|        | 28-P-216    | Oil Seal .....                                 | 1   |
|        | 328580X     | Bearing Cap Assy.(21-P-259) .....              | 1   |
|        | 378447-8    | Socket Head Capscrew (.312" - 18 x 1.5") ..... | 4   |

Continued on following page



**Output Options Bills of Materials**

| Output | Part Number | Description                                    | Qty  |
|--------|-------------|--|------|
| XR     | 3-P-283     | Output Shaft .....                             | 1    |
|        | 28-P-216    | Oil Seal .....                                 | 1    |
|        | 329194X     | Bearing Cap Assembly (21-P-574) .....          | 1    |
|        | 379673      | Hex Shoulder Screw (.312" - 24) .....          | 4    |
|        | 379063      | Flat Washer .....                              | 4    |
|        | 328711X     | Pump Mounting Kit .....                        | 1    |
|        | 378919      | Washer .....                                   | 4    |
|        | 500963-1    | Hex Lock Nut (.312" - 24) .....                | 4    |
| XX     | 3-P-766     | Output Shaft .....                             | 1    |
|        | 28-P-216    | Oil Seal .....                                 | 1    |
|        | 329273X     | Bearing Cap Assy. for 660 & 680 Series .....   | 1 or |
|        | 328273X     | Bearing Cap Assy. (21-P-418) .....             | 1    |
|        | 378430-10   | Hex Capscrew (.312" - 18 x 1.0") .....         | 4    |
|        | 379111      | Square Key .....                               | 1    |
|        | 501181      | Hex Locknut (1.0" - 20) .....                  | 1    |
| XY     | 3-P-768     | Output Shaft .....                             | 1    |
|        | 28-P-275    | Oil Seal .....                                 | 1    |
|        | 328234X     | Bearing Cap Assy. (21-P-614) .....             | 1    |
|        | 378447-6    | Socket Head Capscrew (.312" - 18 x 1.0") ..... | 4    |

**Direct Mount Pump Conversion Kits**

| Flange Suffix | Flange Type                    | Shaft Type             | Conversion Kit       |
|---------------|--------------------------------|------------------------|----------------------|
| AA            | Special for England            | .982"-6 Spline         |                      |
| AF            | S.A.E. "B" 2 or 4 Bolt         | 1.0"-15 Spline         | XD to AF 328591-30X  |
| AK            | S.A.E. "B" 2 Bolt              | 7/8"-13 Spline         | XD to AK 328591-28X  |
| AZ            | S.A.E. 4 Bolt                  | 1-1/4"-14 Spline       | XD to AZ 328591-70X  |
| FF            | S.A.E. "B" 2 or 4 Bolt         | 7/8" Round             | XD to FF 328591-29X  |
| ● GH          | Rotatable S.A.E. "BB" 2 Bolt   | 1.0"-15 Spline         | XD to GH 328591-116X |
| ● GJ          | S.A.E. "B" 4 Bolt Rotatable    | 1.0"-15 Spline         | XD to GJ 328591-138X |
| ● GM          | Din 5462 Pump Mounting         | DIN 5462               | XD to GM 328591-148X |
| MY            | Din 5462 Pump Mounting         | DIN 5462               | XD to MY 328591-146X |
| RA            | Rotatable S.A.E. "B" 2 Bolt    | 7/8"-13 Spline         | XD to RA 328591-55X  |
| RB            | Rotatable S.A.E. "B" 4 Bolt    | 7/8"-13 Spline         | XD to RB 328591-56X  |
| RC            | Rotatable S.A.E. "A" 2 Bolt    | 5/8"-9 Spline          | XD to RC 328591-112X |
| RE            | S.A.E. "B" 4 Bolt Rotatable    | 1.0"-15 Spline         | XD to RE 328591-134X |
| RF            | Rotatable S.A.E. "B" 2 Bolt    | 1.0"-15 Spline         | XD to RF 328591-78X  |
| XG            | Non-standard-S.A.E. "A" 2 Bolt | 3/4" Round w/ 3/16 key | XD to XG 328591-10X  |
| XJ            | Non-standard 2 Bolt            | 3/4" Round             | XD to XJ 328591-11X  |
| XK            | S.A.E. "B" 2 or 4 Bolt         | 7/8"-13 Spline         | XD to XK 328591-16X  |
| XL            | Non-standard 2 Bolt            | 7/8"-13 Spline         | XD to XL 328591-18X  |
| XR            | Chelsea Special 4 Bolt         | 7/8"-13 Spline         | XD to XR 328591-52X  |
| XX            | S.A.E Tapered Shaft            | 1-1/4" w/ 5/16" key    | XD to XX 328591-122X |
| XY            | Din 5462 Pump Mounting         | DIN 5462               | XD to XY 328591-121X |

