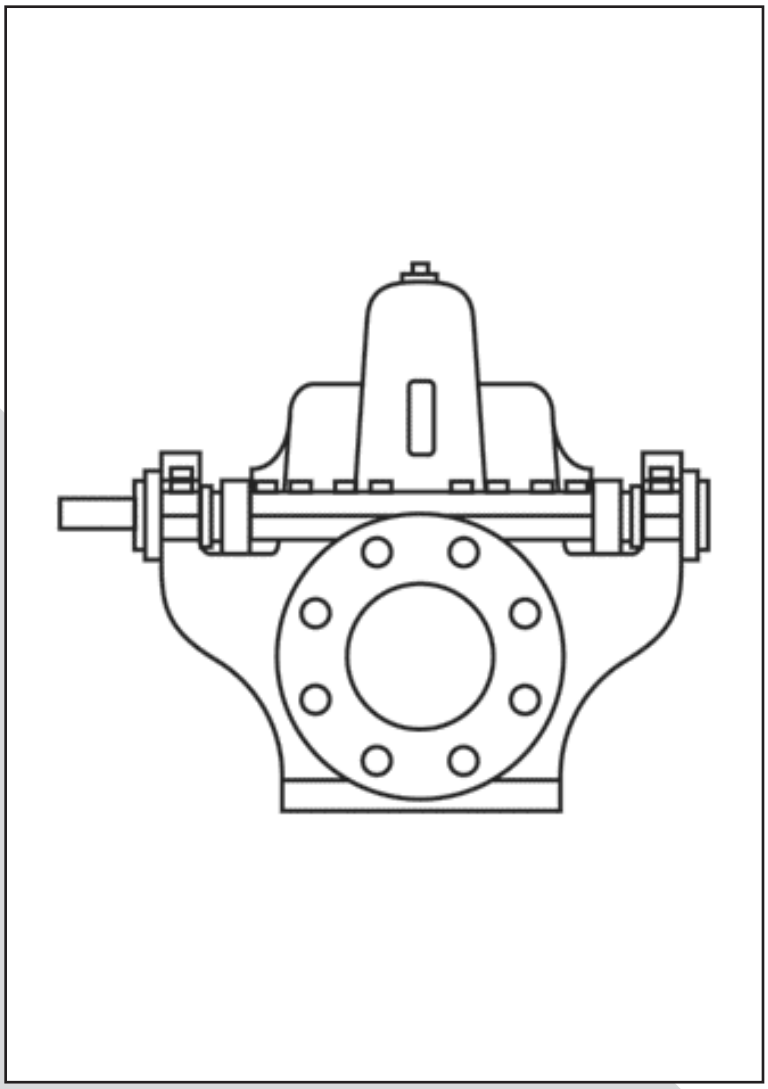
REPAIR PARTS INDEX, INSTRUCTION AND REPAIR MANUAL

# SPLIT-CASE PUMPS

Model
1800



ENGLISH: PAGES 2-40

**INSTRUCTION AND REPAIR MANUAL**

NOTE! To the installer: Please make sure you provide this manual to the owner of the equipment or to the responsible party who maintains the system.

PENTAIR
FAIRBANKS NIJHUIS

Part #FM-03-523 | © 2018 Pentair plc. | 11/19/18

## 1800 Split Case Pumps Repair Parts Index

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**Split Case Model Designations**

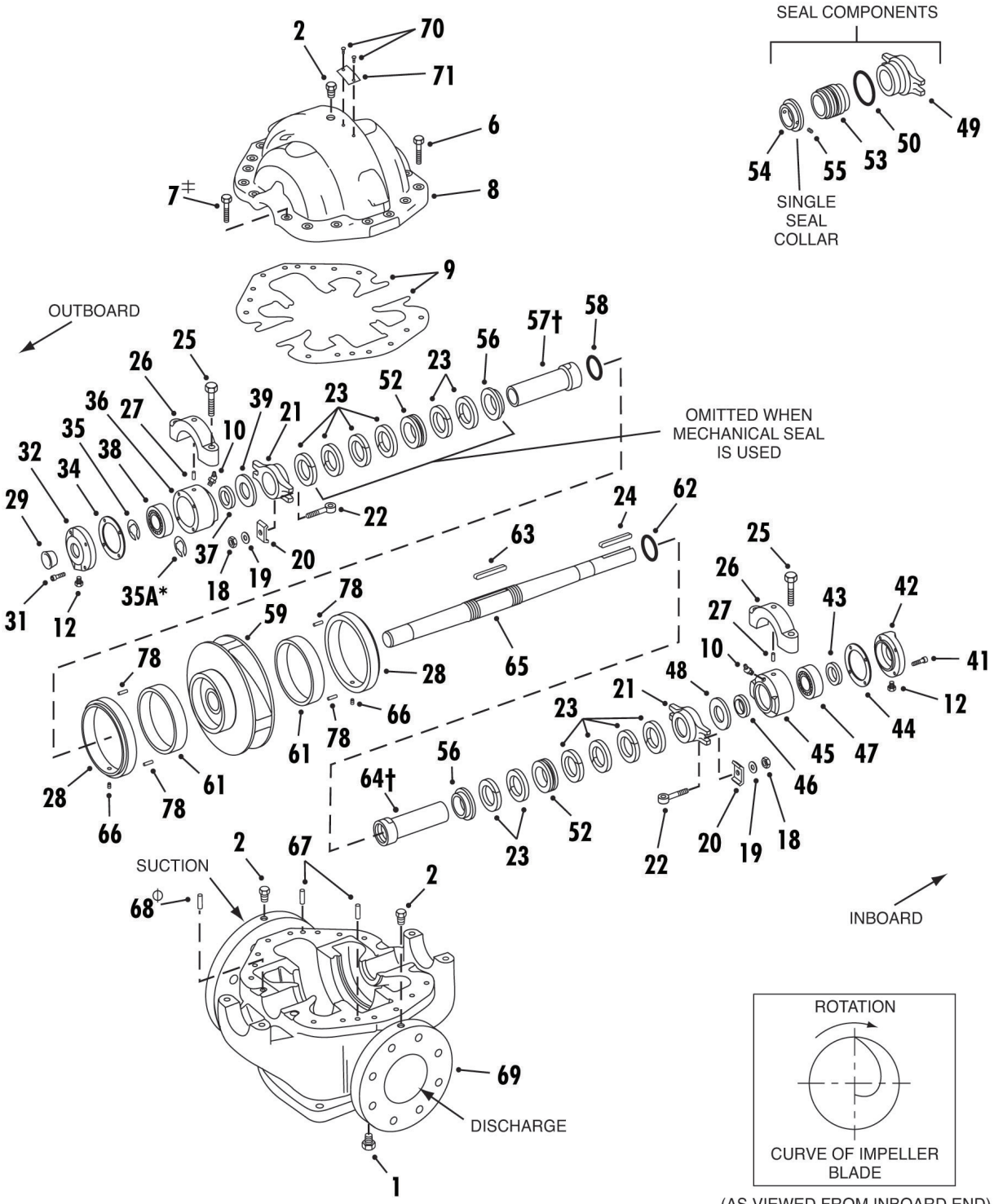
1810 = Vertical Flexible Shaft
1820 = Horizontal Flex Coupled
1840 = Vertical Flex Coupled

Note: Pumps are generally built in one of five (5) materials of construction:

B.F. = Bronze Fitted
S. F. = Standard Fitted
A. B. = All Bronze
A. I. = All Iron
S. S. = Stainless Steel

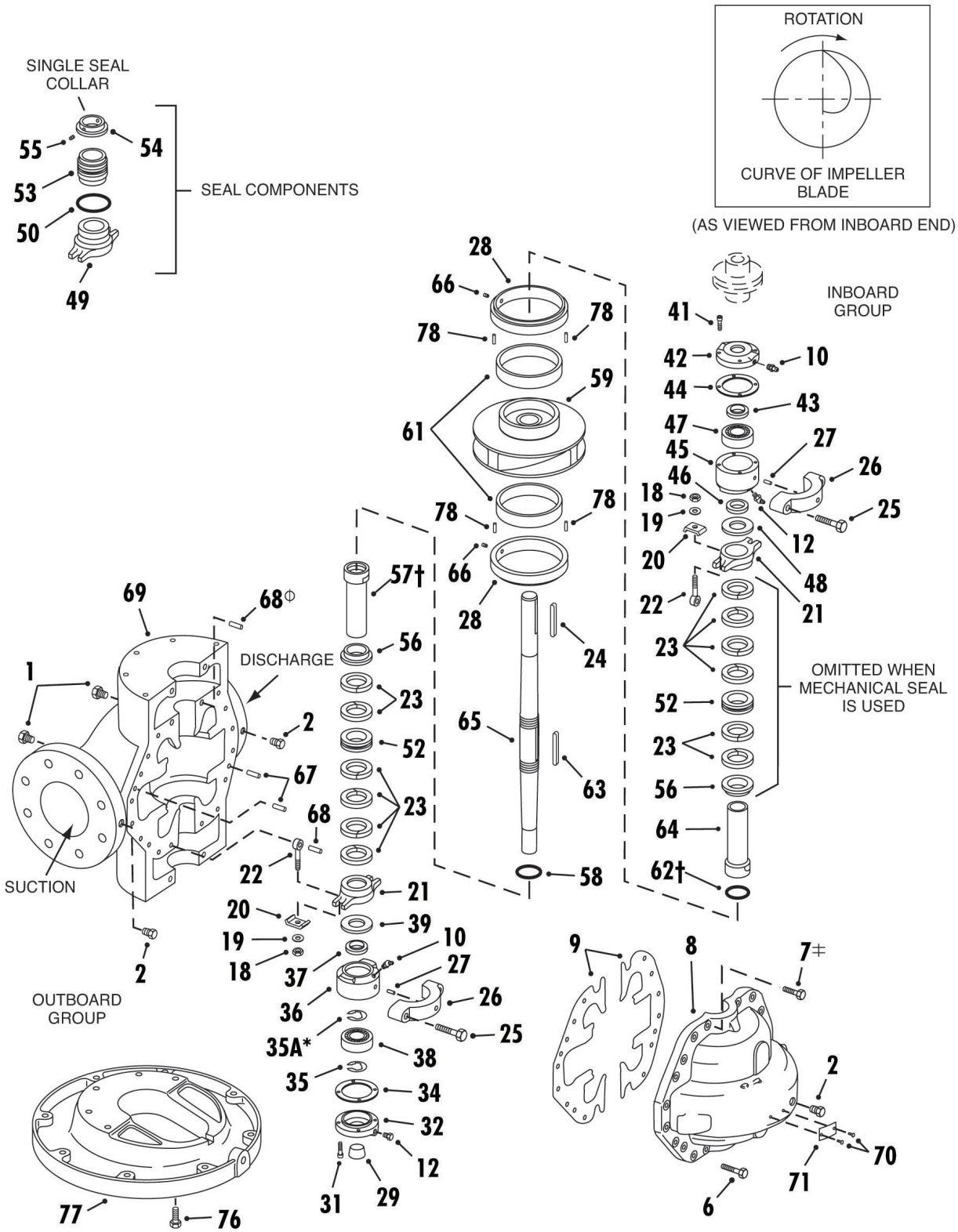
The only difference between B.F. and S.F. is the impeller material. B.F. pumps have bronze impellers, and S.F. pumps have cast iron impellers.

## MODEL 1820 PIECE NUMBERS



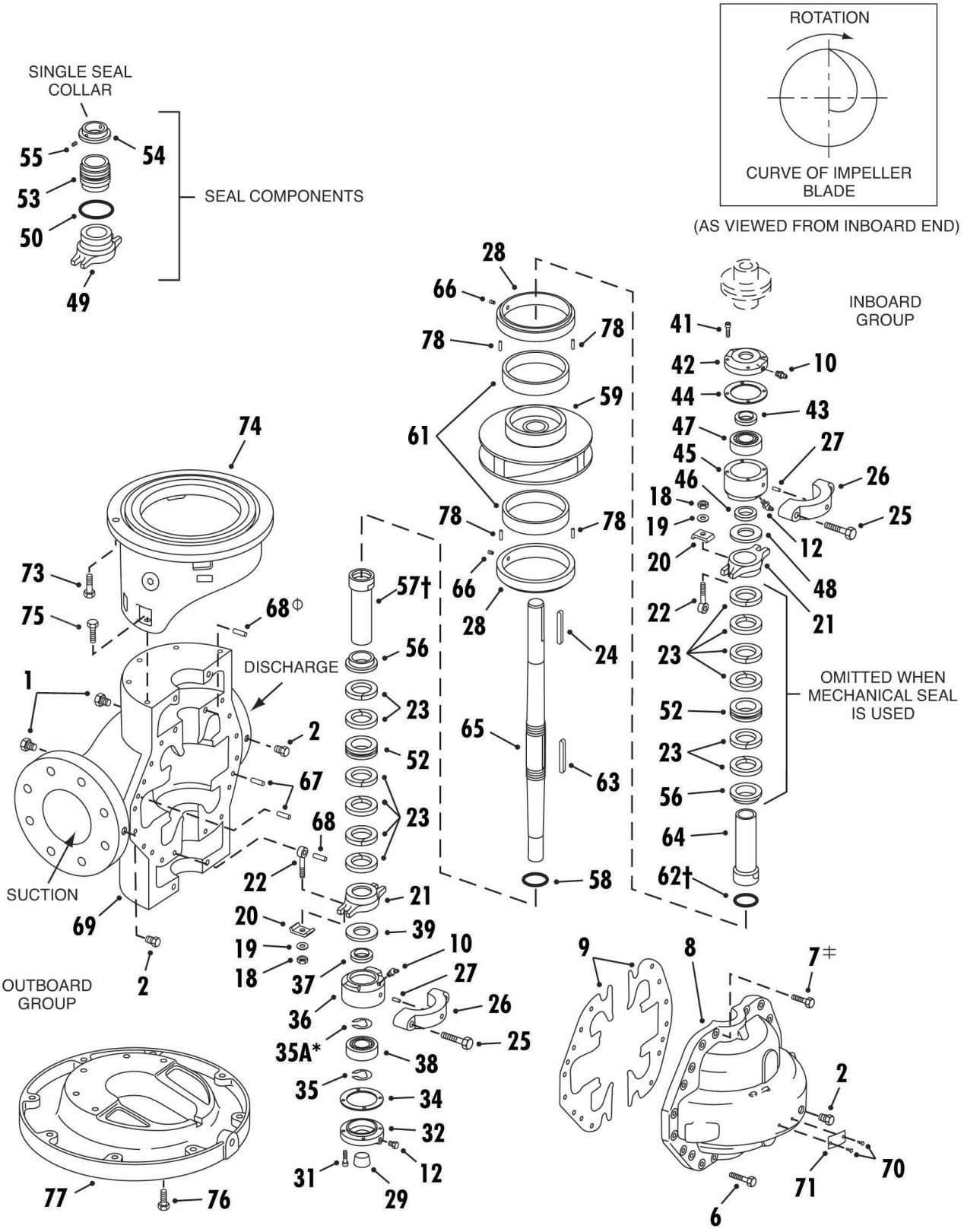

* POWER FRAMES 6B, 7A & 7 ONLY.
‡ PC. NO. 7 NOT REQUIRED FOR PS #1 & #2. REFER PC. NO. 68.
Φ PC. NO. 68 FOR PS #1 & #2 ONLY. FOR OTHER PS REFER PC. NO. 7.
† FOR 10x12x18D, SHAFT SLEEVE CONSISTS OF PC. NO. 79, PC. NO. 60, PC. NO. 64 AND PC. NO. 72.

## MODEL 1810 PIECE NUMBERS




* POWER FRAMES 6B, 7A & 7 ONLY.
‡ PC. NO. 7 NOT REQUIRED FOR PS #1 & #2. REFER PC. NO. 68.
Φ PC. NO. 68 FOR PS #1 & #2 ONLY. FOR OTHER PS REFER PC. NO. 7.
† FOR 10x12x18D, SHAFT SLEEVE CONSISTS OF PC. NO. 79, PC. NO. 60, PC. NO. 64 AND PC. NO. 72.

## MODEL 1840 PIECE NUMBERS




* POWER FRAMES 6B, 7A & 7 ONLY.
‡ PC. NO. 7 NOT REQUIRED FOR PS #1 & #2. REFER PC. NO. 68.
Φ PC. NO. 68 FOR PS #1 & #2 ONLY. FOR OTHER PS REFER PC. NO. 7.
† FOR 10x12x18D, SHAFT SLEEVE CONSISTS OF PC. NO. 79, PC. NO. 60, PC. NO. 64 AND PC. NO. 72

# MODELS 1810, 1820, 1840 PARTS LIST
## 2 X 2-1/2 X 9, 2 X 2-1/2 X 10, 2 X 2-1/2 X 12

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 1 | PLUG | 2 | 600-0003 | 087 | 190 | 087 | 104 |
| 2 | PLUG | 5 | 600-0002 | 087 | 190 | 087 | 104 |
| 6 | CAPSCREW 2x9&10 | 12 | 168-0490 | 082 | 082 | 082 | 104 |
| | 2x2-1/2x12 | 16 | 168-0490 | 082 | 082 | 082 | 104 |
| 7 | PIN | | REFER PC. NO. 68 | | | | |
| 8 | CASING HALF | 1 | INCLUDED WITH NO. 69 | | | | |
| 9 | GASKET 2x2-1/2x9&10 | 1 | 364-1262 | 598 | 598 | 598 | 598 |
| | 2x2-1/2x12 | 1 | 364-1256 | 598 | 598 | 598 | 598 |
| 10 | GREASE FITTING | 2 | 508-0001 | 651 | 651 | 651 | 651 |
| 12 | PLUG | 2 | 600-0001 | 087 | 087 | 087 | 087 |
| 18 | NUT | 4 | 544-0107 | | 190 | 080 | 104 |
| 19 | WASHER | 4 | 908-0109 | | 190 | 080 | 104 |
| 20 | GLAND CLAMP | 4 | 204-0120 | | 190 | 360 | 104 |
| 21 | GLAND (PACKING)A&C | 2 | 372-0238 | 010 | 208 | 010 | 104 |
| 22 | SWING BOLT | 4 | 100-0216 | | 190 | 082 | 104 |
| 22A | SWING BOLT ASSY. | | | | | | |
| | (18, 19, 20, 22) | 4 | 099-0002 | 644 | | | |
| 23 | PACKING | 10 | 564-0152 | 802 | 802 | 802 | 802 |
| 24 | KEY | 1 | 472-0208 | 087 | 087 | 087 | 087 |
| 25 | CAPSCREW | 4 | 168-0490 | 082 | 190 | 082 | 104 |
| 26 | BEARING CAP | 2 | 163-0541 | 010 | | 010 | |
| 27 | PIN | 2 | 592-0361 | 360 | 107 | 360 | 107 |
| 28 | CASE RING | 2 | 676-1744 | 208 | 208 | 010 | 107 |
| 29 | PROTECTOR | 1 | 624-0105 | 087 | 087 | 087 | 087 |
| 31 | CAPSCREW | 4 | 168-0015 | 082 | 082 | 082 | 082 |
| 32 | CARTRIDGE CAP | 1 | 164-0549 | 010 | 010 | 010 | 010 |
| 34 | GASKET | 1 | 364-1308 | 614 | 614 | 614 | 614 |
| 35 | RETAINER RING | 1 | 676-0440 | 088 | 088 | 088 | 088 |
| 36 | CARTRIDGE | 1 | 176-0064 | 010 | 010 | 010 | 010 |
| 37 | GREASE SEAL | 1 | 712-6322 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 712-0097 | 653 | 653 | 653 | 653 |
| 38 | BEARING | 1 | 068-0452 | 647 | 647 | 647 | 647 |
| 39 | SLINGER | 1 | 764-1012 | 478 | 478 | 478 | 478 |
| 41 | CAPSCREW | 4 | 168-0015 | 080 | 080 | 080 | 080 |
| 42 | CARTRIDGE CAP | 1 | 164-0549 | 010 | 010 | 010 | 010 |
| 43 | GREASE SEAL | 1 | 712-6321 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 712-0052 | 653 | 653 | 653 | 653 |
| 44 | GASKET | 1 | 364-1308 | 614 | 614 | 614 | 614 |
| 45 | CARTRIDGE | 1 | 176-0064 | 010 | 010 | 010 | 010 |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 46 | GREASE SEAL | 1 | 712-6322 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 712-0097 | 653 | 653 | 653 | 653 |
| 47 | BEARING | 1 | 068-1905 | 647 | 647 | 647 | 647 |
| 48 | SLINGER | 1 | 764-1012 | 478 | 478 | 478 | 478 |
| 49 | GLAND (SEAL) | 2 | 372-0285 | 010 | 208 | 010 | 104 |
| 50 | O-RING | 2 | 364-0417 | 457 | 457 | 457 | 457 |
| 52 | LANTERN RING | 2 | 676-1767 | 512 | 512 | 512 | 512 |
| 53 | SEAL | 2 | 712-0907 | 749 | 764 | 749 | 764 |
| 54 | COLLAR | 2 | 224-0180 | 208 | 208 | 010 | 104 |
| 55 | SETSCREW | 4 | 724-0081 | 104 | 104 | 104 | 104 |
| 56 | BUSHING | 2 | 136-1423 | 208 | 208 | 010 | 104 |
| 57 | SLEEVE WITH "O" RING PC. NO. 58 (NOTE 1) | | | | | | |
| | SLEEVE (PACKING) | 1 | 756-0641 | 644 | 644 | 646 | 623 |
| | (SEALS) | 1 | 756-0641 | 644 | 644 | 623 | 623 |
| 58 | O-RING | 1 | 364-0328 | 457 | 457 | 457 | 457 |
| 59 | IMPELLER 2x2-1/2x9 | 1 | 443-2104 | 225 | 225 | 010 | 104 |
| | 2x2-1/2x10 | 1 | 443-2105 | 225 | 225 | 010 | 104 |
| | 2x2-1/2x12 | 1 | 443-2106 | 225 | 225 | 010 | 104 |
| | IMPELLER | | FOR S.F. CONSTRUCTION | | | | |
| | (FITTED WITH | | USE MATERIAL 655 | | | | |
| | OPT. RING NO. 61) | | | | | | |
| | 2x2-1/2x9 | 1 | 443-2479 | 643 | 643 | 642 | 646 |
| | 2x2-1/2x10 | 1 | 443-2476 | 643 | 643 | 642 | 646 |
| | 2x2-1/2x12 | 1 | 443-2471 | 643 | 643 | 642 | 646 |
| 61 | IMP. RING (OPT.) | | BEFORE 10/1/85 | | | | |
| | | 2 | 676-1047 | 208 | 108 | 010 | 104 |
| | | | AFTER 10/1/85 | | | | |
| | | 2 | 676-2043 | 208 | 208 | 010 | 104 |
| 62 | O-RING | 1 | 364-0328 | 457 | 457 | 457 | 457 |
| 63 | KEY | 1 | 472-0410 | 107 | 104 | 107 | 104 |
| 64 | SLEEVE WITH "O" RING PC. NO. 62 (NOTE 1) | | | | | | |
| | SLEEVE (PACKING) | 1 | 756-0641 | 644 | 644 | 646 | 623 |
| | (SEALS) | 1 | 756-0641 | 644 | 644 | 623 | 623 |
| 65 | SHAFT | 1 | 728-0945 | 063 | 104 | 063 | 104 |
| 66 | PIN | 2 | 592-0361 | 360 | | 360 | |
| | | 2 | 592-0051 | | 235 | | 235 |
| 67 | PIN | 2 | 592-0375 | 360 | 107 | 360 | 107 |
| 68 | PIN | 4 | 592-0213 | 104 | 104 | 104 | 104 |

