

# **SKID-STEER ROTARY HEAD**

72"(1829MM) ROTARY HEAD

DOC #15-1377

SERIAL #33906+

**WARRANTY + SERVICE** 888.960.0364

**PARTS** 888.960.0361



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# TABLE OF CONTENTS

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## CUTTER ASSEMBLIES

|                                          |    |
|------------------------------------------|----|
| DECK ASSEMBLY - HIGH FLOW.....           | 4  |
| DECK ASSEMBLY - STD FLOW.....            | 6  |
| MOTOR - DECK SUBASSEMBLY, HIGH FLOW..... | 8  |
| MOTOR - DECK SUBASSEMBLY, STD FLOW.....  | 10 |
| SPINDLE - DECK SUBASSEMBLY.....          | 12 |
| CHAIN CURTAIN ASSEMBLY.....              | 13 |
| DECAL ASSEMBLY.....                      | 14 |

## DECK ASSEMBLIES

|                                 |    |
|---------------------------------|----|
| MOTOR ASSEMBLY - 30-0518.....   | 16 |
| MOTOR ASSEMBLY - 30-0524.....   | 17 |
| MOTOR ASSEMBLY - 30-0528.....   | 18 |
| MOTOR ASSEMBLY - 30-0529.....   | 19 |
| SPINDLE ASSEMBLY - 35-0204..... | 20 |

## APPENDIX

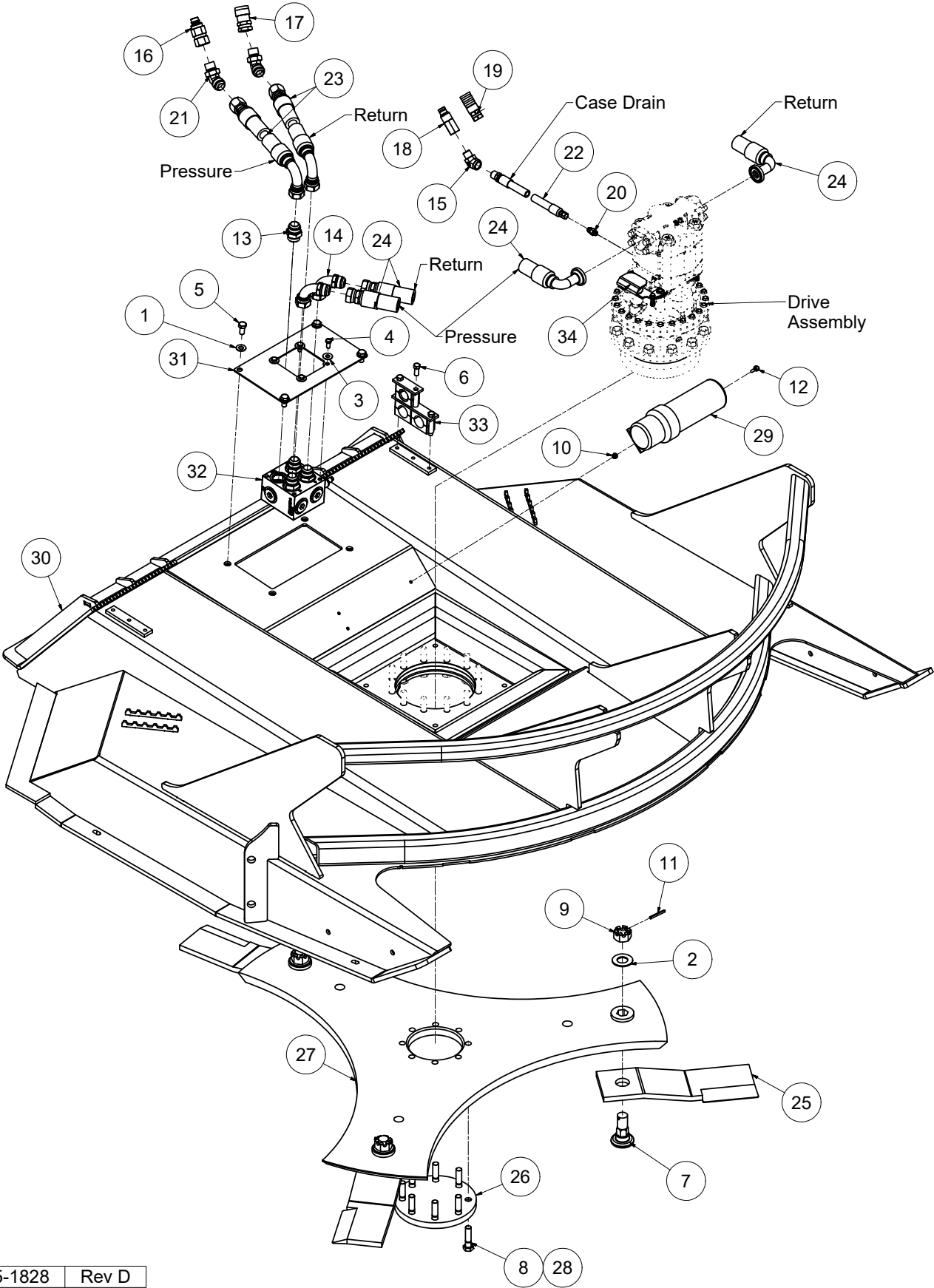
|                                   |    |
|-----------------------------------|----|
| O-RINGS - S.A.E.....              | 22 |
| S.A.E. TORQUE SPECIFICATIONS..... | 23 |
| METRIC TORQUE SPECIFICATIONS..... | 23 |



# CUTTER ASSEMBLIES

CUTTER ASSEMBLIES

DECK ASSEMBLY - HIGH FLOW



25-1828 Rev D

# CUTTER ASSEMBLIES

## DECK ASSEMBLY - HIGH FLOW

| REF# | PARTS DESCRIPTION                                       | REQ | PART#   | TORQUE<br>(ft-lbs) |
|------|---------------------------------------------------------|-----|---------|--------------------|
| 1    | 1/2 X 1.062 GR 8 SAE FLAT WASHER, YELLOW ZINC           | 4   | 11-0042 |                    |
| 2    | 1-1/8 X 2.25 THRU-HARDENED SAE FW, YELLOW ZINC          | 3   | 11-0057 |                    |
| 3    | 3/8 THRU-HARDENED FLAT WASHER, YELLOW ZINC              | 4   | 11-0092 |                    |
| 4    | 3/8-16 X 3/4 GR 5 HEX CAP, ZINC                         | 4   | 11-0545 | 31                 |
| 5    | 1/2-13 X 1 GR 5 HEX CAP, ZINC                           | 4   | 11-0569 | 75                 |
| 6    | 7/16-14 X 1 GR 5, HEX CAP, ZINC                         | 3   | 11-0584 | 49                 |
| 7    | 1-1/8-12 NF HEX BASE D3 BLADE BOLT                      | 3   | 11-0759 |                    |
| 8    | 5/8-11 X 2-1/2 GR 8 HEX CAP, YELLOW ZINC                | 8   | 11-0971 | **212              |
| 9    | 1-1/8"-12 NF SLOTTED HEX NUT GR 8                       | 3   | 11-1050 | 1444               |
| 10   | 1/4-20 GR 5 NYLOCK FLANGE NUT, ZINC                     | 3   | 11-1090 |                    |
| 11   | ROLL PIN, 1/4" X 2"                                     | 3   | 11-2005 |                    |
| 12   | 1/4-20 X 1 GR 5 HEX FLANGE BOLT, ZINC                   | 3   | 11-2210 | 8.5                |
| 13   | 1MOR X 1MJIC, ADAPTER                                   | 4   | 21-1005 |                    |
| 14   | 1MJIC X 1FJIC-90DEG, FITTING 3-3/4                      | 2   | 21-1258 |                    |
| 15   | 1/2MP X 1/2FP ADAPTER 45 DEG                            | 1   | 21-1290 |                    |
| 16   | 1/2" MALE QUICK COUPLER X 3/4" SAE, FLAT FACE, NO SPILL | 1   | 21-1559 |                    |
| 17   | 1/2" FEMALE QCK COUPLER X 3/4" SAE, FLAT FACE, NO SPILL | 1   | 21-1560 |                    |
| 18   | 3/8" MALE QUICK COUPLER, FLAT FACE, NO SPILL            | 1   | 21-1561 |                    |
| 19   | 3/8" FEMALE QUICK COUPLER, FLAT FACE, NO SPILL          | 1   | 21-1562 |                    |
| 20   | ADAPTER, 1/4MOR X 3/8MJIC                               | 1   | 21-1597 |                    |
| 21   | 1MJIC-45DEG X 3/4M-OR, FITTING                          | 2   | 21-1654 |                    |
| 22   | HOSE 3/8 X 118 (3/8FJIC X 1/2MP) KEVLAR                 | 1   | 21-4613 |                    |
| 23   | HOSE 1 X 91 (1FJIC X 1FJIC-90DEG)                       | 2   | 21-4645 |                    |
| 24   | HOSE 1 X 29 (#20FLG-90 X 1FJIC)                         | 2   | 21-4646 |                    |
| 25   | BRUSH BLADE - 5/8"                                      | 3   | 22-0006 |                    |
| 26   | BOLT PROTECTOR, AUBURN                                  | 1   | 24-0228 |                    |
| 27   | D3 72" DLR DISC                                         | 1   | 24-0285 |                    |
| 28   | LOCTITE 262, .017 OZ (RED)                              | 1   | 24-0382 |                    |
| 29   | LARGE MANUAL CANISTER, 12" X 3.25"                      | 1   | 24-0397 |                    |
| 30   | D3 72" DLR PHASE 3                                      | 1   | 25-0348 |                    |
| 31   | MANIFOLD CUTOFF ACCESS PLATE                            | 1   | 31-1091 |                    |
| 32   | MANIFOLD, ANTI-CAVITATION ATTACHMENT                    |     |         |                    |
|      | OPTION A, 35-41 GPM (2800 PSI RELIEF)                   | 1   | 39-0122 |                    |
|      | OPTION B, 29-34 GPM (3050 PSI RELIEF)                   | 1   | 39-0123 |                    |
| 33   | 1" HOSE CLAMP KIT WITH TOP CLAMP, NO BASE               | 1   | 44-0351 |                    |
| 34   | MOTOR HARDWARE LOCK KIT                                 | 1   | 44-0916 |                    |
|      | OPTIONAL HOSES                                          |     |         |                    |
| *    | HOSE, 1 X 91, 4000 PSI (1FJIC X 1FJIC-90DEG) KEVLAR     | 1   | 21-4723 |                    |
| *    | HOSE, 1 X 29, 4000 PSI (#20FLG-90DEG X 1 FJIC) KEVLAR   | 1   | 21-4724 |                    |

