

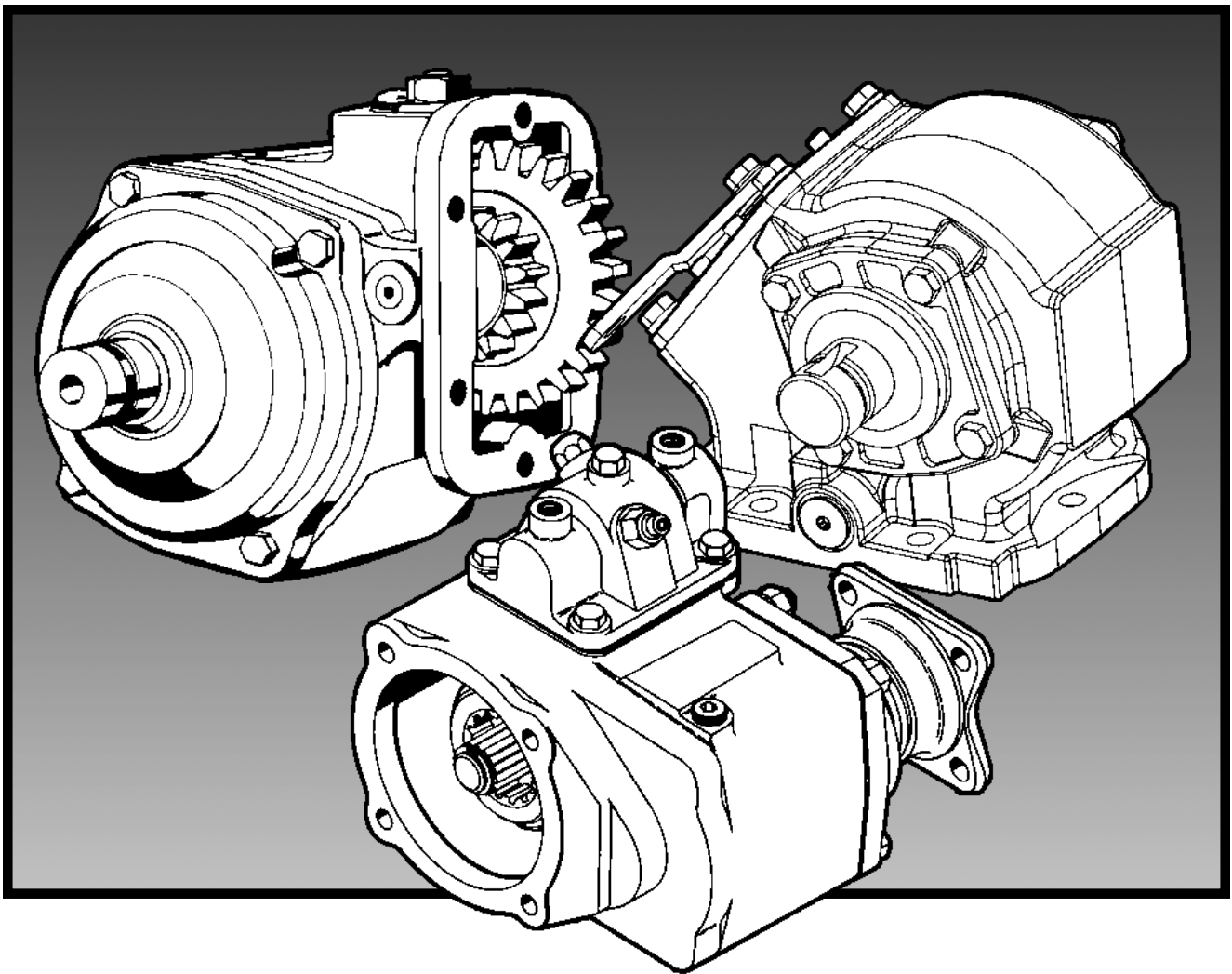
**CHELSEA®**

Bulletin HY25-2221-M1/US

## Parts List 221 Series

Effective: April 15, 2002  
Supersedes: P410-221 Dated September 1995

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**Parker**  
Hydraulics

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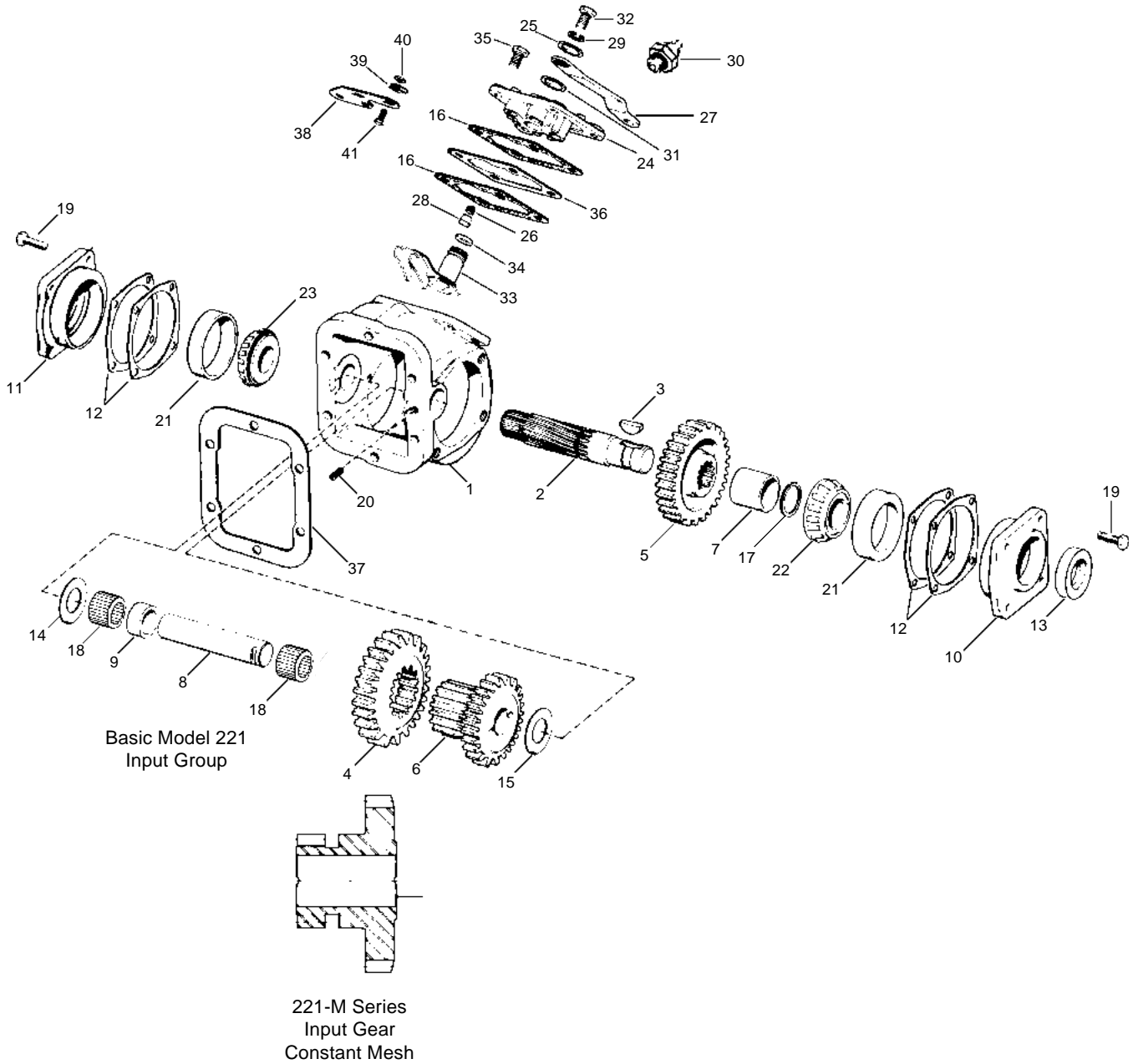
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| Item | Part Number      | Description   | Quantity |
|------|------------------|---|----------|
| 1    | 1-P-467          | Housing, Standard Mount (X) .....                         | 1        |
|      | 1-P-468          | Housing, Extra Deep Mount (Q) .....                       | 1        |
|      | 1-P-469          | Housing, Deep Mount (Z) .....                             | 1        |
|      | 1-P-470X         | Housing, Low Profile (R) .....                            | 1        |
| 2    | 3-P-202          | Driveshaft, Standard Output (1.25" Round) .....           | 1        |
|      | See Chart Pg. 10 | Shaft, Pump .....   | 1        |
| 3    | 500007-29        | Woodruff Key (.3125" x 1.125") .....                      | 1        |
| 4    | See Chart Pg. 4  | Gear, Input .....   | 1        |
| 5    | See Chart Pg. 4  | Gear, Output .....  | 1        |
| 6    | See Chart Pg. 4  | Gear, Ratio .....   | 1        |
| 7    | 4-P-45           | Spacer, Driveshaft (1.410" Wide) .....                    | 1        |
| 8    | 9-P-55           | Shaft, Input Idler (4.812" Long) .....                    | 1        |
| N.S. | 9-P-54           | Shaft, Pressure Lube Input Idler (4.812" long) .....      | 1        |
| N.S. | 379231           | Pipe Plug, Pressure Lube (.125"-27 NPTF) .....            | 1        |
| N.S. | 328075X          | Hose Assembly, Pressure Lube (24" Long) .....             | 1        |
| 9    | 14-P-50          | Spacer, Caged Needle Bearing (.587") .....                | 1        |
| 10   | 328273X          | Bearing Cap, Open End, Standard Output ("XD") .....       | 1        |
| 11   | 328274X          | Bearing Cap, Closed End, Standard Output .....            | 1        |
| 12   | 22-P-24-1        | Gasket, Bearing Cover (.010") .....                       | A.R.     |
|      | 22-P-24-2        | Gasket, Bearing Cover (.020") .....                       | A.R.     |
|      | 22-P-24-3        | Gasket, Bearing Cover (.015") .....                       | A.R.     |
| 13   | 28-P-216         | Oil Seal, Output Shaft ("XD") .....                       | 1        |
| 14   | 31-P-58          | Thrust Washer .....                                       | 1        |