NOTE 1) MATERIAL CODE 644 - SLEEVE 208, "O" RING 457
646 - SLEEVE 108, "O" RING 457
623 - SLEEVE 104, "O" RING 457

# MODELS 1810, 1820, 1840 PARTS LIST
## 2 X 2-1/2 X 9, 2 X 2-1/2 X 10, 2 X 2-1/2 X 12

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL | | | |
|---|---|---|---|---|---|---|---|
| | | | | B.F. | A.B. | A.I. | S.S. |
| 69 | MODEL 411 PUMPS | | | | | | |
| | CASING ASSY. | | | | | | |
| | (1, 2, 8, 26, 27, 66) | | | | | | |
| | 2x2-1/2x9 | 1 | 179-1563 | 010 | 208 | 010 | 104 |
| | 2x2-1/2x10 | 1 | 179-1564 | 010 | 208 | 010 | 104 |
| | 2x2-1/2x12 | 1 | 179-1565 | 010 | 208 | 010 | 104 |
| | MODEL 412 & 413 | | | | | | |
| | PUMPS | | | | | | |
| | CASING ASSEMBLY | | | | | | |
| | (1, 2, 8, 26, 27, 66) | | | | | | |
| | 2x2-1/2x9 | 1 | 179-1575 | 010 | 208 | 010 | 104 |
| | 2x2-1/2x10 | 1 | 179-1576 | 010 | 208 | 010 | 104 |
| | 2x2-1/2x12 | 1 | 179-1577 | 010 | 208 | 010 | 104 |
| 70 | DRIVE SCREW | 2 | 708-0013 | 365 | 365 | 365 | 365 |
| 71 | NAMEPLATE | 2 | 532-0045 | 114 | 114 | 114 | 114 |
| 73 | CAPSCREW | | | | | | |
| | FR. 143HP-256HP | 4 | 168-0388 | 082 | 082 | 082 | 082 |
| | FR. 284HPH-445HP | 4 | 168-0566 | 082 | 082 | 082 | 082 |
| 74 | BRACKET | | | | | | |
| | FR. 143HP-256HP | 1 | 116-0373 | 010 | 010 | 010 | 010 |
| | FR. 284HPH-445HP | 1 | 116-0374 | 010 | 010 | 010 | 010 |
| 75 | CAPSCREW | 5 | 168-0490 | 082 | 082 | 082 | 082 |
| 76 | CAPSCREW | 5 | 168-0490 | 082 | 082 | 082 | 082 |
| 77 | BASE | 1 | 060-0484 | 010 | 010 | 010 | 010 |
| 78 | SETSCREW | | NOT REQUIRED | | | | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL | | | |
|---|---|---|---|---|---|---|---|
| | | | | B.F. | A.B. | A.I. | S.S. |

# MODELS 1810, 1820, 1840 PARTS LIST
## 2-1/2 X 3 X 10B, 2-1/2 X 3 X 12, 3 X 4 X 10B&C, 3 x 4 x 14. 4 x 5 x 10B

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 1 | PLUG | 2 | 600-0003 | 087 | 190 | 087 | 104 |
| 2 | PLUG | 3 | 600-0002 | 087 | 190 | 087 | 104 |
| 6 | CAPSCREW | 16 | 168-0492 | 082 | 082 | 082 | 082 |
| | 3x4x14 | 20 | 168-0492 | 082 | 082 | 082 | 082 |
| 7 | PIN | | REFER PC NO. 68 | | | | |
| 8 | CASING HALF | 1 | INCLUDED WITH NO. 69 | | | | |
| 9 | GASKET 2-1/2x3x10B | 1 | 364-1263 | 598 | 598 | 598 | 598 |
| | 2-1/2x3x12 | 1 | 364-1264 | 598 | 598 | 598 | 598 |
| | 3x4x10B&C | 1 | 364-1265 | 598 | 598 | 598 | 598 |
| | 3x4x14 | 1 | 364-1266 | 598 | 598 | 598 | 598 |
| | 4x5x10B | 1 | 364-1265 | 598 | 598 | 598 | 598 |
| 10 | GREASE FITTING | 2 | 508-0015 | 651 | 651 | 651 | 651 |
| 12 | PLUG | 2 | 600-0001 | 087 | 087 | 087 | 087 |
| 12A | PLUG* | 6 | 600-0003 | 087 | 087 | 087 | 087 |
| 18 | NUT | 4 | 544-0107 | | 190 | | 104 |
| 19 | WASHER | 4 | 908-0109 | | 190 | | 104 |
| 20 | GLAND CLAMP | 4 | 204-0120 | | 190 | | 104 |
| 21 | GLAND (PACKING) | 2 | 372-0225 | 010 | 208 | 010 | 104 |
| 22 | SWING BOLT | 4 | 100-0216 | | 190 | | 104 |
| 22A | SWING BOLT ASSY. | 4 | 099-0005 | 644 | | 644 | |
| | (18, 19, 20, 22) | | | | | | |
| 23 | PACKING | 12 | 564-0151 | 802 | 802 | 802 | 802 |
| 24 | KEY | 1 | 472-0247 | 087 | 087 | 087 | 087 |
| 25 | CAPSCREW | 4 | 168-0494 | 080 | 190 | 080 | 104 |
| 26 | BEARING CAP | 2 | 163-0306 | 010 | | 010 | |
| 27 | PIN | 2 | 592-0361 | 360 | 107 | 360 | 107 |
| 28 | CASE RING | | | | | | |
| | 2-1/2x3x10B & 12 | 2 | 676-1745 | 208 | 208 | 010 | 107 |
| | 3x4x10B, C & 14 | 2 | 676-1746 | 208 | 208 | 010 | 107 |
| | 4x5x10B | 2 | 676-1719 | 208 | 208 | 010 | 107 |
| 29 | PROTECTOR | 1 | 624-0080 | 087 | 087 | 087 | 087 |
| 31 | CAPSCREW | 4 | 168-0015 | 082 | 082 | 082 | 082 |
| 32 | CARTRIDGE CAP | 1 | 164-0531 | 010 | 010 | 010 | 010 |
| 34 | GASKET | 1 | 364-1309 | 614 | 614 | 614 | 614 |
| 35 | RETAINING RING | 1 | 676-0267 | 088 | 088 | 088 | 088 |
| 36 | CARTRIDGE | 1 | 176-0065 | 010 | 010 | 010 | 010 |
| 37 | GREASE SEAL | 1 | 712-6324 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 2 | 712-0053 | 653 | 653 | 653 | 653 |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 38 | BEARING | 1 | 068-0454 | 647 | 647 | 647 | 647 |
| 39 | SLINGER | 1 | 764-1017 | 478 | 478 | 478 | 478 |
| 41 | CAPSCREW | 4 | 168-0015 | 080 | 080 | 080 | 080 |
| 42 | CARTRIDGE CAP | 1 | 164-0531 | 010 | 010 | 010 | 010 |
| 43 | GREASE SEAL | 1 | 712-0231 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 712-0016 | 653 | 653 | 653 | 653 |
| 44 | GASKET | 1 | 364-1309 | 614 | 614 | 614 | 614 |
| 45 | CARTRIDGE | 1 | 176-0065 | 010 | 010 | 010 | 010 |
| 46 | GREASE SEAL | 1 | 712-6324 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 2 | 712-0053 | 653 | 653 | 653 | 653 |
| 47 | BEARING | 1 | 068-1907 | 647 | 647 | 647 | 647 |
| 48 | SLINGER | 1 | 764-1017 | 478 | 478 | 478 | 478 |
| 49 | GLAND (SEAL) | 2 | 372-0287 | 010 | 208 | 010 | 104 |
| 50 | O-RING | 2 | 364-0420 | 457 | 457 | 457 | 457 |
| 52 | LANTERN RING | 2 | 676-1698 | 512 | 512 | 512 | 512 |
| 53 | SEAL | 2 | 712-0910 | 749 | | 479 | |
| | | 2 | 712-0910 | | 764 | | 764 |
| 54 | COLLAR | 2 | 224-0174 | 208 | 208 | 010 | 104 |
| 55 | SETSCREW | 4 | 724-0081 | 104 | 104 | 104 | 104 |
| 56 | BUSHING | 2 | 136-1411 | 208 | 208 | 010 | 104 |
| | SLEEVE WITH "O" RING PC. NO. 58 (NOTE 1) | | | | | | |
| 57 | SLEEVE (PACKING) | 1 | 756-0642 | 644 | 644 | 646 | 623 |
| | (SEALS) | 1 | 756-0642 | 644 | 644 | 623 | 623 |
| 58 | O-RING | 1 | 364-0368 | 457 | 457 | 457 | 457 |
| 59 | IMPELLER | | | | | | |
| | 2-1/2x3x10B | 1 | 443-2295 | 225 | 225 | 010 | 104 |
| | 2-1/2x3x12 | 1 | 443-2108 | 225 | 225 | 010 | 104 |
| | 3x4x10B | 1 | 443-2266 | 225 | 225 | 010 | 104 |
| | 3x4x10C & 14 | 1 | 443-2110 | 225 | 225 | 010 | 104 |
| | 4x5x10B | 1 | 443-2251 | 225 | 225 | 010 | 104 |
| | IMPELLER | | FOR S.F. CONSTRUCTION | | | | |
| | (FITTED WITH | | USE MATERIAL 655 | | | | |
| | OPT. RING NO. 61) | | | | | | |
| | 2-1/2x3x10B | 1 | 443-2470 | 643 | 643 | 642 | 646 |
| | 2-1/2x3x12 | 1 | 443-2475 | 643 | 643 | 642 | 646 |
| | 3x4x10B | 1 | 443-2265 | 643 | 643 | 642 | 646 |
| | 3x4x10C & 14 | 1 | 443-1881 | 643 | 643 | 642 | 646 |
| | 4x5x10B | 1 | 443-2468 | 643 | 643 | 642 | 646 |

*USED WITH WATER COOLED CARTRIDGE CAPS ONLY

NOTE 1) MATERIAL CODE 644 - SLEEVE 208, "O" RING 457
646 - SLEEVE 108, "O" RING 457
623 - SLEEVE 104, "O" RING 457

# MODELS 1810, 1820, 1840 PARTS LIST
## 2-1/2 X 3 X 10B, 2-1/2 X 3 X 12, 3 X 4 X 10B&C, 3 x 4 x 14, 4 x 5 x 10B

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 61 | IMP. RING (OPT.) | | BEFORE 10/1/85 | | | | |
| | 2-1/2x3x10B & 12 | 2 | 676-1056 | 208 | 208 | 010 | 104 |
| | 3x4x10B, C & 14 | 2 | 676-1058 | 208 | 208 | 010 | 104 |
| | 4x5x10B | 2 | 676-1892 | 208 | 208 | 010 | 104 |
| | IMP. RING (OPT.) | | AFTER 10/1/85 | | | | |
| | 2-1/2x3x10B & 12 | 2 | 676-2042 | 208 | 208 | 010 | 104 |
| | 3x4x10B, C & 14 | 2 | 676-1058 | 208 | 208 | 010 | 104 |
| | 4x5x10B | 2 | 676-2040 | 208 | 208 | 010 | 104 |
| 62 | O-RING | 1 | 364-0368 | 457 | 457 | 457 | 457 |
| 63 | KEY | 1 | 472-0411 | 107 | 104 | 107 | 104 |
| | SLEEVE WITH "O" RING PC. NO. 62 (NOTE 1) | | | | | | |
| 64 | SLEEVE (PACKING) | 1 | 756-0642 | 644 | 644 | 646 | 623 |
| | (SEALS) | 1 | 756-0642 | 644 | 644 | 623 | 623 |
| 65 | SHAFT | 1 | 728-0946 | 063 | 104 | 063 | 104 |
| 66 | PIN | 2 | 592-0361 | 360 | | 360 | |
| | | 2 | 592-0051 | | 235 | | 235 |
| 67 | PIN | 2 | 592-0375 | 360 | 107 | 360 | 107 |
| 68 | PIN | 4 | 592-0213 | 104 | 104 | 104 | 104 |
| 69 | MODEL 411 PUMPS | | | | | | |
| | CASING ASSY. | | | | | | |
| | (1, 2, 6, 8, 26, 27, 66) | | | | | | |
| | 2-1/2x3x10B | 1 | 179-1357 | 010 | 208 | 010 | 104 |
| | 2-1/2x3x12 | 1 | 179-1358 | 010 | 208 | 010 | 104 |
| | 3x4x10B&C | 1 | 179-1359 | 010 | 208 | 010 | 104 |
| | 3x4x14 | 1 | 179-1360 | 010 | 208 | 010 | 104 |
| | 4x5x10B | 1 | 179-1361 | 010 | 208 | 010 | 104 |
| | MODEL 412 & 413 | | | | | | |
| | PUMPS | | | | | | |
| | 2-1/2x3x10B | 1 | 179-1445 | 010 | 208 | 020 | 104 |
| | 2-1/2x3x12 | 1 | 179-1446 | 010 | 208 | 010 | 104 |
| | 3x4x10B&C | 1 | 179-1447 | 010 | 208 | 010 | 104 |
| | 3x4x14 | 1 | 179-1448 | 010 | 208 | 010 | 104 |
| | 4x5x10B | 1 | 179-1449 | 010 | 208 | 010 | 104 |
| 70 | DRIVE SCREW | 2 | 708-0013 | 365 | 365 | 365 | 365 |
| 71 | NAMEPLATE | 1 | 532-0045 | 114 | 114 | 114 | 114 |
| 73 | CAPSCREW | | | | | | |
| | FR. 143HP-256HP | 4 | 168-0388 | 082 | 082 | 082 | 082 |
| | FR. 284HPH-445HP | 4 | 168-0566 | 082 | 082 | 082 | 082 |
| 74 | BRACKET | | | | | | |
| | FR. 143HP-256HP | 1 | 116-0373 | 010 | 010 | 010 | 010 |
| | FR. 284HPH-445HP | 1 | 116-0374 | 010 | 010 | 010 | 010 |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 75 | CAPSCREW | 5 | 168-0490 | 082 | 082 | 082 | 082 |
| 76 | CAPSCREW | 5 | 168-0490 | 082 | 082 | 082 | 082 |
| 77 | BASE | 1 | 060-0484 | 010 | 010 | 010 | 010 |
| 78 | SETSCREW | | NOT REQUIRED | | | | |

# MODELS 1810, 1820, 1840 PARTS LIST
## 4 x 5 x 11A&C, 4 x 5 x 15

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 1 | PLUG | 3 | 600-0004 | 028 | 190 | 028 | 104 |
| 2 | PLUG | 2 | 600-0002 | 087 | 190 | 087 | 104 |
| 6 | CAPSCREW | 14 | 168-0492 | 082 | 082 | 082 | 104 |
| | 4x5x15 | 16 | 168-0492 | 082 | 082 | 082 | 104 |
| 7 | CAPSCREW | 4 | 168-0492 | 082 | 082 | 082 | 104 |
| 8 | CASING HALF | 1 | INCLUDED WITH NO. 69 | | | | |
| 9 | GASKET | | BEFORE MARCH 1979 | | | | |
| | 4x5x11 A | 1 | 364-1267 | 614 | 614 | 614 | 614 |
| | 4x5x11 C | 1 | 364-1267 | 614 | 614 | 614 | 614 |
| | GASKET | | AFTER MARCH 1979 | | | | |
| | 4x5x11A | 1 | 364-0099 | 598 | 598 | 598 | 598 |
| | 4x5x11C | 1 | 364-0099 | 598 | 598 | 598 | 598 |
| | 4x5x11D | 1 | 364-2165 | 598 | 598 | 598 | 598 |
| | 4x5x15 (ALL) | 1 | 364-1268 | 598 | 598 | 598 | 598 |
| 10 | GREASE FITTING | 2 | 508-0015 | 651 | 651 | 651 | 651 |
| 12 | PLUG | 2 | 600-0001 | 087 | 087 | 087 | 087 |
| 12A | PLUG* | 6 | 600-0003 | 087 | 087 | 087 | 087 |
| 18 | NUT | 4 | 544-0109 | | 190 | 080 | 104 |
| 19 | WASHER | 4 | 908-0112 | | 190 | 080 | 104 |
| 20 | GLAND CLAMP | 4 | 204-0120 | | 190 | 360 | 104 |
| 21 | GLAND (PACKING) | 2 | 372-0226 | 010 | 208 | 010 | 104 |
| | GLAND (PACKING) 4X5X11D | 1 | 372-0547 | 010 | 208 | 010 | 104 |
| 22 | SWING BOLT | 4 | 100-2011 | | 190 | 360 | 104 |
| 22A | SWING BOLT ASSY. | | | | | | |
| | (18, 19, 20, 22) | 4 | 099-0014 | 644 | | | |
| 23 | PACKING | 10 | 564-0175 | 816 | 816 | 816 | 816 |
| 24 | KEY | 1 | 472-0318 | 087 | 087 | 087 | 087 |
| 25 | CAPSCREW | 4 | 168-0494 | 080 | 190 | 080 | 104 |
| 26 | BEARING CAP | 2 | 163-0307 | 010 | | 010 | |
| 27 | PIN | 2 | 592-0361 | 360 | 107 | 360 | 107 |
| 28 | CASING RING | | | | | | |
| | 4x5x11A | 2 | 676-1720 | 208 | 208 | 010 | 107 |
| | 4x5x11C | 2 | 676-1747 | 208 | 208 | 010 | 107 |
| | 4x5x11D | 2 | 676-2136 | 208 | 208 | 010 | 107 |
| | 4x5x15 | 2 | 676-1747 | 208 | 208 | 010 | 107 |
| 29 | PROTECTOR | 1 | 624-0081 | 087 | 087 | 087 | 087 |
| 31 | CAPSCREW | 4 | 168-0260 | 082 | 082 | 082 | 082 |
| 32 | CARTRIDGE CAP | 1 | 164-0550 | 010 | 010 | 010 | 010 |
| 34 | GASKET | 1 | 364-1310 | 614 | 614 | 614 | 614 |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 35 | RETAINING RING | 1 | 676-0929 | 088 | 088 | 088 | 088 |
| 36 | CARTRIDGE | 1 | 176-0066 | 010 | 010 | 010 | 010 |
| 37 | GREASE SEAL | 1 | 712-6326 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 721-0017 | 653 | 653 | 653 | 653 |
| 38 | BEARING | 1 | 068-0455 | 647 | 647 | 647 | 647 |
| 39 | SLINGER | 1 | 764-1020 | 478 | 478 | 478 | 478 |
| 41 | CAPSCREW | 4 | 168-0260 | 082 | 082 | 082 | 082 |
| 42 | CARTRIDGE CAP | 1 | 164-0550 | 010 | 010 | 010 | 010 |
| 43 | GREASE SEAL | 1 | 712-6325 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 712-0019 | 653 | 653 | 653 | 653 |
| 44 | GASKET | 1 | 364-1310 | 614 | 614 | 614 | 614 |
| 45 | CARTRIDGE | 1 | 176-0066 | 010 | 010 | 010 | 010 |
| 46 | GREASE SEAL | 1 | 712-6326 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 712-0017 | 653 | 653 | 653 | 653 |
| 47 | BEARING | 1 | 068-1908 | 647 | 647 | 647 | 647 |
| 48 | SLINGER | 1 | 764-1020 | 478 | 478 | 478 | 478 |
| 49 | GLAND (SEAL) | 2 | 372-0289 | 010 | 208 | 010 | 104 |
| 50 | O-RING | 2 | 364-0423 | 457 | 457 | 457 | 457 |
| 52 | LANTERN RING | 2 | 676-1699 | 512 | 512 | 512 | 512 |
| 53 | SEAL | 2 | 712-1012 | 749 | 764 | 749 | 764 |
| 54 | COLLAR | 2 | 224-0175 | 208 | 208 | 010 | 104 |
| 55 | SETSCREW | 4 | 724-0081 | 104 | 104 | 104 | 104 |
| 56 | BUSHING | 2 | 136-1412 | 208 | 208 | 010 | 104 |
| | SLEEVE WITH "O" RING PC. NO. 58 (NOTE 1) | | | | | | |
| 57 | SLEEVE (PACKING) | 1 | 756-0643 | 644 | 644 | 646 | 623 |
| | (SEALS) | 1 | 756-0643 | 644 | 644 | 623 | 623 |
| 58 | O-RING | 1 | 364-0372 | 457 | 457 | 457 | 457 |
| 59 | IMPELLER | | | | | | |
| | 4x5x11A | 1 | 443-2112 | 225 | 225 | 010 | 104 |
| | 4x5x11C | 1 | 443-0147 | 225 | 225 | 010 | 104 |
| | 4x5x11D | 1 | 443-2984 | 225 | 225 | - | - |
| | 4x5x15 | 1 | 443-2115 | 225 | 225 | 010 | 104 |
| | IMPELLER | | FOR S.F. CONSTRUCTION | | | | |
| | (FITTED WITH | | USE MATERIAL 655 | | | | |
| | OPT. RING NO. 61) | | | | | | |
| | 4x5x11A | 1 | 443-2478 | 643 | 643 | 642 | 646 |
| | 4x5x11C | 1 | 443-2466 | 643 | 643 | 642 | 646 |
| | 4x5x15 | 1 | 443-1885 | 643 | 643 | 642 | 646 |