NOTE: Check Current Price Sheet for Availability of Output Options

XR to "XK" Conversion Flange 21-P-525

- Shaft with Grease Fitting
- Similar to Ass'y "XK" Flange Rotated 90°

**Bills of Materials for Pump Flange Conversion Kits**

| Part Number       | Description                                    | Quantity |
|-------------------|--|----------|
| <b>328591-10X</b> | <b>Conversion Kit (XD - XG)</b>                |          |
| 22-P-24-1         | Gasket, Bearing Cap .010" thick .....          | 2        |
| 22-P-24-2         | Gasket, Bearing Cap .020" thick .....          | 2        |
| 22-P-24-3         | Gasket, Bearing Cap .015" thick .....          | 1        |
| 28-P-216          | Oil Seal .....                                 | 1        |
| 3-P-281           | Output Shaft .....                             | 1        |
| 328580X           | Bearing Cap Assy.(21-P-259) .....              | 1        |
| 378391            | Retaining Ring .....                           | 2        |
| 378447-8          | Socket Head Capscrew (.312" - 18 x 1.5") ..... | 4        |
| <b>328591-11X</b> | <b>Conversion Kit (XD - XJ)</b>                |          |
| 22-P-24-1         | Gasket, Bearing Cap .010" thick .....          | 2        |
| 22-P-24-2         | Gasket, Bearing Cap .020" thick .....          | 2        |
| 22-P-24-3         | Gasket, Bearing Cap .015" thick .....          | 1        |
| 28-P-216          | Oil Seal .....                                 | 1        |
| 3-P-284           | Output Shaft .....                             | 1        |
| 328580X           | Bearing Cap Assy.(21-P-259) .....              | 1        |
| 378391            | Retaining Ring .....                           | 2        |
| 378447-8          | Socket Head Capscrew (.312" - 18 x 1.5") ..... | 4        |
| <b>328591-16X</b> | <b>Conversion Kit (XD - XK)</b>                |          |
| 22-P-24-1         | Gasket, Bearing Cap .010" thick .....          | 2        |
| 22-P-24-2         | Gasket, Bearing Cap .020" thick .....          | 2        |
| 22-P-24-3         | Gasket, Bearing Cap .015" thick .....          | 1        |
| 28-P-216          | Oil Seal .....                                 | 1        |
| 3-P-282           | Output Shaft .....                             | 1        |
| 328333X           | Bearing Cap Assy.(21-P-424) .....              | 1        |
| 378391            | Retaining Ring .....                           | 2        |
| 378447-8          | Socket Head Capscrew (.312" - 18 x 1.5") ..... | 4        |
| 379688            | Grease Pack .....                              | 1        |