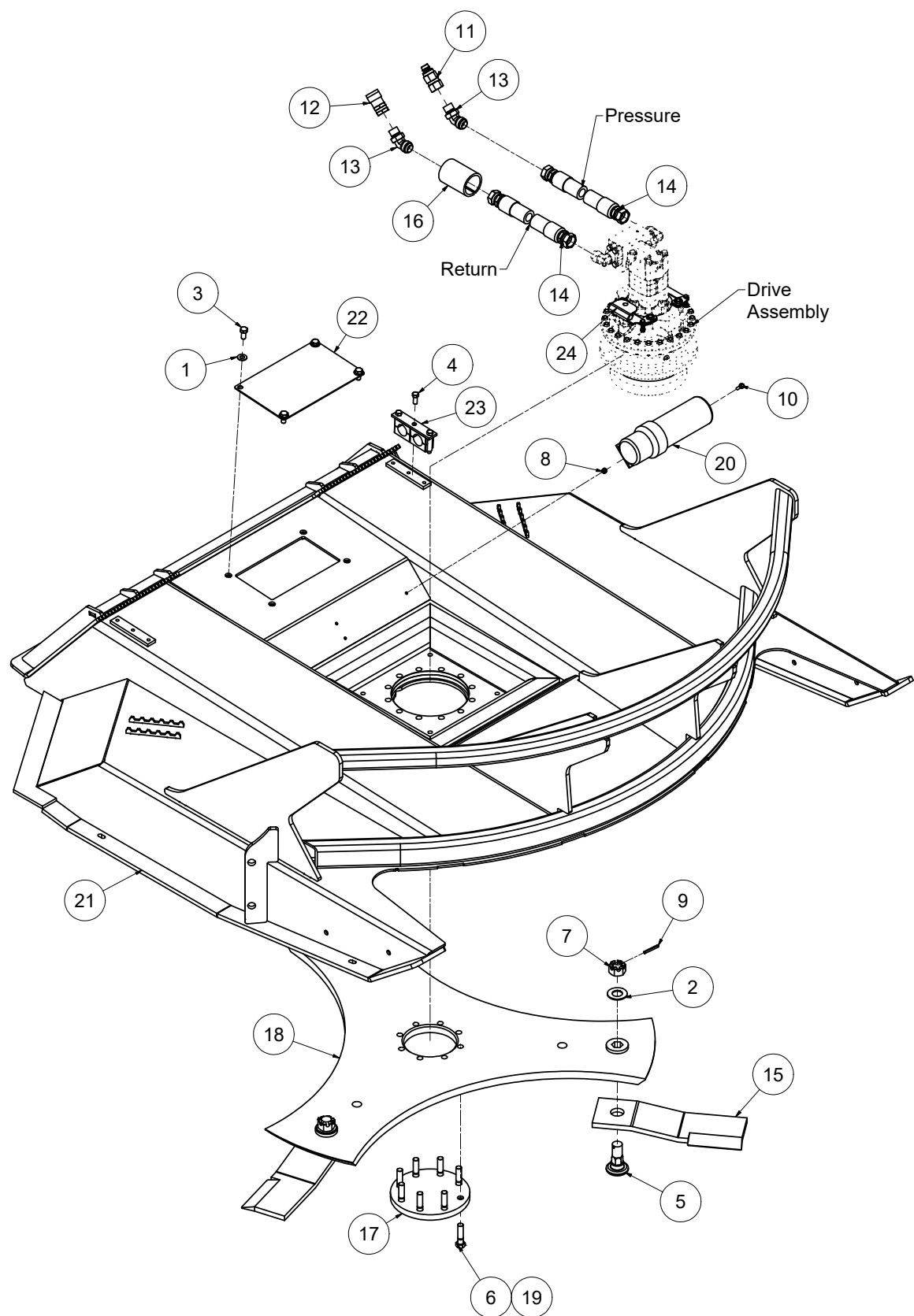
\* NOT SHOWN

\*\* CRITICAL TORQUE VALUES **MUST** BE FOLLOWED.

25-1828 Rev D

# CUTTER ASSEMBLIES

## DECK ASSEMBLY - STD FLOW



# CUTTER ASSEMBLIES

## DECK ASSEMBLY - STD FLOW

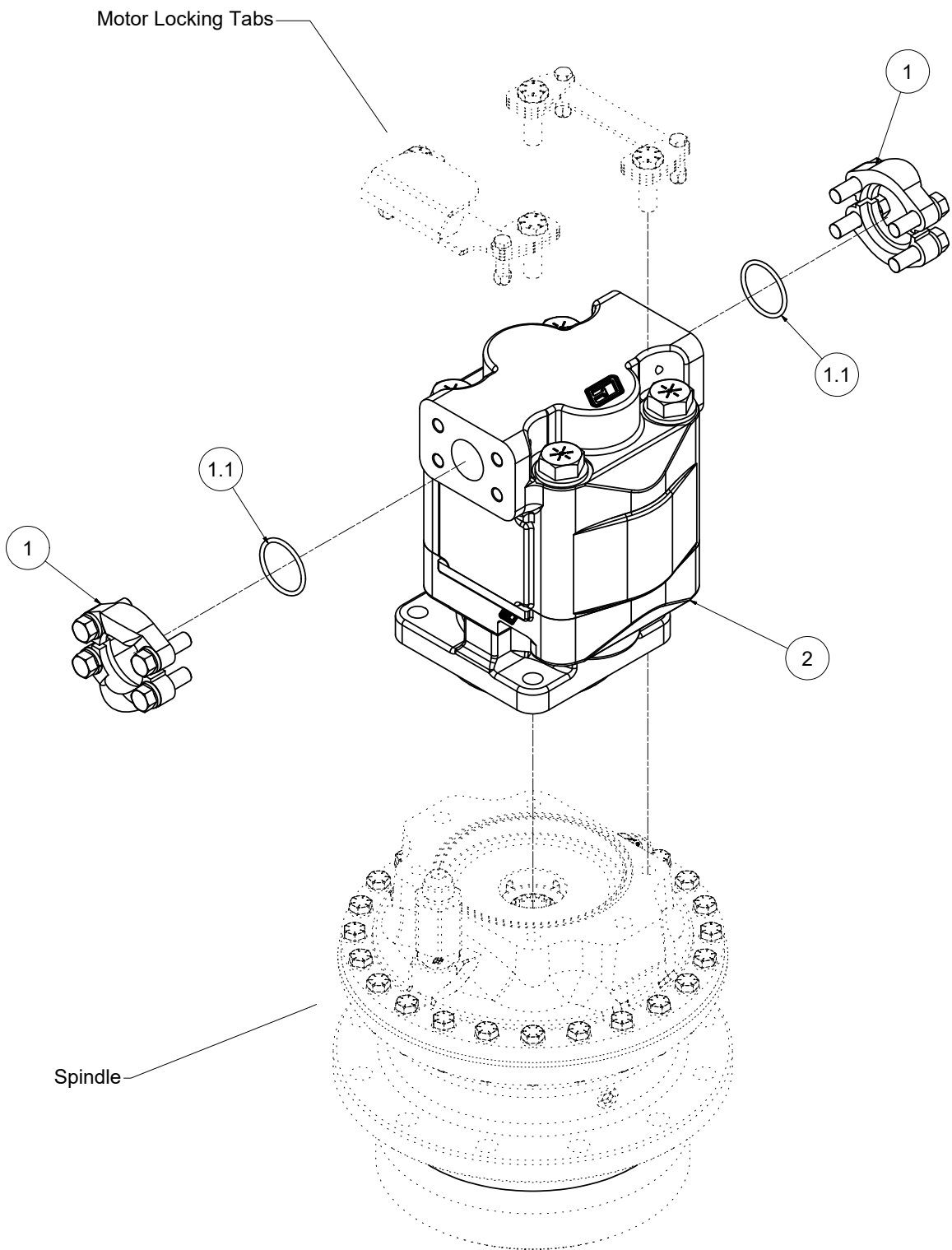
| REF# | PARTS DESCRIPTION                                       | REQ | PART#   | TORQUE<br>(ft-lbs) |
|------|---------------------------------------------------------|-----|---------|--------------------|
| 1    | 1/2 X 1.062 GR 8 SAE FLAT WASHER, YELLOW ZINC           | 4   | 11-0042 |                    |
| 2    | 1-1/8 X 2.25 THRU-HARDENED SAE FW, YELLOW ZINC          | 3   | 11-0057 |                    |
| 3    | 1/2-13 X 1 GR 5 HEX CAP, ZINC                           | 4   | 11-0569 | 75                 |
| 4    | 7/16-14 X 1 GR 5, HEX CAP, ZINC                         | 3   | 11-0584 | 49                 |
| 5    | 1-1/8-12 NF HEX BASE D3 BLADE BOLT                      | 3   | 11-0759 |                    |
| 6    | 5/8-11 X 2-1/2 GR 8 HEX CAP, YELLOW ZINC                | 8   | 11-0971 | **212              |
| 7    | 1-1/8"-12 NF SLOTTED HEX NUT GR 8                       | 3   | 11-1050 | 1444               |
| 8    | 1/4-20 GR 5 NYLOCK FLANGE NUT, ZINC                     | 3   | 11-1090 |                    |
| 9    | ROLL PIN, 1/4" X 2"                                     | 3   | 11-2005 |                    |
| 10   | 1/4-20 X 1 GR 5 HEX FLANGE BOLT, ZINC                   | 3   | 11-2210 | 8.5                |
| 11   | 1/2" MALE QUICK COUPLER X 3/4" SAE, FLAT FACE, NO SPILL | 1   | 21-1559 |                    |
| 12   | 1/2" FEMALE QCK COUPLER X 3/4" SAE, FLAT FACE, NO SPILL | 1   | 21-1560 |                    |
| 13   | 1MJIC-45DEG X 3/4M-OR, FITTING                          | 2   | 21-1654 |                    |
| 14   | HOSE 1 X 103 (1FJIC X 1FJIC)                            | 2   | 21-4345 |                    |
| 15   | BRUSH BLADE - 5/8"                                      | 3   | 22-0006 |                    |
| 16   | KEVLAR SLEEVING 2 3/8 ID X 4.00 FLAT (SOLD/FT)          | 9   | 24-0141 |                    |
| 17   | BOLT PROTECTOR, AUBURN                                  | 1   | 24-0228 |                    |
| 18   | D3 72" DLR DISC                                         | 1   | 24-0285 |                    |
| 19   | LOCTITE 262, .017 OZ (RED)                              | 1   | 24-0382 |                    |
| 20   | LARGE MANUAL CANISTER, 12" X 3.25"                      | 1   | 24-0397 |                    |
| 21   | D3 72" DLR PHASE 3                                      | 1   | 25-0348 |                    |
| 22   | UPPER DECK COVER                                        | 1   | 31-1092 |                    |
| 23   | 1" HOSE CLAMP KIT                                       | 1   | 44-0259 |                    |
| 24   | MOTOR HARDWARE LOCK KIT                                 | 1   | 44-0916 |                    |

\*\* CRITICAL TORQUE VALUES **MUST** BE FOLLOWED.