*USED WITH WATER COOLED CAPS ONLY

NOTE 1) MATERIAL CODE 644 - SLEEVE 208, "O" RING 457
646 - SLEEVE 108, "O" RING 457
623 - SLEEVE 104, "O" RING 457

# MODELS 1810, 1820, 1840 PARTS LIST
## 4 x 5 x 11A&C, 4 x 5 x 15

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 61 | IMP. RING (OPT.) | | BEFORE 10/1/85 | | | | |
| | 4x5x11A | 2 | 676-1893 | 208 | 208 | 010 | 104 |
| | 4x5x11C | 2 | 676-1059 | 208 | 208 | 010 | 104 |
| | 4x5x11 D | | N/A | N/A | N/A | N/A | N/A |
| | 4x5x15 | 2 | 676-1059 | 208 | 208 | 010 | |
| | IMP. RING (OPT.) | | AFTER 10/1/85 | | | | |
| | 4x5x11A | 2 | 676-2045 | 208 | 208 | 010 | 104 |
| | 4x5x11C | 2 | 676-2038 | 208 | 208 | 010 | 104 |
| | 4x5x11D | | N/A | N/A | N/A | N/A | N/A |
| | 4x5x15 | 2 | 676-1059 | 208 | 208 | 010 | 104 |
| 62 | O-RING | 1 | 364-0372 | 457 | 457 | 457 | 457 |
| 63 | KEY | 1 | 472-0412 | 107 | 104 | 107 | 104 |
| | SLEEVE WITH "O" RING PC. NO. 62 (NOTE 1) | | | | | | |
| 64 | SLEEVE (PACKING) | 1 | 756-0643 | 644 | 644 | 646 | 623 |
| | (SEALS) | 1 | 756-0643 | 644 | 644 | 623 | 623 |
| | FOR 4X5X11 D | 1 | 756-0763 | 644 | 644 | 645 | 623 |
| 65 | SHAFT | 1 | 728-0947 | 063 | 104 | 063 | 104 |
| 66 | PIN | 2 | 592-0361 | 360 | | 360 | |
| | | 2 | 592-0051 | | 235 | | 235 |
| | 4X5X11 D | 2 | 592-0361 | 360 | 235 | 360 | 235 |
| 67 | PIN | 2 | 592-0375 | 360 | 107 | 360 | 107 |
| 68 | PIN | | NOT REQUIRED | | | | |
| 69 | MODEL 411 PUMPS | | | | | | |
| | CASING ASSY. | | | | | | |
| | (1, 2, 8, 26, 27, 66) | | | | | | |
| | 4x5x11A | 1 | 179-1363 | 010 | 208 | 010 | 104 |
| | 4x5x11C | 1 | 179-1363 | 010 | 208 | 010 | 104 |
| | 4x5x11 D | 1 | 179-2511 | 010 | 208 | 010 | 104 |
| | 4x5x15 | 1 | 179-1364 | 010 | 208 | 010 | 104 |
| | MODEL 412 & 413 | | | | | | |
| | PUMPS | | | | | | |
| | CASING ASSY. | | | | | | |
| | (1, 2, 8, 26, 27, 66) | | | | | | |
| | 4x5x11A | 1 | 179-1451 | 010 | 208 | 010 | 104 |
| | 4x5x11C | 1 | 179-1451 | 010 | 208 | 010 | 104 |
| | 4x5x11 D | 1 | 179-2518 | 010 | 208 | 010 | 104 |
| | 4x5x15 | 1 | 179-1452 | 010 | 208 | 010 | 104 |
| 70 | DRIVE SCREW | 2 | 708-0013 | 365 | 365 | 365 | 365 |
| 71 | NAMEPLATE | 1 | 532-0045 | 114 | 114 | 114 | 114 |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 73 | CAPSCREW | | | | | | |
| | FR. 143HP-256HP | 4 | 168-0388 | 082 | 082 | 082 | 082 |
| | FR. 284HPH-445HP | 4 | 168-0570 | 082 | 082 | 082 | 082 |
| 74 | BRACKET | | | | | | |
| | FR. 143HP-256HP | 1 | 116-0376 | 010 | 010 | 010 | 010 |
| | FR. 284HPH-445HP | 1 | 116-0364 | 010 | 010 | 010 | 010 |
| 75 | CAPSCREW | 5 | 168-0562 | 082 | 082 | 082 | 082 |
| 76 | CAPSCREW | 5 | 168-0562 | 082 | 082 | 082 | 082 |
| 77 | BASE | 1 | 060-0485 | 010 | 010 | 010 | 101 |
| 78 | SETSCREW | | NOT REQUIRED | | | | |

# MODELS 1810, 1820, 1840 PARTS LIST
## 4 x 6 x 18B, 5 x 6 x 11A&C, 5 x 6 x 15, 5 x 6 x `7, 6 x 8 x 11, 8 x 8 x 11B

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 1 | PLUG | 3 | 600-0004 | 028 | 190 | 028 | 104 |
| 2 | PLUG MODEL 411 | 2 | 600-0002 | 087 | 190 | 087 | 104 |
| | MODEL 412 & 413 | 4 | 600-0002 | 087 | 190 | 087 | 104 |
| 6 | CAPSCREW | | | | | | |
| | 5x6x11A, 6x8x11, | | | | | | |
| | 8x8x11B | 14 | 168-0564 | 082 | 082 | 082 | 104 |
| | 5x6x11C, 5x6x15 | | | | | | |
| | 5x6x17 | 16 | 168-0564 | 082 | 082 | 082 | 104 |
| | 4x6x18B | 20 | 158-0564 | 082 | 082 | 082 | 104 |
| 7 | CAPSCREW | 4 | 168-0494 | 082 | 082 | 082 | 104 |
| 8 | CASING HALF | 1 | INCLUDED WITH NO. 69 | | | | |
| 9 | GASKET 4x6x18B | 1 | 364-0801 | 598 | 598 | 598 | 598 |
| | 5x6x11A | 1 | 364-1269 | 598 | 598 | 598 | 598 |
| | 5x6x11C | 1 | 364-0809 | 598 | 598 | 598 | 598 |
| | 5x6x15 | 1 | 364-1270 | 598 | 598 | 598 | 598 |
| | 5x6x17 | 1 | 364-1270 | 598 | 598 | 598 | 598 |
| | 6x8x11 | 1 | 364-1271 | 598 | 598 | 598 | 598 |
| | 8x8x11B | 1 | 364-1271 | 598 | 598 | 598 | 598 |
| 10 | GREASE FITTING | 2 | 508-0015 | 651 | 651 | 651 | 651 |
| 12 | PLUG | 2 | 600-0001 | 087 | 087 | 087 | 087 |
| 12A | PLUG* | 6 | 600-0003 | 087 | 087 | 087 | 087 |
| 18 | NUT | 4 | 544-0109 | | 190 | 080 | 104 |
| 19 | WASHER | 4 | 908-0112 | | 190 | 080 | 104 |
| 20 | GLAND CLAMP | 4 | 204-0120 | | 190 | 360 | 104 |
| 21 | GLAND (PACKING) | 2 | 372-0227 | 010 | 208 | 010 | 104 |
| 22 | SWING BOLT | 4 | 100-2011 | | 190 | 360 | 104 |
| 22A | SWING BOLT ASSY. | | | | | | |
| | (18, 19, 20, 22) | 4 | 099-0014 | 644 | | | |
| 23 | PACKING | 12 | 564-0176 | 816 | 816 | 816 | 816 |
| 24 | KEY | 1 | 472-0318 | 087 | 087 | 087 | 087 |
| 25 | CAPSCREW | 4 | 168-0566 | 082 | 190 | 082 | 104 |
| 26 | BEARING CAP | 2 | 163-0308 | 010 | | 010 | |
| 27 | PIN | 2 | 592-0361 | 360 | 107 | 360 | 107 |
| 28 | CASE RING | | | | | | |
| | 4x6x18B | 2 | 676-1748 | 208 | 208 | 010 | 107 |
| | 5x6x11A & C | 2 | 676-1748 | 208 | 208 | 010 | 107 |
| | 5x6x15 | 2 | 676-1748 | 208 | 208 | 010 | 107 |
| | 5x6x17, 6x8x11 | 2 | 676-1748 | 208 | 208 | 010 | 107 |
| | 8x8x11B | 2 | 676-1721 | 208 | 208 | 010 | 107 |

*USED WITH WATER COOLED CARTRIDGE CAPS ONLY

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 29 | PROTECTOR | 1 | 624-0081 | 087 | 087 | 087 | 087 |
| 31 | CAPSCREW | 4 | 168-0260 | 082 | 082 | 082 | 082 |
| 32 | CARTRIDGE CAP | 1 | 164-0532 | 010 | 010 | 010 | 010 |
| 34 | GASKET | 1 | 364-1311 | 614 | 614 | 614 | 614 |
| 35 | RETAINING RING | 1 | 676-0935 | 088 | 088 | 088 | 088 |
| 36 | CARTRIDGE | 1 | 176-0067 | 010 | 010 | 010 | 010 |
| 37 | GREASE SEAL | 1 | 712-6327 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 712-6327 | 653 | 653 | 653 | 653 |
| 38 | BEARING | 1 | 068-0456 | 647 | 647 | 647 | 647 |
| 39 | SLINGER | 1 | 764-1022 | 478 | 478 | 478 | 478 |
| 41 | CAPSCREW | 4 | 168-0260 | 082 | 082 | 082 | 082 |
| 42 | CARTRIDGE CAP | 1 | 164-0532 | 010 | 010 | 010 | 010 |
| 43 | GREASE SEAL | 1 | 712-6326 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 712-0017 | 653 | 653 | 653 | 653 |
| 44 | GASKET | 1 | 364-1311 | 614 | 614 | 614 | 614 |
| 45 | CARTRIDGE | 1 | 176-0067 | 010 | 010 | 010 | 010 |
| 46 | GREASE SEAL | 1 | 712-6327 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 712-6327 | 653 | 653 | 653 | 653 |
| 47 | BEARING | 1 | 068-1909 | 647 | 647 | 647 | 647 |
| | 5x6x11C (3500) | 1 | 068-0359 | 647 | 647 | 647 | 647 |
| 48 | SLINGER | 1 | 764-1022 | 478 | 478 | 478 | 478 |
| 49 | GLAND (SEAL) | 2 | 372-0291 | 010 | 208 | 010 | 104 |
| 50 | O-RING | 2 | 364-0425 | 457 | 457 | 457 | 457 |
| 52 | LANTERN RING | 2 | 676-1700 | 512 | 512 | 512 | 512 |
| 53 | SEAL | 2 | 712-1014 | | 764 | | 764 |
| | | 2 | 712-1014 | 749 | | 749 | |
| 54 | COLLAR | 2 | 224-0176 | 208 | 208 | 010 | 104 |
| 55 | SETSCREW | 4 | 724-0081 | 104 | 104 | 104 | 104 |
| 56 | BUSHING | 2 | 136-1413 | 208 | 208 | 010 | 104 |
| | SLEEVE WITH "O" RING PC. NO. 58 (NOTE 1) | | | | | | |
| 57 | SLEEVE (PACKING) | 1 | 756-0644 | 644 | 644 | 646 | 623 |
| | (SEALS) | 1 | 756-0644 | 644 | 644 | 623 | 623 |
| 58 | O-RING | 1 | 364-0375 | 457 | 457 | 457 | 457 |

NOTE 1) MATERIAL CODE 644 - SLEEVE 208, "O" RING 457
646 - SLEEVE 108, "O" RING 457
623 - SLEEVE 104, "O" RING 457

## MODELS 1810, 1820, 1840 PARTS LIST
## 4 x 6 x 18B, 5 x 6 x 11A&C, 5 x 6 x 15, 5 x 6 x 17, 6 x 8 x 11, 8 x 8 x 11B

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 59 | IMPELLER 4x6x18B | 1 | 443-0648 | 225 | 225 | 010 | 104 |
| | 5x6x11A | 1 | 443-2116 | 225 | 225 | 010 | 104 |
| | 5x6x11C | 1 | 443-2300 | 225 | 225 | 010 | 104 |
| | 5x6x15 | 1 | 443-2117 | 225 | 225 | 010 | 104 |
| | 5x6x17 | 1 | 443-2118 | 225 | 225 | 010 | 104 |
| | 6x8x11 | 1 | 443-2116 | 225 | 225 | 010 | 104 |
| 59 | IMPELLER | | | | | | |
| | 8x8x11B | 1 | 443-2122 | 225 | 225 | 010 | 104 |
| | IMPELLER | | FOR S.F. CONSTRUCTION | | | | |
| | (FITTED WITH OPT. | | USE MATERIAL 655 | | | | |
| | NO. 61 IMP. RING) | | | | | | |
| | 4x6x18B | 1 | 443-1021 | 643 | 643 | 642 | 646 |
| | 5x6x11A | 1 | 443-0126 | 643 | 643 | 642 | 646 |
| | 5x6x11C | 1 | 443-2480 | 643 | 643 | 642 | 646 |
| | 5x6x15 | 1 | 443-2467 | 643 | 643 | 642 | 646 |
| | 5x6x17 | 1 | 443-1887 | 643 | 643 | 642 | 646 |
| | 6x8x11 | 1 | 443-0126 | 643 | 643 | 646 | 646 |
| | 8x8x11B | 1 | 443-0119 | 643 | 643 | 642 | 646 |
| 61 | IMP. RING (OPT.) | | BEFORE 10/1/85 | | | | |
| | 4x6x18B, 5x6x11A & C | | | | | | |
| | 5x6x15, 5x6x17 & | | | | | | |
| | 6x8x11 | 2 | 676-1071 | 208 | 208 | 010 | 104 |
| | 8x8x11B | 2 | 676-1894 | 208 | 208 | 010 | 104 |
| | | | AFTER 10/1/85 | | | | |
| | 4x6x18B, 5x6x11A & | | | | | | |
| | 5x6x17, 6x8x11 | 2 | 676-1071 | 208 | 208 | 010 | 104 |
| | 5x6x11C | 2 | 676-2046 | 208 | 208 | 010 | 104 |
| | 5x6x15 | 2 | 676-2039 | 208 | 208 | 010 | 104 |
| | 8x8x11B | 2 | 676-1894 | 208 | 208 | 010 | 104 |
| 62 | O-RING | 1 | 364-0375 | 457 | 457 | 457 | 457 |
| 63 | KEY | 1 | 472-0412 | 107 | 104 | 107 | 104 |
| | SLEEVE WITH "O" RING PC. NO. 62 (NOTE 1) | | | | | | |
| 64 | SLEEVE (PACKING) | 1 | 756-0644 | 644 | 644 | 646 | 623 |
| | (SEALS) | 1 | 756-0644 | 644 | 644 | 623 | 623 |
| 65 | SHAFT | 1 | 728-0948 | 063 | 104 | 063 | 104 |
| 66 | PIN | 2 | 592-0361 | 360 | | 360 | |
| | | 2 | 592-0051 | | 235 | | 235 |
| 67 | PIN | 2 | 592-0375 | 360 | 107 | 360 | 107 |
| 68 | PIN | | NOT REQUIRED | | | | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 69 | MODEL 411 PUMPS | | | | | | |
| | CASING ASSEMBLY | | | | | | |
| | (1, 2, 8, 26, 27, 66) | | | | | | |
| | 4x6x18B | 1 | 179-2047 | 010 | 208 | 010 | 104 |
| | 5x6x11A | 1 | 179-1365 | 010 | 208 | 010 | 104 |
| | 5x6x11C | 1 | 179-2129 | 010 | 208 | 010 | 104 |
| | 5x6x15 | 1 | 179-1366 | 010 | 208 | 010 | 104 |
| | 5x6x17 | 1 | 179-1367 | 010 | 208 | 010 | 104 |
| | 6x8x11 | 1 | 179-1368 | 010 | 208 | 010 | 014 |
| | 8x8x11B | 1 | 179-1371 | 010 | 208 | 010 | 014 |
| | MODEL 412 & 413 | | | | | | |
| | PUMPS | | | | | | |
| | CASING ASSY. | | | | | | |
| | (1, 2, 8, 26, 27, 66) | | | | | | |
| | 4x6x18B | 1 | 179-2101 | 010 | 208 | 010 | 104 |
| | 5x6x11A | 1 | 179-1453 | 010 | 208 | 010 | 104 |
| | 5x6x11C | 1 | 179-2135 | 010 | 208 | 010 | 104 |
| | 5x6x15 | 1 | 179-1454 | 010 | 208 | 010 | 104 |
| | 5x6x17 | 1 | 179-1455 | 010 | 208 | 010 | 104 |
| | 6x8x11 | 1 | 179-1456 | 010 | 208 | 010 | 104 |
| | 8x8x11B | 1 | 179-1459 | 010 | 208 | 010 | 104 |
| 70 | DRIVE SCREW | 2 | 708-0013 | 365 | 365 | 365 | 365 |
| 71 | NAMEPLATE | 1 | 532-0045 | 114 | 114 | 114 | 114 |
| 73 | CAPSCREW | | | | | | |
| | FR. 143HP-256HP | 4 | 168-0388 | 082 | 082 | 082 | 082 |
| | FR. 284HPH-445HP | 4 | 168-0570 | 082 | 082 | 082 | 082 |
| 74 | BRACKET | | | | | | |
| | FR. 143HP-256HP | 1 | 116-0376 | 010 | 010 | 010 | 010 |
| | FR. 284HPH-445HP | 1 | 116-0364 | 010 | 010 | 010 | 010 |
| 75 | CAPSCREW | 5 | 168-0562 | 082 | 082 | 082 | 082 |
| 76 | CAPSCREW | 5 | 168-0562 | 082 | 082 | 082 | 082 |
| 77 | BASE | 1 | 060-0485 | 010 | 010 | 010 | 010 |
| 78 | SETSCREW | 6 | 724-0027 | 104 | 104 | 104 | 104 |