| Part Number       | Description                                    | Quantity |
|-------------------|--|----------|
| <b>328591-16X</b> | <b>Conversion Kit (XD - XL)</b>                |          |
| 22-P-24-1         | Gasket, Bearing Cap .010" thick .....          | 2        |
| 22-P-24-2         | Gasket, Bearing Cap .020" thick .....          | 2        |
| 22-P-24-3         | Gasket, Bearing Cap .015" thick .....          | 1        |
| 28-P-216          | Oil Seal .....                                 | 1        |
| 3-P-283           | Output Shaft .....                             | 1        |
| 328580X           | Bearing Cap Assy.(21-P-259) .....              | 1        |
| 378391            | Retaining Ring .....                           | 2        |
| 378447-8          | Socket Head Capscrew (.312" - 18 x 1.5") ..... | 4        |
| 379688            | Grease Pack .....                              | 1        |
| <b>328591-28X</b> | <b>Conversion Kit (XD - AK)</b>                |          |
| 22-P-24-1         | Gasket, Bearing Cap .010" thick .....          | 2        |
| 22-P-24-2         | Gasket, Bearing Cap .020" thick .....          | 2        |
| 22-P-24-3         | Gasket, Bearing Cap .015" thick .....          | 1        |
| 28-P-216          | Oil Seal .....                                 | 1        |
| 3-P-282           | Output Shaft .....                             | 1        |
| 328989X           | Bearing Cap Assy.(21-P-472) .....              | 1        |
| 378391            | Retaining Ring .....                           | 2        |
| 378447-8          | Socket Head Capscrew (.312" - 18 x 1.5") ..... | 4        |
| 379688            | Grease Pack .....                              | 1        |
| <b>328591-29X</b> | <b>Conversion Kit (XD - FF)</b>                |          |
| 22-P-24-1         | Gasket, Bearing Cap .010" thick .....          | 2        |
| 22-P-24-2         | Gasket, Bearing Cap .020" thick .....          | 2        |
| 22-P-24-3         | Gasket, Bearing Cap .015" thick .....          | 1        |
| 28-P-219          | Oil Seal .....                                 | 1        |
| 3-P-851           | Output Shaft .....                             | 1        |
| 329088X           | Bearing Cap Assy.(21-P-522) .....              | 1        |
| 378391            | Retaining Ring .....                           | 2        |
| 378447-10         | Socket Head Capscrew (.312" - 18 x 2.0") ..... | 4        |
| 379688            | Grease Pack .....                              | 1        |
| <b>328591-52X</b> | <b>Conversion Kit (XD - XR)</b>                |          |
| 22-P-24-1         | Gasket, Bearing Cap .010" thick .....          | 2        |
| 22-P-24-2         | Gasket, Bearing Cap .020" thick .....          | 2        |
| 22-P-24-3         | Gasket, Bearing Cap .015" thick .....          | 1        |
| 28-P-216          | Oil Seal .....                                 | 1        |
| 3-P-283           | Output Shaft .....                             | 1        |
| 328711X           | Pump Mounting .....                            | 1        |
| 378919            | Washer (.328" ID x .062") .....                | 4        |
| 500963-1          | Hex Lock Nut (.312"-24) .....                  | 4        |
| 329194X           | Bearing Cap Assy.(21-P-574) .....              | 1        |
| 379637            | Socket Head Screw (.312" - 18) .....           | 2        |
| 378391            | Retaining Ring .....                           | 2        |
| 379063            | Flat Washer (.339" ID x .052") .....           | 4        |
| 379673            | Stud, Shoulder (.312"-18 x .312"-24) .....     | 4        |
| 379688            | Grease Pack .....                              | 1        |
| <b>328591-55X</b> | <b>Conversion Kit (XD - RA)</b>                |          |
| 21-P-628          | Pump Flange .....                              | 1        |
| 22-P-24-1         | Gasket, Bearing Cap .010" thick .....          | 2        |
| 22-P-24-2         | Gasket, Bearing Cap .020" thick .....          | 2        |
| 22-P-24-3         | Gasket, Bearing Cap .015" thick .....          | 1        |
| 28-P-216          | Oil Seal .....                                 | 1        |
| 3-P-283           | Output Shaft .....                             | 1        |
| 329195X           | Bearing Cap Assy.(21-P-574) .....              | 1        |
| 378391            | Retaining Ring .....                           | 2        |
| 378447-6          | Socket Head Capscrew (.312" - 18 x 1.0") ..... | 7        |
| 379688            | Grease Pack .....                              | 1        |

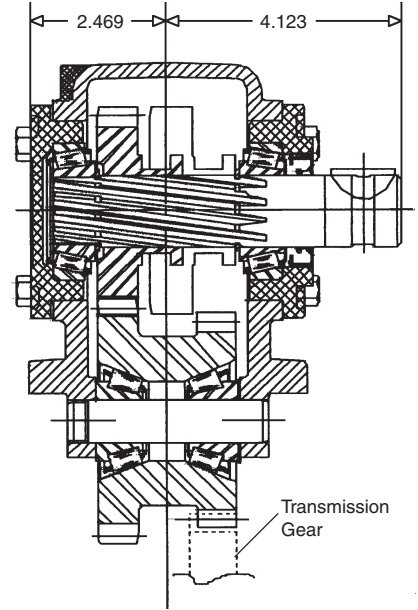
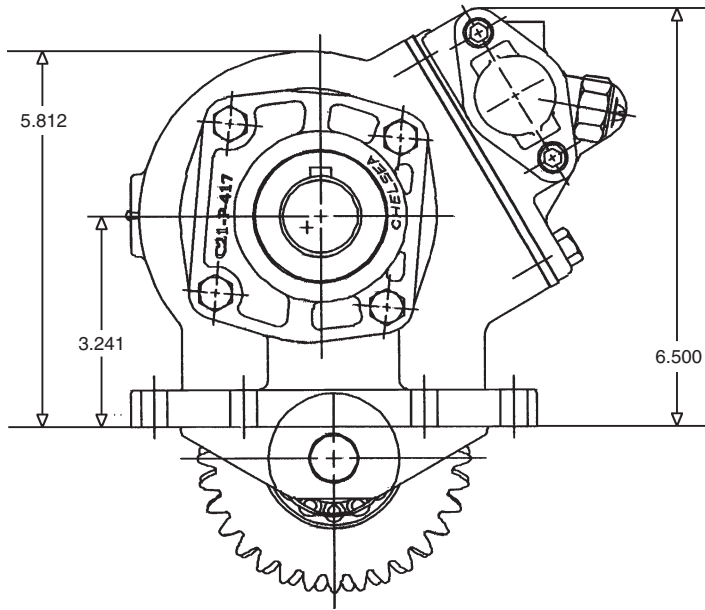
**Pump Flange Conv. Kits Bills of Materials**