# CUTTER ASSEMBLIES

## MOTOR - DECK SUBASSEMBLY, HIGH FLOW





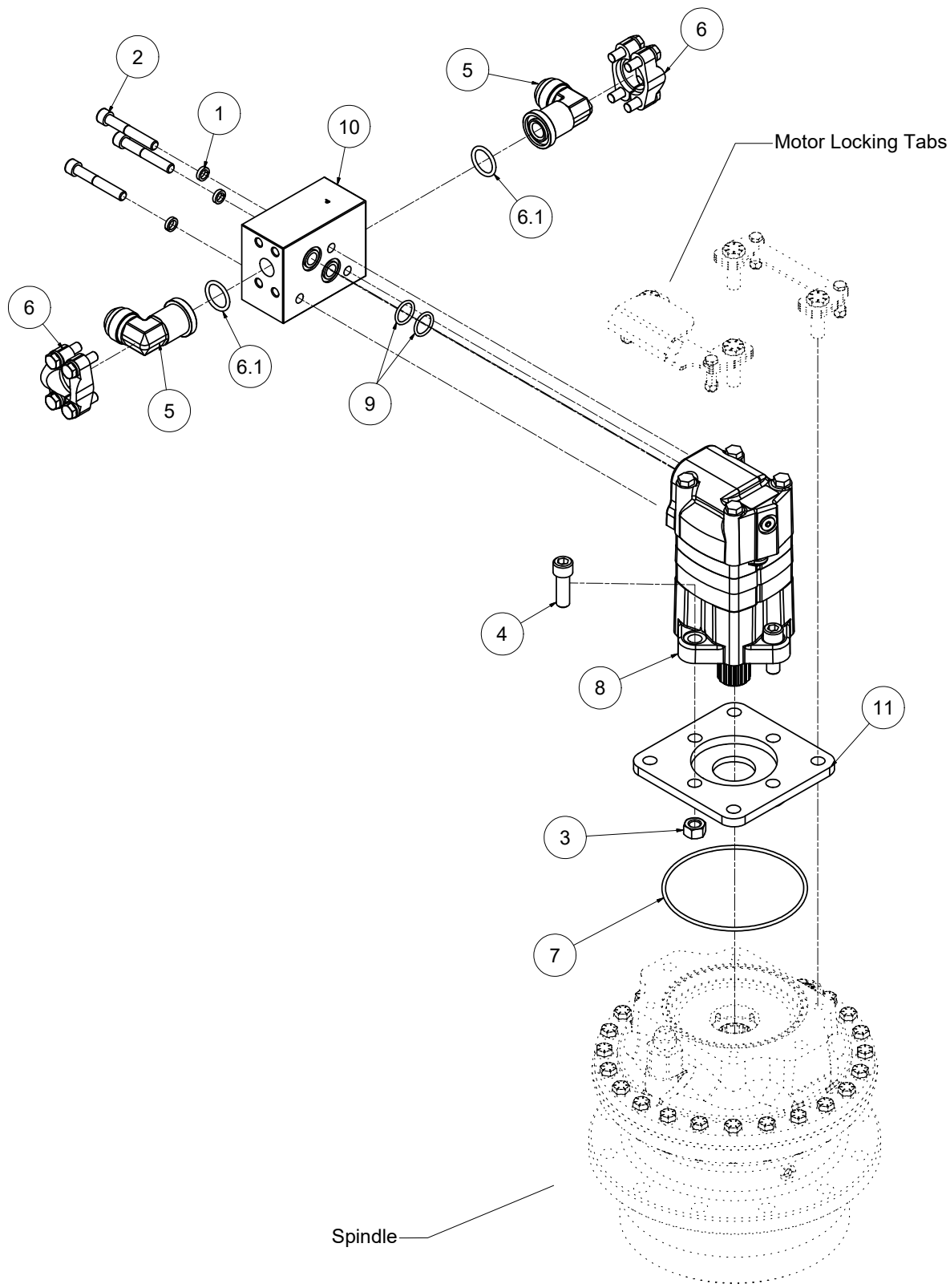
# CUTTER ASSEMBLIES

## MOTOR - DECK SUBASSEMBLY, HIGH FLOW

| REF# | PARTS DESCRIPTION                                    | REQ | PART#   | TORQUE<br>(ft-lbs) |
|------|------------------------------------------------------|-----|---------|--------------------|
| 1    | #20 FLANGE KIT                                       | 2   | 21-2105 | 49                 |
| 1.1  | O-RING, #20 FLANGE                                   | 2   | 33-0013 |                    |
| 2    | MOTOR                                                | 1   |         |                    |
|      | SKID LOADER 60"                                      |     |         |                    |
|      | M365, 1-3/4" GEAR, 1-1/4 14 SPLINE SHAFT, HD HOUSING |     | 30-0520 |                    |
|      | 29-35 GPM (110-132 LPM)                              |     |         |                    |
|      |                                                      |     |         |                    |
|      | M365, 2-1/4" GEAR, 1-1/4 14 SPLINE SHAFT, HD HOUSING |     | 30-0524 |                    |
|      | 36-41 GPM (136-155 LPM)                              |     |         |                    |
|      |                                                      |     |         |                    |
|      | M365 MOTOR, 2-1/2" GEAR SET SPLINED SHAFT            |     | 30-0518 |                    |
|      | 42-46 GPM (159-174 LPM)                              |     |         |                    |
|      |                                                      |     |         |                    |
|      | SKID LOADER 72"                                      |     |         |                    |
|      | M365, 2-1/4" GEAR, 1-1/4 14 SPLINE SHAFT, HD HOUSING |     | 30-0524 |                    |
|      | 29-34 GPM (110-129 LPM)                              |     |         |                    |
|      |                                                      |     |         |                    |
|      | M365, 2-1/2" GEAR SET SPLINED SHAFT                  |     | 30-0518 |                    |
|      | 35-41 GPM (132-155 LPM)                              |     |         |                    |
|      |                                                      |     |         |                    |
|      | SKID LOADER 84"                                      |     |         |                    |
|      | M365, 2-1/2" GEAR SET SPLINED SHAFT                  |     | 30-0518 |                    |
|      | 32-41 GPM (122-155 LPM)                              |     |         |                    |

# CUTTER ASSEMBLIES

## MOTOR - DECK SUBASSEMBLY, STD FLOW



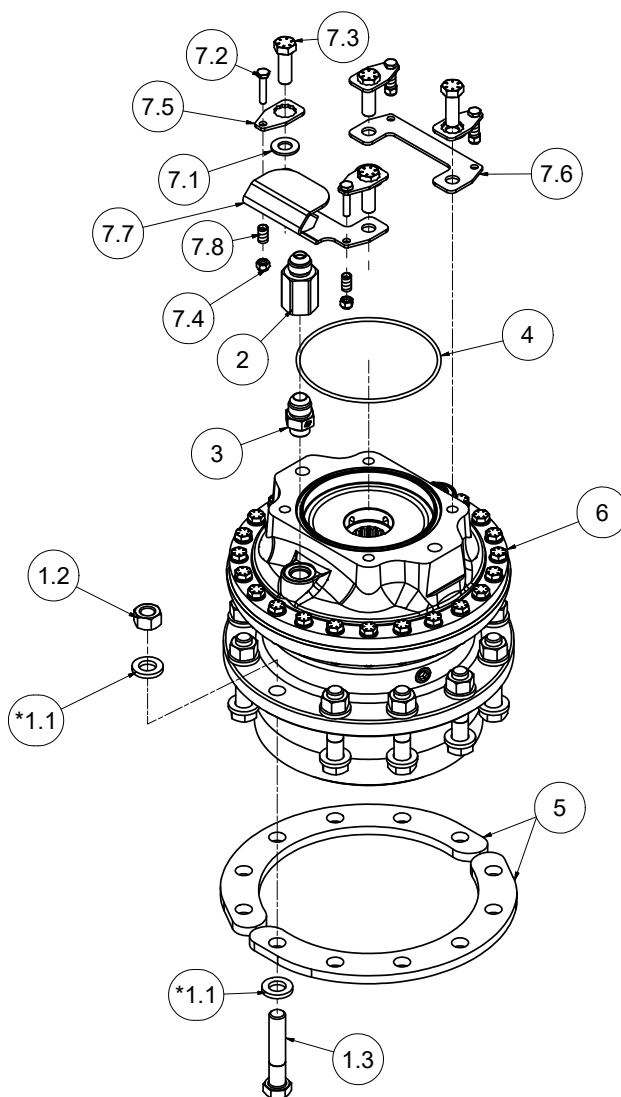
# CUTTER ASSEMBLIES

## MOTOR - DECK SUBASSEMBLY, STD FLOW

| REF# | PARTS DESCRIPTION                                | REQ | PART#   | TORQUE<br>(ft-lbs) |
|------|--------------------------------------------------|-----|---------|--------------------|
| 1    | 3/8 HIGH COLLAR LOCK WASHER                      | 3   | 11-0054 |                    |
| 2    | 3/8-16 X 2-1/2 ASTM A574 SOCKET CAP, BLACK OXIDE | 3   | 11-0701 | 51                 |
| 3    | 1/2-13 GR.8 HEX NUT, ECOGUARD                    | 4   | 11-1180 |                    |
| 4    | 1/2-13 X 1-1/2 ASTM A574 SOCKET CAP, ECOGUARD    | 4   | 11-2279 | 85                 |
| 5    | FITTING, #12FL X 1MJIC 90 DEG                    | 2   | 21-1302 |                    |
| 6    | #12 FLANGE KIT                                   | 2   | 21-2186 |                    |
| 6.1  | #12 FLANGE O-RING                                | 2   | 33-0062 |                    |
| 7    | O-RING, D3 SPINDLE                               | 1   | 24-0305 |                    |
| 8    | MOTOR                                            | 1   |         |                    |
|      | SKID LOADER 60"                                  |     |         |                    |
|      | 4.9CU 2000 SERIES LOW SPEED HIGH TORQUE MOTOR    |     | 30-0528 |                    |
|      | 16-23 GPM (61-87 LPM)                            |     |         |                    |
|      |                                                  |     |         |                    |
|      | 6.2CU 2000 SERIES LOW SPEED HIGH TORQUE          |     | 30-0529 |                    |
|      | 24-28 GPM (91-106 LPM)                           |     |         |                    |
|      |                                                  |     |         |                    |
|      | SKID LOADER 72"                                  |     |         |                    |
|      | 4.9CU 2000 SERIES LOW SPEED HIGH TORQUE MOTOR    |     | 30-0528 |                    |
|      | 17-20 GPM (65-76 LPM)                            |     |         |                    |
|      |                                                  |     |         |                    |
|      | 6.2CU 2000 SERIES LOW SPEED HIGH TORQUE          |     | 30-0529 |                    |
|      | 21-28 GPM (79-106 LPM)                           |     |         |                    |
| 9    | O-RING, ALUMINUM BLOCK, 2000 SERIES              | 2   | 30-1205 |                    |
| 10   | PRESSURE & RETURN BLOCK, 2000 SERIES             | 1   | 30-1206 |                    |
| 11   | LOW FLOW MOTOR PLATE WITH LOCK BASE              | 1   | 41-1835 |                    |