| 15   | 31-P-47          | Thrust Washer .....                                       | 1        |
| 16   | 35-P-8           | Gasket, Cover (.032") (use 2 for Wire Shift) .....        | 1        |
| 17   | 378391           | Retaining Ring, Driveshaft .....                          | 1        |
| 18   | 550886           | Bearing, Caged Needle Roller .....                        | 2        |
| 19   | 378430-10        | Capscrew, Bearing Cap Hex Head (.3125"-18 x 1") .....     | 8        |
| 20   | 378452-7         | Setscrew, Standard Mount Housing (.250"-20 X .500") ..... | 1        |
|      | 378452-4         | Setscrew, Deep Mount Housing (.250"-20 X .312") .....     | 1        |
| 21   | 550221           | Bearing Cup .....   | 2        |
| 22   | 550397           | Bearing Cone, Output End .....                            | 1        |
| 23   | 550532           | Bearing Cone, Closed End .....                            | 1        |
|      | 328805-1X        | Cable Shift Cover Assembly (Assemblies 3 & 6) .....       | 1        |
|      | 328805-2X        | Cable Shift Cover Assembly (Assemblies 4 & 5) .....       | 1        |
|      |                  | (Includes Items 24 thru 34) .....                         |          |
| 24   | 34-P-74          | Cover, Shifter .....                                      | 1        |
| 25   | 500365-22        | Flat Washer .....   | 1        |
| 26   | 37-P-19          | Poppet Spring, Shifter .....                              | 1        |
| 27   | 51-P-22          | Shift Lever .....   | 1        |
| 28   | 63-P-16          | Shift Poppet .....  | 1        |
| 29   | 500356-10        | Lockwasher, Shift Lever .....                             | 1        |
| 30   | 379639           | Indicator Switch (Normally Off) .....                     | 1        |
| 31   | 378004           | Flat Washer .....   | 1        |
| 32   | 500409-6         | Screw, Shift Lever Hex (.3125"-24 x .625") .....          | 1        |
| 33   | 328803-1X        | Post & Plate Assembly (Assemblies 3 & 6) .....            | 1        |
|      | 328803-2X        | Post & Plate Assembly (Assemblies 4 & 5) .....            | 1        |
| 34   | 28-P-191         | O-Ring, Shifter Post .....                                | 1        |
| 35   | 378430-10        | Capscrew, Hex Head (.3125" - 18 x 1") .....               | 4        |
| 36   | 5-A-125          | Spacer, Shifter Cover (Wire Shift Only) .....             | 1        |
| N.S. | 68-P-2           | Name Plate .....  | 1        |