# MODELS 1810, 1820, 1840 PARTS LIST
# 6 x 8 x 11HH

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL | | | |
|---|---|---|---|---|---|---|---|
| | | | | B.F. | A.B. | A.I. | S.S. |
| 1 | PLUG | 3 | 600-0004 | 028 | | 028 | |
| 2 | PLUG MODEL 411 | 2 | 600-0002 | 087 | | 087 | |
| | MODEL 412 & 413 | 4 | 600-0002 | 087 | | 087 | |
| 6 | CAPSCREW | 24 | 168-0636 | 082 | | 082 | |
| 7 | CAPSCREW | 4 | 168-0494 | 082 | | 082 | |
| 8 | CASING HALF | 1 | INCLUDED WITH NO. 69 | | | | |
| 9 | GASKET | 1 | 364-2166 | 598 | | 598 | |
| 10 | GREASE FITTING | 2 | 508-0015 | 651 | | 651 | |
| 12 | PLUG | 2 | 600-0001 | 087 | | 087 | |
| 18 | NUT | 4 | 544-0109 | 190 | | 080 | |
| 19 | WASHER | 4 | 908-0112 | 080 | | 080 | |
| 20 | GLAND CLAMP | 4 | 204-0120 | 360 | | 360 | |
| 21 | GLAND (PACKING) | 2 | 372-0227 | 010 | | 010 | |
| 22 | SWING BOLT | 4 | 100-2011 | 360 | | 360 | |
| 22A | SWING BOLT ASSY. | | | | | | |
| | (18, 19, 20, 22) | 4 | 099-0014 | 644 | | | |
| 23 | PACKING | 12 | 564-0176 | 816 | | 816 | |
| 24 | KEY | 1 | 472-0318 | 087 | | 087 | |
| 25 | CAPSCREW | 4 | 168-0566 | 082 | | 082 | |
| 26 | BEARING CAP | 2 | 163-0308 | 010 | | 010 | |
| 27 | PIN | 2 | 592-0361 | 360 | | 360 | |
| 28 | CASE RING | 2 | 676-2138 | 208 | | 010 | |
| 29 | PROTECTOR | 1 | 624-0081 | 087 | | 087 | |
| 31 | CAPSCREW | 4 | 168-0260 | 082 | | 082 | |
| 32 | CARTRIDGE CAP | 1 | 164-0532 | 010 | | 010 | |
| 34 | GASKET | 1 | 364-1311 | 614 | | 614 | |
| 35 | RETAINING RING | 1 | 676-0935 | 088 | | 088 | |
| 36 | CARTRIDGE | 1 | 176-0067 | 010 | | 010 | |
| 37 | GREASE SEAL | 1 | 712-6327 | 653 | | 653 | |
| | OIL SEAL | 1 | 712-6327 | 653 | | 653 | |
| 38 | BEARING | 1 | 068-0456 | 647 | | 647 | |
| 39 | SLINGER | 1 | 764-1022 | 478 | | 478 | |
| 41 | CAPSCREW | 4 | 168-0260 | 082 | | 082 | |
| 42 | CARTRIDGE CAP | 1 | 164-0532 | 010 | | 010 | |
| 43 | GREASE SEAL | 1 | 712-6327 | 653 | | 653 | |
| | OIL SEAL | 1 | 712-6327 | 653 | | 653 | |
| 44 | GASKET | 1 | 364-1311 | 614 | | 614 | |
| 45 | CARTRIDGE | 1 | 176-0067 | 010 | | 010 | |
| 46 | GREASE SEAL | 1 | 712-6326 | 653 | | 653 | |
| | OIL SEAL | 1 | 712-6326 | 653 | | 653 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL | | | |
|---|---|---|---|---|---|---|---|
| | | | | B.F. | A.B. | A.I. | S.S. |
| 47 | BEARING | 1 | 068-1909 | 647 | | 647 | |
| 48 | SLINGER | 1 | 764-1022 | 478 | | 478 | |
| 49 | GLAND (SEAL) | 2 | 372-0291 | 010 | | 010 | |
| 50 | O-RING | 2 | 364-0425 | 457 | | 457 | |
| 52 | LANTERN RING | 2 | 676-1700 | 512 | | 512 | |
| 53 | SEAL | 2 | 712-1014 | 749 | | 749 | |
| 54 | COLLAR | 2 | 224-0176 | 208 | | 010 | |
| 55 | SETSCREW | 4 | 724-0081 | 104 | | 104 | |
| 56 | BUSHING | 2 | 136-1413 | 208 | | 010 | |
| | SLEEVE WITH "O" RING PC. NO. 58 (NOTE 1) | | | | | | |
| 57 | SLEEVE (PACKING) | 1 | 756-0828 | 644 | | 646 | |
| | (SEALS) | 1 | 756-0828 | 644 | | 623 | |
| 58 | O-RING | 1 | 364-0375 | 457 | | 457 | |
| 59 | IMPELLER | 1 | 443-2990 | 225 | | 010 | |
| 59 | IMPELLER | FOR S.F. CONSTRUCTION | | | | | |
| | (FITTED WITH OPT. | USE MATERIAL 655 | | | | | |
| | NO. 61 IMP. RING) | | | | | | |
| | 6x8x11HH | 1 | N/A | N/A | | N/A | |
| 61 | IMP. RING (OPT.) | | | | | | |
| | 6x8x11HH | 2 | N/A | N/A | | N/A | |
| 62 | O-RING | 1 | 364-0375 | 457 | | 457 | |
| 63 | KEY | 1 | 472-0412 | 107 | | 107 | |
| | SLEEVE WITH "O" RING PC. NO. 62 (NOTE 1) | | | | | | |
| 64 | SLEEVE (PACKING) | 1 | 756-0828 | 644 | | 646 | |
| | (SEALS) | 1 | 756-0828 | 644 | | 623 | |
| 65 | SHAFT | 1 | 728-7304 | 063 | | 063 | |
| 66 | PIN | 2 | 592-0305 | 360 | | 360 | |
| | | 2 | 592-0051 | | | | |
| 67 | PIN | 2 | 592-0375 | 360 | | 360 | |
| 68 | PIN | NOT REQUIRED | | | | | |
| 69 | MODEL 411 PUMPS | | | | | | |
| | CASING ASSEMBLY | | | | | | |
| | (1, 2, 8, 26, 27, 66) | | | | | | |
| | 6x8x11HH | 1 | 179-2505 | 010 | | 010 | |
| | MODEL 412 & 413 | | | | | | |
| | PUMPS | | | | | | |
| | CASING ASSY. | | | | | | |
| | (1, 2, 8, 26, 27, 66) | | | | | | |
| | 6x8x11HH | 1 | 179-2508 | 010 | | 010 | |

## MODELS 1810, 1820, 1840 PARTS LIST
## 6 x 8 x 11H

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL | | | |
|---|---|---|---|---|---|---|---|
| | | | | B.F. | A.B. | A.I. | S.S. |
| 70 | DRIVE SCREW | 2 | 708-0013 | 365 | | 365 | |
| 71 | NAMEPLATE | 1 | 532-0045 | 114 | | 114 | |
| 73 | CAPSCREW | | | | | | |
| | FR. 143HP-256HP | 4 | 168-0388 | 082 | | 082 | |
| | FR. 284HPH-445HP | 4 | 168-0570 | 082 | | 082 | |
| 74 | BRACKET | | | | | | |
| | FR. 143HP-256HP | 1 | 116-0376 | 010 | | 010 | |
| | FR. 284HPH-445HP | 1 | 116-0364 | 010 | | 010 | |
| 75 | CAPSCREW | 5 | 168-0562 | 082 | | 082 | |
| 76 | CAPSCREW | 5 | 168-0562 | 082 | | 082 | |
| 77 | BASE | 1 | 060-0485 | 010 | | 010 | |
| 78 | SETSCREW | 6 | 724-0027 | 104 | | 104 | |

# MODELS 1810, 1820, 1840 PARTS LIST
## 6 x 8 x 14HH

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 1 | PLUG | 3 | 600-0004 | 028 | | 028 | |
| 2 | PLUG | 2 | 600-0002 | 087 | | 087 | |
| 6 | CAPSCREW | 24 | 168-0636 | 082 | | 082 | |
| 7 | CAPSCREW | 4 | 168-0494 | 082 | | 082 | |
| 8 | CASING HALF | 1 | INCLUDED WITH NO. 69 | | | | |
| 9 | GASKET | 1 | 364-2161 | 598 | | 598 | |
| 10 | GREASE FITTING | 2 | 508-0015 | 651 | | 651 | |
| 12 | PLUG | 2 | 600-0001 | 087 | | 087 | |
| 18 | NUT | 4 | 544-0113 | 190 | | 080 | |
| 19 | WASHER | 4 | 908-0114 | 080 | | 080 | |
| 20 | GLAND CLAMP | 4 | 204-0121 | 360 | | 360 | |
| 21 | GLAND (PACKING) | 2 | 372-0228 | 010 | | 010 | |
| 22 | SWING BOLT | 4 | 100-2012 | 360 | | 360 | |
| 22A | SWING BOLT ASSY. | | | | | | |
| | (18, 19, 20, 22) | 4 | 099-0015 | 644 | | | |
| 23 | PACKING | 12 | 564-0177 | 816 | | 816 | |
| 24 | KEY | 1 | 472-0321 | 087 | | 087 | |
| 25 | CAPSCREW | 4 | 168-0638 | 080 | | 080 | |
| 26 | BEARING CAP | 2 | 163-0309 | 010 | | 010 | |
| 27 | PIN | 2 | 592-0361 | 360 | | 360 | |
| 28 | CASE RING | 2 | 676-2137 | 208 | | 010 | |
| 29 | PROTECTOR | 1 | 624-0110 | 087 | | 087 | |
| 31 | CAPSCREW | 4 | 168-0260 | 082 | | 082 | |
| 32 | CARTRIDGE CAP | 1 | 164-0533 | 010 | | 010 | |
| 34 | GASKET | 1 | 364-1312 | 614 | | 614 | |
| 35 | RETAINING RING | 1 | 676-0943 | 088 | | 088 | |
| 36 | CARTRIDGE | 1 | 176-0068 | 010 | | 010 | |
| 37 | GREASE SEAL | 1 | 712-6329 | 653 | | 653 | |
| | OIL SEAL | 1 | 712-0037 | 653 | | 653 | |
| 38 | BEARING | 1 | 068-0458 | 647 | | 647 | |
| 39 | SLINGER | 1 | 764-1028 | 478 | | 478 | |
| 41 | CAPSCREW | 4 | 168-0260 | 082 | | 082 | |
| 42 | CARTRIDGE CAP | 1 | 164-0533 | 010 | | 010 | |
| 43 | GREASE SEAL | 1 | 712-6328 | 653 | | 653 | |
| | OIL SEAL | 1 | 712-0055 | 653 | | 653 | |
| 44 | GASKET | 1 | 364-1312 | 614 | | 614 | |
| 45 | CARTRIDGE | 1 | 176-0068 | 010 | | 010 | |
| 46 | GREASE SEAL | 1 | 712-6329 | 653 | | 653 | |
| | OIL SEAL | 1 | 712-0037 | 653 | | 653 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 47 | BEARING | 1 | 068-0160 | 647 | | 647 | |
| 48 | SLINGER | 1 | 764-1028 | 478 | | 478 | |
| 49 | GLAND (SEAL) | 2 | 372-0293 | 010 | | 010 | |
| 50 | O-RING | 2 | 364-0429 | 457 | | 457 | |
| 52 | LANTERN RING | 2 | 676-1701 | 512 | | 512 | |
| 53 | SEAL | 2 | 712-1017 | 749 | | 749 | |
| 54 | COLLAR | 2 | 224-0177 | 208 | | 010 | |
| 55 | SETSCREW | 4 | 724-0081 | 104 | | 104 | |
| 56 | BUSHING | 2 | 136-1414 | 208 | | 010 | |
| | SLEEVE WITH "O" RING PC. NO. 58 (NOTE 1) | | | | | | |
| 57 | SLEEVE (PACKING) | 1 | 756-0827 | 644 | | 646 | |
| | (SEALS) | 1 | 756-0827 | 644 | | 623 | |
| 58 | O-RING | 1 | 364-0380 | 457 | | 457 | |
| 59 | IMPELLER | | | | | | |
| | 6x8x14HH | 1 | 444-2985 | 225 | | 010 | |
| 59 | IMPELLER | | | | | | |
| | (FITTED WITH OPT. | | | | | | |
| | RING NO. 61 ) | | | | | | |
| | 6x8x14HH | 1 | N/A | N/A | | N/A | |
| 61 | IMP. RING (OPT.) | | | | | | |
| | 6x8x14HH | 2 | N/A | N/A | | N/A | |
| 62 | O-RING | 1 | 364-0380 | 457 | | 457 | |
| 63 | KEY | 1 | 472-0413 | 107 | | 107 | |
| | SLEEVE WITH "O" RING PC. NO. 62 (NOTE 1) | | | | | | |
| 64 | SLEEVE (PACKING) | 1 | 756-0765 | 644 | | 646 | |
| | (SEALS) | 1 | 756-0765 | 644 | | 623 | |
| 65 | SHAFT | 1 | 728-7302 | 063 | | 063 | |
| 66 | PIN | 2 | 592-0305 | 360 | | 360 | |
| | | 2 | 592-0030 | | | | |
| 67 | PIN | 2 | 592-0375 | 360 | | 360 | |
| 68 | PIN | NOT REQUIRED | | | | | |
| 69 | MODEL 411 PUMPS | | | | | | |
| | CASING ASSEMBLY | | | | | | |
| | (1, 2, 8, 26, 27, 66) | | | | | | |
| | 6x8x14HH | 1 | 179-2499 | 010 | | 010 | |
| | MODEL 412 & 413 | | | | | | |
| | PUMPS | | | | | | |
| | CASING ASSY. | | | | | | |
| | (1, 2, 8, 26, 27, 66) | | | | | | |
| | 6x8x14HH | 1 | 179-2502 | 010 | | 010 | |

## MODELS 1810, 1820, 1840 PARTS LIST
## 6 x 8 x 14HH

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL | | | |
|---|---|---|---|---|---|---|---|
| | | | | B.F. | A.B. | A.I. | S.S. |
| 70 | DRIVE SCREW | 2 | 708-0013 | 365 | | 365 | |
| 71 | NAMEPLATE | 1 | 532-0045 | 114 | | 114 | |
| 73 | CAPSCREW | 4 | 168-0498 | 082 | | 082 | |
| 74 | BRACKET | | RTF | | | | |
| 75 | CAPSCREW | 5 | 168-0634 | 082 | | 082 | |
| 76 | CAPSCREW | 5 | 168-0634 | 082 | | 082 | |
| 77 | BASE | 1 | 060-0470 | 010 | | 010 | |
| 78 | SETSCREW | NOT REQUIRED | | | | | |

# MODELS 1810, 1820, 1840 PARTS LIST
## 6 x 8 x 15, 6 x 8 x 18A, B & C, 6 x 8 x 20, 8 x 10 x 12 & 12A, 8 x 10 x 15A&B, 8 x 10 x 17B

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 1 | PLUG | 3 | 600-0004 | 028 | 190 | 028 | 104 |
| 2 | PLUG MODEL 411 | 2 | 600-0002 | 087 | 190 | 087 | 104 |
| | MODEL 412 & 413 | 4 | 600-0002 | 087 | 190 | 087 | 104 |
| 6 | CAPSCREW 6x8x15 | 17 | 168-0636 | 082 | 190 | 082 | 104 |
| | 6x8x18A,B&C | 20 | 168-0638 | 082 | 190 | 082 | 104 |
| | 6x8x20 | 19 | 168-0638 | 082 | 190 | 082 | 104 |
| | ALL OTHER SIZES | 18 | 168-0638 | 082 | 190 | 082 | 104 |
| 7 | CAPSCREW | 4 | 168-0498 | 082 | 190 | 082 | 104 |
| 8 | CASING HALF | 1 | INCLUDED WITH NO. 69 | | | | |
| 9 | GASKET 6x8x15 | 1 | 364-1272 | 598 | 598 | 598 | 598 |
| | 6x8x18A,B&C | 1 | 364-0802 | 598 | 598 | 598 | 598 |
| | 6x8x20 | 1 | 364-1273 | 598 | 598 | 598 | 598 |
| | 8x10x12, 12A | 1 | 364-1274 | 598 | 598 | 598 | 598 |
| | 8x10x15A&B | 1 | 364-1275 | 598 | 598 | 598 | 598 |
| | 8x10x17B | 1 | 364-1276 | 598 | 598 | 598 | 598 |
| 10 | GREASE FITTING | 2 | 508-0015 | 651 | 651 | 651 | 651 |
| 12 | PLUG | 2 | 600-0001 | 087 | 087 | 087 | 087 |
| 12A | PLUG* | 6 | 600-0003 | 087 | 087 | 087 | 087 |
| 18 | NUT | 4 | 544-0113 | | 190 | 080 | 104 |
| 19 | WASHER | 4 | 908-0114 | | 190 | 080 | 104 |
| 20 | GLAND CLAMP | 4 | 204-0121 | | 190 | 360 | 104 |
| 21 | GLAND (PACKING) | 2 | 372-0228 | 010 | 208 | 010 | 104 |
| 22 | SWING BOLT | 4 | 100-2012 | | 190 | 360 | 104 |
| 22A | SWING BOLT ASSY. | | | | | | |
| | (18, 19, 20, 22) | 4 | 099-0015 | 644 | | | |
| 23 | PACKING | 12 | 564-0177 | 802 | 802 | 802 | 802 |
| 24 | KEY | 1 | 472-0321 | 087 | 087 | 087 | 087 |
| 25 | CAPSCREW | 4 | 168-0638 | 082 | 208 | 082 | 104 |
| 26 | BEARING CAP | 2 | 163-0309 | 010 | | 010 | |
| 27 | PIN | 2 | 592-0361 | 360 | 107 | 360 | 107 |
| 28 | CASE RING | | | | | | |
| | 6x8x15, 6x8x18A&C 6x8x20, 8x10x12 | 2 | 676-1750 | 208 | 208 | 010 | 107 |
| | 6x8x18B | 2 | 676-1989 | 208 | 208 | 010 | 107 |
| | 8x10x15A | 2 | 676-1988 | 208 | 208 | 010 | 107 |
| | 8x10x12A, 15B & 17B | 2 | 676-0018 | 208 | 208 | 010 | 107 |
| 29 | PROTECTOR | 1 | 624-0110 | 087 | 087 | 087 | 087 |
| 31 | CAPSCREW | 4 | 168-0260 | 082 | 082 | 082 | 082 |
| 32 | CARTRIDGE CAP | 1 | 164-0533 | 010 | 010 | 010 | 010 |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 34 | GASKET | 1 | 364-1312 | 614 | 614 | 614 | 614 |
| 35 | RETAINING RING | 1 | 676-0943 | 088 | 088 | 088 | 088 |
| 36 | CARTRIDGE | 1 | 176-0068 | 010 | 010 | 010 | 010 |
| 37 | GREASE SEAL | 1 | 712-6329 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 712-0037 | 653 | 653 | 653 | 653 |
| 38 | BEARING | 1 | 068-0458 | 647 | 647 | 647 | 647 |
| 39 | SLINGER | 1 | 764-1028 | 478 | 478 | 478 | 478 |
| 41 | CAPSCREW | 4 | 168-0260 | 082 | 082 | 082 | 082 |
| 42 | CARTRIDGE CAP | 1 | 164-0533 | 010 | 010 | 010 | 010 |
| 43 | GREASE SEAL | 1 | 712-6328 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 712-0055 | 653 | 653 | 653 | 653 |
| 44 | GASKET | 1 | 364-1312 | 614 | 614 | 614 | 614 |
| 45 | CARTRIDGE | 1 | 176-0068 | 010 | 010 | 010 | 010 |
| 46 | GREASE SEAL | 1 | 712-6329 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 712-0037 | 653 | 653 | 653 | 653 |
| 47 | BEARING | 1 | 068-0160 | 647 | 647 | 647 | 647 |
| 48 | SLINGER | 1 | 764-1028 | 478 | 478 | 478 | 478 |
| 49 | GLAND (SEAL) | 2 | 372-0293 | 010 | 208 | 010 | 104 |
| 50 | O-RING | 2 | 364-0429 | 457 | 457 | 457 | 457 |
| 52 | LANTERN RING | 2 | 676-1701 | 512 | 512 | 512 | 512 |
| 53 | SEAL | 2 | 712-1017 | 749 | 764 | 749 | 764 |
| 54 | COLLAR | 2 | 224-0177 | 208 | 208 | 010 | 104 |
| 55 | SETSCREW | 4 | 724-0081 | 104 | 104 | 104 | 104 |
| 56 | BUSHING | 2 | 136-1414 | 208 | 208 | 010 | 104 |
| | SLEEVE WITH "O" RING PC. NO. 58 (NOTE 1) | | | | | | |
| 57 | SLEEVE (PACKING) | 1 | 756-0645 | 644 | 644 | 646 | 623 |
| | (SEALS) | 1 | 756-0645 | 644 | 644 | 623 | 623 |
| 58 | O-RING | 1 | 364-0380 | 457 | 457 | 457 | 457 |
| 59 | IMPELLER | | | | | | |
| | 6x8x15 | 1 | 443-2119 | 225 | 225 | 010 | 104 |
| | 6x8x18A | 1 | 443-0649 | 208 | 208 | 010 | 104 |
| | 6x8x18B | 1 | 443-0658 | 225 | 225 | 010 | 104 |
| | 6x8x18C | 1 | 443-2298 | 208 | 208 | 010 | 104 |
| | 6x8x20 | 1 | 443-2120 | 225 | 225 | 010 | 104 |
| | 8x10x12 | 1 | 443-2447 | 225 | 225 | 010 | 104 |
| | 8x10x15A | 1 | 443-2119 | 225 | 225 | 010 | 104 |
| | 8x10x12A & 15B | 1 | 443-2445 | 225 | 225 | 010 | 104 |
| | 8x10x17B | 1 | 443-0476 | 225 | 225 | 010 | 104 |