# CUTTER ASSEMBLIES

## SPINDLE - DECK SUBASSEMBLY



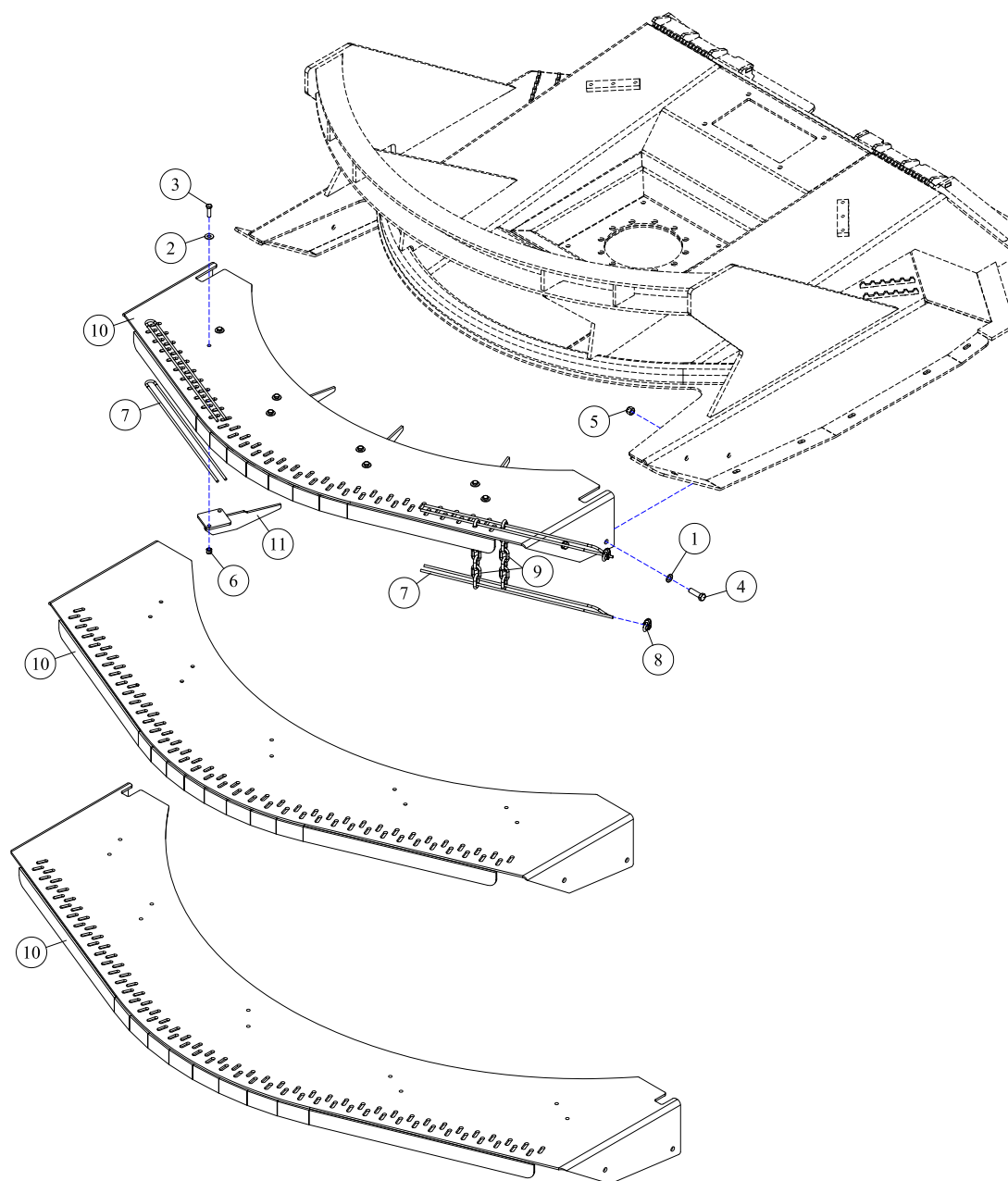
| REF# | PARTS DESCRIPTION                              | REQ | PART#   | TORQUE<br>(ft-lbs) |
|------|------------------------------------------------|-----|---------|--------------------|
| 1    | BOLT KIT - SPINDLE 1" (DLR) SHELL              | 1   | 11-3625 |                    |
| *1.1 | M16 DIN EN 14399 THRU-HARDENED FW, ECOGUARD    | 24  | 11-0102 |                    |
| 1.2  | 5/8-11 GR 8 HEX NUT, ECOGUARD                  | 12  | 11-1166 |                    |
| 1.3  | 5/8-11 X 3.25 GR 8 HEX CAP, ECOGUARD           | 12  | 11-2232 | 150                |
| 2    | RELIEF VALVE, D3 SPINDLE                       | 1   | 21-1653 |                    |
| 3    | 5/8MJIC X 1/2MORB                              | 1   | 21-1706 |                    |
| 4    | O-RING, D3 SPINDLE                             | 1   | 24-0305 |                    |
| 5    | LOWER BOLT PLATE, D3                           | 2   | 31-0893 |                    |
| 6    | SPINDLE-D3 DIRECT DRIVE SAE C                  | 1   | 35-0204 |                    |
| 7    | MOTOR HARDWARE LOCK KIT                        | 1   | 44-0916 |                    |
| 7.1  | 1/2 X 1.062 GR 8 SAE FLAT WASHER, YELLOW ZINC  | 4   | 11-0042 |                    |
| 7.2  | 1/4-20 X 1-1/4 GR 5 HEX CAP, ZINC              | 4   | 11-0702 | 8.5                |
| 7.3  | 1/2-13 X 1-1/2 GR 8 HEX CAP SCREW, YELLOW ZINC | 4   | 11-0972 | 90                 |
| 7.4  | 1/4-20 GR 5 NYLOCK NUT, ZINC                   | 4   | 11-1022 |                    |
| 7.5  | MOTOR BOLT LOCK TAB                            | 4   | 31-0503 |                    |
| 7.6  | V3LOCK BOTTOM                                  | 1   | 31-0504 |                    |
| 7.7  | MOTOR LOCKING BASE WITH PRV PROTECTION         | 1   | 31-0824 |                    |
| 7.8  | BOLT LOCKING TAB SPRING                        | 4   | 36-0013 |                    |

\* NOTE: FLAT SIDE OF WASHERS TOWARDS HARDWARE.  
CHAMFER SIDE TOWARDS SPINDLE & DECK.

35-0204-3 Rev 000

# CUTTER ASSEMBLIES

## CHAIN CURTAIN ASSEMBLY

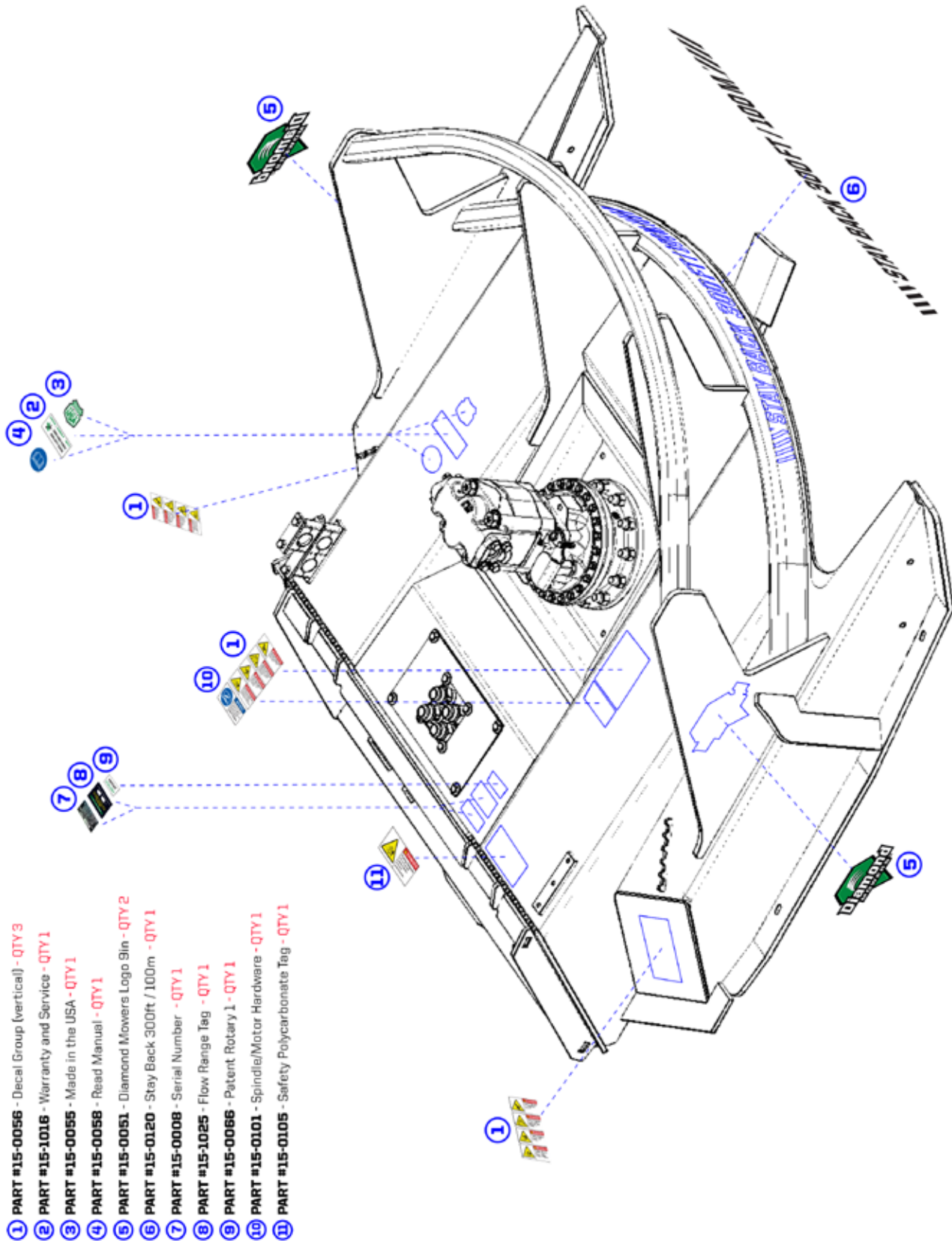


| REF# | PARTS DESCRIPTION                  | REQ | PART #  |
|------|------------------------------------|-----|---------|
| 1    | 1/2 SAE FLAT WASHER GR8            | 4   | 11-0042 |
| 2    | <u>3/8 SAE FLAT WASHER GR8</u>     |     | 11-0090 |
|      | On 60" DLR                         | 8   |         |
|      | On 72" DLR                         | 10  |         |
|      | On 84" DLR                         | 10  |         |
| 3    | <u>3/8 X 1-1/4 NC HEX CAPSCREW</u> |     | 11-0533 |
|      | On 60" DLR                         | 8   |         |
|      | On 72" DLR                         | 10  |         |
|      | On 84" DLR                         | 10  |         |
| 4    | 1/2 X 1-3/4 NC HEX CAPSCREW        | 4   | 11-0535 |
| 5    | 1/2 NC NYLOCK NUT                  | 4   | 11-1018 |
| 6    | <u>3/8 NC NYLOCK NUT</u>           |     | 11-1024 |
|      | On 60" DLR                         | 8   |         |
|      | On 72" DLR                         | 10  |         |
|      | On 84" DLR                         | 10  |         |

| REF# | PARTS DESCRIPTION                           | REQ | PART #  |
|------|---------------------------------------------|-----|---------|
| 7    | <u>1/4 GALVANIZED CABLE (SOLD PER FOOT)</u> |     | 12-0032 |
|      | On 60" DLR                                  | 22  |         |
|      | On 72" DLR                                  | 26  |         |
|      | On 84" DLR                                  | 30  |         |
| 8    | 1/4 WIRE ROPE CLAMP                         | 2   | 12-0033 |
| 9    | <u>5/16 ZINC CHAIN - 7 LINKS GRADE 30</u>   |     | 12-0036 |
|      | On 60" DLR                                  | 59  |         |
|      | On 72" DLR                                  | 73  |         |
|      | On 84" DLR                                  | 85  |         |
| 10   | <u>CHAIN GUARD</u>                          |     |         |
|      | D3 DLR CHAIN GUARD 60"                      | 1   | 41-1636 |
|      | D3 DLR CHAIN GUARD 72"                      | 1   | 41-1635 |
|      | D3 DLR CHAIN GUARD 84"                      | 1   | 41-1637 |
| 11   | <u>BOLT ON CHAIN GUARD RIB</u>              |     | 41-1653 |
|      | On 60" DLR                                  | 4   |         |
|      | On 72" DLR                                  | 5   |         |
|      | On 84" DLR                                  | 5   |         |