N.S. — Not Shown      A.R.—As Required

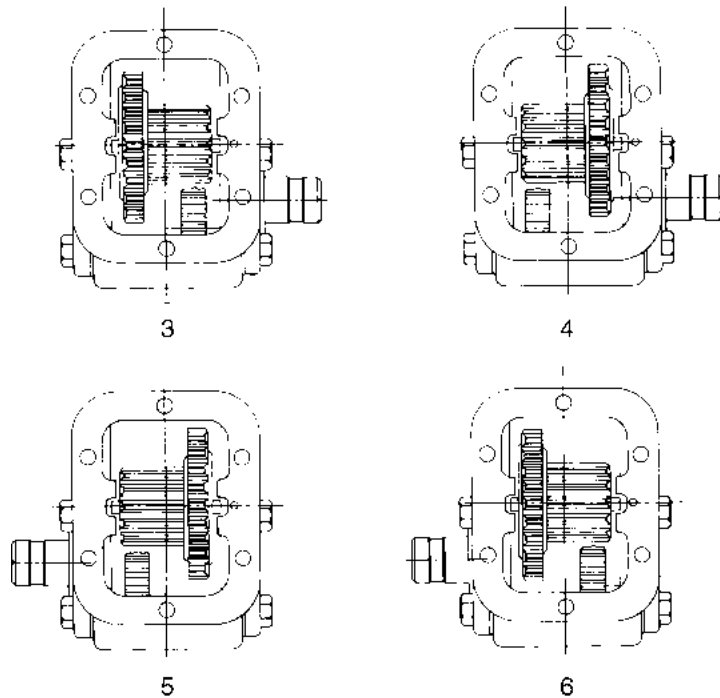
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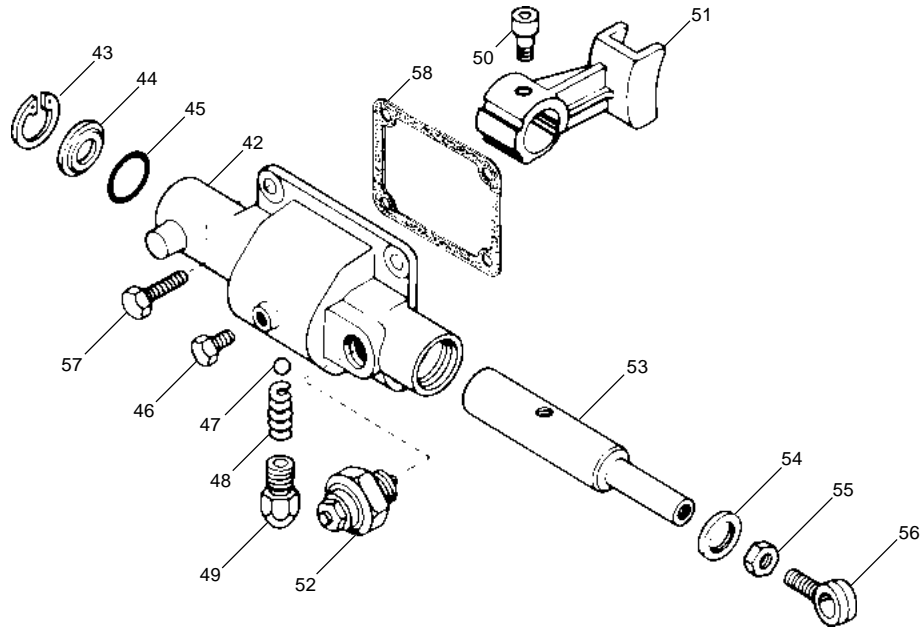
| Item | Part Number        | Description   | Quantity |
|------|--------------------|---|----------|
|      |                    | <b>LOOSE PARTS</b>  |          |
| 37   | <b>328948-6X</b>   | Gasket & Installation Instructions .....                                  | 1        |
|      | <b>35-P-9-1</b>    | Gasket, Mounting (.010" thick) .....                                      | 2        |
|      | <b>35-P-9-2</b>    | Gasket, Mounting (.020" thick) .....                                      | 2        |
| N.S. | <b>328346-10X</b>  | Cable Control Assembly (Includes 378441-10 10' Cable & 378502 Knob) ..... | 1        |
|      | <b>328380X</b>     | Mounting Parts Kit (Cable Control) .....                                  | 1        |
|      |                    | (Includes items 38 thru 41) .....   |          |
| 38   | <b>50-P-17</b>     | Bracket, Cable Control .....  | 1        |
| 39   | <b>50-P-19</b>     | Bracket, Swivel .....   | 1        |
| N.S. | <b>378019</b>      | Pin, Pivot .....  | 1        |
| 40   | <b>378326</b>      | Nut, Hex (.25"-20) .....  | 1        |
| N.S. | <b>500568-4</b>    | Setscrew (.25"-20 X .50") .....   | 1        |
| 41   | <b>500396-8</b>    | Capscrew, Hex Head (.25"-20 x .75") .....                                 | 1        |
| N.S. | <b>328170-1X</b>   | Stud Kit, Standard Mount .....  | 1        |
|      | <b>379286-30</b>   | Capscrew (.375"-16 x 4") .....  | 1        |
|      | <b>379286-42</b>   | Capscrew (.375"-16 x 7") .....  | 1        |
|      | <b>379423-18</b>   | Stud (.375"-16 & .375"-24 X 2.00") .....                                  | 2        |
|      | <b>378018</b>      | Copper Washer .....   | 6        |
|      | <b>379744</b>      | Nut, Flange (.375"-24) .....  | 2        |
|      | <b>378774</b>      | Washer, Tab Lock .....  | 4        |
|      | <b>379286-13</b>   | Capscrew, Hex Head (.375"-16) .....                                       | 2        |
| N.S. | <b>328170-26X</b>  | Stud Kit, Deep Mount .....  | 1        |
|      | <b>379286-29</b>   | Capscrew (.375"-16 x 3.75") .....   | 1        |
|      | <b>379286-41</b>   | Capscrew (.375"-16 x 6.75") .....   | 1        |
|      | <b>379423-14</b>   | Stud (.375"-16 & .375"-24 X 1.75") .....                                  | 2        |
|      | <b>378018</b>      | Copper Washer .....   | 6        |
|      | <b>379744</b>      | Nut, Flange (.375"-16 x 1") .....   | 2        |
|      | <b>379286-11</b>   | Capscrew (.375"-16 x 1") .....  | 2        |
|      | <b>378774</b>      | Washer, Tab Lock .....  | 4        |
| N.S. | <b>328170-155X</b> | Stud Kit, Low Profile .....   | 1        |
|      | <b>379286-42</b>   | Capscrew (.375"-16 x 7") .....  | 1        |
|      | <b>379286-14</b>   | Capscrew (.375"-16 x 1.5") .....  | 2        |
|      | <b>379423-18</b>   | Stud (.375"-16 & .375"-24 X 2.00") .....                                  | 2        |
|      | <b>378018</b>      | Copper Washer .....   | 5        |
|      | <b>379744</b>      | Nut, Flange (.375"-24) .....  | 2        |
|      | <b>378774</b>      | Washer, Tab Lock .....  | 5        |
|      | <b>328751-1X</b>   | Installation Kit, Cable or Lever Indicator Light .....                    | 1        |
|      | <b>328388-47X</b>  | Installation Kit, 12-Volt Electric Over Air .....                         | 1        |
|      | <b>328388-48X</b>  | Installation Kit, 24-Volt Electric Over Air .....                         | 1        |
|      | <b>328356-13X</b>  | Gasket & Seal Kit .....   | 1        |
|      | <b>328356-15X</b>  | Seal Kit, Cable Shift .....   | 1        |
|      | <b>328356-18X</b>  | Seal Kit, Lever Shift .....   | 1        |
|      | <b>328356-19X</b>  | Seal Kit, Air Shift .....   | 1        |