*USED WITH WATER COOLED CARTRIDGE CAPS ONLY

NOTE 1) MATERIAL CODE 644 - SLEEVE 208, "O" RING 457
646 - SLEEVE 108, "O" RING 457
623 - SLEEVE 104, "O" RING 457

# MODELS 1810, 1820, 1840 PARTS LIST
## 6 x 8 x 15, 6 x 8 x 18A, B & C, 6 x 8 x 20, 8 x 10 x 12 & 12A, 8 x 10 x 15A&B, 8 x 10 x 17B

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| | IMPELLER (FITTED) | | FOR S.F. CONSTRUCTION | | | | |
| | WITH OPT. NO. 61 | | USE MATERIAL 655 | | | | |
| | RING | | | | | | |
| | 6x8x15 | 1 | 443-1888 | 643 | 643 | 642 | 646 |
| | 6x8x18A | 1 | 443-1022 | 643 | 643 | 642 | 646 |
| | 6x8x18B | 1 | 443-0659 | 643 | 643 | 642 | 646 |
| | 6x8x18C | 1 | 443-2299 | 643 | 643 | 642 | 646 |
| | 6x8x20 | 1 | 443-1889 | 643 | 643 | 642 | 646 |
| 59 | IMPELLER (FITTED) | | FOR S.F. CONSTRUCTION | | | | |
| | WITH OPT. NO. 61 | | USE MATERIAL 655 | | | | |
| | RING | | | | | | |
| | 8x10x12 | 1 | 443-2446 | 643 | 643 | 642 | 646 |
| | 8x10x15A | 1 | 443-1888 | 643 | 643 | 642 | 646 |
| | 8x10x12A & 15B | 1 | 443-2473 | 643 | 643 | 642 | 646 |
| | 8x10x17B | 1 | 443-2472 | 643 | 643 | 642 | 646 |
| 61 | IMP. RING (OPT.) | | BEFORE 10/1/85 | | | | |
| | 6x8x15 | 2 | 676-1054 | 208 | 208 | 010 | 104 |
| | 6x8x18B | 2 | 676-1990 | 208 | 208 | 010 | 104 |
| | 8x10x12A, 15B & 17B | 2 | 676-0019 | 208 | 208 | 010 | 104 |
| | IMP. RING (OPT.) | | AFTER 10/1/85 | | | | |
| | 6x8x15, 18A & 18C | 2 | 676-1054 | 208 | 208 | 010 | 104 |
| | 6x8x20 | 2 | 676-1054 | 208 | 208 | 010 | 104 |
| | 8x10x12 | 2 | 676-1054 | 208 | 208 | 010 | 104 |
| | 8x10x15A | 2 | 676-1054 | 208 | 208 | 010 | 104 |
| | 6x8x18B | 2 | 676-1990 | 208 | 208 | 010 | 104 |
| | 8x10x12A, 15B & 17B | 2 | 676-2044 | 208 | 208 | 010 | 104 |
| 62 | O-RING | 1 | 364-0380 | 457 | 457 | 457 | 457 |
| 63 | KEY | 1 | 472-0413 | 107 | 104 | 107 | 104 |
| | SLEEVE WITH "O" RING PC. NO. 62 (NOTE 1) | | | | | | |
| 64 | SLEEVE (PACKING) | 1 | 756-0645 | 644 | 644 | 646 | 623 |
| | (SEALS) | 1 | 746-0645 | 644 | 644 | 623 | 623 |
| 65 | SHAFT | 1 | 728-0949 | 063 | 104 | 063 | 104 |
| 66 | PIN | 2 | 592-0361 | 360 | | 360 | |
| | | 2 | 592-0051 | | 235 | | 235 |
| 67 | PIN | 2 | 592-0375 | 360 | 107 | 360 | 107 |
| 68 | PIN | | NOT REQUIRED | | | | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 69 | MODEL 411 | | | | | | |
| | CASING ASSEMBLY | | | | | | |
| | (1, 2, 8, 26, 27, 66) | | | | | | |
| | 6x8x15 | 1 | 179-1369 | 010 | 228 | 010 | 104 |
| | 6x8x18A,B&C | 1 | 179-2049 | 010 | 208 | 010 | 104 |
| | 6x8x20 | 1 | 179-1370 | 010 | 208 | 010 | 104 |
| | 8x10x12 | 1 | 179-1373 | 010 | 208 | 010 | 104 |
| | 8x10x12A | 1 | 179-2344 | 010 | 208 | 101 | 104 |
| | 8x10x15A&B | 1 | 179-2204 | 010 | 208 | 010 | 104 |
| | 8x10x17B | 1 | 179-2074 | 010 | 208 | 010 | 104 |
| 69 | MODEL 412 & 413 | | | | | | |
| | CASING ASSEMBLY | | | | | | |
| | (1, 2, 8, 26, 27, 66) | | | | | | |
| | 6x8x15 | 1 | 179-1457 | 010 | 208 | 010 | 104 |
| | 6x8x18A,B&C | 1 | 179-2103 | 010 | 208 | 010 | 104 |
| | 6x8x20 | 1 | 179-1458 | 010 | 208 | 020 | 104 |
| | 8x10x12 | 1 | 179-1461 | 010 | 208 | 010 | 104 |
| | 8x10x12A | 1 | 179-2346 | 010 | 208 | 010 | 104 |
| | 8x10x15A&B | 1 | 179-2207 | 010 | 208 | 010 | 104 |
| | 8x10x17B | 1 | 179-2077 | 010 | 208 | 010 | 104 |
| 70 | DRIVE SCREW | 2 | 708-0013 | 365 | 365 | 365 | 365 |
| 71 | NAMEPLATE | 1 | 532-0045 | 114 | 114 | 114 | 114 |
| 73 | CAPSCREW | 4 | 168-0498 | 082 | 082 | 082 | 104 |
| 74 | BRACKET | | REFER TO FACTORY | | | | |
| 75 | CAPSCREW | 5 | 168-0634 | 082 | 082 | 082 | 082 |
| 76 | CAPSCREW | 5 | 168-0634 | 082 | 082 | 082 | 082 |
| 77 | BASE | 1 | 060-0470 | 010 | 010 | 010 | 010 |
| 78 | SETSCREW | | | | | | |
| | 6X8X15 | 6 | | | | | |
| | 6x8x18A | 6 | | | | | |
| | 6x8x18C | 6 | | | | | |
| | 6x8x20 | 6 | | | | | |
| | 8x10x12, 12A | 6 | | | | | |
| | 8x10x15A | 6 | 724-0027 | 104 | 104 | 104 | 104 |
| | 6x8x18B | 6 | | | | | |
| | 8x10x15B | 8 | | | | | |
| | 8x10x17B | 8 | | | | | |

# MODELS 1810, 1820, 1840 PARTS LIST
## 8 x 10 x 21, 8 x 10 x 21A, 10 x 12 x 12B, 10 x 12 x 15B&C, 10 x 12 x 18

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 1 | PLUG | 3 | 600-0004 | 028 | 190 | 028 | 104 |
| 2 | PLUG | 2 | 600-0002 | 087 | 190 | 087 | 104 |
| | 10x12x12B 412 &413 | 4 | 600-0002 | 087 | 190 | 087 | 104 |
| 6 | CAPSCREW | | | | | | |
| | 8x10x21 & 21A | 21 | 168-0638 | 082 | 082 | 082 | 082 |
| | 10x12x12B | 24 | 168-0638 | 082 | 082 | 082 | 104 |
| | 10x12x15B | 26 | 168-0638 | 082 | 082 | 082 | 104 |
| | 10x12x18 | 26 | 168-0638 | 082 | 082 | 082 | 104 |
| 7 | CAPSCREW | 4 | 168-0498 | 082 | 082 | 082 | 104 |
| 8 | UPPER CASING | | INCLUDED WITH NO. 69 | | | | |
| 9 | GASKET 8x10x21&21A | 1 | 364-2110 | 598 | 598 | 598 | 598 |
| | 10x12x12B | 1 | 364-0803 | 598 | 598 | 598 | 598 |
| | 10x12x15B&C | 1 | 364-0804 | 598 | 598 | 598 | 598 |
| | 10x12x18 | 1 | 364-0805 | 598 | 598 | 598 | 598 |
| 10 | GREASE FITTING | 2 | 508-0015 | 651 | 651 | 651 | 651 |
| 12 | PLUG | 2 | 600-0001 | 087 | 087 | 087 | 087 |
| 18 | NUT | 4 | 544-0113 | | 190 | 080 | 104 |
| 19 | WASHER | 4 | 908-0114 | 080 | 190 | 080 | 104 |
| 20 | CLAMP | 4 | 204-0121 | 360 | 190 | 360 | 104 |
| 21 | GLAND (PACKING) | 2 | 372-0065 | 010 | 208 | 010 | 104 |
| 22 | SWING BOLT | | | | | | |
| | PACKING | 4 | 100-2012 | 360 | 190 | 360 | 104 |
| | SEALS | 4 | 100-2013 | 360 | 190 | 360 | 104 |
| 23 | PACKING | 10 | 564-0179 | 802 | 802 | 802 | 802 |
| 24 | KEY | 1 | 472-0366 | 087 | 087 | 087 | 087 |
| 25 | CAPSCREW | 4 | 168-0638 | 082 | 082 | 082 | 104 |
| 26 | BEARING CAP | 2 | 163-0309 | 010 | | 010 | |
| 27 | PIN | 2 | 592-0361 | 360 | 107 | 360 | 107 |
| 28 | CASE RING | | | | | | |
| | 8x10x21 | 2 | 676-2031 | 208 | 208 | 010 | 107 |
| | 8x10x21A | 2 | 676-2014 | 208 | 208 | 010 | 107 |
| | 10x12x12B | 2 | 676-1982 | 208 | 208 | 010 | 107 |
| | 10x12x15B&C | 2 | 676-1983 | 208 | 208 | 010 | 107 |
| | 10x12x18 | 2 | 676-1984 | 208 | 208 | 010 | 107 |
| 29 | PROTECTOR | 1 | 624-0111 | 087 | 087 | 087 | 087 |
| 31 | CAPSCREW | 4 | 168-0260 | 082 | 082 | 082 | 082 |
| 32 | CARTRIDGE CAP | 1 | 164-0352 | 010 | 010 | 010 | 010 |
| 34 | GASKET | 1 | 364-1312 | 614 | 614 | 614 | 614 |
| 35 | RETAINING RING | 1 | 676-0382 | 088 | 088 | 088 | 088 |
| 35A | RETAINING RING | 1 | 676-0925 | 088 | 088 | 088 | 088 |
| 36 | CARTRIDGE | 1 | 176-0001 | 010 | 010 | 010 | 010 |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 37 | GREASE SEAL | 1 | 712-6331 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 712-6331 | 653 | 653 | 653 | 653 |
| 38 | BEARING | 1 | 068-0362 | 647 | 647 | 647 | 647 |
| 39 | SLINGER | 1 | 764-0178 | 478 | 478 | 478 | 478 |
| 41 | CAPSCREW | 4 | 168-0260 | 082 | 082 | 082 | 082 |
| 42 | CARTRIDGE CAP | 1 | 164-0352 | 010 | 010 | 010 | 010 |
| 43 | GREASE SEAL | 1 | 712-6330 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 712-6330 | 653 | 653 | 653 | 653 |
| 44 | GASKET | 1 | 364-1312 | 614 | 614 | 614 | 614 |
| 45 | CARTRIDGE | 1 | 176-0001 | 010 | 010 | 010 | 010 |
| 46 | GREASE SEAL | 1 | 712-6331 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 712-6331 | 653 | 653 | 653 | 653 |
| 47 | BEARING | 1 | 068-1912 | 647 | 647 | 647 | 647 |
| 48 | SLINGER | 1 | 764-0178 | 478 | 478 | 478 | 478 |
| 49 | GLAND (SEAL) | 2 | 372-0150 | 010 | 208 | 010 | 104 |
| 50 | O-RING | 2 | 364-0433 | 457 | 457 | 457 | 457 |
| 52 | LANTERN RING | 2 | 676-1462 | 512 | 512 | 512 | 512 |
| 53 | SEAL | 2 | 712-0468 | 755 | 764 | 756 | 764 |
| 54 | COLLAR | 2 | 224-0004 | 208 | 208 | 010 | 104 |
| 55 | SETSCREW | 4 | 724-0081 | 104 | 104 | 104 | 104 |
| 56 | BUSHING | 2 | 136-1002 | 208 | 208 | 010 | 104 |
| | SLEEVE WITH "O" RING PC. NO. 58 (NOTE 1) | | | | | | |
| 57 | SLEEVE (PACKING) | 1 | 756-0646 | 644 | 644 | 646 | 623 |
| | (SEALS) | 1 | 756-0646 | 644 | 644 | 623 | 623 |
| 58 | O-RING | 1 | 364-0388 | 457 | 457 | 457 | 457 |
| 59 | IMPELLER | | | | | | |
| | 8x10x21 | 1 | 443-2432 | 208 | 208 | 010 | 104 |
| | 8x10x21A | 1 | 443-2662 | 208 | 208 | 010 | 104 |
| | 10x12x12B | 1 | 443-0650 | 208 | 208 | 010 | 104 |
| | 10x12x15B | 1 | 443-0651 | 208 | 208 | 010 | 104 |
| | 10x12x15C | 1 | 443-0841 | 208 | 208 | 010 | 104 |
| | 10x12x18 | 1 | 443-0652 | 225 | 225 | 010 | 104 |
| | IMPELLER (FITTED | | FOR S.F. CONSTRUCTION | | | | |
| | WITH OPT. IMP. | | USE MATERIAL 655 | | | | |
| | RING NO. 61) | | | | | | |
| | 8x10x21 | 1 | 443-2457 | 643 | 643 | 642 | 646 |
| | 8x10x21A | 1 | 443-2663 | 643 | 643 | 642 | 646 |
| | 10x12x12B | 1 | 443-1023 | 643 | 643 | 642 | 646 |
| | 10x12x15B | 1 | 443-1024 | 643 | 643 | 642 | 646 |
| | 10x12x15C | 1 | 443-2474 | 643 | 643 | 642 | 646 |
| | 10x12x18 | 1 | 443-2469 | 643 | 643 | 642 | 646 |

NOTE 1) MATERIAL CODE 644 - SLEEVE 208, "O" RING 457
646 - SLEEVE 108, "O" RING 457
623 - SLEEVE 104, "O" RING 457

# MODELS 1810, 1820, 1840 PARTS LIST
## 8 x 10 x 21, 8 x 10 x 21A, 10 x 12 x 12B, 10 x 12 x 15B&C, 10 x 12 x 18

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 61 | IMP. RING (OPT.) | ALSO ORDER #78 SETSCREW | | | | | |
| | | | BEFORE 10/1/85 | | | | |
| | 8x10x21 | 2 | 676-1757 | 208 | 208 | 010 | 104 |
| | 10x12x12B | 2 | 676-1970 | 208 | 208 | 010 | 104 |
| | 10x12x15B&C | 2 | 676-1971 | 208 | 208 | 010 | 104 |
| | 10x12x18 | 2 | 676-1972 | 208 | 208 | 010 | 104 |
| | | | AFTER 10/1/85 | | | | |
| | 8x10x21 | 2 | 676-1757 | 208 | 208 | 010 | 104 |
| | 8x10x21A | 2 | 676-2013 | 208 | 208 | 010 | 104 |
| | 10x12x12B | 2 | 676-1970 | 208 | 208 | 010 | 104 |
| | 10x12x15B | 2 | 676-1971 | 208 | 208 | 010 | 104 |
| | 10x12x15C | 2 | 676-2047 | 208 | 208 | 010 | 104 |
| | 10x12x18 | 2 | 676-2041 | 208 | 208 | 010 | 104 |
| 62 | O-RING | 1 | 364-0388 | 457 | 457 | 457 | 457 |
| 63 | KEY | 1 | 472-0414 | 107 | 107 | 107 | 107 |
| | BEFORE JULY 1990 | | | | | | |
| 64 | SLEEVE (PACKING) | 1 | 756-0384 | 208 | 208 | 108 | 104 |
| | (SEALS) | 1 | 756-0384 | 208 | 208 | 104 | 104 |
| | SLEEVE WITH "O" RING PC. NO. 62 (NOTE 1) | | | | | | |
| 64 | SLEEVE (PACKING) | 1 | 756-0646 | 644 | 644 | 646 | 623 |
| | (SEALS) | 1 | 756-0646 | 644 | 644 | 623 | 623 |
| 65 | SHAFT | 1 | 728-0502 | 076 | 109 | 076 | 109 |
| 66 | PIN | 2 | 592-0361 | 360 | | 360 | |
| | | 2 | 592-0051 | | 235 | | 235 |
| 67 | PIN | 2 | 592-0375 | 360 | 107 | 360 | 107 |
| 68 | PIN | | NOT REQUIRED | | | | |
| 69 | CASING ASSEMBLY | | | | | | |
| | (1, 2, 8, 26, 27, 66) | | | | | | |
| | 8x10x21 411 | 1 | 179-2328 | 010 | 208 | 010 | 104 |
| | 8x10x21A | 1 | 179-2464 | 010 | 208 | 010 | 104 |
| | 8x10x21 412C & 413C | 1 | 179-2330 | 010 | 208 | 010 | 104 |
| | 8x10x21A | 1 | 179-2466 | 010 | 208 | 010 | 104 |
| | 10x12x12B 411 | 1 | 179-2051 | 010 | 208 | 010 | 104 |
| | 10x12x12B | | | | | | |
| | 412 & 413 | 1 | 179-2315 | 010 | 208 | 010 | 104 |
| | 10x12x15B&C 411 | 1 | 179-2053 | 010 | 208 | 010 | 104 |
| | 10x12x15B&C | | | | | | |
| | 412C, 413C | 1 | 179-0310 | 010 | 208 | 010 | 104 |
| | 10x12x18 411 | 1 | 179-2055 | 010 | 208 | 010 | 104 |
| | 10x12x18 411B | 1 | 179-2317 | 010 | 208 | 010 | 104 |
| | 10x12x18 | | | | | | |
| | 412C & 413C | 1 | 179-0312 | 010 | 208 | 010 | 104 |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 70 | DRIVE SCREW | 2 | 708-0013 | 365 | 365 | 365 | 365 |
| 71 | NAMEPLATE | 1 | 532-0045 | 114 | 114 | 114 | 114 |
| 73 | CAPSCREW | 4 | 168-0566 | 082 | 082 | 082 | 082 |
| 74 | BRACKET | | REFER TO FACTORY | | | | |
| 75 | CAPSCREW | | | | | | |
| | 8x10x21 & 21A | 4 | 168-0636 | 082 | 082 | 082 | 082 |
| | 10x12x12B | 5 | 168-0634 | 082 | 082 | 082 | 082 |
| | 10x12x15B&C | 4 | 168-0636 | 082 | 082 | 082 | 082 |
| | 10x12x18 | 4 | 168-0636 | 082 | 082 | 082 | 082 |
| 76 | CAPSCREW | | | | | | |
| | 8x10x21 & 21A | 4 | 168-0636 | 082 | 082 | 082 | 082 |
| | 10x12x12B | 5 | 168-0634 | 082 | 082 | 082 | 082 |
| | 10x12x15B&C | 4 | 168-0636 | 082 | 082 | 082 | 082 |
| | 10x12x18 | 4 | 168-0636 | 082 | 082 | 082 | 082 |
| 77 | BASE (MODELS | | | | | | |
| | 412 & 413) | | | | | | |
| | 10x12x12B | 1 | 060-1292 | 010 | 010 | 010 | 010 |
| * | BASE | | (NOT ILLUSTRATED) | | | | |
| | MODEL 411B | | REFER TO FACTORY | | | | |
| | MODEL 412C | | | | | | |
| | 8x10x21 & 21A | 1 | 060-1335 | 087 | 087 | 087 | 087 |
| | 10x12x12B | | | | | | |
| | 10x12x15B&C | | | | | | |
| | 10x12x18 | 1 | 060-1298 | 087 | 087 | 087 | 087 |
| | MODEL 413C | | | | | | |
| | 8x10x21 & 21A | 1 | 060-1336 | 087 | 087 | 087 | 087 |
| | 10x12x12B | | | | | | |
| | 10x12x15B&C | | | | | | |
| | 10x12x18 | 1 | 060-1328 | 087 | 087 | 087 | 087 |
| 78 | SETSCREW | | | | | | |
| | 8x10x21 & 21A | 6 | 724-0027 | 104 | 104 | 104 | 104 |
| | 10x12x12B | | | | | | |
| | 10x12x15B&C | | | | | | |
| | 10x12x18 | 8 | 724-0027 | 104 | 104 | 104 | 104 |
| 80 | REGISTER PLATE | | (NOT ILLUSTRATED) | | | | |
| | MODEL 413C | 1 | 008-0591 | 087 | 087 | 087 | 087 |

*411B – BOTTOM SUCTION PUMP. 412C – CHAIR MOUNTED PUMPS.

