

# DATA SHEET

## 8 FRAME BLOCK-STYLE PLUNGER PUMPS



### Stainless Steel Models

**781, 784, 786**

### Stainless Steel Flushed Model

**781K**

### Gearbox Model

**781G1**



Model 781 Shown  
(Mounting rails sold separately)

### FEATURES

- Triplex plunger design ensures high efficiency and low pulsation.
- Durable V-packings are lubricated and cooled by the liquid being pumped.
- Model 781K offers an external flush for high-temperature or low-lubricity fluids.
- Belt-driven option provides precise flow settings.
- Direct-drive option offers a compact foot print for electric motors with a NEMA or IEC frame, or SAE hydraulic motors with a bell housing/flexible coupler assembly.
- Pump comes standard with NBR seals. Alternative seal materials are available for higher temperature or chemical compatibility.

### COMMON SPECIFICATIONS

|  | U.S.                 | Metric             |
|--|----------------------|--------------------|
| Inlet Pressure Range   | Flooded to 60 psi    | Flooded to 4.1 bar |
| Max. Liquid Temperature (NBR)                                      | 160° F               | 71° C              |
| <b>Alternate seals available for high temperature up to 200° F</b> |                      |                    |
| Bore   | 0.551"               | 14 mm              |
| Stroke (Models 781, 781K)  | 0.945"               | 24 mm              |
| Stroke (Model 784)   | 0.591"               | 15 mm              |
| Stroke (Model 786)   | 0.728"               | 18.5 mm            |
| Crankcase Capacity   | 25 oz                | 0.74 l             |
| Inlet Ports (2)  | ½" NPT(F)            | ½" NPT(F)          |
| Flushing Ports (2)   | ⅛" NPT(F)            | ⅛" NPT(F)          |
| Discharge Port (2)   | ⅜" NPT(F)            | ⅜" NPT(F)          |
| Shaft Diameter – Single End  | 0.945"               | 24 mm              |
| Weight   | 48.1 lbs             | 21.8 kg            |
| Dimensions (Models 781, 781K)                                      | 13.15 x 9.25 x 6.06" | 334 x 235 x 154 mm |

### SPECIFICATIONS

|                  | U.S. Measure | Metric Measure |
|------------------|--------------|----------------|
| <b>781, 781K</b> |              |                |
| Flow             | 4.7 gpm      | 17.8 lpm       |
| Pressure Range   | 100–5000 psi | 6.9–345 bar    |
| Pump RPM*        | 1750 rpm     | 1750 rpm       |
| <b>786</b>       |              |                |
| Flow             | 3.6 gpm      | 13.6 lpm       |
| Pressure Range   | 100–5000 psi | 6.9–345 bar    |
| Pump RPM*        | 1750 rpm     | 1750 rpm       |
| <b>784</b>       |              |                |
| Flow             | 2.9 gpm      | 11.0 lpm       |
| Pressure Range   | 100–5000 psi | 6.9–345 bar    |
| Pump RPM*        | 1750 rpm     | 1750 rpm       |
| <b>781G1</b>     |              |                |
| Flow             | 4.5 gpm      | 17.0 lpm       |
| Pressure Range   | 100–5000 psi | 6.9–345 bar    |
| Engine RPM       | 3465 rpm     | 3465 rpm       |

\*Pump minimum is 100 RPM.

### ALTERNATIVE SEAL CONFIGURATION

| MATERIAL | SUFFIX CODE | MAXIMUM TEMPERATURE |         |
|----------|-------------|---------------------|---------|
| NBR      | —           | 160° F              | (71° C) |
| FPM      | .0110       | 180° F              | (82° C) |
| EPDM     | .0220       | 160° F              | (71° C) |
| IPFE     | .0770       | 200° F              | (93° C) |
| HT       | .3000       | 180° F              | (82° C) |
| STHT     | .3400       | 190° F              | (88° C) |

See **Tech Bulletin 002** for inlet conditions and RPM at high temperature.

|                                      |                  |   |                |
|--------------------------------------|------------------|---|----------------|
| <b>DETERMINING THE PUMP RPM</b>      | Rated gpm        | = | Desired gpm    |
|                                      | Rated rpm        | = | Desired rpm    |
| <b>DETERMINING THE REQUIRED HP</b>   | hp               | = | gpm x psi      |
|                                      | (Electric Brake) | = | 1460           |
| <b>DETERMINING MOTOR PULLEY SIZE</b> | Motor Pulley OD  | = | Pump Pulley OD |
|                                      | Pump rpm         | = | Motor rpm      |

Refer to pump **Service Manual** for repair procedure and additional technical information.