N.S. — Not Shown      A.R.—As Required

| Pitch Model | Item No. 4<br>Sliding Input Gear |     | Application                         | Item No. 6<br>Ratio Gear |     | Item No. 5<br>Output Gear |     |
|-------------|----------------------------------|-----|-------------------------------------|--------------------------|-----|---------------------------|-----|
|             |                                  |     | <b>LO-LO SPEED</b>                  |                          |     |                           |     |
| 221*CAB     | 5-P-227                          | 21T | General all 5 or 5/7                | 5-P-903                  | 14T | 2-P-283                   | 29T |
| 221*CAH     | 5-P-319                          | 26T | General all 6 or 6/8                | 5-P-903                  | 14T | 2-P-283                   | 29T |
| 221*CAJ     | 5-P-569                          | 25T | Allison                             | 5-P-903                  | 14T | 2-P-283                   | 29T |
| 221*CAK     | 5-P-226                          | 25T | Allision/4700 A Series              | 5-P-903                  | 14T | 2-P-283                   | 29T |
| 221*CDA     | 5-P-633                          | 27T | Mack T-2000 Series                  | 5-P-903                  | 14T | 2-P-283                   | 29T |
|             |                                  |     | <b>LOW SPEED</b>                    |                          |     |                           |     |
| 221*EAB     | 5-P-227                          | 21T | General all 5 or 5/7                | 5-P-248                  | 15T | 2-P-179                   | 28T |
| 221*EAH     | 5-P-202                          | 25T | General all 6 or 6/8                | 5-P-248                  | 15T | 2-P-179                   | 28T |
| 221*EAJ     | 5-P-569                          | 25T | Allison                             | 5-P-248                  | 15T | 2-P-179                   | 28T |
| 221*EDA     | 5-P-633                          | 27T | Mack T-2000 Series                  | 5-P-248                  | 15T | 2-P-179                   | 28T |
| 221*EAD     | 5-P-504                          | 20T | Spicer R8516                        | 5-P-503                  | 15T | 2-P-479                   | 27T |
| 221*EAK     | 5-P-226                          | 25T | Allision/4700 A Series              | 5-P-248                  | 15T | 2-P-179                   | 28T |
| 221*EDQ     | 5-P-811                          | 22T | Saab Scania                         | 5-P-097                  | 15T | 2-P-479                   | 27T |
|             |                                  |     | <b>MEDIUM HIGH SPEED</b>            |                          |     |                           |     |
| 221*LAB     | 5-P-227                          | 21T | General all 5 or 5/7                | 5-P-394                  | 18T | 2-P-388                   | 25T |
| 221*LAH     | 5-P-202                          | 25T | General all 6 or 6/8                | 5-P-394                  | 18T | 2-P-388                   | 25T |
| 221*LAK     | 5-P-226                          | 25T | Allision/4700A Series               | 5-P-394                  | 18T | 2-P-388                   | 25T |
| 221*LDA     | 5-P-633                          | 27T | Mack T-2000 Series                  | 5-P-394                  | 18T | 2-P-388                   | 25T |
|             |                                  |     | <b>HIGH SPEED</b>                   |                          |     |                           |     |
| 221*PAB     | 5-P-227                          | 21T | General all 5 or 5/7                | 5-P-316                  | 20T | 2-P-256                   | 23T |
| 221*PAH     | 5-P-202                          | 25T | General all 6 or 6/8                | 5-P-316                  | 20T | 2-P-256                   | 23T |
| 221*PAK     | 5-P-226                          | 25T | Allison/4700 A Series               | 5-P-316                  | 20T | 2-P-256                   | 23T |
| 221*PDA     | 5-P-633                          | 27T | Mack T-2000 Series                  | 5-P-316                  | 20T | 2-P-256                   | 23T |
|             |                                  |     | <b>CONSTANT MESH</b>                |                          |     |                           |     |
| 221*CAK-M   | 5-P-994                          | 25T | Allison-Constant Mesh-Constant Mesh | —                        | 14T | 2-P-283                   | 29T |
| 221*EAK-M   | 5-P-910                          | 25T | Allison-Constant Mesh-Constant Mesh | —                        | 15T | 2-P-179                   | 28T |
| 221*PAB-M   | 5-P-987                          | 21T | General-Constant Mesh               | —                        | 20T | 2-P-256                   | 23T |

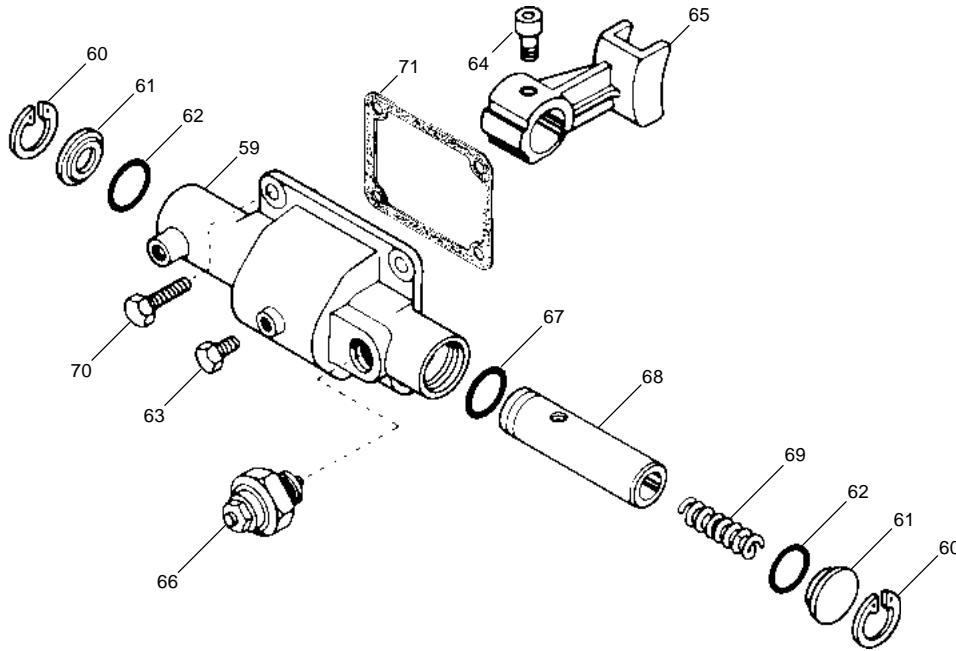
**Assembly Arrangements**





| Item | Part Number     | Description  | Quantity |
|------|-----------------|--|----------|
|      | <b>328724X</b>  | LEVER CONTROL ASSEMBLY (Includes items 42 thru 56) ..... | 1        |
| 42   | <b>34-P-60</b>  | Cover, Lever Shift .....                                 | 1        |
| 43   | <b>378316</b>   | Snap Ring .....  | 1        |
| 44   | <b>378315</b>   | Plug .....   | 1        |
| 45   | <b>28-P-42</b>  | O-Ring .....   | 1        |
| 46   | <b>378285-1</b> | Guide Screw .....  | 1        |
| 47   | <b>378002</b>   | Poppet Ball .....  | 1        |
| 48   | <b>37-P-41</b>  | Poppet Spring .....                                      | 1        |
| 49   | <b>378554</b>   | Poppet Cap .....   | 1        |
| 50   | <b>378447-4</b> | Screw, Socket Head (.3125"-18 x .75") .....              | 1        |
| 51   | <b>32-P-129</b> | Shift Fork .....   | 1        |
| 52   | <b>379639</b>   | Indicator Switch (Normally Off) .....                    | 1        |
| 53   | <b>11-P-117</b> | Shifter Shaft .....                                      | 1        |
| 54   | <b>28-P-229</b> | Oil Seal .....   | 1        |
| 55   | <b>500381-3</b> | Jam Nut .....  | 1        |
| 56   | <b>36-P-1</b>   | Eye Bolt .....   | 1        |
| 57   | <b>378430-8</b> | Screw, Hex head (.3125"-18 x .75") .....                 | 4        |
| 58   | <b>35-P-8</b>   | Gasket, Shift Cover .....                                | 1        |