# MODELS 1810, 1820, 1840 PARTS LIST
## 10 x 12 x 18D

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 1 | PLUG | 3 | 600-0004 | 028 | | 028 | |
| 2 | PLUG | 2 | 600-0002 | 087 | | 087 | |
| 6 | CAPSCREW | 32 | 168-0638 | 082 | | 082 | |
| 7 | CAPSCREW | 4 | 168-0500 | 082 | | 082 | |
| 8 | UPPER CASING | | INCLUDED WITH NO. 69 | | | | |
| 9 | GASKET | 1 | 364-2168 | 598 | | 598 | |
| 10 | GREASE FITTING | 2 | 508-0015 | 651 | | 651 | |
| 12 | PLUG | 2 | 600-0001 | 087 | | 087 | |
| 18 | NUT | 4 | 544-0113 | 190 | | 104 | |
| 19 | WASHER | 4 | 908-0114 | 080 | | 080 | |
| 20 | CLAMP | 4 | 204-7001 | 360 | | 360 | |
| 21 | GLAND | 2 | 372-7009 | 010 | | 010 | |
| 22 | SWING BOLT | 4 | 100-2013 | 360 | | 360 | |
| 23 | PACKING | 12 | 564-0181 | 802 | | 802 | |
| 24 | KEY | 1 | 472-0366 | 087 | | 087 | |
| 25 | CAPSCREW | 4 | 168-0638 | 082 | | 082 | |
| 26 | BEARING CAP | 2 | 163-0309 | 010 | | 010 | |
| 27 | PIN | 2 | 592-0361 | 360 | | 360 | |
| 28 | CASE RING | 2 | 676-2140 | 208 | | 010 | |
| 29 | PROTECTOR | 1 | 624-0111 | 087 | | 087 | |
| 31 | CAPSCREW | 4 | 168-0260 | 082 | | 082 | |
| 32 | CARTRIDGE CAP | 1 | 164-0352 | 010 | | 010 | |
| 34 | GASKET | 1 | 364-1312 | 614 | | 614 | |
| 35 | RETAINING RING | 1 | 676-0382 | 088 | | 088 | |
| 35A | RETAINING RING | 1 | 676-0925 | 088 | | 088 | |
| 36 | CARTRIDGE | 1 | 176-0001 | 010 | | 010 | |
| 37 | GREASE SEAL | 1 | 712-6331 | 653 | | 653 | |
| | OIL SEAL | 1 | 712-6331 | 653 | | 653 | |
| 38 | BEARING | 1 | 068-0362 | 647 | | 647 | |
| 39 | SLINGER | 1 | 764-0178 | 478 | | 478 | |
| 41 | CAPSCREW | 4 | 168-0260 | 082 | | 082 | |
| 42 | CARTRIDGE CAP | 1 | 164-0352 | 010 | | 010 | |
| 43 | GREASE SEAL | 1 | 712-6330 | 653 | | 653 | |
| | OIL SEAL | 1 | 712-6330 | 653 | | 653 | |
| 44 | GASKET | 1 | 364-1312 | 614 | | 614 | |
| 45 | CARTRIDGE | 1 | 176-0001 | 010 | | 010 | |
| 46 | GREASE SEAL | 1 | 712-6331 | 653 | | 653 | |
| | OIL SEAL | 1 | 712-6331 | 653 | | 653 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 47 | BEARING | 1 | 068-1912 | 647 | | 647 | |
| 48 | SLINGER | 1 | 764-0178 | 478 | | 478 | |
| 49 | GLAND | 2 | 372-7032 | 010 | | 010 | |
| 50 | O-RING | 2 | 364-0384 | 457 | | 457 | |
| 52 | LANTERN RING | 2 | 676-7030 | 509 | | 509 | |
| 53 | SEAL | 2 | 712-0471 | 755 | | 756 | |
| 54 | COLLAR | 2 | 224-0006 | 208 | | 010 | |
| 55 | SETSCREW | 4 | 724-0089 | 104 | | 104 | |
| 56 | BUSHING | 2 | 136-1672 | 208 | | 010 | |
| 57 | SLEEVE (PACKING) | 1 | 756-0774 | 644 | | 646 | |
| | (SEALS) | 1 | 756-0774 | 644 | | 623 | |
| 58 | O-RING | 1 | 364-0384 | 457 | | 457 | |
| 59 | IMPELLER | 1 | 443-2986 | 225 | | 010 | |
| 60 | SLEEVE PIN | 2 | 592-0008 | 104 | | 104 | |
| 61 | IMP. RING (OPT.) | | ALSO ORDER #78 SETSCREW | | | | |
| | | 2 | 676-2139 | 208 | | 010 | |
| 62 | O-RING | 1 | 364-0384 | 457 | | 457 | |
| 63 | KEY | 1 | 472-7048 | 107 | | 107 | |
| 64 | SLEEVE (PACKING) | 1 | 756-0774 | 644 | | 646 | |
| | (SEALS) | 1 | 756-0774 | 644 | | 623 | |
| 65 | SHAFT | 1 | 728-7306 | 076 | | 076 | |
| 66 | PIN | 2 | 592-0310 | 360 | | 360 | |
| | | 2 | 592-0032 | | | | |
| 67 | PIN | 2 | 592-0375 | 360 | | 360 | |
| 68 | PIN | | NOT REQUIRED | | | | |
| 69 | CASING ASSEMBLY | 1 | 179-2422 | 010 | | 010 | |
| 70 | DRIVE SCREW | 2 | 708-0013 | 365 | | 365 | |
| 71 | NAMEPLATE | 1 | 532-0045 | 114 | | 114 | |
| 72 | SETSCREW | 4 | 724-0643 | 113 | | 113 | |
| 73 | CAPSCREW | 4 | 168-0566 | 082 | | 082 | |
| 74 | BRACKET | | REFER TO FACTORY | | | | |
| 75 | CAPSCREW | 4 | 168-0636 | 082 | | 082 | |
| 76 | CAPSCREW | 4 | 168-0636 | 082 | | 082 | |
| 77 | BASE | | | | | | |
| | MODEL 412C | 1 | 060-1553 | 087 | | 087 | |
| | MODEL 413C | 1 | 060-1574 | 087 | | 087 | |
| 78 | SETSCREW | | NOT REQUIRED | | | | |
| 79 | SLEEVE COLLAR | 2 | 544-7007 | 208 | | 108 | |
| 80 | REGISTER PLATE | 1 | 008-0591 | 087 | | 087 | |

# MODELS 1810, 1820, 1840 PARTS LIST
## 12 x 14 x 15B, 12 x 14 x 18A, 14 x 16 x 18

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 1 | PLUG | 3 | 600-0004 | 087 | 190 | 087 | 104 |
| 2 | PLUG | 2 | 600-0002 | 087 | 190 | 087 | 104 |
| 6 | CAPSCREW | 32 | 168-0638 | 082 | 190 | 082 | 104 |
| | 12x14x18A & | | | | | | |
| | 14x16x18 | 36 | 168-0790 | 082 | 190 | 082 | 104 |
| 7 | CAPSCREW | 4 | 168-0163 | 082 | 082 | 082 | 104 |
| 8 | CASING HALF | | INCLUDED WITH NO. 69 | | | | |
| 9 | GASKET | | | | | | |
| | 8x12x24 | 1 | 364-2171 | 598 | 598 | 598 | 598 |
| | 12x14x15B | 1 | 364-0806 | 598 | 598 | 598 | 598 |
| | 12x14x18A | 1 | 364-0807 | 598 | 598 | 598 | 598 |
| | 14x16x18 | 1 | 364-0808 | 598 | 598 | 598 | 598 |
| 10 | GREASE FITTING | 2 | 508-0010 | 651 | 651 | 651 | 651 |
| 11 | GREASE FITTING | | INCLUDED WITH NO. 10 | | | | |
| 12 | PLUG | 2 | 600-0001 | 087 | 087 | 087 | 087 |
| 18 | NUT | 4 | 544-0113 | 080 | 190 | 080 | 104 |
| 19 | WASHER | 4 | 908-0114 | 080 | 190 | 080 | 104 |
| 20 | GLAND CLAMP | 4 | 204-0121 | 360 | 190 | 360 | 104 |
| 21 | GLAND (PACKING) | 2 | 372-0280 | 010 | 208 | 010 | 104 |
| 22 | SWING BOLT | 4 | 100-2013 | 360 | 190 | 360 | 104 |
| 23 | PACKING | 14 | 564-0180 | 802 | 802 | 802 | 802 |
| 24 | KEY | 1 | 472-0394 | 087 | 087 | 087 | 087 |
| 25 | CAPSCREW | 4 | 168-0642 | 082 | 190 | 082 | 104 |
| 26 | BEARING CAP | 2 | 163-0334 | 010 | | 010 | |
| 27 | PIN | 2 | 592-0366 | 360 | 107 | 360 | 107 |
| 28 | CASE RING | | | | | | |
| | 8x12x24 | 2 | 676-7125 | 208 | 208 | 010 | 107 |
| | 12x14x15B | 2 | 676-1985 | 208 | 208 | 010 | 107 |
| | 12x14x18A | 2 | 676-2056 | 208 | 208 | 010 | 107 |
| | 14x16x18 | 2 | 676-1969 | 208 | 208 | 010 | 107 |
| 29 | PROTECTOR | 1 | 624-0111 | 087 | 087 | 087 | 087 |
| 31 | CAPSCREW | 4 | 168-0388 | 082 | 082 | 082 | 082 |
| 32 | CARTRIDGE CAP | 1 | 164-0499 | 010 | 010 | 010 | 010 |
| 34 | GASKET | 1 | 364-1330 | 614 | 614 | 614 | 614 |
| 35 | RETAINING RING | 1 | 676-0295 | 088 | 088 | 088 | 088 |
| 35A | RETAINING RING | 1 | 676-0926 | 088 | 088 | 088 | 088 |
| 36 | CARTRIDGE | 1 | 176-0002 | 010 | 010 | 010 | 010 |
| 37 | GREASE SEAL | 1 | 712-6332 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 712-0059 | 653 | 653 | 653 | 653 |
| 38 | BEARING | 1 | 068-0364 | 647 | 647 | 647 | 647 |
| 39 | SLINGER | 1 | 764-0177 | 478 | 478 | 478 | 478 |
| 41 | CAPSCREW | 4 | 168-0388 | 082 | 082 | 082 | 082 |

NOTE 1) MATERIAL CODE 644 - SLEEVE 208, "O" RING 457
646 - SLEEVE 108, "O" RING 457
623 - SLEEVE 104, "O" RING 457

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 42 | CARTRIDGE CAP | 1 | 164-0499 | 010 | 010 | 010 | 010 |
| 43 | GREASE SEAL | 1 | 712-6333 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 712-0058 | 653 | 653 | 653 | 653 |
| 44 | GASKET | 1 | 364-1330 | 614 | 614 | 614 | 614 |
| 45 | CARTRIDGE | 1 | 176-0002 | 010 | 010 | 010 | 010 |
| 46 | GREASE SEAL | 1 | 712-6332 | 653 | 653 | 653 | 653 |
| | OIL SEAL | 1 | 712-0059 | 653 | 653 | 653 | 653 |
| 47 | BEARING | 1 | 068-1914 | 647 | 647 | 647 | 647 |
| 48 | SLINGER | 1 | 764-0177 | 478 | 478 | 478 | 478 |
| 49 | GLAND (SEAL) | 2 | 372-0068 | 010 | 208 | 010 | 104 |
| 50 | O-RING | 2 | 364-0436 | 457 | 457 | 457 | 457 |
| 52 | LANTERN RING | 2 | 676-1943 | 010 | 208 | 010 | 104 |
| 53 | MECH. SEAL | 2 | 712-0471 | 755 | 764 | 756 | 764 |
| 54 | COLLAR | 2 | 224-0006 | 208 | 208 | 010 | 104 |
| 55 | SETSCREW | 4 | 724-0081 | 104 | 104 | 104 | 104 |
| 56 | BUSHING | 2 | 136-1602 | 208 | 208 | 010 | 104 |
| | SLEEVE WITH "O" RING PC. NO. 58 (NOTE 1) | | | | | | |
| 57 | SLEEVE (PACKING) | 1 | 756-0647 | 644 | 644 | 646 | 623 |
| | (SEALS) | 1 | 756-0647 | 644 | 644 | 623 | 623 |
| 58 | O-RING | 1 | 364-0390 | 457 | 457 | 457 | 457 |
| 59 | IMPELLER | | | | | | |
| | 8x12x24 | 1 | 443-3149 | 208 | 208 | 010 | 104 |
| | 12x14x15B | 1 | 443-0653 | 208 | 208 | 010 | 104 |
| | 12x14x15C | 1 | 443-3080 | 208 | 208 | 010 | 104 |
| | 12x14x18A | 1 | 443-2482 | 208 | 208 | 010 | 104 |
| | 14x16x18 | 1 | 443-0655 | 208 | 208 | 010 | 104 |
| | IMPELLER | | | | | | |
| | (FITTED WITH OPT. | | FOR S.F. CONSTRUCTION | | | | |
| | IMP. RING NO. 61) | | USE MATERIAL 655 | | | | |
| | 8x12x24 | 1 | 443-3150 | 643 | 643 | 642 | 646 |
| | 12x14x15B | 1 | 443-1026 | 643 | 643 | 642 | 646 |
| | 12x14x15C | 1 | 443-3084 | 643 | 643 | 642 | 646 |
| | 12x14x18A | 1 | 443-2481 | 643 | 643 | 642 | 646 |
| | 14x16x18 | 1 | 443-1028 | 643 | 643 | 642 | 646 |
| 61 | IMP. RING (OPT.) | | ALSO ORDER #78, SETSCREW | | | | |
| | 8x12x24 | 2 | 676-7124 | 208 | 208 | 010 | 104 |
| | 12x14x15B | 2 | 676-1973 | 208 | 208 | 010 | 104 |
| | 12x14x15C | 2 | 676-2124 | 208 | 208 | 010 | 104 |
| | 12x14x18A | 2 | 676-2055 | 208 | 208 | 010 | 104 |
| | 14x16x18 | 2 | 676-1975 | 208 | 208 | 010 | 104 |
| 62 | O-RING | 1 | 364-0390 | 457 | 457 | 457 | 457 |
| 63 | KEY | 1 | 472-0414 | 107 | 104 | 107 | 104 |
| 64 | SLEEVE WITH "O" RING PC. NO. 62 (NOTE 1) | | | | | | |
| | SLEEVE (PACKING) | 1 | 756-0647 | 644 | 644 | 646 | 623 |
| | (SEALS) | 1 | 756-0647 | 644 | 644 | 623 | 623 |
| 65 | SHAFT | 1 | 728-0503 | 076 | 109 | 076 | 109 |

## MODELS 1810, 1820, 1840 PARTS LIST
## 12 x 14 x 15B, 12 x 14 x 18A, 14 x 16 x 18

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL | | | |
|---|---|---|---|---|---|---|---|
| | | | | B.F. | A.B. | A.I. | S.S. |
| 66 | PIN | 2 | 592-0361 | 360 | | 360 | |
| | | 2 | 592-0051 | | 235 | | 235 |
| 67 | PIN | 2 | 592-0375 | 360 | 107 | 360 | 107 |
| 68 | PIN | | NOT REQUIRED | | | | |
| 69 | CASING ASSEMBLY | | | | | | |
| | 8x12x24 | 1 | 179-2526 | 010 | 208 | 010 | 104 |
| | 12x14x15B 411 | 1 | 179-2057 | 010 | 208 | 010 | 104 |
| | 12x14x15B 411B | 1 | 179-2319 | 010 | 208 | 010 | 104 |
| | 12x14x15B | | | | | | |
| | 412C, 413C | 1 | 179-2321 | 010 | 208 | 010 | 104 |
| | 12x14x18A 411 | 1 | 179-2337 | 010 | 208 | 010 | 104 |
| | 12x14x18A | | | | | | |
| | 412C, 413C | 1 | 179-2338 | 010 | 208 | 010 | 104 |
| | 14x16x18 411 | 1 | 179-2061 | 010 | 208 | 010 | 104 |
| | 14x16x18 | | | | | | |
| | 412C, 413C | 1 | 179-2323 | 010 | 208 | 010 | 104 |
| 70 | DRIVE SCREW | 2 | 708-0013 | 365 | 365 | 365 | 365 |
| 71 | NAMEPLATE | 1 | 532-0045 | 114 | 114 | 114 | 114 |
| 73 | CAPSCREW 413C | 4 | 168-0636 | 082 | 082 | 082 | 082 |
| 74 | BRACKET | | REFER TO FACTORY | | | | |
| 75 | CAPSCREW 412C | 4 | 168-0636 | 082 | 082 | 082 | 082 |
| | 413C | 4 | 168-0636 | 082 | 082 | 082 | 082 |
| 76 | CAPSCREW 412C | 4 | 168-0636 | 082 | 082 | 082 | 082 |
| | 413C | 4 | 168-0636 | 082 | 082 | 082 | 082 |
| * | BASE | | (NOT ILLUSTRATED) | | | | |
| | MODEL 411B | | REFER TO FACTORY | | | | |
| | MODEL 412C | | | | | | |
| | 12x14x15B | 1 | 060-1297 | 087 | 087 | 087 | 087 |
| | 12x14x18A | 1 | 060-1297 | 087 | 087 | 087 | 087 |
| | 14x16x18 | 1 | 060-1296 | 087 | 087 | 087 | 087 |
| | MODEL 413C | | | | | | |
| | 12x14x15B | 1 | 060-1327 | 087 | 087 | 087 | 087 |
| | 12x14x18A | 1 | 060-1327 | 087 | 087 | 087 | 087 |
| | 14x16x18 | 1 | 060-1326 | 087 | 087 | 087 | 087 |
| 78 | SETSCREW | 8 | 724-0027 | 104 | 104 | 104 | 104 |
| 80 | REGISTER PLATE | | (NOT ILLUSTRATED) | | | | |
| | MODEL 413C | 1 | 008-0591 | 087 | 087 | 087 | 087 |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL | | | |
|---|---|---|---|---|---|---|---|
| | | | | B.F. | A.B. | A.I. | S.S. |

**INSTRUCTION MANUAL**
**MODEL 1810, 1820 & 1840**

This repair manual is applicable to pump Models 1810, 1820 & 1840. All photos illustrate Model 1810.

## ATTENTION: SAFETY WARNINGS:

Read and understand all warnings before installation or servicing pump.

## OPERATIONAL LIMITS: *

Maximum Operating Pressure: 175 psi at Temperatures to 150° (65.6°C)
Maximum Operating Temperature: 225°F (107°C)

## SERVICE

Your Fairbanks Nijhuis™ pump requires no maintenance other than periodic inspection, lubrication and occasional cleaning. The intent of inspection is to prevent breakdown, thus obtaining optimum service life.

## LUBRICATION OF BEARINGS

Regreasable bearings will require periodic lubrication and this can be accomplished by using the zerk or lubrication fitting at each bearing. Lubricate the bearings at regular intervals using high quality grease. The initial bearing lubrication at Aurora is Chevron SRI Grease NLGI 2 (polyurea thickener) (Pentair Part Number 384-0002-639). Before lubricating the bearings, thoroughly flushing the old grease with the new grease is required. We recommend Chevron SRI Grease NLGI 2 (polyurea thickener) for follow-up relubrication after the flushing. Most major brands of Grade No. 2 ball bearing grease are satisfactory for pump operation in both wet and dry applications.

## CAUTION

Be aware that mixing of different brands or blends of grease should be avoided due to possible incompatibilities that could damage the bearings. A thorough flushing of the old grease with the new grease is required to minimize this potential incompatibility. Avoid using the following: (1) grease of vegetable or animal base that can develop acids or (2) grease containing rosin, graphite, talc or other impurities. Under no circumstances should grease be reused.

## CAUTION

Over lubrication should be avoided as it may result in overheating and possible bearing failure. Under normal application, adequate lubrication is assured if the amount of grease is maintained at 1/3 to 1/2 the capacity of the bearing and adjacent space surrounding the bearing.

In dry locations, each bearing will need lubrication at least every 4,000 hours of running time or every 6 to 12 months, whichever is more frequent. In wet locations the bearings will need lubrication at least after every 2,000 hours of running time or every 4 to 6 months, whichever is more frequent. A unit is considered to be installed in a wet location if the pump and motor are exposed to dripping water, to the weather, or to heavy condensation such as found in unheated and poorly ventilated underground locations.