| Part Number        | Description                                      | Quantity |
|--------------------|--|----------|
| <b>328591-56X</b>  | <b>Conversion Kit (XD - RB)</b>                  |          |
| 21-P-572           | Pump Flange .....                                | 1        |
| 22-P-24-1          | Gasket, Bearing Cap .010" thick .....            | 2        |
| 22-P-24-2          | Gasket, Bearing Cap .020" thick .....            | 2        |
| 22-P-24-3          | Gasket, Bearing Cap .015" thick .....            | 1        |
| 28-P-216           | Oil Seal .....                                   | 1        |
| 3-P-283            | Output Shaft .....                               | 1        |
| 329195X            | Bearing Cap Assy.(21-P-574) .....                | 1        |
| 378391             | Retaining Ring .....                             | 2        |
| 378447-6           | Socket Head Capscrew (.312" - 18 x 1.0") .....   | 7        |
| 379688             | Grease Pack .....                                | 1        |
| <b>328591-70X</b>  | <b>Conversion Kit (XD - AZ)</b>                  |          |
| 379688             | Grease Pack .....                                | 1        |
| 378447-11          | Socket Head Capscrew (.312" - 18 x 2.250") ..... | 4        |
| 3-P-844            | Output Shaft .....                               | 1        |
| 28-P-230           | Oil Seal .....                                   | 1        |
| 22-P-24-1          | Gasket, Bearing Cap .010" thick .....            | 2        |
| 22-P-24-2          | Gasket, Bearing Cap .020" thick .....            | 2        |
| 22-P-24-3          | Gasket, Bearing Cap .015" thick .....            | 1        |
| 378391             | Retaining Ring .....                             | 2        |
| 329052X            | Bearing Cap Assy.(21-P-508) .....                | 1        |
| <b>328591-78X</b>  | <b>Conversion Kit (XD - RF)</b>                  |          |
| 21-P-626           | Pump Flange .....                                | 1        |
| 22-P-24-1          | Gasket, Bearing Cap .010" thick .....            | 2        |
| 22-P-24-2          | Gasket, Bearing Cap .020" thick .....            | 2        |
| 22-P-24-3          | Gasket, Bearing Cap .015" thick .....            | 1        |
| 28-P-219           | Oil Seal .....                                   | 1        |
| 3-P-924            | Output Shaft .....                               | 1        |
| 329264X            | Bearing Cap Assy.(21-P-629) .....                | 1        |
| 378391             | Retaining Ring .....                             | 2        |
| 378447-6           | Socket Head Capscrew (.312" - 18 x 1.0") .....   | 4        |
| 379688             | Grease Pack .....                                | 1        |
| 28-P-638           | O-Ring .....                                     | 1        |
| <b>328591-112X</b> | <b>Conversion Kit (XD - RC)</b>                  |          |
| 21-P-638           | Pump Flange .....                                | 1        |
| 22-P-24-1          | Gasket, Bearing Cap .010" thick .....            | 2        |
| 22-P-24-2          | Gasket, Bearing Cap .020" thick .....            | 2        |
| 22-P-24-3          | Gasket, Bearing Cap .015" thick .....            | 1        |
| 28-P-216           | Oil Seal .....                                   | 1        |
| 3-P-800            | Output Shaft .....                               | 1        |
| 329322X            | Bearing Cap Assy.(21-P-640) .....                | 1        |
| 378391             | Retaining Ring .....                             | 2        |
| 378447-6           | Socket Head Capscrew (.312" - 18 x 1.0") .....   | 4        |
| 379688             | Grease Pack .....                                | 1        |
| 378446-4           | Screw, Socket (.250" - 20 x .750") .....         | 6        |