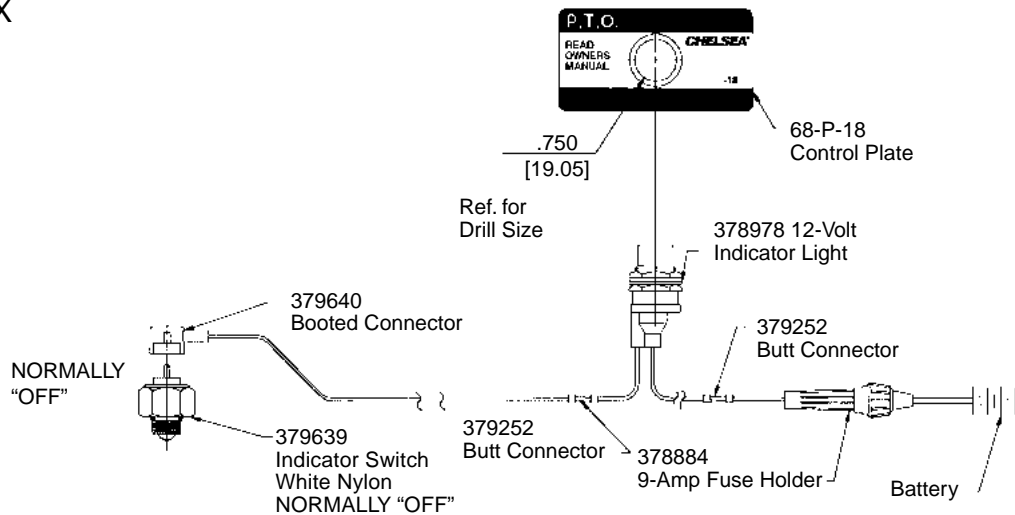




| Item | Part Number       | Description   | Quantity |
|------|-------------------|---|----------|
|      | <b>328723X</b>    | <b>AIR SHIFT COVER ASSEMBLY</b> (Includes items 59 thru 69) ..... | 1        |
| 59   | <b>34-P-115</b>   | Cover, Air Shift .....  | 1        |
| 60   | <b>378316</b>     | Snap Ring .....   | 2        |
| 61   | <b>378315</b>     | Plug .....  | 2        |
| 62   | <b>28-P-42</b>    | O-Ring .....  | 2        |
| 63   | <b>378285-1</b>   | Guide Screw .....   | 1        |
| 64   | <b>378447-4</b>   | Screw, Socket Head (.3125"-18 x .75") .....                       | 1        |
| 65   | <b>32-P-129</b>   | Shifter Fork .....  | 1        |
| 66   | <b>379639</b>     | Indicator Switch (Normally Off) .....                             | 1        |
| 67   | <b>28-P-41</b>    | O-Ring .....  | 1        |
| 68   | <b>11-P-75</b>    | Piston Shaft .....  | 1        |
| 69   | <b>37-P-21</b>    | Spring .....  | 1        |
| 70   | <b>378430-8</b>   | Screw, Hex Head (.3125"-18 x .75") .....                          | 4        |
| 71   | <b>35-P-8</b>     | Gasket, Shift Cover .....   | 1        |
| N.S. | <b>328388-37X</b> | Installation Kit, Air Shift .....                                 | 1        |

**Cable Lever Control Indicator Light Installation Sketch**

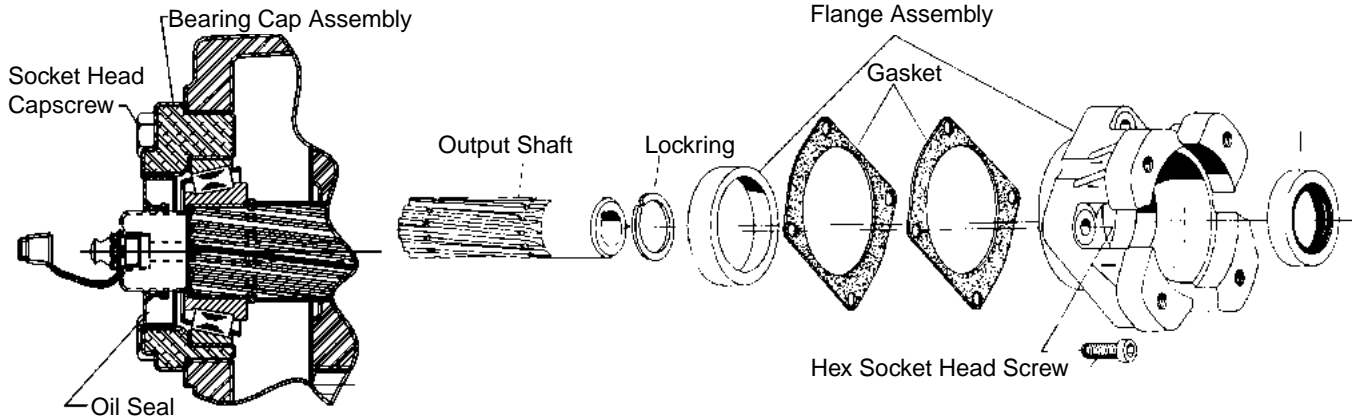
328751-1X



| Flange Suffix | Flange Type                  | Shaft Type       | Conversion Kit* |
|---------------|------------------------------|------------------|-----------------|
| AA            | Special for England          | .982"-6 Spline   |                 |
| AF            | S.A.E. "BB" 2 or 4 Bolt      | 1.0"-15 Spline   | 328591-30X      |
| AK            | S.A.E. "B" 2 Bolt            | 7/8"-13 Spline   | 328591-28X      |
| FF            | S.A.E. "B" 2 or 4 Bolt       | 7/8" Round       | 328591-29X      |
| GA            | Rotatable S.A.E. "B" 2 Bolt  | 7/8"-13 Spline   | ● 328591-72X    |
| GB            | Rotatable S.A.E. "B" 4 Bolt  | 7/8"-13 Spline   | ● 328591-74X    |
| GK            | S.A.E. "B" 2 or 4 Bolt       | 7/8"-13 Spline   | ● 328591-89X    |
| GP            | S.A.E. "A" Pilot 2 or 4 Bolt | 7/8"-13 Spline   | ● 328591-90X    |
| GQ            | S.A.E. "B" 2 or 4 Bolt       | 7/8"-13 Spline   | ● 328591-91X    |
| GY            | DIN 5462 Pump Mounting       | 7/8"-13 Spline   | ● 328591-92X    |
| GZ            | Non-standard 4 Bolt          | 1-1/4"-14 Spline | ● 328591-93X    |
| ■ LA          | S.A.E. "B" 2 Bolt            | 7/8"-13 Spline   | 328591-44X      |
| ■ LB          | S.A.E. "A" Pilot 2 Bolt      | 7/8"-13 Spline   | 328591-45X      |
| ■ LC          | S.A.E. "B" 2 Or 4 Bolt       | 7/8"-13 Spline   | 328591-46X      |
| ■ LD          | Similar to "XD"              | 1-1/4" Round     |                 |
| ■ LF          | S.A.E. "B" 2 or 4 Bolt       | 7/8"-13 Spline   | 328591-48X      |
| RA            | Rotatable S.A.E. "B" 2 Bolt  | 7/8"-13 Spline   | 328591-55X      |
| RB            | Rotatable S.A.E. "B" 4 Bolt  | 7/8"-13 Spline   | 328591-56X      |
| RC            | Rotatable S.A.E. "A" 2 Bolt  | 5/8"-9 Spline    | 328591-112X     |
| RF            | Rotatable S.A.E. "BB" 2 Bolt | 1.0"-15 Spline   | 328591-78X      |
| XE            | S.A.E. "A" 2 or 4 Bolt       | 5/8"-9 Spline    | 328591-27X      |
| XG            | Non-standard 4 Bolt          | 3/4" Round       | 328591-10X      |
| XJ            | Non-standard 4 Bolt          | 3/4" Round       | 328591-11X      |
| XK            | S.A.E. "B" 2 or 4 Bolt       | 7/8"-13 Spline   | 328591-16X      |
| XL            | Non-standard 4 Bolt          | 7/8"-13 Spline   | 328591-18X      |
| XO            | S.A.E. "A" Pilot 2 Bolt      | 3/4" Round       | 328591-26X      |
| XP            | S.A.E. "A" Pilot 2 or 4 Bolt | 7/8"-13 Spline   | 328591-23X      |
| ▶ XQ          | S.A.E. "B" 2 or 4 Bolt       | 7/8"-13 Spline   | 328591-17X      |
| XR            | CHELSEA Special 4 Bolt       | 7/8"-13 Spline   | 328591-52X      |
| XY            | DIN 5462 Pump Mounting       | 7/8"-13 Spline   | 328591-121X     |