## DECAL ASSEMBLY

071020



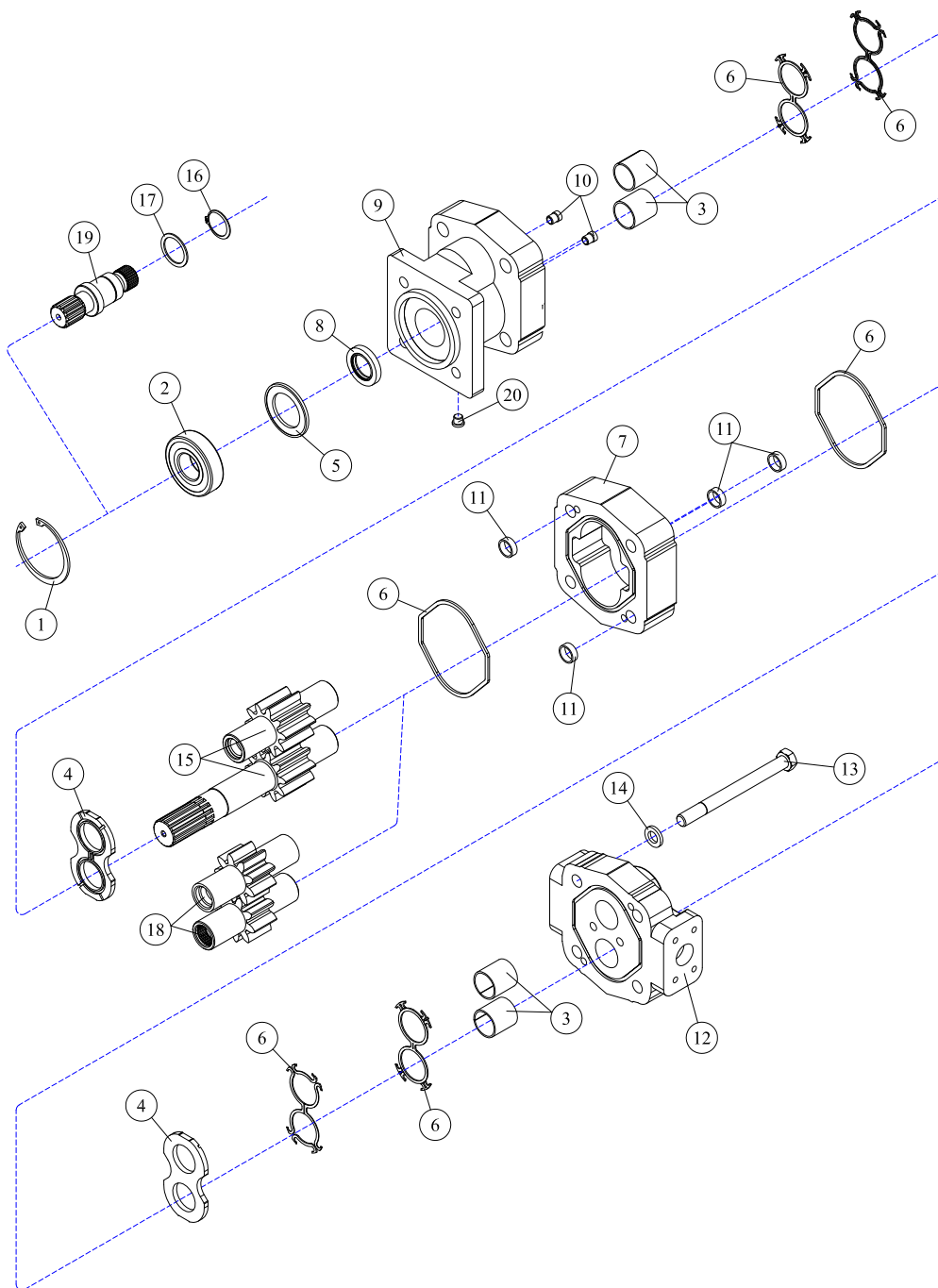
The image shows a close-up, slightly angled view of a wooden deck. The wood grain is prominent, with various shades of brown and tan. A horizontal grey band runs across the middle of the image, serving as a background for the title. The title is centered within this band and is flanked by two short green horizontal lines.

# DECK ASSEMBLIES



# DECK ASSEMBLIES

## MOTOR ASSEMBLY - 30-0518

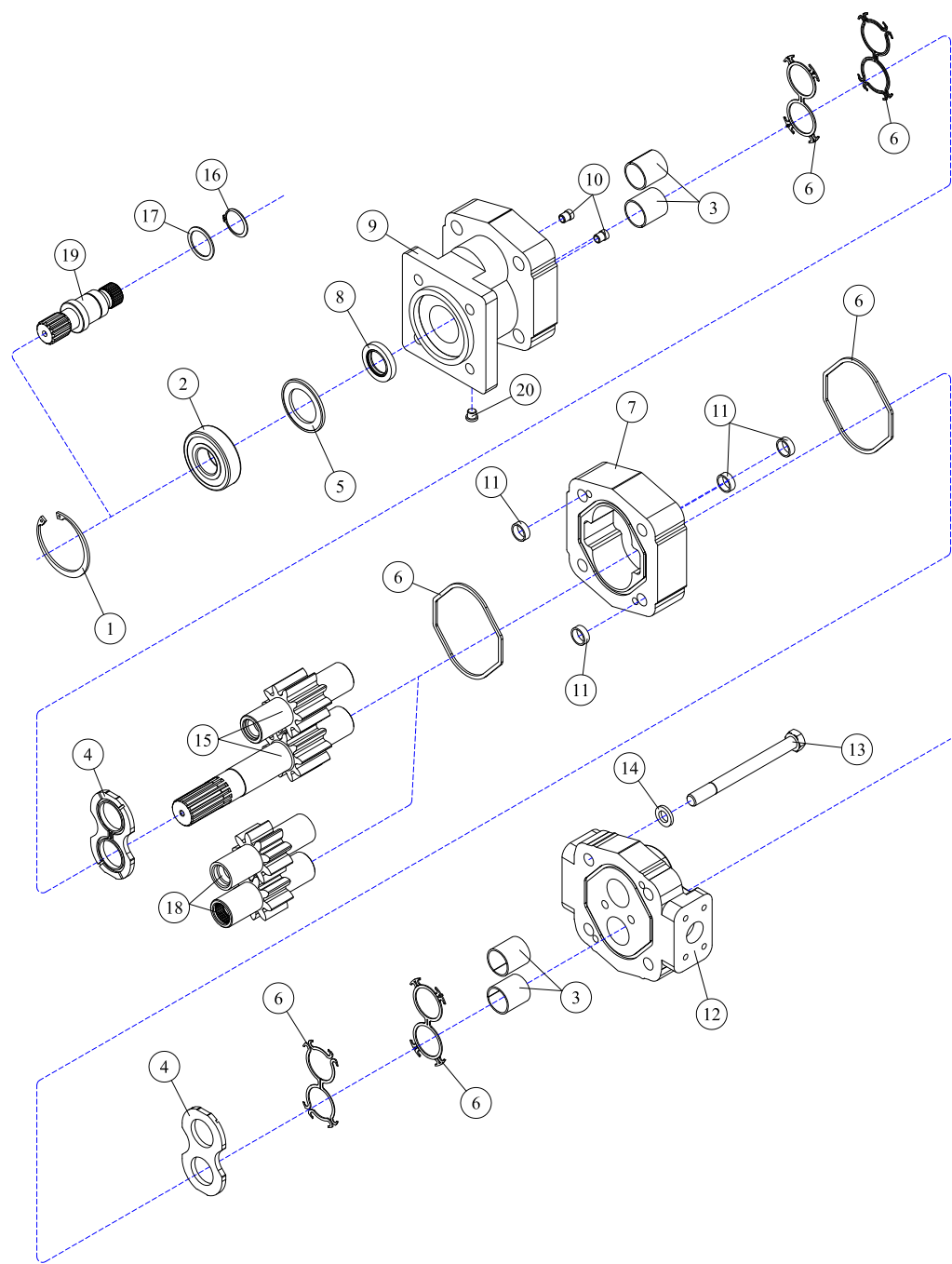


| REF# | PARTS DESCRIPTION                   | REQ   | PART #  |
|------|-------------------------------------|-------|---------|
| 1    | SNAP RING                           | 1     | 30-1009 |
| 2    | OUTBOARD BEARING                    | 1     | 30-1010 |
| 3    | BUSHING                             | 4     | 30-1011 |
| 4    | THRUST PLATE                        | 2     | 30-1012 |
| 5    | SEAL RETAINER                       | 1     | 30-1017 |
| 6    | M365 SEAL KIT                       | Avail | 30-1021 |
| 7    | 2-1/2" M365 GEAR HOUSING            | 1     | 30-1137 |
| 8    | <b>SHAFT SEAL</b>                   |       |         |
|      | 150 PSI (included in M365 seal kit) | 1     | 30-1210 |
|      | 500 PSI                             | 1     | 30-1156 |
| 9    | SHAFT END COVER                     | 1     | 30-1086 |
| 10   | CHECK ASSEMBLY                      | 2     | 30-1087 |
| 11   | ALIGNMENT BUSHING                   | 4     | 30-1090 |

| REF# | PARTS DESCRIPTION                | REQ   | PART #  |
|------|----------------------------------|-------|---------|
| 12   | PORT END COVER                   | 1     | 30-1091 |
| 13   | STUD                             | 4     | 30-1334 |
| 14   | WASHER                           | 4     | 30-1093 |
|      | <b>GEAR SET OPTION A:</b>        |       |         |
| 15   | 2-1/2" GEAR SET                  | 1     | 30-1170 |
|      | <b>GEAR SET OPTION B:</b>        |       |         |
| 16   | RETAINING RING                   | 1     | 30-1019 |
| 17   | WASHER                           | 1     | 30-1020 |
| 18   | 2-1/2" GEAR SET                  | 1     | 30-1136 |
| 19   | CONTINENTAL SHAFT, SPLINED       | 1     | 30-1144 |
| 20   | PLUG                             | 1     | 30-1096 |
| *    | SEAL APPLICATOR TOOL (not shown) | Avail | 30-1048 |