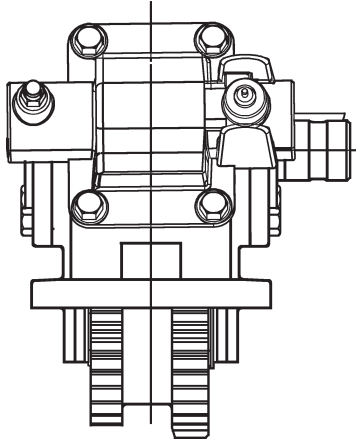
| Part Number        | Description                                    | Quantity |
|--------------------|--|----------|
| <b>328591-116X</b> | <b>Conversion Kit (XD - GH)</b>                |          |
| 21-P-626           | Pump Flange .....                              | 1        |
| 22-P-24-1          | Gasket, Bearing Cap .010" thick .....          | 2        |
| 22-P-24-2          | Gasket, Bearing Cap .020" thick .....          | 2        |
| 22-P-24-3          | Gasket, Bearing Cap .015" thick .....          | 1        |
| 28-P-219           | Oil Seal .....                                 | 1        |
| 3-P-941X           | Output Shaft .....                             | 1        |
| 379688             | Grease Pack .....                              | 1        |
| 379819             | Grease Fitting Cap .....                       | 1        |
| 500168-2           | Fitting .....                                  | 1        |
| 328273X            | Closed Bearing Cap Assy.(21-P-418) .....       | 1        |
| 378391             | Retaining Ring .....                           | 2        |
| 378447-6           | Socket Head Capscrew (.312" - 18 x 1.0") ..... | 7        |
| 28-P-268           | Oil Seal .....                                 | 1        |
| 329264X            | Open Bearing Cap Assy.(21-P-629) .....         | 1        |
| 28-P-271           | O-Ring .....                                   | 1        |
| <b>328591-122X</b> | <b>Conversion Kit (XD - XX)</b>                |          |
| 501181             | Hex Nut .....                                  | 1        |
| 3-P-766            | Output Shaft .....                             | 1        |
| 28-P-216           | Oil Seal .....                                 | 1        |
| 378430-10          | Hex Capscrew (.312" - 18 x 1.0") .....         | 4        |
| 379111             | Square Key .....                               | 1        |
| <b>328591-134X</b> | <b>Conversion Kit (XD - RE)</b>                |          |
| 21-P-654           | Pump Flange .....                              | 1        |
| 22-P-24-1          | Gasket, Bearing Cap .010" thick .....          | 2        |
| 22-P-24-2          | Gasket, Bearing Cap .020" thick .....          | 2        |
| 22-P-24-3          | Gasket, Bearing Cap .015" thick .....          | 1        |
| 28-P-219           | Oil Seal .....                                 | 1        |
| 328273X            | Closed Bearing Cap Assy.(21-P-418) .....       | 1        |
| 378391             | Retaining Ring .....                           | 2        |
| 378447-6           | Socket Head Capscrew (.312" - 18 x 1.0") ..... | 7        |
| 28-P-268           | Oil Seal .....                                 | 1        |
| 329264X            | Open Bearing Cap Assy.(21-P-629) .....         | 1        |
| 28-P-271           | O-Ring .....                                   | 1        |
| 379688             | Grease Pack .....                              | 1        |
| <b>328591-138X</b> | <b>Conversion Kit (XD - GJ)</b>                |          |
| 21-P-654           | Pump Flange .....                              | 1        |
| 22-P-24-1          | Gasket, Bearing Cap .010" thick .....          | 2        |
| 22-P-24-2          | Gasket, Bearing Cap .020" thick .....          | 2        |
| 22-P-24-3          | Gasket, Bearing Cap .015" thick .....          | 1        |
| 28-P-219           | Oil Seal .....                                 | 1        |
| 3-P-941X           | Output Shaft .....                             | 1        |
| 500168-2           | Fitting .....                                  | 1        |
| 379688             | Grease Pack .....                              | 1        |
| 379819             | Grease Fitting Cap .....                       | 1        |
| 328273X            | Closed Bearing Cap Assy.(21-P-418) .....       | 1        |
| 378391             | Retaining Ring .....                           | 2        |
| 378447-6           | Socket Head Capscrew (.312" - 18 x 1.0") ..... | 7        |
| 28-P-268           | Oil Seal .....                                 | 1        |
| 329264X            | Open Bearing Cap Assy.(21-P-629) .....         | 1        |
| 28-P-271           | O-Ring .....                                   | 1        |