# PARTS LIST

| ITEM | PART NUMBER                   | MATL   | PART NUMBER  | MATL   | DESCRIPTION  | QTY |
|------|-------------------------------|--------|--------------|--------|--|-----|
|      | <b>781/781G1/<br/>784/786</b> |        | <b>781K</b>  |        |  |     |
| 5    | 92538                         | S      | 92538        | S      | Screw, HHC, Sems (M6 x 16) (See Tech Bulletin 074)                 | 8   |
| 8    | 133571                        | ALE    | 133571       | ALE    | Cover, Bearing (See Tech Bulletin 118, 123)                        | 1   |
| 9    | 815280                        | FBR    | 815280       | FBR    | Split Shim, 2 Piece  | 1-2 |
| 10   | 12393                         | NBR    | 12393        | NBR    | O-Ring, Bearing Cover  | 2   |
| 11   | 43222                         | NBR    | 43222        | NBR    | Seal, Oil, Crankshaft  | 1   |
| 15   | 43221                         | STL    | 43221        | STL    | Bearing, Roller  | 2   |
| 20   | 48863                         | TNM    | 48863        | TNM    | Rod Assembly, Connecting (See Tech Bulletin 074)                   | 3   |
| 25   | <b>119234</b>                 | FCM    | 119234       | FCM    | Crankshaft-Single End (M24 with 60mm Extension) (781, 781K)        | 1   |
|      | <b>46554</b>                  | FCM    | —            | —      | Crankshaft-Single End (M24 with 34mm Extension) (781G1)            | 1   |
|      | <b>44591</b>                  | FCM    | —            | —      | Crankshaft-Single End (M15 with 34mm extension) (784)              | 1   |
|      | <b>44947</b>                  | FCM    | —            | —      | Crankshaft-Single End (M18.5 with 34mm extension) (786)            | 1   |
| 30   | 133572                        | ALE    | 133572       | ALE    | Cover, Blind Bearing (See Tech Bulletin 118, 123)                  | 1   |
| 32   | 44666                         | RTP    | 44666        | RTP    | Cap, Oil Filler, Domed   | 1   |
| 33   | 14177                         | NBR    | 14177        | NBR    | O-Ring, Filler Cap-70D   | 1   |
| 37   | 92241                         | PC     | 92241        | PC     | Gauge, Oil, Bubble with Gasket-80D                                 | 1   |
| 38   | 44428                         | NBR    | 44428        | NBR    | Gasket, Flat Flexible, Oil Gauge-80D                               | 1   |
| 40   | 92538                         | S      | 92538        | S      | Screw, HHC, Sems (M6 x 16) (See Tech Bulletin 074, 106)            | 4   |
| 48   | 25625                         | STCP   | 25625        | STCP   | Plug, Drain (1/4" x 19 BSP)  | 1   |
| 49   | 23170                         | NBR    | 23170        | NBR    | O-Ring, Drain Plug-70D   | 1   |
| 50   | 133569                        | ALE    | 133569       | ALE    | Cover, Rear (See Tech Bulletin 118, 123)                           | 1   |
| 51   | 14047                         | NBR    | 14047        | NBR    | O-Ring, Rear Cover-70D (See Tech Bulletin 106)                     | 1   |
| 53   | 133593                        | ALE    | 133593       | ALE    | Crankcase with Guide Pins (See Tech Bulletin 118, 123)             | 1   |
| 54   | 27488                         | S      | 27488        | S      | Pin, Guide   | 2   |
| 64   | 43237                         | CM     | 43237        | CM     | Pin, Crosshead   | 3   |
| 65   | 48913                         | SHS    | 48913        | SHS    | Rod, Plunger, Short  | 3   |
| 69   | 126589                        | STCP R | 126589       | STCP R | Washer, Oil Seal   | 3   |
| 70   | 43228                         | NBR    | 43228        | NBR    | Seal, Oil, Crankcase   | 3   |
| 75   | 43328                         | S      | 43328        | S      | Slinger, Barrier   | 3   |
| 88   | 45697                         | S      | 45697        | S      | Washer, Keyhole (M18)  | 3   |