DECK ASSEMBLIES

MOTOR ASSEMBLY - 30-0524

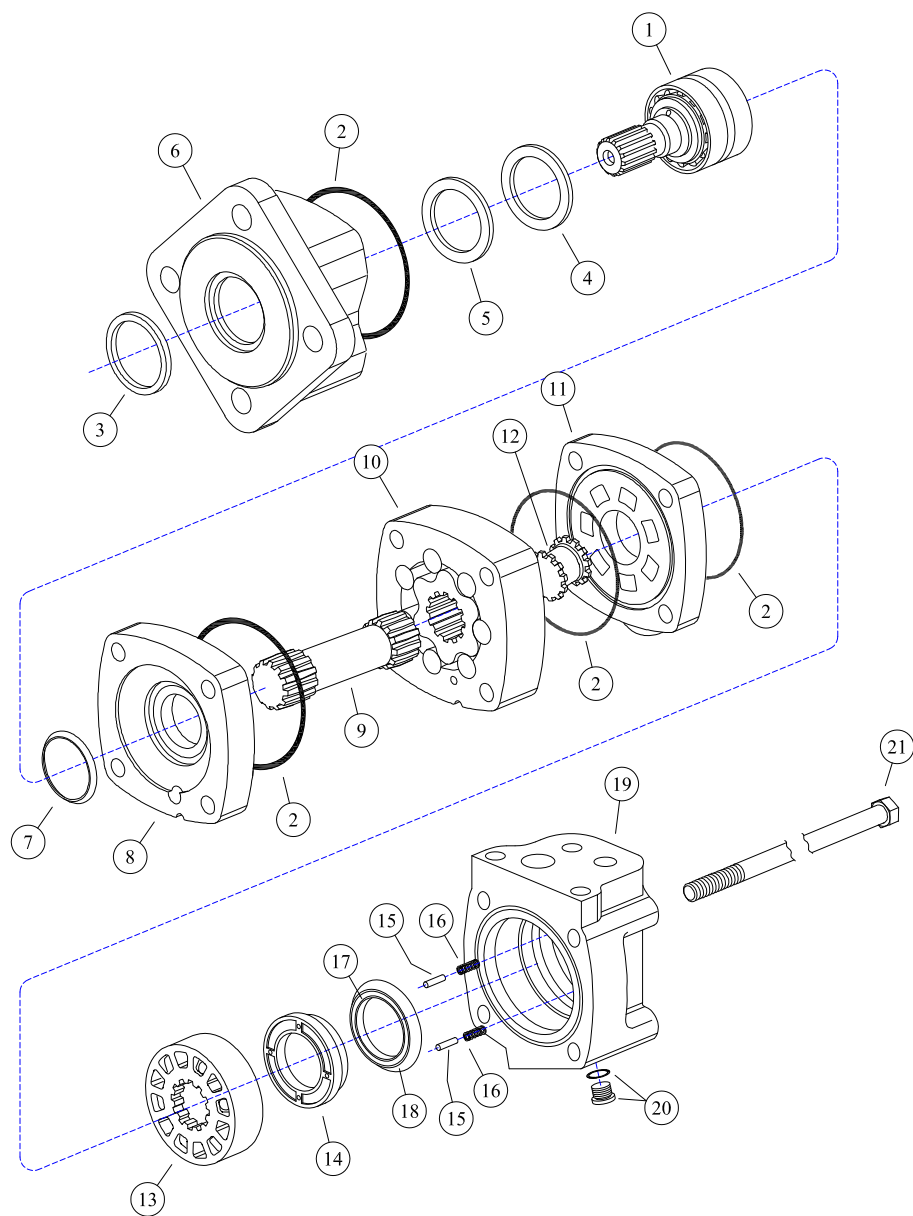


| REF# | PARTS DESCRIPTION                                                   | REQ    | PART #             |
|------|---------------------------------------------------------------------|--------|--------------------|
| 1    | SNAP RING                                                           | 1      | 30-1009            |
| 2    | OUTBOARD BEARING                                                    | 1      | 30-1010            |
| 3    | BUSHING                                                             | 4      | 30-1011            |
| 4    | THRUST PLATE                                                        | 2      | 30-1012            |
| 5    | SEAL RETAINER                                                       | 1      | 30-1017            |
| 6    | M365 SEAL KIT                                                       | Avail  | 30-1021            |
| 7    | 2-1/4" M365 GEAR HOUSING                                            | 1      | 30-1026            |
| 8    | <b>SHAFT SEAL</b><br>150 PSI (included in M365 seal kit)<br>500 PSI | 1<br>1 | 30-1210<br>30-1156 |
| 9    | SHAFT END COVER                                                     | 1      | 30-1086            |
| 10   | CHECK ASSEMBLY                                                      | 2      | 30-1087            |
| 11   | ALIGNMENT BUSHING                                                   | 4      | 30-1090            |

| REF#                      | PARTS DESCRIPTION                | REQ   | PART #  |
|---------------------------|----------------------------------|-------|---------|
| 12                        | PORT END COVER                   | 1     | 30-1091 |
| 13                        | STUD                             | 4     | Call    |
| 14                        | WASHER                           | 4     | 30-1093 |
| <b>GEAR SET OPTION A:</b> |                                  |       |         |
| 15                        | 2-1/4" GEAR SET                  | 1     | 30-1165 |
| <b>GEAR SET OPTION B:</b> |                                  |       |         |
| 16                        | RETAINING RING                   | 1     | 30-1019 |
| 17                        | WASHER                           | 1     | 30-1020 |
| 18                        | 2-1/4" GEAR SET                  | 1     | 30-1025 |
| 19                        | CONTINENTAL SHAFT, SPLINED       | 1     | 30-1144 |
| 20                        | PLUG                             | 1     | 30-1096 |
| *                         | SEAL APPLICATOR TOOL (not shown) | Avail | 30-1048 |

DECK ASSEMBLIES

MOTOR ASSEMBLY - 30-0528



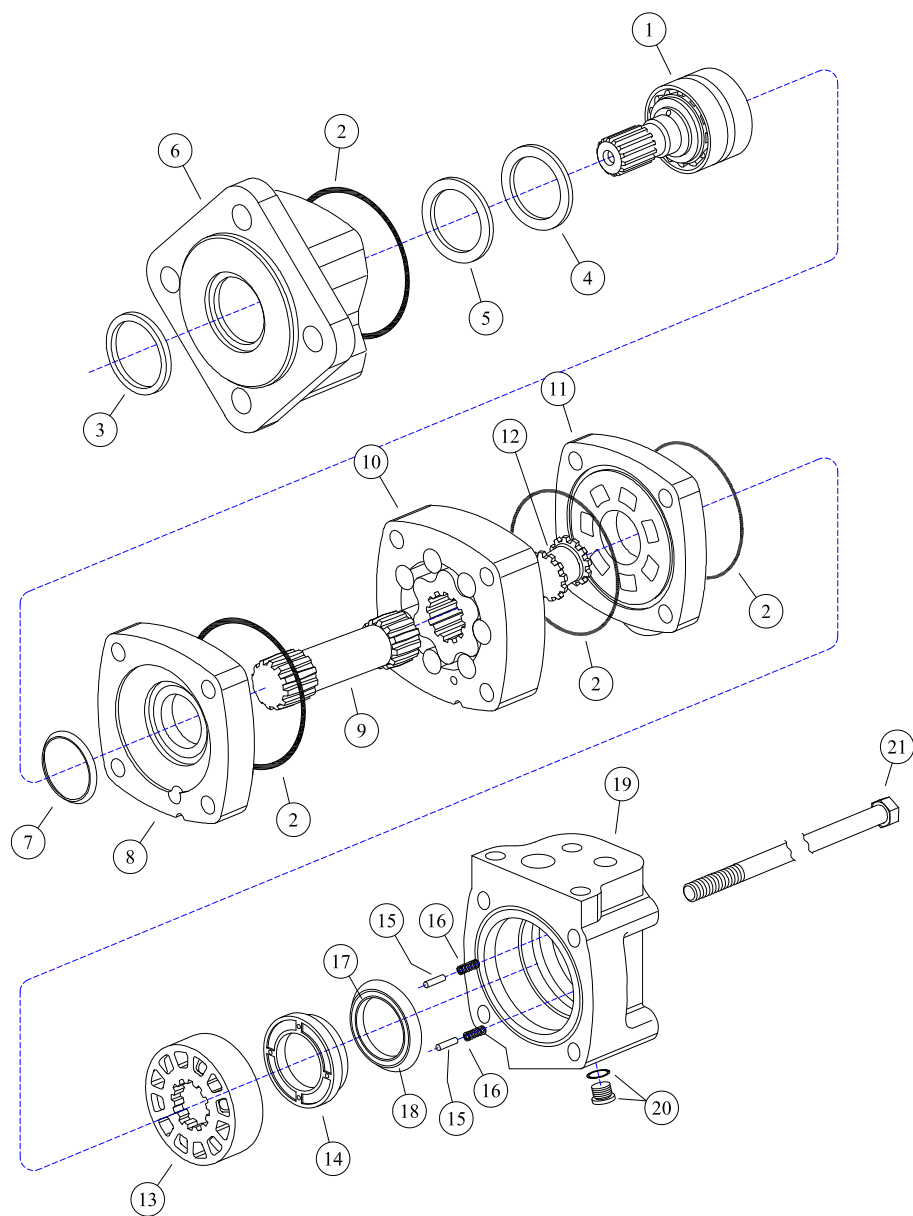
\* Part included with item # 22 seal kit

| REF# | PARTS DESCRIPTION                        | REQ | PART #  |
|------|------------------------------------------|-----|---------|
| 1    | SHAFT & BEARING KIT (1-1/4" SPLINED 14T) | 1   | 30-1311 |
| 2    | SEAL                                     | 4   | 30-1312 |
| 3    | SEAL, EXCLUSION                          | 1   | 30-1313 |
| 4    | SEAL, SHAFT                              | 1   | 30-1314 |
| 5    | RING, BACK-UP                            | 1   | 30-1315 |
| 6    | HOUSING, BEARING, DIAGONAL (FOUR BOLT)   | 1   | 30-1316 |
| 7    | SEAL, SHAFT FACE                         | 1   | 30-1317 |
| 8    | PLATE, WEAR                              | 1   | 30-1318 |
| 9    | DRIVE, MAIN                              | 1   | 30-1319 |
| 10   | GEROLER                                  | 1   | 30-1320 |
| 11   | PLATE, VALVE                             | 1   | 30-1321 |
| 12   | DRIVE, VALVE                             | 1   | 30-1322 |

| REF# | PARTS DESCRIPTION       | REQ | PART #  |
|------|-------------------------|-----|---------|
| 13   | VALVE                   | 1   | 30-1323 |
| 14   | BALANCE RING            | 1   | 30-1324 |
| 15   | PIN, BALANCE RING       | 2   | 30-1325 |
| 16   | SPRING, COMPRESSION     | 2   | 30-1326 |
| 17   | SEAL, FACE, INNER       | 1   | 30-1327 |
| 18   | SEAL, FACE, OUTER       | 1   | 30-1328 |
| 19   | HOUSING, VALVE          | 1   | 30-1329 |
| 20   | PLUG ASSEMBLY W/ O-RING | 1   | 30-1309 |
|      | O-RING                  | 1   | 30-1330 |
| 21   | SCREW, CAP              | 4   | 30-1331 |
| 22   | SEAL KIT                | 1   | 33-0064 |

DECK ASSEMBLIES

MOTOR ASSEMBLY - 30-0529



\* Part included with item # 22 seal kit

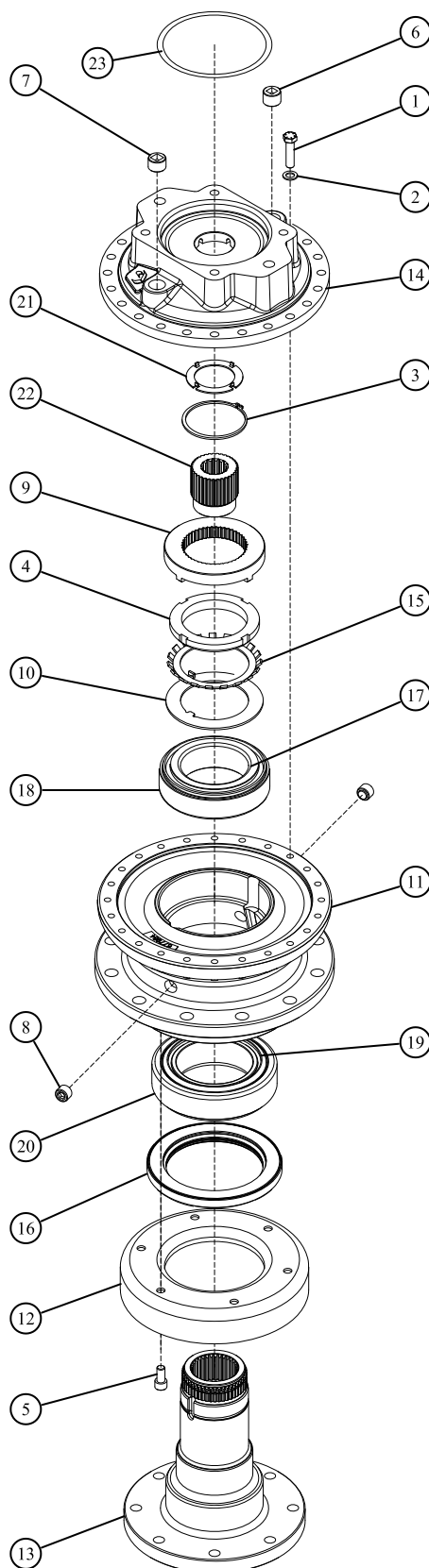
| REF# | PARTS DESCRIPTION                        | REQ | PART #  |
|------|------------------------------------------|-----|---------|
| 1    | SHAFT & BEARING KIT (1-1/4" SPLINED 14T) | 1   | 30-1311 |
| 2    | SEAL                                     | 4   | 30-1312 |
| 3    | SEAL, EXCLUSION                          | 1   | 30-1313 |
| 4    | SEAL, SHAFT                              | 1   | 30-1314 |
| 5    | RING, BACK-UP                            | 1   | 30-1315 |
| 6    | HOUSING, BEARING, DIAGONAL (FOUR BOLT)   | 1   | 30-1316 |
| 7    | SEAL, SHAFT FACE                         | 1   | 30-1317 |
| 8    | PLATE, WEAR                              | 1   | 30-1318 |
| 9    | DRIVE, MAIN                              | 1   | 30-1319 |
| 10   | GEROLER                                  | 1   | 30-1320 |
| 11   | PLATE, VALVE                             | 1   | 30-1321 |
| 12   | DRIVE, VALVE                             | 1   | 30-1322 |

| REF# | PARTS DESCRIPTION       | REQ | PART #  |
|------|-------------------------|-----|---------|
| 13   | VALVE                   | 1   | 30-1323 |
| 14   | BALANCE RING            | 1   | 30-1324 |
| 15   | PIN, BALANCE RING       | 2   | 30-1325 |
| 16   | SPRING, COMPRESSION     | 2   | 30-1326 |
| 17   | SEAL, FACE, INNER       | 1   | 30-1327 |
| 18   | SEAL, FACE, OUTER       | 1   | 30-1328 |
| 19   | HOUSING, VALVE          | 1   | 30-1329 |
| 20   | PLUG ASSEMBLY W/ O-RING | 1   | 30-1309 |
|      | O-RING                  | 1   | 30-1330 |
| 21   | SCREW, CAP              | 4   | 30-1331 |
| 22   | SEAL KIT                | 1   | 33-0064 |

