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KEPM-C-01072023

Hydraulic Cylinder

PARTS MANUAL

Hydraulic Cylinder Reference and Service Guide

Revision C

SERIAL NUMBER:



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Thank you for choosing a KELLY product.

We trust that you find the following manual clear and easy to follow. If you should require additional customer support or assistance, please do not hesitate to contact us.

Spare parts can be purchased, as required, through your local dealer or by contacting KELLY directly.

The KELLY team values your feedback. Should you have any difficulties that you wish to raise, suggestions for improvement or modifications that you feel would enhance our products we look forward to hearing from you.

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How To Identify Your Cylinder

Identify the cylinder on your frame as either EzyFit (for most older machines) or Nordon (from 2015); in order to reference the appropriate section of this manual.

EzyFit cylinders are identified by their stamping on the barrel clevis, consisting of EF followed by 4 numbers. These four numbers with the prefix of 0311- is the part number of the cylinder.

Nordon cylinders have a decal sticker (with the part number and description) on the clevis end of the barrel. More recent Nordon cylinders are white.



Ezyfit cylinder (0311-2958) with the stamping on the barrel clevis



Nordon cylinder (0311-3524SP) with sticker on barrel

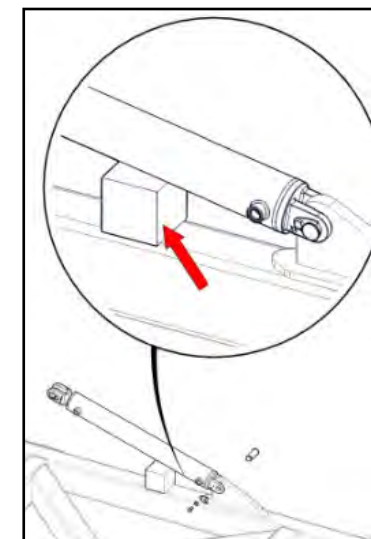


White Nordon cylinders

Cylinder Installation and Bleeding Process

INSTALLATION GUIDE - Ensure the hydraulic cylinder is supported at all time to prevent the piston rod from bending.

1. Ensure cylinder is clean and free from foreign matter.
2. Mount base end of cylinders first, ensuring pins and mounts are well greased.
3. Remove plastic or steel plugs located in the ports.
4. Manually fill the cylinders with system hydraulic oil.
5. Connect hoses to cylinder, leaving fittings slightly loose.
6. Once frames have been assembled and cylinders in position, support the barrel of the cylinder in an elevated position so the rod will not collide with mountings (see drawing).
7. Using the hydraulic control lever, bleed the air out of the lines, then tighten the base side hydraulic hose fitting.
8. Operate the controls on slowest flow speed possible to extend cylinder. Bleed the air from the retract side hoses then tighten the hose end fitting and fully retract the cylinders.
9. Operate the controls and fully cycle all cylinders to ensure all air is bled from the system. This may take several cycles.
10. Extend the rod ends out to the mounting points and connect the pins.
11. Remove the cylinder support and cycle the machine through full operation, checking /adjusting for the proper folding operation as per Kelly operator's manual.



Step 6

PLEASE NOTE:

1. Take care when connecting mounts that no side load is applied to the cylinders, as shaft damage will occur.
2. Ensure mounting pins align.

Cylinders Per Machine

| Model 1204 | | |
|-------------|--------------------------|----------|
| Part Number | Location | Quantity |
| 0311-316SP | Wing and Wheel Arm Frame | 4 |

| Model 2006 | | |
|--------------|-------------------------------|----------|
| Part Number | Location | Quantity |
| 0311-220SADC | Chain Tensioning - Outer Wing | 2 |
| 0311-2516 | Wheel Arm Frame | 2 |
| 0311-3532ST | Inner Wings | 2 |

| Model 3009 | | |
|-------------|-------------|----------|
| Part Number | Location | Quantity |
| 0311-256SP | Module Lift | 3 |
| 0311-312EXT | Drawbar | 1 |
| 0311-3524SP | Rear Tail | 2 |
| 0311-430ST | Inner Wings | 2 |

| Model 3009NT | | |
|---------------|------------------|----------|
| Part Number | Location | Quantity |
| 0311-256SP-WT | Chain Tensioning | 2 |
| 0311-256SP | Module Lift | 3 |
| 0311-312EXT | Drawbar | 1 |
| 0311-3524SP | Outer Wings | 2 |
| 0311-416SP | Rear Tail | 1 |
| 0311-530ST | Inner Wings | 2 |