## CALIFORNIA PROPOSITION 65 WARNING:

## WARNING

**This product and related accessories contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.**

## CAUTION

**Use normal fire caution procedures when using any petroleum cleaner.**

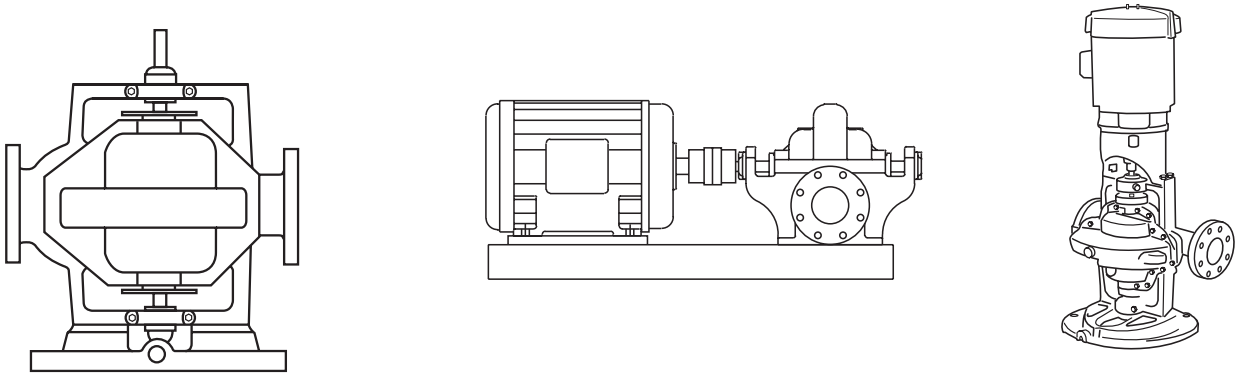
Model 1820 pumps are available with two options for lubricating the shaft bearings:

1. Re-greasable
2. Oil Lubrication

Oil lubricated bearings are standard on Model 1820 series pumps. A fixed oil level is maintained within the power frame of an oiler which allows visual indications of reserve oil.

At initial installation and before starting a unit that has been shut down for repairs or for any extended length of time, run enough 10W-30 weight motor oil through the oiler to maintain a constant oil level to insure that the bearing will never be without an oil supply. Oil will have to be added at intervals to maintain a constant level in the oiler. This interval can only be determined by experience.

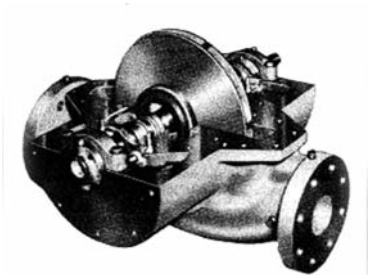
Under working conditions, oil will breakdown and need to be replaced at regular intervals. The length of these intervals will depend on many factors. Under normal operation, in clean and dry locations, the oil should be changed about once a year.



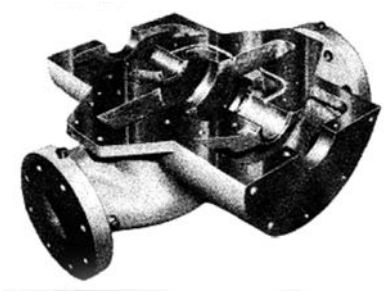
**Models 1810, 1820 and 1840**
A. Complete pump assemblies.

However, when the pump is exposed to dirt contamination, high temperatures (200F. or above) or a wet location, the oil may have to be changed every 2 or 3 months.

The motor that drives your pump may or may not require lubrication. Consult the manufacturer's recommendations for proper maintenance instructions.



B. Casing Half Removed



C. Rotating element removed from casing half.

## REPAIRS

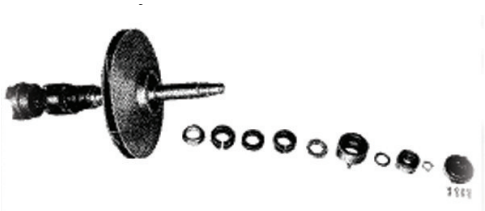
The pump may be disassembled using the illustrations and text provided. Although complete disassembly is covered, it will seldom be necessary to completely disassemble your pump.

The illustrations accompanying the disassembly instructions show the pump at various stages of disassembly. The illustrations are intended to aid in the correct identification of the parts mentioned in the text.

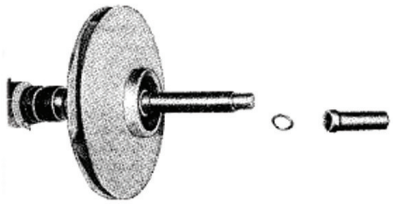
Inspect removed parts at disassembly to determine their reusability. Cracked castings should never be reused. All packing and gaskets should be replaced with new ones at reassembly simply as a matter of economy; they are much less expensive to replace routinely than to replace as the need accrues. In general it is economical to return to the manufacturer for repair only the motor and motor controller.

**DISSASSEMBLY OF THE PUMP** - Disassemble only what is needed to make repairs or accomplish inspection. Proceed to disassemble the pump as follows: (see figure 4 for Model 1820, Figure 5 for Model 1810 and Figure 6 for Model 1840.

1. Break the electrical connections to motor or take other steps needed to prevent drive unit from being unintentionally energized during disassembly.
2. Close such valves or flow-control devices necessary to make certain flow of liquid will no take place during disassembly.



D. Outboard rotating element components removed, illustrating disassembly order.



E. Sleeve and thrust washer removed.

**NOTE:**

**Discharge and suction piping need not be disturbed unless complete pump assembly is to be removed.**

3. Drain liquid from pump by removing plugs (1 and 2). Disconnect any flushing, cooling, by-pass lines that are connected to parts that will be removed.
4. Loosen and remove capscrews (6) securing casing halve (8) to remainder of pump assembly.

**NOTE:**

**If pump being disassembled is size 4x5x11 or larger, remove capscrews (7) also before attempting to separate casing halves If possible drain and/or flush pump to remove any corrosive or toxic liquid before attempting further disassembly. Many units will not have drain taps.**

5. Make certain all securing capscrews are removed, then carefully remove casing halve (8) using hoist or crane with a sling attached around cast hooks on the casing and under the casing.

## CAUTION

**Use extreme care when casing comes loose that it does not drop out of sling, as this would cause extensive damage to other components of pump.**

6. Remove gasket (9) and scrape mating surface of casing halves to remove pieces of gasket which have adhered in separation. Take care not to scratch or mar mating surface.
7. On Model 1820 and 1840 loosen flexible coupling and slide the halves apart. On Model 1810 pumps remove flexible shafting.
8. Remove four capscrews (25) SECURING TWO BEARING CAPS (26). Lift off bearing caps (26). Lift off bearing caps (26) and pins (27). Mark caps to insure correct replacement and orientation on the respective bearing arms.
9. Loosen and remove four nuts (18), washers (19), and gland clamps (20) securing split halves of two packing glands (21). Remove four swing bolts (22).
10. Assuming that further work is required on shaft and impeller assembly use properly secured rope sling and hoist or crane as required to lift it from casing halve (69) and place it on a suitable bench or work surface.

## CAUTION

**Take care not to dent or damage impeller and/or other parts. Use of a supporting cradle or work stand is recommended.**

**NOTE:**

**Disassembly procedure from this point covers pumps having standard packing. If pump has mechanical seals, refer to specific instructions.**

11. Remove and discard rings of packing (23). Replacement with new packing is recommended whenever pump is disassembled.
12. Slip off flexible coupling halve or spacer coupling and remove key (24). If preferred, the key may be removed by carefully tapping it from outer end with a brass drift or similar non-marring tool, using a small hammer.

13. Remove two casing wearing rings (28)
14. Remove zerks (10) and pipe plugs (12) from cartridge caps (32 and 42).
15. Loosen and remove four capscrews (31) from cartridge cap (32). The outboard shaft end protector (29) may be removed from its recess in the outboard cartridge cap if necessary. Remove retainer ring (35) with a pair of trauarc pliers. Also remove gasket (34).

**NOTE:**

**If the unit has a tandern shaft, protector (29) is not used.**

16. Outboard bearing (38) is press fitted into shaft (65). To remove it, place a puller on bearing cartridge (36) and pull cartridge, grease seal (37) and bearing from shaft. The grease seal can be pressed from the bearing cartridge if it needs replacing, then slide slinger (39), lantern ring (52) and bushing (56) off shaft (65).
17. Removal of inboard bearing is basically the same as for outboard bearing. Remove capscrews (41) and slide slinger (40), cartridge cap (42), grease seal (43) and gasket (44) off shaft.
18. Pull or press off bearing cartridge (45), grease seal (46) and bearing (47). Remove slinger (48), lantern ring (52) and bushing (56) from shaft.
19. If pump has right hand rotation, unscrew and remove outboard sleeve (57) first. Remove o-ring (58). If pump has left hand rotation unscrew and remove inboard sleeve (64) first. Remove o-ring (62).
20. Key (63) holds impeller (59) and either sleeve (64) if pump is right hand or sleeve (57 for left hand pump. These parts can be removed by pulling impeller from shaft (65) and removing key (63) from its position in keyway and sleeve. Unscrew and remove remaining sleeve and gasket.
21. Disassemble wearing ring (61) (optional) from impeller (59) only if necessary. On power frames 5, 6B and 7, remove setscrews (78). Apply a puller and gradually withdraw wearing rings (61) from impeller (59). Wearing rings may have to be cut or trimmed off the impeller. If a lathe is used to trim rings off, use care not to clamp impeller too tight and cause distortion. Also use care not to remove any metal from impeller.
22. Remove locking and locating pins (66, 67, and 68) from casing have (69) only if replacement is necessary.
23. Nameplate (71) and its securing screws (70) should only be removed if replacement is necessary.
24. For model 413 & 483 pumps unscrew capscrews (75) to remove motor and motor bracket (74) from casing have (69). The motor can be separated from motor bracket by removing capscrews (73).

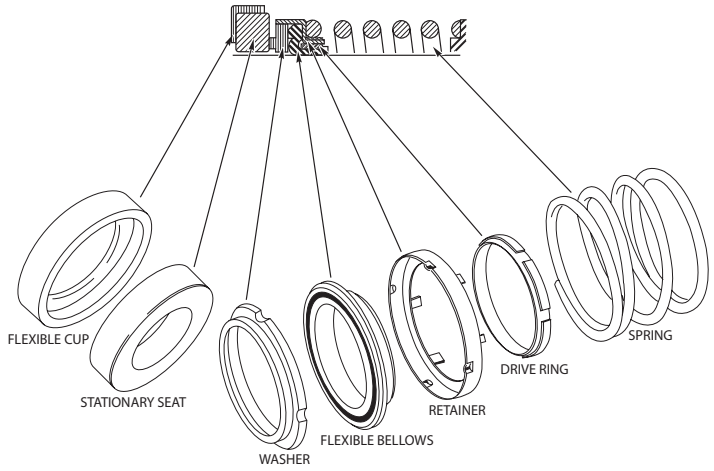
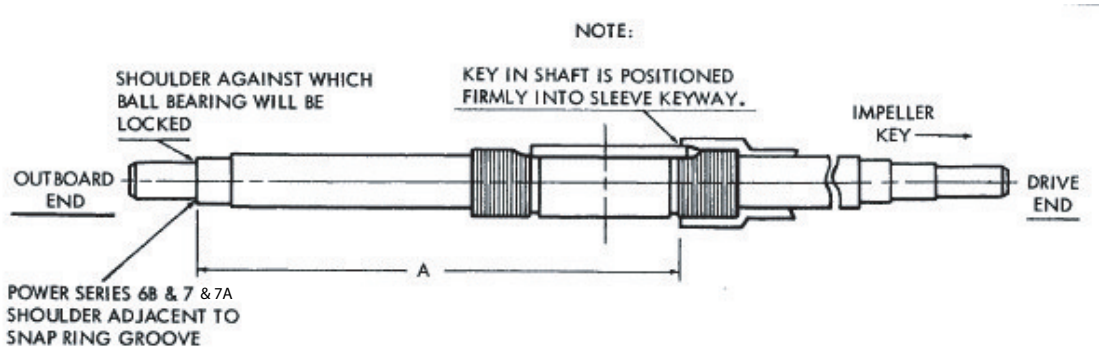



Figure 1. Mechanical Seal

25. If complete removal of pump is required, disconnect the suction and discharging piping from casing halve (69). Remove nuts from foundation bolts and lift pump casing halve (69) and base (77) out. When the casing halve and base are moved away from the piping, lay them on their side, so that, by removing capscrews (76) the base can be separated from casing halve (69).

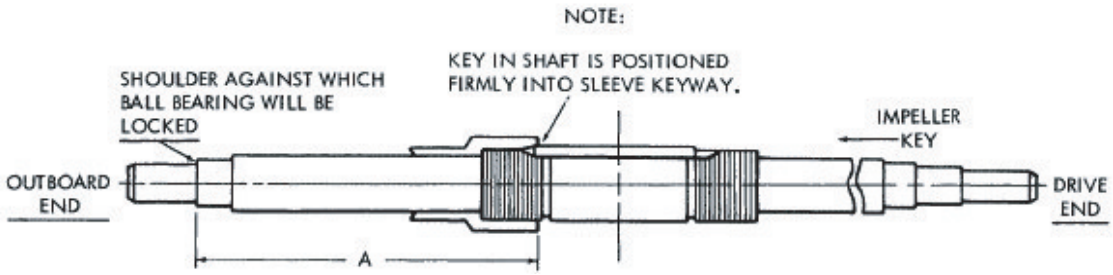



| Power Series | Pump Size | A |
|---|---|---|
| 1 | 2” 1823<br>2” 1842<br>2” 1825 | 8-15/64 |
| 2 | 2-1/2” 1823<br>2-1/2” 1824<br>3” 1824<br>3” 1825<br>4” 1822 | 10-31/64 |
| 3 | 4” 1823<br>4” 1824 | 11-11/64 |

| Power Series | Pump Size | A |
|---|---|---|
| 4 | 4” 1825<br>5” 1822<br>5” 1823<br>5” 1824<br>6” 1822<br>8” 1821 | 11-59/64 |
| 4A | 6” 1822HH | 14-1/64 |
| 5 | 6” 1823<br>6” 1824<br>6” 1825<br>8” 1822<br>8” 1823<br>8” 1824 | 13-31/64 |

| Power Series | Pump Size | A |
|---|---|---|
| 5A | 6” 1823HH | 15-23/32 |
| 6B | 8” 1825<br>10” 1822<br>10” 1823<br>10” 1824 | 15-31/32 |
| 7 | 12” 1823<br>12” 1824<br>14” 1824 | 18-3/64 |
| 7A | 10” 1924D | 18-51/64 |

Figure 2. Locating Shaft Sleeve on Shaft, Right Hand Rotation




| Power Series | Pump Size | A |
|---|---|---|
| 1 | 2” 1823<br>2” 1842<br>2” 1825 | 8-15/64 |
| 2 | 2-1/2” 1823<br>2-1/2” 1824<br>3” 1824<br>3” 1825<br>4” 1822 | 10-31/64 |
| 3 | 4” 1823<br>4” 1824 | 11-11/64 |

| Power Series | Pump Size | A |
|---|---|---|
| 4 | 4” 1825<br>5” 1822<br>5” 1823<br>5” 1824<br>6” 1822<br>8” 1821 | 11-59/64 |
| 4A | 6” 1822HH | 14-1/64 |
| 5 | 6” 1823<br>6” 1824<br>6” 1825<br>8” 1822<br>8” 1823<br>8” 1824 | 13-31/64 |

| Power Series | Pump Size | A |
|---|---|---|
| 5A | 6” 1823HH | 15-23/32 |
| 6B | 8” 1825<br>10” 1822<br>10” 1823<br>10” 1824 | 15-31/32 |
| 7 | 12” 1823<br>12” 1824<br>14” 1824 | 18-3/64 |
| 7A | 10” 1924D | 18-51/64 |

Figure 3. Locating Shaft Sleeve on Shaft, Left Hand Rotation.

## DISSASSEMBY OF A PUMP WITH MECHANICAL SEALS

1. Perform disassembly procedure as previously given through step 8.
2. Loosen and remove four nuts (18), and washers (19) thus freeing swing bolts (22) to allow shaft and impeller assembly to be lifted from casing halve (69) with sling and hoist or crane as described in paragraph 10 above.

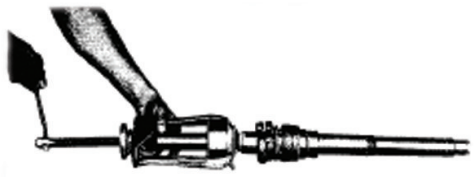
### CAUTION

**Use extreme care in moving this assembly, because sliding loose on the shaft can crack ceramic seats. To prevent this, wrap seal securely in a cloth to stop it from sliding on shaft.**

3. With shaft and impeller assembly on a suitable bench, cradle, or work stand, loosen and remove pipe plug (12) from inboard cartridge cap (42). Remove grease zerk (10) and capscrews (41) and slide cartridge cap with grease seal (43) off end of this shaft (65). Remove gasket (44)
4. Either pull or press bearing cartridge (45), grease seal (46) and bearing (47) off shaft. Remove slinger (48).



F. Impeller removed from outboard rotating element.



G. Removing bearing from shaft using conventional puller.

5. The on piece gland (49) used with mechanical seal assembly can now be removed from the shaft.
6. O-ring (50 can be removed from seal gland if desired

### CAUTION

7. **Exercise great care in removing seal assembly (53) to keep from marring or otherwise damaging precision ground mating surfaces.**
8. Scribe a mark on shaft sleeve for relocating seal collar on reassembly. Loosen setscrews (55), securing seal collars (54) to shaft sleeves and slide them off.
9. Proceed with further disassembly of outboard seal assembly using the same procedure.
10. After removal of mechanical seals, proceed with balance of disassembly in same manner as described for packing design.

## REASSEMBLY

Reassembly will generally be in reverse order of disassembly. If disassembly was not complete use only those steps related to your particular repair program.

1. For Model 1810 and 1840 pumps, reassemble base (77) to casing halve (69) with capscrews (76). Set these parts back on their foundation and connect them to the suction and discharge piping, then secure the base to its foundation by tightening nuts on foundation bolts.
2. Position locating pins (67) in lower casing (69), adding swing bolt pins (68), if used on your pump. Install wearing ring pins (66). Tap pins gently to seat them in place. If name plate (71) was removed, install it with screws (70). Install o-ring (62) in shaft sleeve
3. On right hand unit thread inboard sleeve (64) onto shaft (65) distance a (refer to figure 2). Onto the shaft a distance A (refer to figure 3). When the sleeve is in position its keyway should align with keyway on shaft. Coat key and keyway with Loctite sealant grade 242. Insert key (63) into keyways of shaft and sleeve. Tap it firmly in place.
4. Coat inside diameter of impeller wearing rings (61) (optional) with Loctite sealant grade 271 and press them over hubs of impeller (59). DO not attempt to hammer impeller wear rings into position, since they are press fit. Use of an arbor press is preferred. However, placing a block of wood over the impeller wearing ring and pressing it in will work satisfactorily. For power frames 5, 6B, and 7 only, two setscrews (78) will be installed by drilling into wearing rings and impeller. The opposite surface for the impeller should be protected from damage throughout the procedures by resting it against soft wood on the surface of workbench.



H. Shaft with sleeve and key in position.

## CAUTION

**Impeller wearing ring must be given special care because they press fit. Be sure rings are positioned squarely over the hub of impeller. A softheaded hammer may be used to gently tap impeller-wearing rings into correct alignment before they are pressed into place.**

5. Coat impeller (59) keyway with Loctite sealant grade 242 and slide onto shaft until it is firmly against the shaft sleeve. Place o-ring (58) in shaft sleeve (57) and thread shaft sleeve firmly against the impeller.

**NOTE**

**When assembling rotation element of an 1800 series pump, it is important than the curve of the impeller blades is in agreement with pump rotation (see insert in figures 4,5, and 6).**

## CAUTION

**Carefully check that proper shaft sleeve has been keyed into place for rotation of pump. If correct shaft sleeve is not keyed into shaft, it can spin loose during operation of pump and cause excessive damage.**

6. Install packing or mechanical seals and secure according to the following specific instructions.

### STANDARD PACKING

a. Slide a bushing (56) onto each end of shaft. The raised shoulder on these bushings must face away from impeller.
b. Pump sizes 2 x 2 ½ x 9, 2 x 2 ½ x 10, 2 x 2 ½ x 12 have one packing ring (23) in front of lantern ring (52). All other pump sizes have two packing rings in front of lantern ring. Stagger the joints in packing rings so pump will not leak excessively.

### MECHANICAL SEALS

a. Single seal and balanced single seals
    I. Slide one seal lock collar (54) with setscrews (55) facing the impeller onto each end of the shaft. Position on scribe mark made during disassembly and lock in place.
    II. Put a light coat of liquid dishwashing detergent on the shaft sleeve. Check rotating parts of seal to make sure they are clean. Spread a light coat of liquid detergent on inside diameters of flexible bellows and washers.
    III. Place the seal's spring, drive ring, retainer, flexible bellows, and washer on the shaft sleeve in respective order. (Refer to figure 1)
    IV. Thoroughly inspect cavity of seal gland (49) for burrs or nicks which would damage seat of the seal. Apply a film of liquid detergent to seal seat and install it in seal gland cavity, taking care to seat it evenly and squarely.

## CAUTION

**Never place a mechanical seal into service after it has been used without replacing or relapping stationary seat and washer faces.**

    V. Place O-rings (50) around the seal glands and slide seal glands onto the ends of the shaft.
b. Double Seal
    I. Place on seal seat in collar (54), the other one fits into seal gland (49). These parts are set into their cavities in the same manner as they are with a single seal.
    II. Place o-rings (51) around collars (54) and put the collars with stationary seats facing away from impeller on ends of the shaft, then slide flexible bellows, washers, and springs on the shaft in order shown in figure 1, for each half of double seal assembly (53).