| 90   | 45890                         | CC     | 45890        | CC     | Plunger (M14 x 72)   | 3   |
| 95   | 89653                         | SS     | 89653        | SS     | Stud, Plunger Retainer (M6 x 58)                                   | 3   |
| 96   | 43235                         | PTFE   | 43235        | PTFE   | Backup Ring, Plunger Retainer                                      | 3   |
| 97   | 17399                         | NBR    | 17399        | NBR    | O-Ring, Plunger Retainer-80D                                       | 3   |
| 98   | 44041                         | SS     | 44041        | SS     | Gasket, Plunger Retainer   | 3   |
| 99   | 49665                         | SS     | 49665        | SS     | Retainer, Plunger (M6) (See Tech Bulletin 074)                     | 3   |
| 100  | 995686                        | PVDF   | 995686       | PVDF   | Retainer, Seal (See Tech Bulletin 105)                             | 3   |
| 104  | 701734                        | NBR    | 701734       | NBR    | O-Ring, Inlet Adapter-70D  | 3   |
| 105  | 701587                        | SS     | 701587       | SS     | Adapter, Inlet   | 3   |
| 106  | 48821                         | NBR    | 48821        | NBR    | Seal, LPS with SS-Spring   | 3   |
| 110  | <b>49205</b>                  | SS     | —            | —      | Manifold, Inlet/Discharge, Block-Style                             | 1   |
|      | —                             | —      | <b>49241</b> | SS     | Manifold, Inlet/Discharge, Block-Style Flushed (1/8" Flushed Port) | 1   |
| 112  | 701595                        | NBR    | 701595       | NBR    | O-Ring, V-Packing Spacer-70D                                       | 3   |
| 117  | 87952                         | S      | 87952        | S      | Screw, HSH (M10 x 55) (See Tech Bulletin 074)                      | 4   |
| 122  | 701598                        | PTFE   | 701598       | PTFE   | Backup Ring, V-Packing Cylinder                                    | 3   |
| 123  | 701596                        | NBR    | 701596       | NBR    | O-Ring, V-Packing Cylinder-70D                                     | 3   |
| 124  | 701589                        | SS     | 701589       | SS     | Cylinder V-Packing   | 3   |
| 126  | 701682                        | SS     | 701682       | SS     | Adapter, Female  | 3   |
| 127  | 45895                         | SNG    | 45895        | SNG    | V-Packing  | 9   |
| 128  | 701683                        | SS     | 701683       | SS     | Adapter, Male  | 3   |
| 139  | 45156                         | SS     | 45156        | SS     | Plug, Inlet/Discharge Manifold [1/2" NPT(M)]                       | 1   |
| 162  | 701599                        | PTFE   | 701599       | PTFE   | Backup Ring, Valve Seat  | 12  |
| 163  | 701597                        | NBR    | 701597       | NBR    | O-Ring, Seat-70D   | 12  |
| 164  | 701591                        | SS     | 701591       | SS     | Seat   | 6   |
| 166  | 701751                        | SS     | 701751       | SS     | Valve  | 6   |
| 167  | 44056                         | SS     | 44056        | SS     | Spring   | 6   |
| 168  | 44565                         | PVDF   | 44565        | PVDF   | Retainer, Spring   | 6   |
| 185  | 49213                         | SS     | 49213        | SS     | Manifold, Valve, Block-Style (Includes: Inserts, Valve Plugs)      | 1   |
| 188  | 87952                         | S      | 87952        | S      | Screw, HSH, (M10 x 55) (See Tech Bulletin 074)                     | 14  |
| 500  | <b>8071</b>                   | —      | —            | —      | Gearbox, 1" Shaft (See Individual Data Sheet)                      | 1   |
|      | 8078                          | —      | —            | —      | Gearbox, 1 1/8" Shaft (See Individual Data Sheet)                  | 1   |