| Model 4012 | | |
|---------------|-------------|----------|
| Part Number | Location | Quantity |
| 0311-256SP | Module Lift | 3 |
| 0311-412EXT-2 | Drawbar | 1 |
| 0311-424 | Rear Tail | 1 |
| 0311-430ST-C2 | Outer Wings | 2 |
| 0311-536ST | Inner Wings | 2 |

| Model 40 | | |
|--------------|-----------------------|----------|
| Part Number | Location | Quantity |
| 0311-256SP | Module Lift | 3 |
| 0311-312EXT | Drawbar | 1 |
| 0311-324STSP | Left Hand Outer Wing | 2 |
| 0311-3524SP | Rear Tail | 2 |
| 0311-424 | Right Hand Outer Wing | 1 |
| 0311-530ST | Inner Wings | 2 |

| Model 45 | | |
|-------------|-------------|----------|
| Part Number | Location | Quantity |
| 0311-5040 | Inner Wings | 2 |
| 0311-6357 | Drawbar | 1 |
| 0311-2958 | Rear Tail | 2 |
| 0311-2957 | Outer Wings | 4 |
| 0311-5041 | Module Lift | 3 |

Cylinders Per Machine

| Model 4614 | | |
|---------------|-------------|----------|
| Part Number | Location | Quantity |
| 0311-256SP | Module Lift | 3 |
| 0311-324STSP | Outer Wings | 4 |
| 0311-412EXT-2 | Drawbar | 1 |
| 0311-424 | Rear Tail | 1 |
| 0311-530STSP | Inner Wings | 4 |

| Model 6218HDX | | |
|---------------|-------------|----------|
| Part Number | Location | Quantity |
| 0311-256SP | Module Lift | 3 |
| 0311-3524SP | Rear Tail | 2 |
| 0311-3532ST | Outer Wings | 4 |
| 0311-412EXT-2 | Drawbar | 1 |
| 0311-536ST | Inner Wings | 4 |

| Model 6218 | | |
|---------------|----------------|----------|
| Part Number | Location | Quantity |
| 0311-256SP | Module Lift | 3 |
| 0311-308SPOC | Hydraulic Jack | 2 |
| 0311-3524SP | Rear Tail | 2 |
| 0311-3532ST | Outer Wings | 4 |
| 0311-412EXT-2 | Drawbar | 2 |
| 0311-536ST | Inner Wings | 4 |

| Model 8024 | | |
|---------------|---------------------|----------|
| Part Number | Location | Quantity |
| 0311-256SP | Module Lift | 3 |
| 0311-308SPOC | Hydraulic Jack | 2 |
| 0311-3524SP | Rear Tail | 2 |
| 0311-412EXT-2 | Drawbar | 2 |
| 0311-6X36-4ST | Inner & Outer Wings | 8 |