# DECK ASSEMBLIES

## SPINDLE ASSEMBLY - 35-0204

| REF# | PARTS DESCRIPTION                        | REQ | PART #         |
|------|------------------------------------------|-----|----------------|
| 1    | BOLT-HEX HEAD                            | 24  | 11-1611        |
| 2    | WASHER-FLAT                              | 24  | 11-1612        |
| 3    | RING-RETAINING                           | 1   | 11-1613        |
| 4    | NUT-LOCK                                 | 1   | 11-1614        |
| 5    | SCREW-SKT HD CAP                         | 6   | 11-1616        |
| 6    | PLUG (TO COVER) (MAGNETIC)               | 1   | 35-0200        |
| 7    | PLUG (TO COVER) (NON-MAGNETIC)           | 1   | 35-0202        |
| 8    | PIPE PLUG (TO HUB) (MAGNETIC)            | 2   | 21-1611        |
| 9    | PLATE-KEEPER                             | 1   | 35-0098        |
| 10   | WASHER-THRUST (BOTTOM)                   | 1   | 35-0099        |
| 11   | HUB                                      | 1   | 35-0100        |
| 12   | GUARD                                    | 1   | 35-0102        |
| 13   | SHAFT-OUTPUT                             | 1   | 35-0103        |
| 14   | <b>COVER</b>                             |     |                |
|      | C COVER (STANDARD)                       | 1   | 35-0199        |
|      | D COVER (OPTIONAL)                       | 1   | 35-0109        |
|      | <b>SEAL KIT</b>                          |     | <b>33-0078</b> |
| 15   | WASHER-LOCK                              | 1   |                |
| 16   | SEAL-OIL                                 | 1   |                |
|      | SEALANT                                  |     |                |
|      | <b>BEARING AND SEAL KIT</b>              |     | <b>33-0079</b> |
| 17   | BEARING-CONE (TOP)                       | 1   |                |
| 18   | BEARING-CUP (TOP)                        | 1   |                |
| 19   | BEARING-CONE (BOTTOM)                    | 1   |                |
| 20   | BEARING-CUP (BOTTOM)                     | 1   |                |
| 15   | WASHER-LOCK                              | 1   |                |
| 16   | OIL SEAL                                 | 1   |                |
|      | SEALANT                                  | 1   |                |
|      | <b>D3 SPINDLE REPLACEMENT INSERT KIT</b> |     | <b>33-0080</b> |
| 21   | WASHER-THRUST (TOP)                      | 1   |                |
| 22   | COUPLING                                 | 1   |                |
|      | SEALANT                                  |     |                |
| 23   | O-RING, D3 SPINDLE                       | 1   | 24-0305        |





# APPENDIX

## O-RINGS - S.A.E.

### ORING (AS568) BOSS FITTINGS [KIT PART# 33-0122] SAE SIZES

| STANDARD<br>ORING<br>PART # | HYDRAULIC<br>SIZE | ORING ID<br>SAE<br>(IN) | ORING WIDTH<br>SAE<br>(IN) | ORING MATERIAL       |
|-----------------------------|-------------------|-------------------------|----------------------------|----------------------|
| 902                         | -2                | 0.24                    | 0.06                       | 90-durometer Nitrile |
| 903                         | -3                | 0.30                    | 0.06                       | 90-durometer Nitrile |
| 904                         | -4                | 0.35                    | 0.07                       | 90-durometer Nitrile |
| 905                         | -5                | 0.41                    | 0.07                       | 90-durometer Nitrile |
| 906                         | -6                | 0.47                    | 0.08                       | 90-durometer Nitrile |
| 908                         | -8                | 0.64                    | 0.09                       | 90-durometer Nitrile |
| 910                         | -10               | 0.76                    | 0.1                        | 90-durometer Nitrile |
| 912                         | -12               | 0.92                    | 0.12                       | 90-durometer Nitrile |
| 914                         | -14               | 1.05                    | 0.12                       | 90-durometer Nitrile |
| 916                         | -16               | 1.17                    | 0.12                       | 90-durometer Nitrile |
| 920                         | -20               | 1.48                    | 0.12                       | 90-durometer Nitrile |
| 924                         | -24               | 1.72                    | 0.12                       | 90-durometer Nitrile |
| 932                         | -32               | 2.34                    | 0.12                       | 90-durometer Nitrile |

### ORING (AS568) FLAT SEAL FITTINGS [KIT PART# 33-0123] SAE SIZES & METRIC SIZES

| STANDARD<br>ORING<br>PART # | HYDRAULIC<br>SIZE | END SIZE<br>SAE<br>(IN) | METRIC<br>(MM) | ORING ID<br>SAE<br>(IN) | METRIC<br>(MM) | ORING WIDTH<br>SAE<br>(IN) | METRIC<br>(MM) | ORING MATERIAL       |
|-----------------------------|-------------------|-------------------------|----------------|-------------------------|----------------|----------------------------|----------------|----------------------|
| 011                         | -4                | 1/4                     | 6              | 0.30                    | 7.70           | 0.07                       | 1.78           | 90-durometer Nitrile |
| 012                         | -6                | 3/8                     | 8, 10          | 0.36                    | 9.30           | 0.07                       | 1.78           | 90-durometer Nitrile |
| 014                         | -8                | 1/2                     | 12             | 0.49                    | 12.40          | 0.07                       | 1.78           | 90-durometer Nitrile |
| 016                         | -10               | 5/8                     | 14, 15, 16     | 0.61                    | 15.60          | 0.07                       | 1.78           | 90-durometer Nitrile |
| 018                         | -12               | 3/4                     | 18, 20         | 0.74                    | 18.80          | 0.07                       | 1.78           | 90-durometer Nitrile |
| 020                         | -14               | 7/8                     | 22             | 0.86                    | 21.80          | 0.07                       | 1.78           | 90-durometer Nitrile |
| 021                         | -16               | 1                       | 25             | 0.93                    | 23.50          | 0.07                       | 1.78           | 90-durometer Nitrile |
| 025                         | -20               | 1 1/4                   | 28, 30, 32     | 1.18                    | 29.90          | 0.07                       | 1.78           | 90-durometer Nitrile |
| 029                         | -24               | 1 1/2                   | 35, 38         | 1.49                    | 37.80          | 0.07                       | 1.78           | 90-durometer Nitrile |
| 135                         | -32               | 2                       | 50             | 1.93                    | 49.00          | 0.10                       | 2.54           | 90-durometer Nitrile |