**Bold print numbers are unique to a particular pump model. Italics are optional items.**

◆ Silicone oil/grease required. \*Review material codes for individual items (ST4 generally may be used as alternate). R Components comply with RoHS Directive.

For additional technical information see [www.catpumps.com/literature/tech-bulletins](http://www.catpumps.com/literature/tech-bulletins). See 8051-8078 Gearbox data sheet for optional gearbox drive.

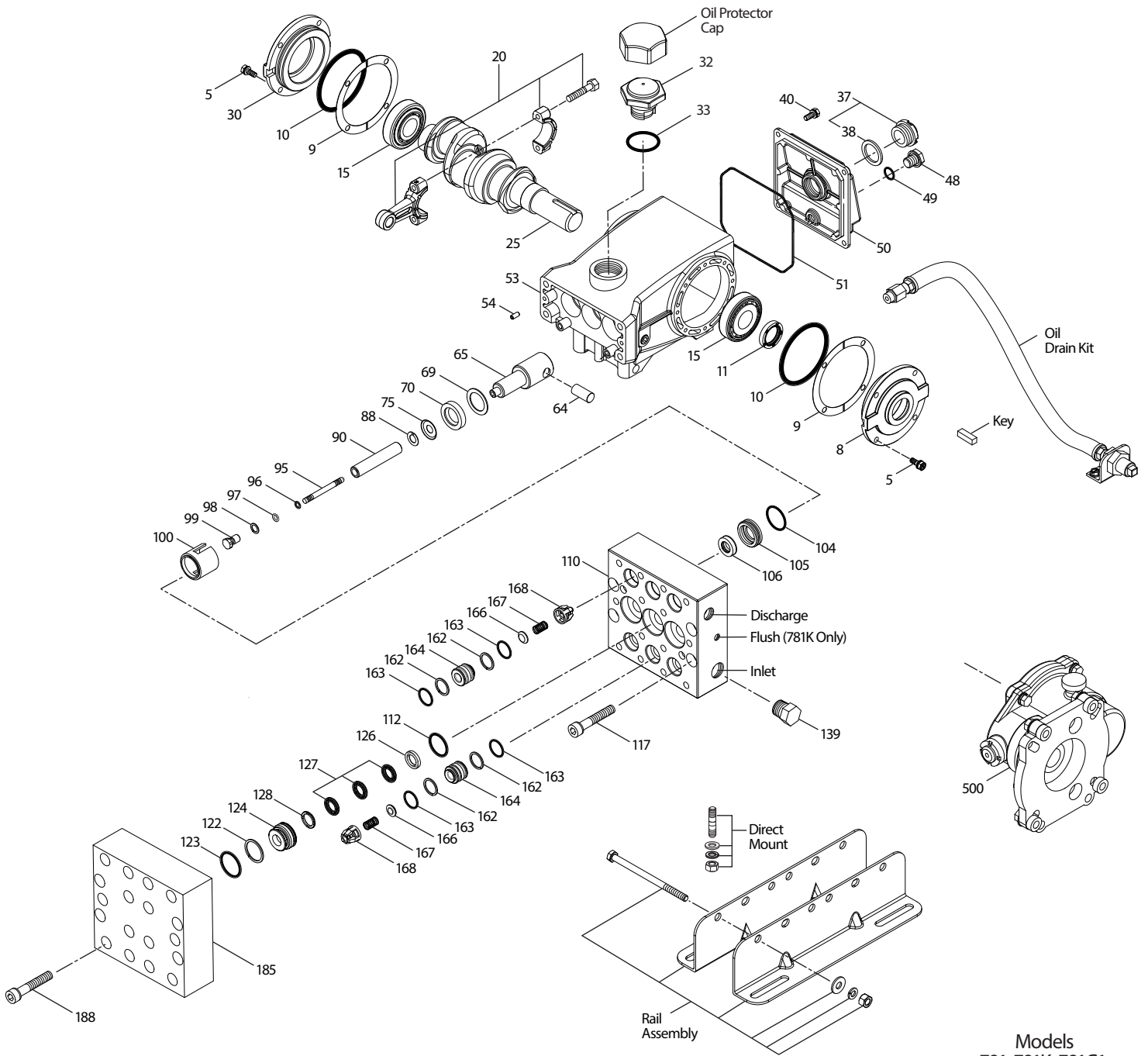
MATERIAL CODES (Not Part of Part Number): ALE=Aluminum Epoxy CC=Ceramic CM=Chrome-Moly EPDM=Ethylene Propylene Diene Monomer FBR=Fiber

FCM=Forged Chrome-Moly FPM=Fluorocarbon IPFE=I-Perfluoroelastomer NBR=Medium Nitrile (Buna-N) PC=Poly Carbonate PE=Polyethylene PTFE=Pure Polytetrafluoroethylene