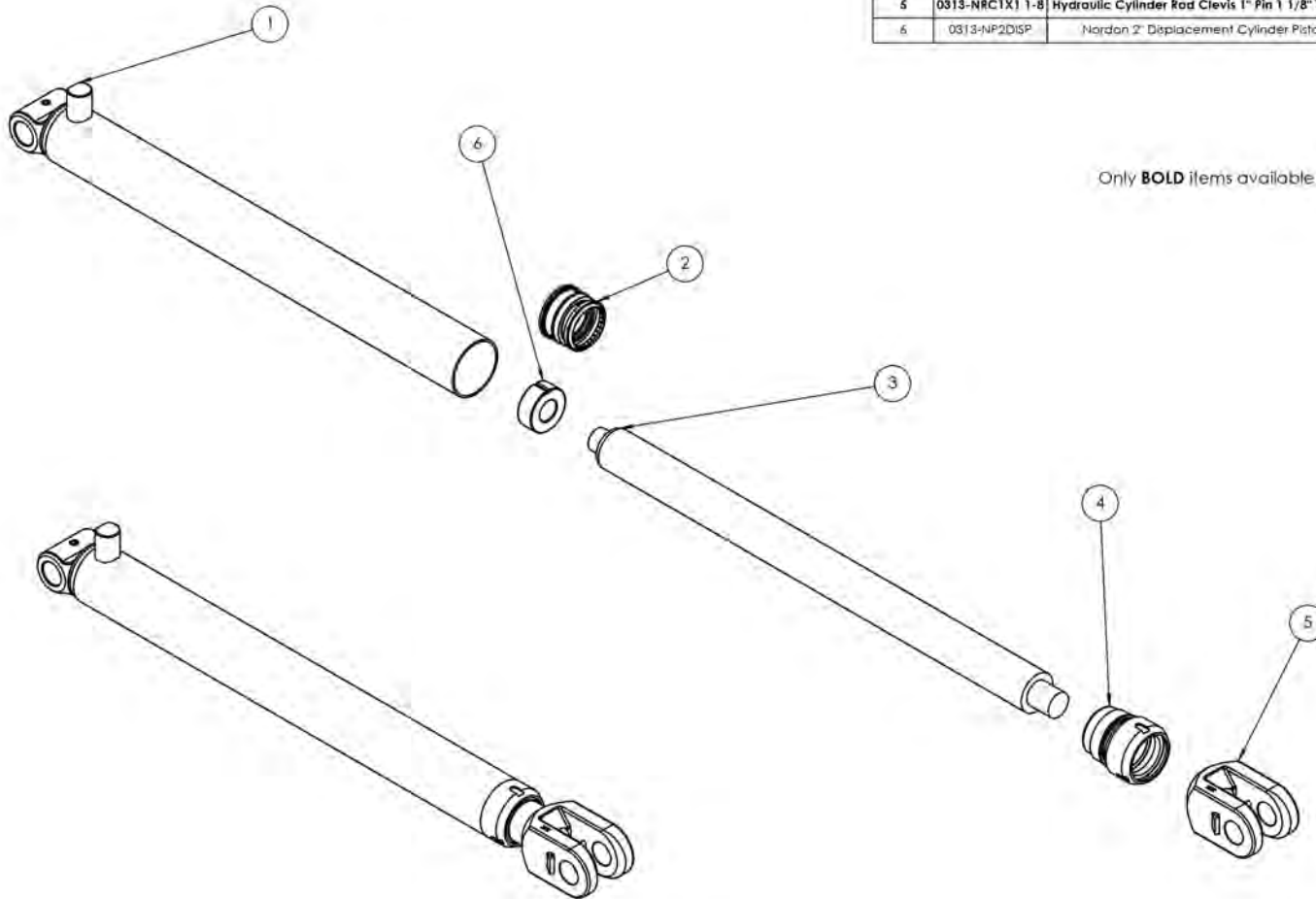
Hydraulic Cylinder Supplement Parts Manual Index - Nordon Cylinders