III. Place o-rings (50) around the seal glands (49) and slide seal glands onto ends of the shaft with stationary seats facing impeller.

7. Place slinger (39) on outboard end of shaft.
8. Press grease seal (37) into bearing cartridge (36). On 6B and 7 Power Frames replace snap ring (35A) on inboard slide of bearing. Place outboard double row ball bearing (38) in bearing cartridge and press these parts onto outboard end of the shaft. Snap retainer ring (35) in place to secure outboard bearing. Place gasket (43) and cartridge cap (32) in position and secure with capscrews (31)

**NOTE**

**Model 1810 and 1840 - Both the grease zerk holes in bearing cartridges and the pipe plugholes in cartridge caps must be facing the front of pump when it is assembled.**

9. Protector (29) can be placed in the cartridge cap or if unit has a tandem shaft, press grease seal into cartridge cap and slide a slinger onto shaft.
10. Place slinger (48) on inboard end of the shaft.
11. Press grease seal (46) into bearing cartridge (45). Place the inboard ball bearing (47) in the bearing cartridge and press this assembly onto inboard end of the shaft.
12. Press grease seal (43) into cartridge cap (42). Position gasket (44) and cartridge cap against bearing cartridge and secure it in place with capscrews (41). Be sure to align grease zerk hole and pipe plughole to the front.
13. Place slinger (40) onto shaft place grease zerks (10) in bearing cartridges and pipe plugs (12) in bearing caps. If pump is oil lubricated, breather tubes are placed in bearing cartridges and oiler with nipples and elbows are placed in cartridge caps.
14. Slide casing wearing rings (28) over impeller wearing rings (61) and set rotating elements into casing halves (69). Make certain the holes that are drilled in bottom of surface of casing wearing rings locate over pins (66) previously set in casing halve (69). Grease zerks or breather tube should face outward.
15. Install key (24) in motor end of shaft (65). Check positioning and alignment of packing rings or seal components and install swing bolts (22) and split gland halves (21) if the pump has packing. Place in position clamps (20), washers (19), and nuts (18) securing loosely in place. Swing bolts (22) are set over pins (68) on 4x5x10 or smaller pumps. On larger pumps swing bolts are held in place by capscrews (7) after casing have (8) is in position.
16. Place pins (27) into bearing cartridges. Place bearing caps (26) in position and secure with capscrews (25)
17. Position new casing gaskets (9) on casing halve (69). Set casing halve (8) in place and secure it to casing halve (69) with capscrews (6). Pins (67) are used as means of locating position of the two casing halves.
18. On pumps larger than 4x5x10, thread in capscrews (7) making sure they are placed through the eyes of swing bolts (22).
19. Place drain plugs (1) and (2_) back in the casing halves.
20. On model and 1840 pumps, set the motor on motor bracket (74) and fasten them together with capscrews (73). Slide the flexible coupling halves onto the pump and motor shafts. Attach motor bracket to casing have (69) with capscrews (75). Connect flexible coupling halves. On model 1810 pumps, attach flexible shafting. Ideal joint operating angle is 1" to 5". On Model 1820 pumps, if lower casing was removed from the base, see section on installation for proper methods of realigning pump to motor and piping.
21. Replace any flushing, cooling, by-pass or drain lines that were removed from the pump. Connect electricity back to the motor.

**STARTING PUMP AFTER REASSEMBLY** – Do not start pump until all air and vapor have been blend and making sure that there is liquid in pump to provide necessary lubrication.

**NOTE**

**Do not over tighten standard packing assembly before returning unit to operation. Jog the pump to check for proper rotation. Then allow pump to run for a short time, gradually tighten nuts (18) until dripping has been reduced to its normal level.**

**Model 1820 List of Parts (See Figure 4)**

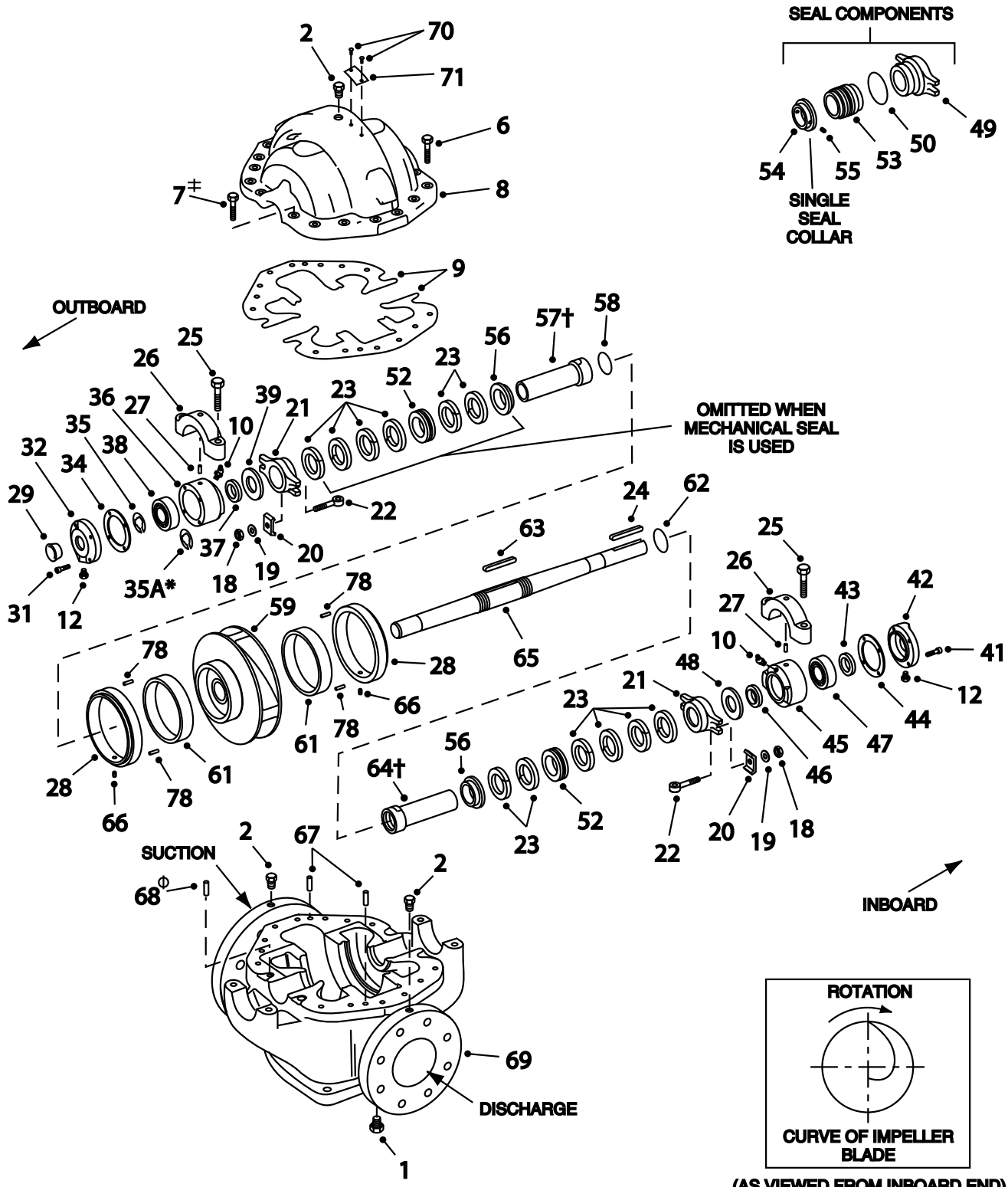
| | | | |
|---|---|---|---|
| 1. Plug | 26. Bearing Cap | 43. Grease Seal | 59. Impeller |
| 2. Plug | 27. Pin | 44. Gasket | 60. Sleeve Pin |
| 6. Capscrew | 28. Wearing Ring | 45. Cartridge | 61. Wearing Ring |
| 7. Capscrew | 29. Protector | 46. Grease Seal | 62. O-Ring |
| 8. Casing | 31. Capscrew | 47. Bearing | 63. Key |
| 9. Gasket | 32. Cartridge Cap | 48. Slinger | 64. Sleeve |
| 10. Grease Fitting | 34. Gasket | 49. Gland | 65. Shaft |
| 12. Plug | 35. Retaining Ring | 50. O-Ring | 66. Pin |
| 18. Nut | 35A. Retaining Ring | 51. O-Ring | 67. Pin |
| 19. Washer | 36. Cartridge | 52. Lantern Ring | 68. Pin |
| 20. Clamp | 37. Grease Seal | 53. Seal | 69. Casing |
| 21. Gland Half | 38. Bearing | 54. Collar | 70. Drivescrew |
| 22. Swing Bolt | 39. Slinger | 55. Setscrew | 71. Nameplate |
| 23. Packing | 40. Slinger | 56. Bushing | 72. Setscrew |
| 24. Key | 41. Capscrew | 57. Sleeve | 78. Setscrew |
| 25. Capscrew | 42. Cartridge Cap | 58. O-Ring | 79. Sleeve Collar |

**Model 1810 List of Parts (See Figure 5)**

| | | | |
|---|---|---|---|
| 1. Plug | 26. Bearing Cap | 43. Grease Seal | 59. Impeller |
| 2. Plug | 27. Pin | 44. Gasket | 60. Sleeve Pin |
| 6. Capscrew | 28. Wearing Ring | 45. Cartridge | 61. Wearing Ring |
| 7. Capscrew | 29. Protector | 46. Grease Seal | 62. O-Ring |
| 8. Casing | 31. Capscrew | 47. Bearing | 63. Key |
| 9. Gasket | 32. Cartridge Cap | 48. Slinger | 64. Sleeve |
| 10. Grease Fitting | 34. Gasket | 49. Gland | 65. Shaft |
| 12. Plug | 35. Retaining Ring | 50. O-Ring | 66. Pin |
| 18. Nut | 35A. Retaining Ring | 51. O-Ring | 67. Pin |
| 19. Washer | 36. Cartridge | 52. Lantern Ring | 68. Pin |
| 20. Clamp | 37. Grease Seal | 53. Seal | 69. Casing |
| 21. Gland Half | 38. Bearing | 54. Collar | 70. Drivescrew |
| 22. Swing Bolt | 39. Slinger | 55. Setscrew | 71. Nameplate |
| 23. Packing | 40. Slinger | 56. Bushing | 72. Setscrew |
| 24. Key | 41. Capscrew | 57. Sleeve | 78. Setscrew |
| 25. Capscrew | 42. Cartridge Cap | 58. O-Ring | 79. Sleeve Collar |

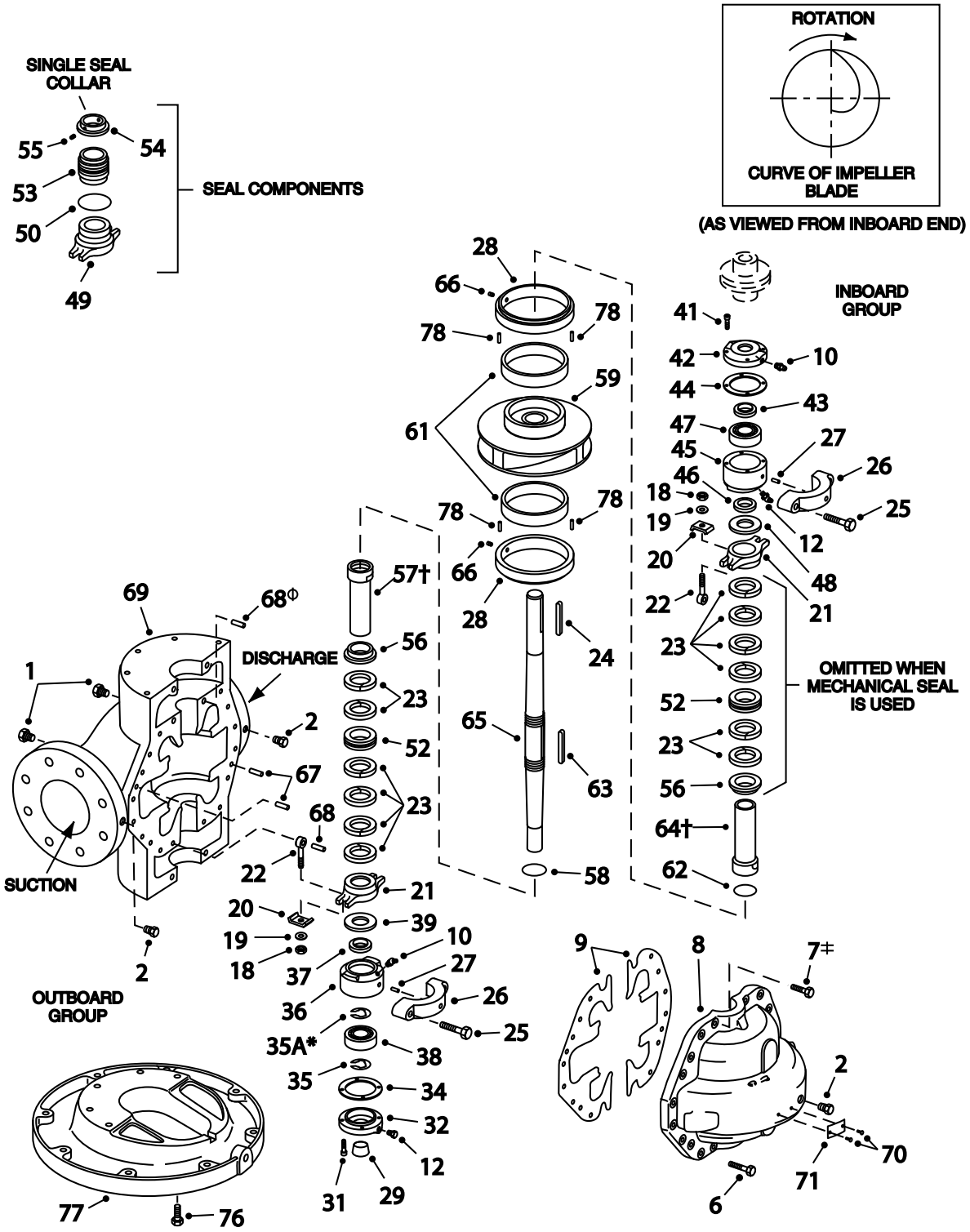
**Model 1840 List of Parts (See Figure 6)**

| | | | |
|---|---|---|---|
| 1. Plug | 26. Bearing Cap | 43. Grease Seal | 59. Impeller |
| 2. Plug | 27. Pin | 44. Gasket | 60. Sleeve Pin |
| 6. Capscrew | 28. Wearing Ring | 45. Cartridge | 61. Wearing Ring |
| 7. Capscrew | 29. Protector | 46. Grease Seal | 62. O-Ring |
| 8. Casing | 31. Capscrew | 47. Bearing | 63. Key |
| 9. Gasket | 32. Cartridge Cap | 48. Slinger | 64. Sleeve |
| 10. Grease Fitting | 34. Gasket | 49. Gland | 65. Shaft |
| 12. Plug | 35. Retaining Ring | 50. O-Ring | 66. Pin |
| 18. Nut | 35A. Retaining Ring | 51. O-Ring | 67. Pin |
| 19. Washer | 36. Cartridge | 52. Lantern Ring | 68. Pin |
| 20. Clamp | 37. Grease Seal | 53. Seal | 69. Casing |
| 21. Gland Half | 38. Bearing | 54. Collar | 70. Drivescrew |
| 22. Swing Bolt | 39. Slinger | 55. Setscrew | 71. Nameplate |
| 23. Packing | 40. Slinger | 56. Bushing | 72. Setscrew |
| 24. Key | 41. Capscrew | 57. Sleeve | 78. Setscrew |
| 25. Capscrew | 42. Cartridge Cap | 58. O-Ring | 79. Sleeve Collar |




* POWER FRAMES 6B, 7A & 7 ONLY.
‡ PC. NO. 7 NOT REQUIRED FOR PS #1 & #2. REFER PC. NO. 68.
Φ PC. NO. 68 FOR PS #1 & #2 ONLY. FOR OTHER PS REFER PC. NO. 7.
† FOR 10x12x18D, SHAFT SLEEVE CONSISTS OF PC. NO. 79, PC. NO. 60, PC. NO. 64 AND PC. NO. 72.

**WHEN ORDERING SPARE PARTS ALWAYS INCLUDE THE PUMP TYPE, SIZE, SERIAL NUMBER AND THE PIECE NUMBER FROM THE EXPLODED VIEW IN THIS MANUAL.**




* POWER FRAMES 6B, 7A & 7 ONLY.
≠ PC. NO. 7 NOT REQUIRED FOR PS #1 & #2. REFER PC. NO. 68.
Φ PC. NO. 68 FOR PS #1 & #2 ONLY. FOR OTHER PS REFER PC. NO. 7.
† FOR 10x12x18D, SHAFT SLEEVE CONSISTS OF PC. NO. 79, PC. NO. 60, PC. NO. 64 AND PC. NO. 72.

Figure 5. Model 1810 Exploded View.

**WHEN ORDERING SPARE PARTS ALWAYS INCLUDE THE PUMP TYPE, SIZE, SERIAL NUMBER AND THE PIECE NUMBER FROM THE EXPLODED VIEW IN THIS MANUAL.**

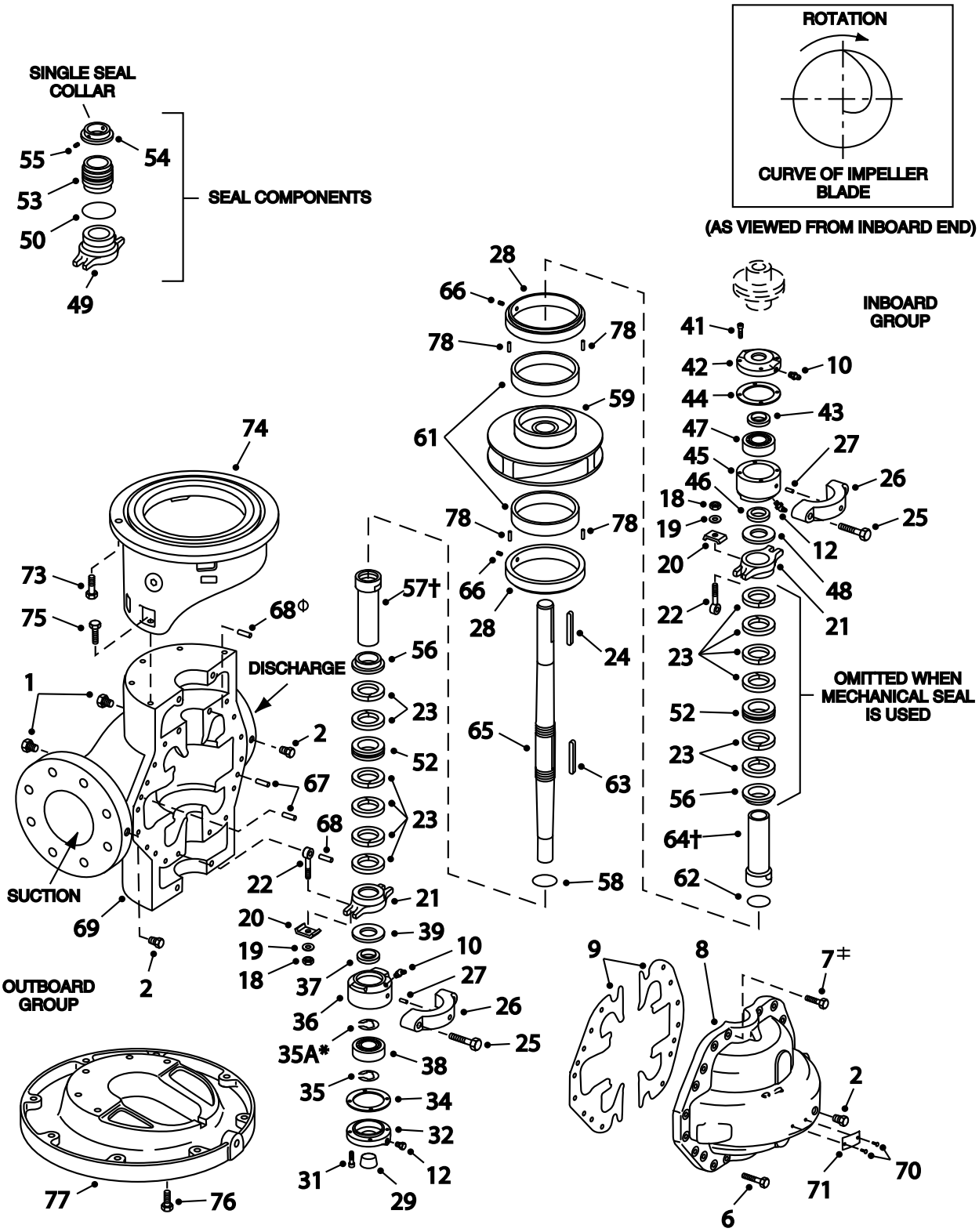



Figure 6 Model 184 Exploded View.

**WHEN ORDERING SPARE PARTS ALWAYS INCLUDE THE PUMP TYPE, SIZE, SERIAL NUMBER AND THE PIECE NUMBER FROM THE EXPLODED VIEW IN THIS MANUAL.**

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