PVDF=Polyvinylidene Fluoride RTP=Reinforced Composite S=304SS SHS=304SS/High Strength SFTA=Special Blend PTFE Tan SNG=Special Blend (Buna) SS=316SS ST4=Special PTFE4

STCP=Steel/Chrome Plated STL=Steel STZP=Steel/Zinc Plated TNM=Special High Strength

# EXPLODED VIEW



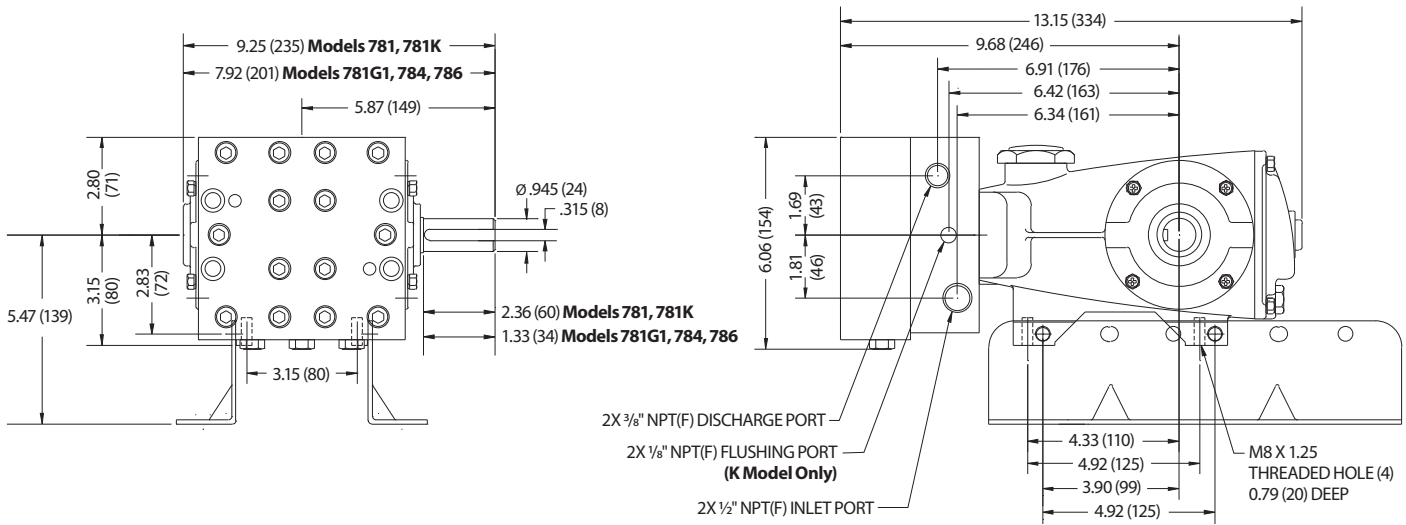
Models  
781, 781K, 781G1,  
784, 786  
July 2021

## OPTIONAL PARTS AND ACCESSORIES

| PART   | DESCRIPTION                 | QTY |
|--------|-----------------------------|-----|
| 30660  | Kit, Complete Mounting      | 1   |
| 30067  | Key (M8 x 7.5 x 25)         | 1   |
| 30645  | Assembly, Rail              | 1   |
| 30243  | Kit, Direct Mount           | 1   |
| 828710 | Protector, Oil Cap          | 1   |
| 34334  | Kit, Oil Drain (3/8" x 24") | 1   |
| 30696  | Pliers, Reverse             | 1   |

## SERVICE PARTS

| PART          | DESCRIPTION                                      | QTY |
|---------------|--|-----|
| <b>701883</b> | Seal Kit—Standard NBR                            | 1   |
| <b>701884</b> | Valve Kit—Standard NBR                           | 2   |
| 6107          | Oil, Bottle (21 oz bottle)                       | 1   |
| 6139          | Lubricant, Anti-Seize (8 oz)                     | 1   |
| <b>811483</b> | Head, Complete—with NBR Seals and O-Rings        | 1   |
| <b>811485</b> | Head, Complete—with NBR Seals and O-Rings (781K) | 1   |