**Pump Flange Conv. Kits Bills of Materials**

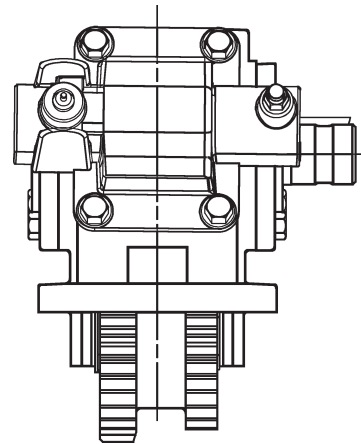
| Part Number        | Description                                    | Quantity |
|--------------------|--|----------|
| <b>328591-146X</b> | <b>Conversion Kit (XD - MY)</b>                |          |
| 22-P-24-1          | Gasket, Bearing Cap .010" thick .....          | 2        |
| 22-P-24-2          | Gasket, Bearing Cap .020" thick .....          | 2        |
| 22-P-24-3          | Gasket, Bearing Cap .015" thick .....          | 1        |
| 3-P-768            | Output Shaft .....                             | 1        |
| 28-P-275           | Oil Seal .....                                 | 1        |
| 329412X            | Bearing Cap Assy. (21-P-675) .....             | 1        |
| 378447-6           | Socket Head Capscrew (.312" - 18 x 1.0") ..... | 4        |
| 378391             | Retaining Ring .....                           | 2        |
| <b>328591-148X</b> | <b>Conversion Kit (XD - GM)</b>                |          |
| 28-P-275           | Oil Seal .....                                 | 1        |
| 378391             | Retaining Ring .....                           | 2        |
| 329412X            | Open Bearing Cap Assy. (21-P-675) .....        | 1        |
| 378447-6           | Socket Head Capscrew (.312" - 18 x 1.0") ..... | 4        |
| 328273X            | Closed Bearing Cap Assy. (21-P-418) .....      | 1        |
| 28-P-268           | Oil Seal .....                                 | 1        |
| 22-P-24-1          | Gasket, Bearing Cap .010" thick .....          | 2        |
| 22-P-24-2          | Gasket, Bearing Cap .020" thick .....          | 2        |
| 22-P-24-3          | Gasket, Bearing Cap .015" thick .....          | 1        |
| 3-P-938X           | Output Shaft .....                             | 1        |
| 500168-2           | Fitting .....                                  | 1        |
| 379688             | Grease Pack .....                              | 1        |
| 379819             | Grease Fitting Cap .....                       | 1        |