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

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



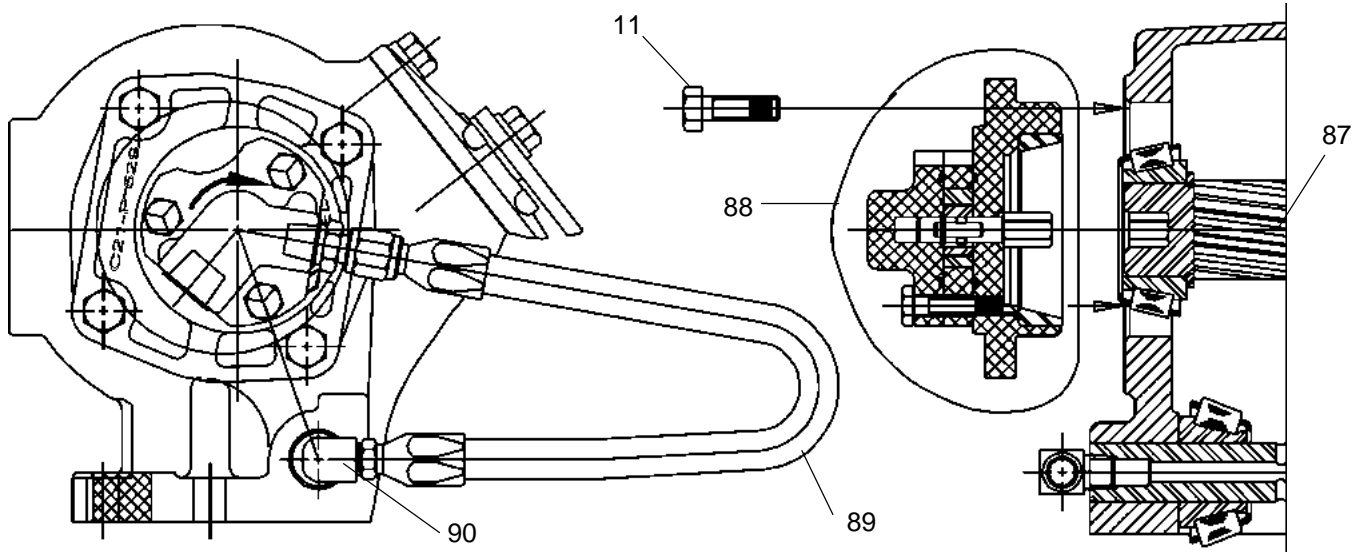
| Front         |                 |                       |              |                       |          | Rear Cap Greaseable Option              |                       |          |
|---------------|-----------------|-----------------------|--------------|-----------------------|----------|---|-----------------------|----------|
| Flange Suffix | Conversion Kit* | Flange Assembly       | Output Shaft | Socket Head (4 Req'd) | Oil Seal | Brg. Cap Assembly                       | Socket Head (4 Req'd) | Oil Seal |
| AA            |                 | 329102X               | 3-P-862      | 378447-8              | 28-P-216 |   |                       |          |
| AF            | 328591-30X      | 329088X               | 3-P-854      | 378447-10             | 28-P-219 |   |                       |          |
| AK            | 328591-28X      | 328989X               | 3-P-282      | 378447-8              | 28-P-216 |   |                       |          |
| FF            | 328591-29X      | 329088X               | 3-P-851      | 378447-10             | 28-P-219 |   |                       |          |
| GA            | 328591-72X      | 329195X               | 3-P-923X     | ● 378447-6            | 28-P-216 | 328273X                                 | 378430-10             | 28-P-268 |
| GB            | 328591-74X      | 329195X               | 3-P-923X     | ● 378447-6            | 28-P-216 | 328273X                                 | 378430-10             | 28-P-268 |
| GK            | 328591-89X      | 328333X               | 3-P-933X     | 378447-8              | 28-P-216 | 328273X                                 | 378430-10             | 28-P-268 |
| GP            | 328591-90X      | 328328X               | 3-P-933X     | 378447-8              | 28-P-216 | 328273X                                 | 378430-10             | 28-P-268 |
| ▶ GQ          | 328591-91X      | 328589X               | 3-P-933X     | 378442-8              | 28-P-216 | 328273X                                 | 378430-10             | 28-P-268 |
| GY            | 328591-92X      | 329234X               | 3-P-938X     | 378430-10             | 28-P-216 | 328273X                                 | 378430-10             | 28-P-268 |
| GZ            | 328591-93X      | 329052X               | 3-P-939X     | 378447-11             | 28-P-230 | 328273X                                 | 378430-10             | 28-P-268 |
| ■ LA          | 328591-44X      | 328989X               | 3-P-858      | 378447-8              | 28-P-216 | See Page 9 for<br>Lube Pump Information |                       |          |
| ■ LB          | 328591-45X      | 328328X               | 3-P-858      | 378447-8              | 28-P-216 |   |                       |          |
| ■ LC          | 328591-46X      | 328589X               | 3-P-858      | 378447-8              | 28-P-216 |   |                       |          |
| ■ LD          |                 | 328273X               | 3-P-857      | 378430-10             | 28-P-216 |   |                       |          |
| ■ LF          | 328591-48X      | 328333X               | 3-P-858      | 378447-8              | 28-P-216 |   |                       |          |
| RA            | 328591-55X      | 329195X<br>21-P-628   | 3-P-283      | ● 378447-6            | 28-P-216 |   |                       |          |
| RB            | 328591-56X      | 329195X<br>21-P-572   | 3-P-283      | ● 348447-6            | 28-P-216 |   |                       |          |
| RC            | 328591-112X     | 329322X &<br>21-P-638 | 3-P-800      | 328170-210X           | 28-P-216 |   |                       |          |
| RF            | 328591-78X      | 329264X &<br>21-P-626 | 3-P-924      | ● 378447-6 (7)        | 28-P-219 |   |                       |          |
| XE            | 328591-27X      | 329328X               | 3-P-800      | 348447-8              | 28-P-216 |   |                       |          |
| XG            | 328591-10X      | 329580X               | 3-P-281      | 348447-8              | 28-P-216 |   |                       |          |
| XJ            | 328591-11X      | 329580X               | 3-P-284      | 348447-8              | 28-P-216 |   |                       |          |
| XK            | 328591-16X      | 329333X               | 3-P-282      | 348447-8              | 28-P-216 |   |                       |          |
| XL            | 328591-18X      | 329580X               | 3-P-283      | 348447-8              | 28-P-216 |   |                       |          |
| XM            | 328591-20X      | 328583X               | 3-P-284      | 348447-8              | 28-P-216 |   |                       |          |
| XN            | 328591-21X      | 328584X               | 3-P-282      | 348447-8              | 28-P-216 |   |                       |          |
| XO            | 328591-26X      | 329328X               | 3-P-284      | 348447-8              | 28-P-216 |   |                       |          |
| XP            | 328591-23X      | 329328X               | 3-P-282      | 348447-8              | 28-P-216 |   |                       |          |
| ▶ XQ          | 328591-17X      | 329589X               | 3-P-282      | 348447-8              | 28-P-216 |   |                       |          |
| XR            | 328591-52X      | 329194X               | 3-P-283      | ▶▶ 379673             | 28-P-216 |   |                       |          |
| XY            | 328591-121X     | 329234X               | 3-P-768      | 378430-10             | 28-P-230 |   |                       |          |

- \* Consists of all the items shown in the illustration, plus Lock Ring (Item 5) and Bearing Cap Gasket (Item 8)
- Seven required; four to fasten the Flange Assembly 328195X to the housing and three to fasten the rotatable flange to the flange assembly.
- ▶ Similar to "XK" Assembly, only rotated 90°
- ▶▶ Special shoulder stud
- Lube pump Option

**NOTE:** To convert PTO's with AK, XP, XQ, XN, or XK output to the lube pump option, use 329097-1X. To convert P.T.O.'s with XD output to the lube pump option, use 329096-1X