Models 781, 781K, 784, 786

## SEAL KITS One (1) seal kit required per pump

| PUMP MODELS                | NBR (STD)     | FPM (.0110)    | EPDM (.0220)◆ | IPFE (.0770)  | HT (.3000)    | STHT (.3400) |
|----------------------------|---------------|----------------|---------------|---------------|---------------|--------------|
| 781, 781K, 781G1, 784, 786 | <b>701883</b> | <b>701920*</b> | <b>76883*</b> | <b>702843</b> | <b>701885</b> | <b>76286</b> |

| ITEM (Included in Seal Kits) |        |        |        |        |        |        | DESCRIPTION                     | QTY |
|------------------------------|--------|--------|--------|--------|--------|--------|---------------------------------|-----|
| 96                           | 43235  | 43235  | 43235  | 43235  | 43235  | 48235  | Backup Ring, Plunger Retainer   | 3   |
| 97                           | 17399  | 14160  | 46204  | 701715 | 17399  | 17399  | O-Ring, Plunger Retainer        | 3   |
| 104                          | 701734 | 701912 | 703297 | 702774 | 701734 | 701734 | O-Ring, Inlet Adapter           | 3   |
| 106                          | 48821  | 704649 | 49466  | 704649 | 48821  | 704649 | Seal, LPS with SS-Spring        | 3   |
| 112                          | 701595 | 701913 | 703298 | 702496 | 701595 | 701595 | O-Ring, V-Packing Spacer        | 3   |
| 122                          | 701598 | 701598 | 701598 | 701598 | 701598 | 701598 | Backup Ring, V-Packing Cylinder | 3   |
| 123                          | 701596 | 701914 | 703318 | 702769 | 701596 | 701596 | O-Ring, V-Packing Cylinder      | 3   |
| 127                          | 45895  | 704666 | 704666 | 704666 | 704666 | 704666 | V-Packing                       | 9   |

◆ Silicone oil/grease required \*Review material codes for individual items (STG generally may be used as alternative)

## VALVE KITS Two (2) valve kits required per pump

| PUMP MODELS                | NBR (STD)     | FPM (.0110)   | EPDM (.0220)◆ | IPFE (.0770)  | HT (.3000)    | STHT (.3400)  |
|----------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 781, 781K, 781G1, 784, 786 | <b>701884</b> | <b>701921</b> | <b>76884</b>  | <b>702844</b> | <b>701884</b> | <b>701884</b> |

| ITEM (Included in Valve Kits) |        |        |        |        |        |        | DESCRIPTION             | QTY |
|-------------------------------|--------|--------|--------|--------|--------|--------|-------------------------|-----|
| 162                           | 701599 | 701599 | 701599 | 701599 | 701599 | 701599 | Backup Ring, Valve Seat | 6   |
| 163                           | 701597 | 701915 | 703180 | 702495 | 701597 | 701597 | O-Ring, Valve Seat      | 6   |
| 164                           | 701591 | 701591 | 701591 | 701591 | 701591 | 701591 | Seat                    | 3   |
| 166                           | 701751 | 701751 | 701751 | 701751 | 701751 | 701751 | Valve                   | 3   |
| 167                           | 44056  | 44056  | 44056  | 44056  | 44056  | 44056  | Spring                  | 3   |
| 168                           | 44565  | 44565  | 44565  | 44565  | 44565  | 44565  | Retainer, Spring        | 3   |

◆ Silicone oil/grease required

### ⚠ CAUTIONS AND WARNINGS

All high-pressure systems require a primary pressure regulating device (i.e. regulator, unloader) and a secondary pressure relief device (i.e. pop-off valve, relief valve). Failure to install such relief devices could result in personal injury or damage to pump or property. Cat Pumps does not assume any liability or responsibility for the operation of a customer's high-pressure system. Read all CAUTIONS and WARNINGS before commencing service or operation of any high-pressure system. The CAUTIONS and WARNINGS are included in each Service Manual and with each Accessory Data sheet. CAUTIONS and WARNINGS can also be viewed online at [www.catpumps.com/dynamic-literature/cautions-and-warnings](http://www.catpumps.com/dynamic-literature/cautions-and-warnings) or can be requested directly from Cat Pumps.

### WARRANTY

View the Limited Warranty online at [www.catpumps.com/literature/cat-pumps-limited-warranty](http://www.catpumps.com/literature/cat-pumps-limited-warranty)