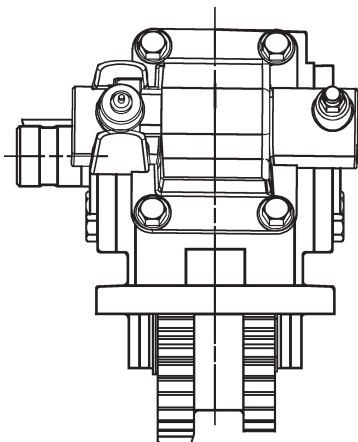
**Assembly Arrangements**



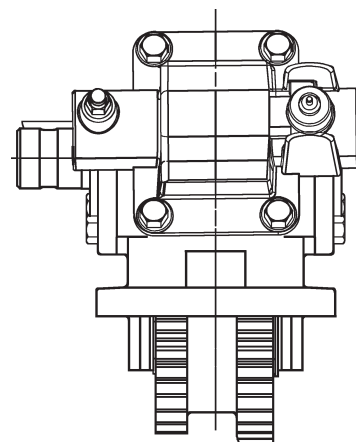
Assembly 3



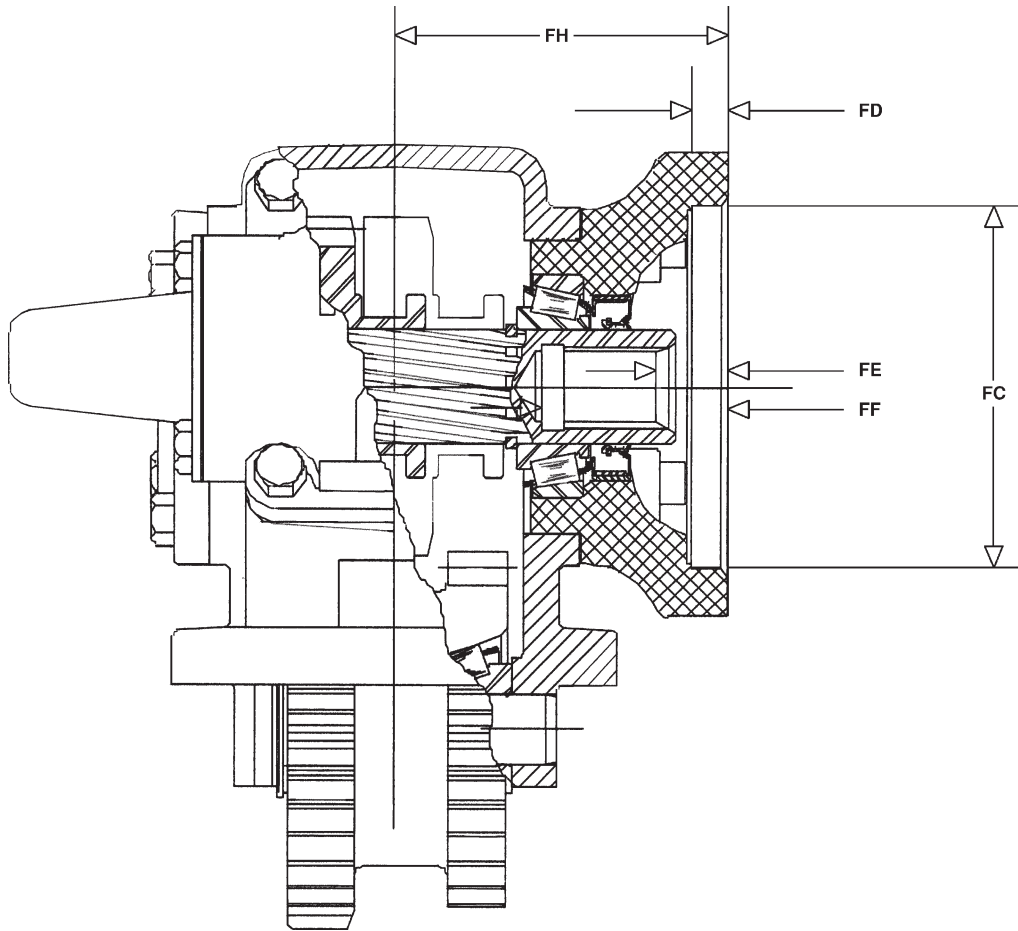
Assembly 4



Assembly 5



Assembly 6



| Pump Flange Suffix | Bolt Circle Dia. | Bolt Holes  |                    | FC<br>Female Pilot Dia. | FD<br>Pilot Depth | FE<br>Face to End of Shaft | FF<br>Face thru Hole | FH<br>Face to Center of P.T.O. | Output Shaft<br>Hole Diameter | Keyway Width |
|--------------------|------------------|-------------|--------------------|-------------------------|-------------------|----------------------------|----------------------|--------------------------------|-------------------------------|--------------|
|                    |                  | Tapped Hole | No. Equally Spaced |                         |                   |                            |                      |                                |                               |              |
| AA                 | 2.83             | M10-1.5     | 6                  | 2.05                    | N/A               | N/A                        | N/A                  | 3.447                          | 6 Spline                      | —            |
| AF                 | 5.00             | .500" - 13  | 4                  | 4.003                   | 0.406             | 0.516                      | 1.984                | 4.322                          | 1" - 15 Spline                | —            |
| AK                 | 5.75             | .500" - 13  | 2                  | 4.003                   | 0.406             | 0.516                      | 1.984                | 4.322                          | .875" - 13 Spline             | —            |
| AZ                 | 5.75             | .500" - 13  | 4                  | 4.003                   | 0.406             | 0.562                      | 2.062                | 4.985                          | 1.25" - 14 Spline             | —            |
| FF                 | 5.00             | .500" - 13  | 4                  | 4.003                   | 0.406             | 0.516                      | 1.984                | 4.322                          | .875" Round                   | .25"         |
|                    | 5.75             | .500" - 13  | 2                  | —                       | —                 | —                          | —                    | —                              | —                             | —            |
| MY                 | 3.15 x 3.15      | M12-1.75    | 12                 | 3.152                   | 0.393             | 0.594                      | 2.508                | 4.697                          | —                             | —            |
| RA                 | 5.75             | .500" - 13  | 2                  | 4.003                   | 0.406             | 0.558                      | 2.058                | 4.558                          | .875" - 13 Spline             | —            |
| RB                 | 5.00             | .500" - 13  | 4                  | 4.003                   | 0.406             | 0.558                      | 2.058                | 4.558                          | .875" - 13 Spline             | —            |
| RC•                | 4.188            | .375 - 16   | 2tt                | 3.253                   | 0.27              | 0.525                      | 1.462                | 3.694                          | .625" - 9 Spline              | —            |
| RE•                | 3.532 x 3.532    | .500"13     | 4                  | 4.003                   | 0.406             | 0.501                      | 1.969                | 4.569                          | 1.0"-15 Spline                | —            |
| RF•, GH            | 5.75             | .500" - 13  | 2tt                | 4.003                   | 0.406             | 0.501                      | 1.969                | 4.569                          | 1.0" - 15 Spline              | —            |
| XG                 | 4.19             | .500" - 13  | 4                  | 3.253                   | 0.562             | 0.562                      | 2.331                | 4.562                          | .75" Round                    | .1875"       |
| XJ                 | 4.19             | .500" - 13  | 4                  | 3.253                   | 0.562             | 1.406                      | 3.018                | 4.562                          | .75" Round                    | .1875"       |