**NOTE:** The 489 "A" & "C" ratio units cannot be used with an "XK" or "AK" output flange due to interference

**NOTE:** Pump must rotate in direction of arrow



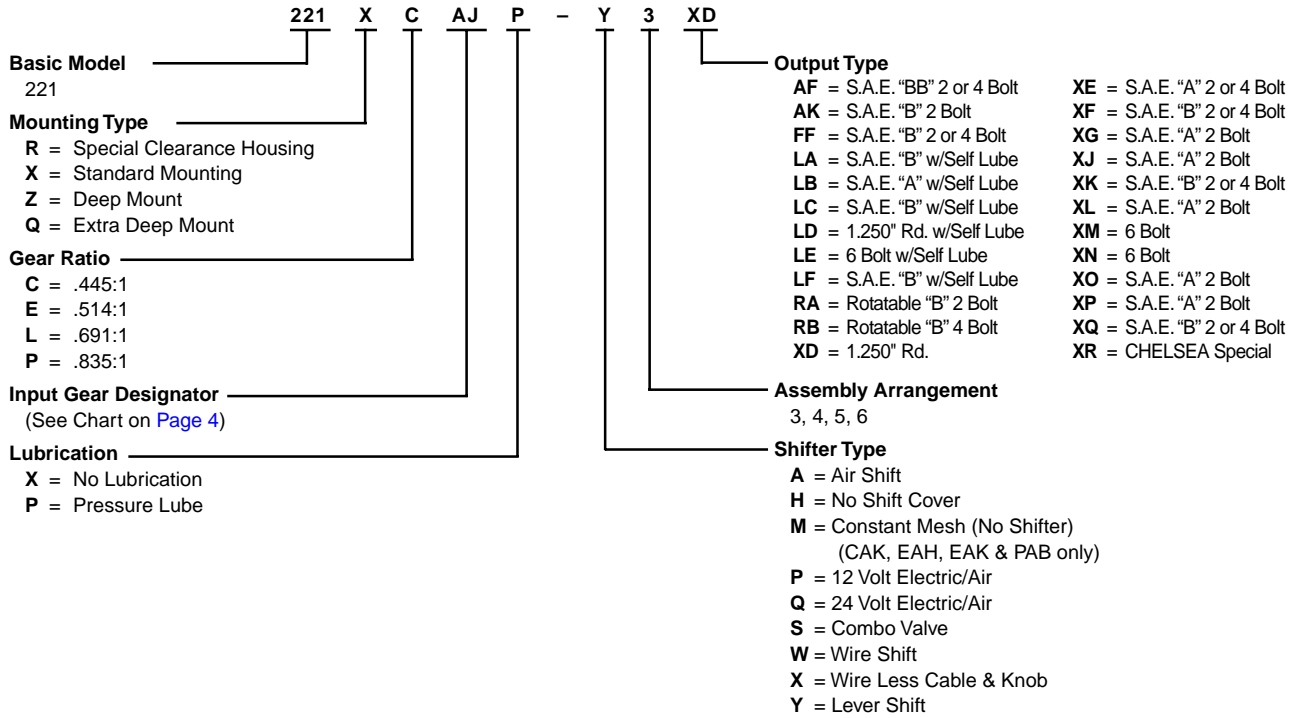
**NOTE:** Install Street Elbow into idler shaft before installing idler shaft

Pump assembly as shown is for "Q", "W" and "X" ratios.  
 Rotate as needed for "C", "E", "L", and "P" ratios.

| Item | Part Number      | Description   | Quantity |
|------|------------------|---|----------|
| 11   | <b>378430-10</b> | Capscrew, Hex Head (.312"-18 x 1.00") .....               | 4        |
| 87   | <b>3-P-857</b>   | Shaft, Output ("LD" Output) .....                         | 1        |
|      | <b>3-P-858</b>   | Shaft, Output ("LA", "LB", "LC", "LE", "LF" Output) ..... | 1        |
| 88   | <b>329091X</b>   | Lube Pump & Bearing Cap Assembly .....                    | 1        |
| 89   | <b>329092X</b>   | Pressure Lube Hose Assembly .....                         | 1        |
| 90   | <b>500841-1</b>  | Street Elbow, 90° .....                                   | 1        |

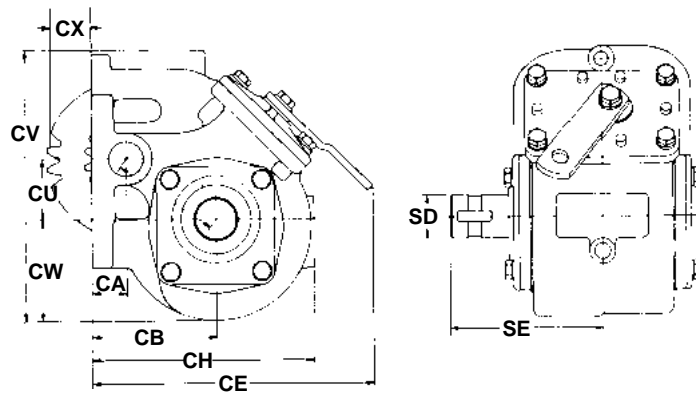
| Part Number        | Description   | Quantity |
|--------------------|---|----------|
| <b>328390-88X</b>  | CONVERSION KIT, Cable to Air all Assemblies .....     | 1        |
| <b>328390-89X</b>  | CONVERSION KIT, Lever to Air all Assemblies .....     | 1        |
| <b>328390-109X</b> | CONVERSION KIT, Wire to 12V. Electric over Air .....  | 1        |
| <b>328390-110X</b> | CONVERSION KIT, Wire to 24V. Electric over Air .....  | 1        |
| <b>328390-111X</b> | CONVERSION KIT, Lever to 12V. Electric over Air ..... | 1        |
| <b>328390-112X</b> | CONVERSION KIT, Lever to 24V. Electric over Air ..... | 1        |