| Page No. | Part No. | Replaces Part No. | Seal Kit No. | Description | Machine Model & Machine Area |
|----------|---------------|------------------------|--------------|--|--|
| 9 | 0311-220SADC | | 0312-N2 | 2" Bore x 20" Stroke 1.75" Rod Single Acting Displacement Cylinder | 2006 x 2 (outer wing chain tensioners) |
| 10 | 0311-208SADC | | 0312-N2 | 2" Bore x 8" Stroke 1.75" Rod Single Acting Displacement Cylinder | 2006 x 2 (outer wing chain tensioners) |
| 11 | 0311-2506EXT | | 0312-N25 | 2.5" Bore x 6" Stroke | 12X x 1 (front lift) |
| 12 | 0311-256SP | 0311-5041 | 0312-N25 | 2.5" Bore x 6" Stroke 1.5" Rod Side Port Cylinder | All Models x 3 (module lift) |
| 13 | 0311-256SP-WT | | 0312-N25 | 2.5" Bore x 6" Stroke x 1.5" Rod Side Port Wing Tensioner | Upgrade to 3009NT & 4614 x 2 (rear chain wing detensioners) |
| 14 | 0311-2516 | | 0312-N25 | 2.5" Bore x 16" Stroke Hydraulic Cylinder | 2006 & 12X x 2 (wheel arm lift) |
| 15 | 0311-308SPOC | | 0312-N3-S | 3" Bore x 8" Stroke Cylinder with Int DCBV Valve | 6218 x 1; 6218HDX & 8024 x 2 (hydraulic jack) |
| 16 | 0311-316SP | | 0312-N3-S | 3" Bore x 12" Stroke 1.5" Rod Side Port Hydraulic Cylinder | 1204 x 4 (wings & wheel arm lift) |
| 17 | 0311-324STSP | 0311-324SP 0311-324 | 0312-N3-S | 3" Bore x 24" Stroke 1.5" Rod Cylinder with Stop Tube & Side Port | 40 x 2 (left hand outer wing); 4614 x 4 (both outer wing) |
| 18 | 0311-324 | 3011-2957 | 0312-N3-S | 3" Bore x 24" Stroke 1.5" Rod Cylinder | 4614 x 4 (outer wing) |
| 19 | 0311-3524SP | 0311-2958 | 0312-N35-S | 3.5" Bore x 24" Stroke 1.75" Rod Side Port Cylinder | 3009NT x 2 (each outer wing) 3009, 40, 4012, 6218, 6218HDX & 8024 x 2 (rear tail) |
| 20 | 0311-3532ST | 0311-6896 | 0312-N35-S | 3.5" Bore x 32" Stroke 1.75" Rod Cylinder with 4" Stop Tube | 2006 x 2 (main wings) 6218CT & 6218HDX x 4 (both outer wings) |
| 21-22 | 0311-312EXT | 0311-6002 | 0312-N3-S | 3" Bore x 12" Stroke 1.5" Rod Extended Cylinder | 3009NT, 3009, 40 & 4012 x 1 (front lift cylinder) |
| 23 | 0311-412EXT | 3011-6357 | 0312-N4-S | 4" Bore x 12" Stroke 1.75" Rod Extended Cylinder | 45 & 50 (front lift) |
| 24 | 0311-412EXT-2 | 0311-412EXT | 0312-N4-2 | 4" Bore x 12" Stroke 2" Rod Extended Cylinder | 4012, 4614 & 6218 x 1 (front lift) 6218HDX & 8024 x 2 (front lift) |
| 25 | 0311-416SP | | 0312-N4-S | 4" Bore x 16" Stroke 1.75" Rod Cylinder (Side Port) | 3009NT x 1 (rear tail) |
| 26 | 0311-424 | 0311-3786 | 0312-N4-S | 4" Bore x 24" Stroke 1.75" Rod Cylinder | 4012 & 4614 x 1 (rear tail) 40 x 1 (right hand outer wing) |
| 27 | 0311-430ST | 0311-4781 | 0312-N4-S | 4" Bore x 30" Stroke 1.75" Rod Cylinder with 3" Stop Tube | 40 x 1 (right hand outer wing) |
| 28 | 0311-430ST-C2 | | 0312-N4-S | 4" Bore x 30" Stroke 1.75" Rod Cylinder (Clevis) with 3" Stop Tube | 4012 x 2 (left hand & right hand outer wing) |
| 29 | 0311-530ST | 0311-5040 | 0312-N5-S | 5" Bore x 30" Stroke 2" Rod Cylinder with 3" Stop Tube | 3009NT, 40, 4012 x 2 (main wings) |
| 30 | 0311-530STSP | | 0312-N5-S | 5" Bore x 30" Stroke 2" Rod Cylinder with 3" Stop Tube (Side Port) | 4614 x 4 (main wings) |
| 31 | 0311-536ST | 0311-2956 | 0312-N5-S | 5" Bore x 36" Stroke 2" Rod Cylinder with 3" Stop Tube | 4012 x 2 ; 6218 & 6218HDX x 4 (main wings) |
| 32 | 0311-6X36-4ST | | 0312-N6-S | 6" Bore x 36" Stroke 3" Rod Cylinder with 4" Stop Tube | 8024 x 8 (outer & inner wings) |

Superseded

| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|----------|-----------------|--|----------|------|
| 1 | 0313-220DISP-B | 2" X 20" Displacement Cylinder Barrel | | 1 |
| 2 | 0312-N2 | Nordon 2" Cylinder Seal Kit | | 1 |
| 3 | 0313-220DISP-R | 2" x 20" Displacement Cylinder Rod | | 1 |
| 4 | 0313-NG2x8DISP | Cylinder Gland 1.75" Rod x 2" Barrel Displacement | | 1 |
| 5 | 0313-NRC1X1 1-B | Hydraulic Cylinder Rod Clevis 1" Pin 1 1/8" Thread | A-0 | 1 |
| 6 | 0313-NP2DISP | Nordon 2" Displacement Cylinder Piston | | 1 |