| *XK                | 5.00             | .500" - 13  | 4                  | 4.003                   | 0.406             | 0.562                      | 2.062                | 3.688                          | .875" - 13 Spline             | —            |
|                    | 5.75             | .500" - 13  | 2                  | —                       | —                 | —                          | —                    | —                              | —                             | —            |
| XL                 | 4.19             | .500" - 13  | 4                  | 3.253                   | 0.562             | 0.562                      | 2.062                | 4.562                          | .875" - 13 Spline             | —            |
| XR                 | 3.71             | —           | 4                  | 2.752                   | 0.281             | N/A                        | N/A                  | 2.809                          | .875" - 13 Spline             | —            |
| XY                 | 4.61             | M12-1.75    | 4                  | 3.152                   | 0.393             | 0.594                      | 2.31                 | 4.697                          | DIN 5462 Spline               | —            |

\* Available on the "Q" Ratio only

• Rotatable Flange Rotates in 30° Increments

tt Two Set of Holes Spaced 14° Apart

**NOTE:** To convert an "XR" to an "XK", use conversion flange number 21-P-525







## Offer of Sale

The items described in this document and other documents or descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors are hereby offered for sale at prices to be established by Parker Hannifin Corporation, its subsidiaries and its authorized distributors. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any such items, when communicated to Parker Hannifin Corporation, its subsidiary or an authorized distributor ("Seller") verbally or in writing, shall constitute acceptance of this offer.

**1. Terms and Conditions of Sale:** All descriptions, quotations, proposals, offers, acknowledgments, acceptances and sales of Seller's products are subject to and shall be governed exclusively by the terms and conditions stated herein. Buyer's acceptance of any offer to sell is limited to these terms and conditions. Any terms or conditions in addition to, or inconsistent with those stated herein, proposed by Buyer in any acceptance of an offer by Seller, are hereby objected to. No such additional, different or inconsistent terms and conditions shall become part of the contract between Buyer and Seller unless expressly accepted in writing by Seller. Seller's acceptance of any offer to purchase by Buyer is expressly conditional upon Buyer's assent to all the terms and conditions stated herein, including any terms in addition to, or inconsistent with those contained in Buyer's offer. Acceptance of Seller's products shall in all events constitute such assent.

**2. Payment:** Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

**3. Delivery:** Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

**4. Warranty:** Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of:

(A) All Power Take-Off units one (1) year from date of installation.

(B) Except 267, 277, 278, 242, 244, 245, 250, 251 and 859 series two (2) years from date of installation. **THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED. NOTWITHSTANDING THE FOREGOING, THERE ARE NO WARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER'S DESIGNS OR SPECIFICATIONS.**

**5. Limitation Of Remedy: SELLER'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER'S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.**

**6. Changes, Reschedules and Cancellations:** Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

**7. Special Tooling:** A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall

have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

**8. Buyer's Property:** Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property, Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

**9. Taxes:** Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

**10. Indemnity For Infringement of Intellectual Property Rights:** Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. Patents, U.S. Trademarks, copyrights, trade dress and trade secrets (hereinafter 'Intellectual Property Rights'). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

**11. Force Majeure:** Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter 'Events of Force Majeure'). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

**12. Entire Agreement/Governing Law:** The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

9/01-P



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