**Model Number Designation**

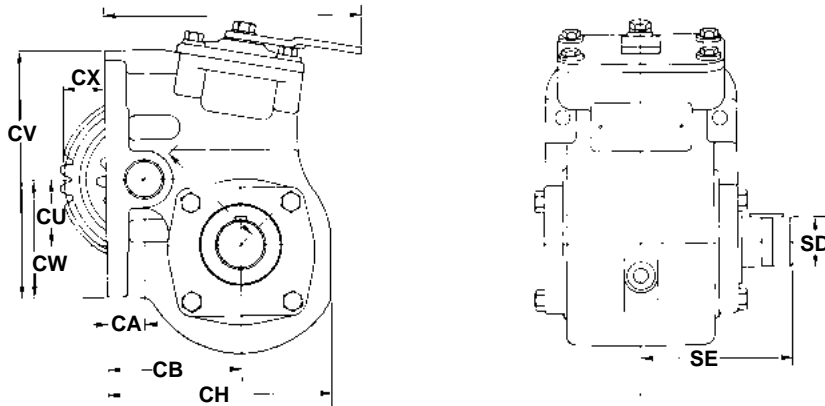


| Dimension Symbol               | Description   | Case Part Number and Dimensions |                        |                        |
|--------------------------------|---|---------------------------------|------------------------|------------------------|
|                                |   | 1-P-467<br>221X                 | 1-P-469<br>221Z        | 1-P-470<br>221R        |
| CA                             | Face of Case to Center Line of Input Hole .....           | 0.972"                          | 0.752"                 | 0.500"                 |
| CB                             | Face of Case to Center Line of Output Shaft Hole .....    | 3.516"                          | 3.296"                 | 2.543"                 |
| CD                             | Center Distance Between Input Gear & Output Shaft .....   | 3.087"                          | 3.087"                 | 3.087"                 |
| CE                             | Face of Case to End of Shift Lever .....                  | 8.000"                          | 7.781"                 | 8.000"                 |
| CH                             | Face of Case to extreme Horizontal Edge of Case ..... (d) | 6.281"                          | 6.062"                 | 6.190"                 |
| CU                             | Output Shaft BELOW Center Line of Input Gear .....        | 1.750"                          | 1.750"                 | 1.941"                 |
| CV                             | Top to Bottom of Case—Clearance ..... (d)                 | 7.750"                          | 7.750"                 | 7.906"                 |
| CW                             | Center Line of Output Shaft to Bottom of Case ..... (d)   | 2.875"                          | 2.875"                 | 2.875"                 |
| CX                             | Face of Case to Pitch Line of Gear .....                  | 1.110"                          | 1.330"                 | 1.110"                 |
| P.T.O. Output Shaft Dimensions |   |                                 |                        |                        |
| SD                             | Outside Diameter of Standard Shaft— For U-Joint .....     | 1.25" Rd<br>.3125" Key          | 1.25" Rd<br>.3125" Key | 1.25" Rd<br>.3125" Key |
| SE                             | Center Line of P.T.O. to End of Output Shaft .....        | 4.25"                           | 4.25"                  | 4.25"                  |

(d) — Approximate dimension for estimating clearance in installations.



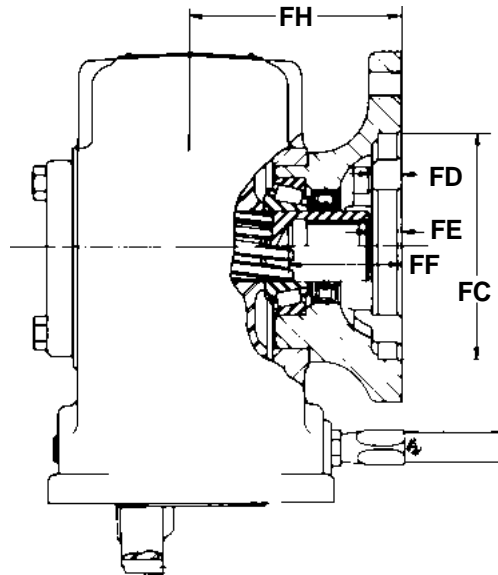
**221X & 221Z**



**221R**

**Dimensions**

**P.T.O. Case Pump Flange & Shaft Dimensions**



| Pump Flange Suffix | Bolt Circle Dia. | Bolt Holes      |                    | FC                    | FD          | FE                   | FF             | FH                       | Output Shaft         | Keyway Width |
|--------------------|------------------|-----------------|--------------------|-----------------------|-------------|----------------------|----------------|--------------------------|----------------------|--------------|
|                    |                  | Tapped Hole     | No. Equally Spaced | Female Pilot Diameter | Pilot Depth | Face to end of Shaft | Face thru Hole | Face to Center of P.T.O. | Hole Diameter        |              |
| AA                 | 2.834            | M10-1.5         | 6                  | 2.050                 | N/A         | N/A                  | N/A            | 3.447                    | .982/.816 - 6 Spline | —            |
| AF                 | 5.750            | .500"-13        | 2                  | 4.003                 | 0.406       | 0.516                | 1.984          | 4.322                    | 1"-15 Spline         | —            |
|                    | 5.000            | .500"-13        | 4                  | 4.003                 | 0.406       | 0.516                | 1.984          | 4.322                    | —                    | —            |
| AK                 | 5.750            | .500"-13        | 2                  | 4.003                 | 0.406       | 0.562                | 2.062          | 3.688                    | 7/8" - 13 Spline     | —            |
| FF                 | 5.750            | .500"-13        | 2                  | 4.003                 | 0.406       | 0.516                | 1.984          | 4.322                    | 7/8" Round           | 1/4"         |
|                    | 5.000            | .500"-13        | 4                  | 4.003                 | 0.406       | 0.516                | 1.984          | 4.322                    | —                    | —            |
| RA • GA            | 5.750            | .500"-13        | 2 **               | 4.003                 | 0.406       | 0.558                | 2.058          | 4.588                    | 7/8"-13 Spline       | —            |
| RB • GB            | 5.000            | .500"-13        | 4                  | 4.003                 | 0.406       | 0.558                | 2.058          | 4.588                    | 7/8"-13 Spline       | —            |
| RC •               | 4.188            | .375"-16        | 2 **               | 3.253                 | 0.270       | 0.525                | 1.462          | 3.694                    | 5/8"-9 Spline        | —            |
| RD •               | 4.188            | .375"-16        | 2 **               | 3.253                 | 0.270       | 0.525                | 1.462          | 3.694                    | 7/8"-13 Spline       | —            |
| RF •, GH           | 5.750            | .500"-13        | 2 **               | 4.003                 | 0.406       | 0.501                | 1.969          | 4.569                    | 1"-15 Spline         | —            |
| XE                 | 5.000            | .500"-13        | 4                  | 3.253                 | 0.344       | 0.562                | 1.500          | 3.688                    | 5/8"-9 Spline        | —            |
| XG                 | 4.188            | .375"-16        | 4                  | 3.253                 | 0.562       | 0.593                | 2.218          | 4.562                    | 3/4" Round           | 3/16"        |
| XJ                 | 4.188            | .375"-16        | 4                  | 3.253                 | 0.562       | 1.406                | 2.906          | 4.562                    | 3/4" Round           | 3/16"        |
| XK, GK             | 5.750            | .531"-13 ♦      | 2                  | 4.003                 | 0.406       | 0.562                | 2.062          | 3.688                    | 7/8"-13 Spline       | —            |
|                    | 5.000            | .531"-13 ♦      | 4                  | 4.003                 | 0.406       | 0.562                | 2.062          | 3.688                    | —                    | —            |
| XL                 | 4.188            | .375"-16        | 4                  | 3.253                 | 0.562       | 0.562                | 2.062          | 4.562                    | 7/8"-13 Spline       | —            |
| XO                 | 5.000            | .500"-13        | 4                  | 3.253                 | 0.344       | 0.562                | 2.062          | 3.688                    | 3/4" Round           | 3/16"        |
|                    | 4.188            | .375"-16        | 2                  | 3.253                 | 0.344       | 0.562                | 2.062          | 3.688                    | —                    | —            |
| XP, GP             | 5.000            | .500"-13        | 4                  | 3.253                 | 0.344       | 0.562                | 2.062          | 3.688                    | 7/8"-13 Spline       | —            |
|                    | 4.188            | .375"-16        | 2                  | 3.253                 | 0.344       | 0.562                | 2.062          | 3.688                    | —                    | —            |
| XY, GY             | 4.454            | M12-1.75        | 4                  | 3.152                 | 0.393       | 0.594                | 2.508          | 4.697                    | DIN 5462             | —            |
| XQ, GQ             | 5.750            | .500"-13        | 2                  | 4.003                 | 0.406       | 0.562                | 2.062          | 3.688                    | 7/8"-13 Spline       | —            |
|                    | 5.000            | .500"-13        | 4                  | 4.003                 | 0.406       | 0.562                | 2.062          | 3.688                    | —                    | —            |
| XR                 | 3.710            | .312"-24(Studs) | 4                  | 2.752                 | 0.281       | N/A                  | N/A            | 2.809                    | 7/8"-13 Spline       | —            |

- Rotatable Flange Rotates in 30° Increments
- \*\* Two Set of Holes Spaced 14° Apart
- ♦ Not Tapped

**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, 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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