Only **BOLD** items available as spare parts



Part Number
0311-220SADC

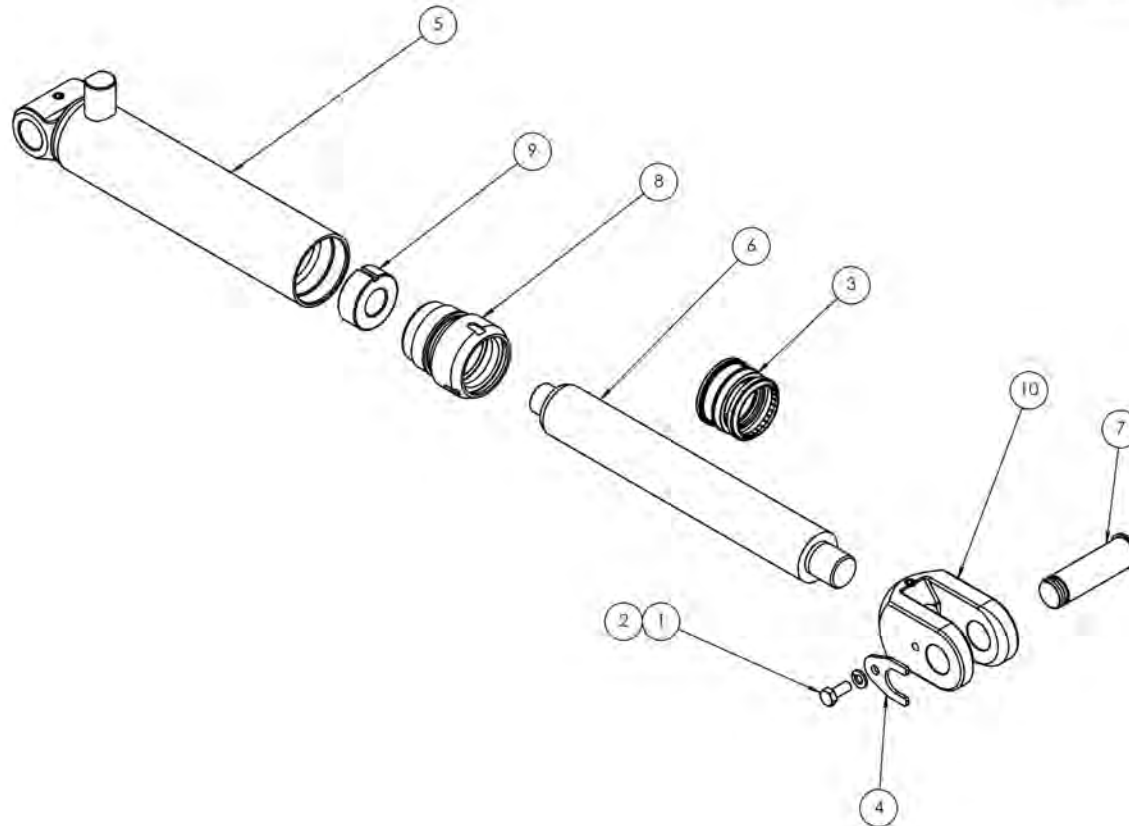
Description
2" Bore x 20" Stroke 1.75" Rod Single Acting Displacement Cylinder

For Machines Built:

Revision
B-0

| ITEM NO. | PART NUMBER | Description 2 | Revision | Qty |
|-----------|------------------------|---|------------|----------|
| 1 | 0211-820 | M8 x 20 Class 8.8 ZP Bolt | | 1 |
| 2 | 0231-S8 | Washer Spring M8 | | 1 |
| 3 | 0312-N2 | Nordon 2" Cylinder Seal Kit | | 1 |
| 4 | 0313-10I23M3 | Retaining Lug | A-0 | 1 |
| 5 | 0313-28DISP-B | 2" x 8" Displacement Cylinder Barrel | | 1 |
| 6 | 0313-28DISP-R | 2" x 8" Displacement Cylinder Rod | | 1 |
| 7 | 0313-NCP1X75 | Hydraulic Cylinder Pin 1" x 75mm | A-0 | 1 |
| 8 | 0313-NG2x8DISP | Cylinder Gland 1.75" Rod x 2" Barrel Displacement | | 1 |
| 9 | 0313-NP2DISP | Nordon 2" Displacement Cylinder Piston | | 1 |
| 10 | 0313-NRC1X1 1-8 | Hydraulic Cylinder Rod Clevis 1" Pin 1 1/8" Thread | A-0 | 1 |