## S.A.E. TORQUE SPECIFICATIONS

| Nominal<br>Dia.              | threads<br>per<br>inch | Tensile<br>Stress<br>Area |  | ASTM A307 Grade A |           |           |  | SAE J429 Grade 5  |           |            |  | SAE J429 Grade 8  |            |            |  | FNL Grade 9       |            |            |
|------------------------------|------------------------|---------------------------|-----------------------------------------------------------------------------------|-------------------|-----------|-----------|-----------------------------------------------------------------------------------|-------------------|-----------|------------|-----------------------------------------------------------------------------------|-------------------|------------|------------|-------------------------------------------------------------------------------------|-------------------|------------|------------|
|                              |                        |                           | Clamp<br>Load<br>(Lbs.)                                                           | Tightening Torque |           |           | Clamp<br>Load<br>(Lbs.)                                                           | Tightening Torque |           |            | Clamp<br>Load<br>(Lbs.)                                                           | Tightening Torque |            |            | Clamp<br>Load<br>(Lbs.)                                                             | Tightening Torque |            |            |
|                              |                        |                           |                                                                                   | K = 0.15          | K = 0.17  | K = 0.20  |                                                                                   | K = 0.15          | K = 0.17  | K = 0.20   |                                                                                   | K = 0.15          | K = 0.17   | K = 0.20   |                                                                                     | K = 0.15          | K = 0.17   | K = 0.20   |
| (in.)                        |                        | (sq. in.)                 | (Lbs.)                                                                            | K = 0.15          | K = 0.17  | K = 0.20  | (Lbs.)                                                                            | K = 0.15          | K = 0.17  | K = 0.20   | (Lbs.)                                                                            | K = 0.15          | K = 0.17   | K = 0.20   | (Lbs.)                                                                              | K = 0.15          | K = 0.17   | K = 0.20   |
| Unified Coarse Thread Series |                        |                           |                                                                                   |                   |           |           |                                                                                   |                   |           |            |                                                                                   |                   |            |            |                                                                                     |                   |            |            |
| 1/4                          | 20                     | 0.0318                    | 859                                                                               | 32 in-lbs         | 37 in-lbs | 43 in-lbs | 2029                                                                              | 76 in-lbs         | 86 in-lbs | 101 in-lbs | 2864                                                                              | 107 in-lbs        | 122 in-lbs | 143 in-lbs | 3357                                                                                | 126 in-lbs        | 143 in-lbs | 168 in-lbs |
| 5/16                         | 18                     | 0.0524                    | 1416                                                                              | 66                | 75        | 88        | 3342                                                                              | 157               | 178       | 209        | 4719                                                                              | 221               | 251        | 295        | 5531                                                                                | 259               | 294        | 346        |
| 3/8                          | 16                     | 0.0775                    | 2092                                                                              | 10 ft-lbs         | 11 ft-lbs | 13 ft-lbs | 4940                                                                              | 23 ft-lbs         | 26 ft-lbs | 31 ft-lbs  | 6974                                                                              | 33 ft-lbs         | 37 ft-lbs  | 44 ft-lbs  | 8174                                                                                | 38 ft-lbs         | 43 ft-lbs  | 51 ft-lbs  |
| 7/16                         | 14                     | 0.1063                    | 2870                                                                              | 16                | 18        | 21        | 6777                                                                              | 37                | 42        | 49         | 9568                                                                              | 52                | 59         | 70         | 11214                                                                               | 61                | 70         | 82         |
| 1/2                          | 13                     | 0.1419                    | 3831                                                                              | 24                | 27        | 32        | 9046                                                                              | 57                | 64        | 75         | 12771                                                                             | 80                | 90         | 106        | 14969                                                                               | 94                | 106        | 125        |
| 9/16                         | 12                     | 0.1819                    | 4912                                                                              | 35                | 39        | 46        | 11599                                                                             | 82                | 92        | 109        | 16375                                                                             | 115               | 130        | 154        | 19193                                                                               | 135               | 153        | 180        |
| 5/8                          | 11                     | 0.2260                    | 6102                                                                              | 48                | 54        | 64        | 14408                                                                             | 113               | 128       | 150        | 20340                                                                             | 159               | 180        | 212        | 23840                                                                               | 186               | 211        | 248        |
| 3/4                          | 10                     | 0.3345                    | 9030                                                                              | 85                | 96        | 113       | 21322                                                                             | 200               | 227       | 267        | 30101                                                                             | 282               | 320        | 376        | 35281                                                                               | 331               | 375        | 441        |
| 7/8                          | 9                      | 0.4617                    | 12467                                                                             | 136               | 155       | 182       | 29436                                                                             | 322               | 365       | 429        | 41556                                                                             | 455               | 515        | 606        | 48707                                                                               | 533               | 604        | 710        |
| 1                            | 8                      | 0.6057                    | 16355                                                                             | 204               | 232       | 273       | 38616                                                                             | 483               | 547       | 644        | 54517                                                                             | 681               | 772        | 909        | 63899                                                                               | 799               | 905        | 1065       |
| 1 1/4                        | 7                      | 0.9691                    | 26166                                                                             | 409               | 463       | 545       | 53786                                                                             | 840               | 952       | 1121       | 87220                                                                             | 1363              | 1545       | 1817       | 102229                                                                              | 1597              | 1810       | 2130       |
| 1 1/2                        | 6                      | 1.4053                    | 37942                                                                             | 711               | 806       | 949       | 77991                                                                             | 1462              | 1657      | 1950       | 126473                                                                            | 2371              | 2688       | 3162       | 148237                                                                              | 2779              | 3150       | 3706       |
| Fine Thread Series           |                        |                           |                                                                                   |                   |           |           |                                                                                   |                   |           |            |                                                                                   |                   |            |            |                                                                                     |                   |            |            |
| 1/4                          | 28                     | 0.0364                    | 982                                                                               | 37 in-lbs         | 42 in-lbs | 49 in-lbs | 2319                                                                              | 87 in-lbs         | 99 in-lbs | 116 in-lbs | 3274                                                                              | 123 in-lbs        | 139 in-lbs | 164 in-lbs | 3837                                                                                | 144 in-lbs        | 163 in-lbs | 192 in-lbs |
| 5/16                         | 24                     | 0.0581                    | 1568                                                                              | 73                | 83        | 98        | 3702                                                                              | 174               | 197       | 231        | 5226                                                                              | 245               | 278        | 327        | 6125                                                                                | 287               | 325        | 383        |
| 3/8                          | 24                     | 0.0878                    | 2371                                                                              | 11 ft-lbs         | 13 ft-lbs | 15 ft-lbs | 5599                                                                              | 26 ft-lbs         | 30 ft-lbs | 35 ft-lbs  | 7905                                                                              | 37 ft-lbs         | 42 ft-lbs  | 49 ft-lbs  | 9265                                                                                | 43 ft-lbs         | 49 ft-lbs  | 58 ft-lbs  |
| 7/16                         | 20                     | 0.1187                    | 3205                                                                              | 18                | 20        | 23        | 7568                                                                              | 41                | 47        | 55         | 10684                                                                             | 58                | 66         | 78         | 12523                                                                               | 68                | 78         | 91         |
| 1/2                          | 20                     | 0.1600                    | 4319                                                                              | 27                | 31        | 36        | 10197                                                                             | 64                | 72        | 85         | 14396                                                                             | 90                | 102        | 120        | 16873                                                                               | 105               | 120        | 141        |
| 9/16                         | 18                     | 0.2030                    | 5480                                                                              | 39                | 44        | 51        | 12940                                                                             | 91                | 103       | 121        | 18268                                                                             | 128               | 146        | 171        | 21412                                                                               | 151               | 171        | 201        |
| 5/8                          | 18                     | 0.2560                    | 6911                                                                              | 54                | 61        | 72        | 16317                                                                             | 127               | 144       | 170        | 23036                                                                             | 180               | 204        | 240        | 27000                                                                               | 211               | 239        | 281        |
| 3/4                          | 16                     | 0.3730                    | 10070                                                                             | 94                | 107       | 126       | 23776                                                                             | 223               | 253       | 297        | 33566                                                                             | 315               | 357        | 420        | 39343                                                                               | 369               | 418        | 492        |
| 7/8                          | 14                     | 0.5095                    | 13756                                                                             | 150               | 171       | 201       | 32479                                                                             | 355               | 403       | 474        | 45853                                                                             | 502               | 568        | 669        | 53743                                                                               | 588               | 666        | 784        |
| 1                            | 14                     | 0.6799                    | 18357                                                                             | 229               | 260       | 306       | 43343                                                                             | 542               | 614       | 722        | 61190                                                                             | 765               | 867        | 1020       | 71720                                                                               | 896               | 1016       | 1195       |
| 1 1/4                        | 12                     | 1.0729                    | 28970                                                                             | 453               | 513       | 604       | 59548                                                                             | 930               | 1055      | 1241       | 96565                                                                             | 1509              | 1710       | 2012       | 113182                                                                              | 1768              | 2004       | 2358       |
| 1 1/2                        | 12                     | 1.5810                    | 42688                                                                             | 800               | 907       | 1067      | 87747                                                                             | 1645              | 1865      | 2194       | 142292                                                                            | 2668              | 3024       | 3557       | 166778                                                                              | 3127              | 3544       | 4169       |

The torque values can only be achieved if nut (or tapped hole) has a proof load greater than or equal to the bolt's minimum ultimate tensile strength.

Clamp load calculated as 75% of the proof load when specified by the standard. ASTM A307 utilized 75% of 36,000 PSI.

Torque values for 1/4 and 5/16-in series are in inch-pounds. All other torque values are in foot-pounds.

Torque values calculated from formula  $T = KDF$ , where

$K = 0.15$  for "lubricated" conditions

$K = 0.17$  for zinc plated and dry conditions; we have also found various forms of customer applied thread lockers to have a similar  $K$  value.

$K = 0.20$  for plain and dry conditions

$D$  = Nominal Diameter

$F$  = Clamp Load

**Note: When using Zinc Plated (lubricated with wax) Top Lock Nuts, the  $K$  value can vary between 0.12-0.16**

## METRIC TORQUE SPECIFICATIONS

| Nominal Dia.<br>(mm) | Pitch | 4.6 Class 4.6     |                     |                      |                    | 8.8 Class 8.8     |                     |                      |                    | 10.9 Class 10.9   |                     |                      |                    | 12.9 Class 12.9   |                     |                      |                    |
|----------------------|-------|-------------------|---------------------|----------------------|--------------------|-------------------|---------------------|----------------------|--------------------|-------------------|---------------------|----------------------|--------------------|-------------------|---------------------|----------------------|--------------------|
|                      |       | Tightening Torque |                     |                      |                    | Tightening Torque |                     |                      |                    | Tightening Torque |                     |                      |                    | Tightening Torque |                     |                      |                    |
|                      |       | Clamp Load (lbs)  | Lubricated (ft-lbs) | Zinc Plated (ft-lbs) | Plain&Dry (ft-lbs) | Clamp Load (lbs)  | Lubricated (ft-lbs) | Zinc Plated (ft-lbs) | Plain&Dry (ft-lbs) | Clamp Load (lbs)  | Lubricated (ft-lbs) | Zinc Plated (ft-lbs) | Plain&Dry (ft-lbs) | Clamp Load (lbs)  | Lubricated (ft-lbs) | As-Received (ft-lbs) | Plain&Dry (ft-lbs) |
| 4                    | 0.7   | 333               | 0.7                 | 0.7                  | 0.9                | 858               | 1.7                 | 1.9                  | 2.3                | 1228              | 2.4                 | 2.7                  | 3.2                | 1436              | 2.8                 | 3.2                  | 3.8                |
| 5                    | 0.8   | 538               | 1.3                 | 1.5                  | 1.8                | 1387              | 3.4                 | 3.9                  | 4.5                | 1985              | 4.9                 | 5.5                  | 6.5                | 2319              | 5.7                 | 6.5                  | 7.6                |
| 6                    | 1     | 763               | 2.3                 | 2.6                  | 3.0                | 1968              | 5.8                 | 6.6                  | 7.7                | 2816              | 8.3                 | 9.4                  | 11.1               | 3291              | 9.7                 | 11.0                 | 13.0               |
| 7                    | 1     | 1095              | 3.8                 | 4.3                  | 5.0                | 2822              | 9.7                 | 11.0                 | 13.0               | 4039              | 13.9                | 15.8                 | 18.5               | 4720              | 16.3                | 18.4                 | 21.7               |
| 8                    | 1.25  | 1389              | 5.5                 | 6.2                  | 7.3                | 3580              | 14.1                | 16.0                 | 18.8               | 5123              | 20.2                | 22.9                 | 26.9               | 5987              | 23.6                | 26.7                 | 31.4               |
| 10                   | 1.5   | 2200              | 10.8                | 12.3                 | 14.4               | 5671              | 27.9                | 31.6                 | 37.2               | 8115              | 39.9                | 45.2                 | 53.2               | 9484              | 46.7                | 52.9                 | 62.2               |
| 12                   | 1.75  | 3197              | 18.9                | 21.4                 | 25.2               | 8240              | 48.7                | 55.1                 | 64.9               | 11792             | 69.6                | 78.9                 | 92.8               | 13781             | 81.4                | 92.2                 | 108.5              |
| 14                   | 2     | 4379              | 30.2                | 34.2                 | 40.2               | 11289             | 77.8                | 88.1                 | 103.7              | 16154             | 111.3               | 126.1                | 148.4              | 18879             | 130.0               | 147.4                | 173.4              |
| 16                   | 2     | 5943              | 47                  | 53                   | 62                 | 15320             | 121                 | 137                  | 161                | 21924             | 173                 | 196                  | 230                | 25622             | 202                 | 229                  | 269                |
| 18                   | 2.5   | 7301              | 65                  | 73                   | 86                 | 18822             | 167                 | 189                  | 222                | 26934             | 239                 | 270                  | 318                | 31477             | 279                 | 316                  | 372                |
| 20                   | 2.5   | 9286              | 91                  | 104                  | 122                | 23938             | 236                 | 267                  | 314                | 34256             | 337                 | 382                  | 449                | 40034             | 394                 | 446                  | 525                |
| 22                   | 2.5   | 11509             | 125                 | 141                  | 166                | 29669             | 321                 | 364                  | 428                | 42457             | 460                 | 521                  | 613                | 49619             | 537                 | 609                  | 716                |
| 24                   | 3     | 13372             | 158                 | 179                  | 211                | 34471             | 407                 | 461                  | 543                | 49329             | 582                 | 660                  | 777                | 57649             | 681                 | 771                  | 908                |
| 27                   | 3     | 17428             | 232                 | 262                  | 309                | 44924             | 597                 | 676                  | 796                | 64288             | 854                 | 968                  | 1139               | 75132             | 998                 | 1131                 | 1331               |
| 30                   | 3.5   | 21266             | 314                 | 356                  | 419                | 54819             | 809                 | 917                  | 1079               | 78448             | 1158                | 1312                 | 1544               | 91680             | 1353                | 1534                 | 1804               |
| 33                   | 3.5   | 26310             | 427                 | 484                  | 570                | 67821             | 1101                | 1248                 | 1468               | 97055             | 1576                | 1786                 | 2101               | 113425            | 1842                | 2087                 | 2455               |
| 36                   | 4     | 30982             | 549                 | 622                  | 732                | 79866             | 1415                | 1603                 | 1886               | 114291            | 2024                | 2294                 | 2699               | 133569            | 2366                | 2681                 | 3154               |

The torque values can only be achieved if nut (or tapped hole) has a proof load greater than or equal to the bolt's minimum ultimate tensile strength.

Clamp loads estimated as 75% of proof load for specified bolts.

Torque values listed in foot-pounds.

Torque values calculated from formula  $T = KDF$  where;  $K = 0.15$  for "lubricated" condition,  $K = 0.17$  for zinc plated and dry condition (or as-received for the 12.9),  $K = 0.20$  for plain and dry condition



**DEMAND  
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