Only **BOLD** items available as spare parts

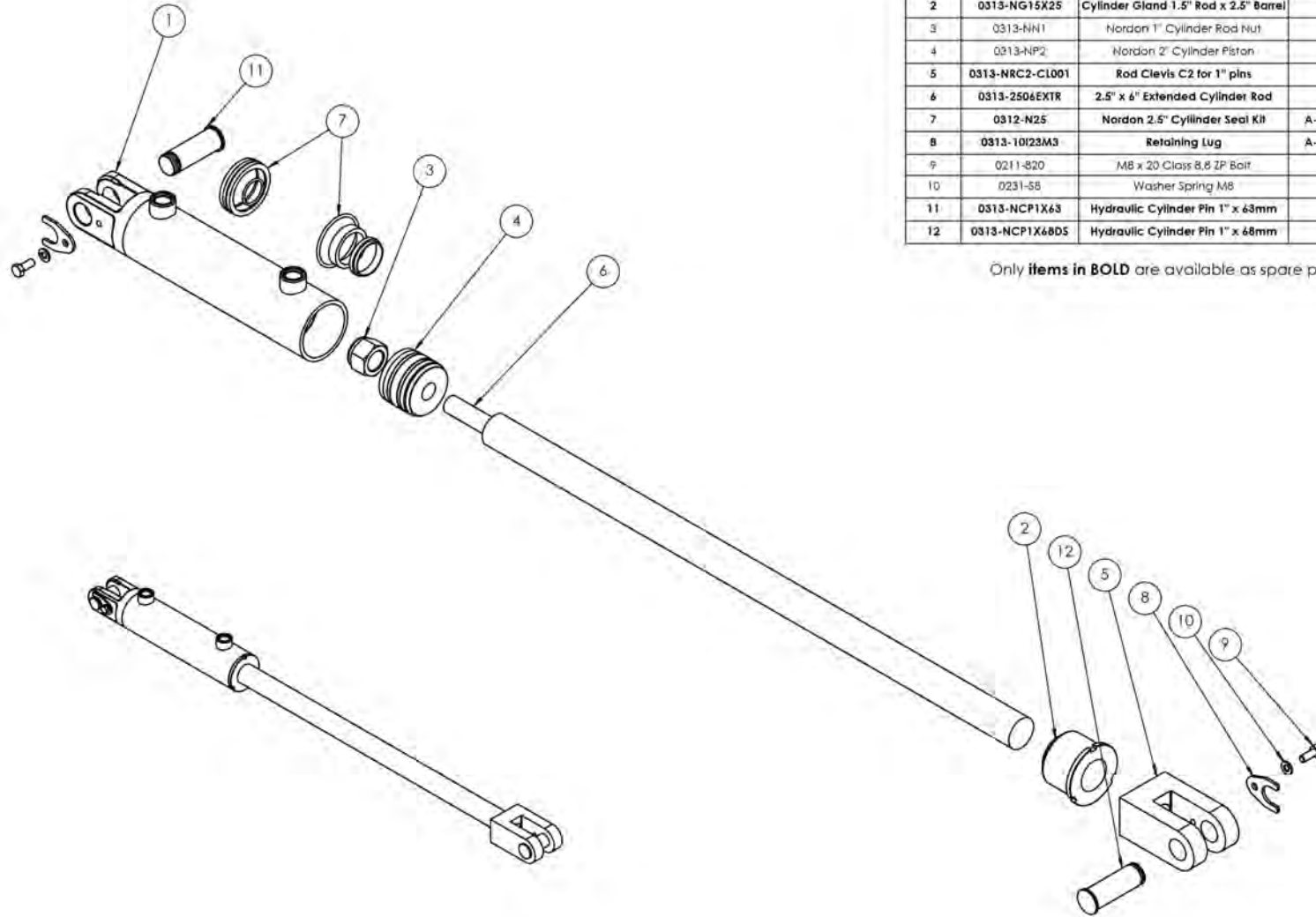


Part Number
0311-208SADC

Description
2" Bore x 8" Stroke 1.75" Rod Single Acting Displacement Cylinder

For Machines Built:

Revision
B-0

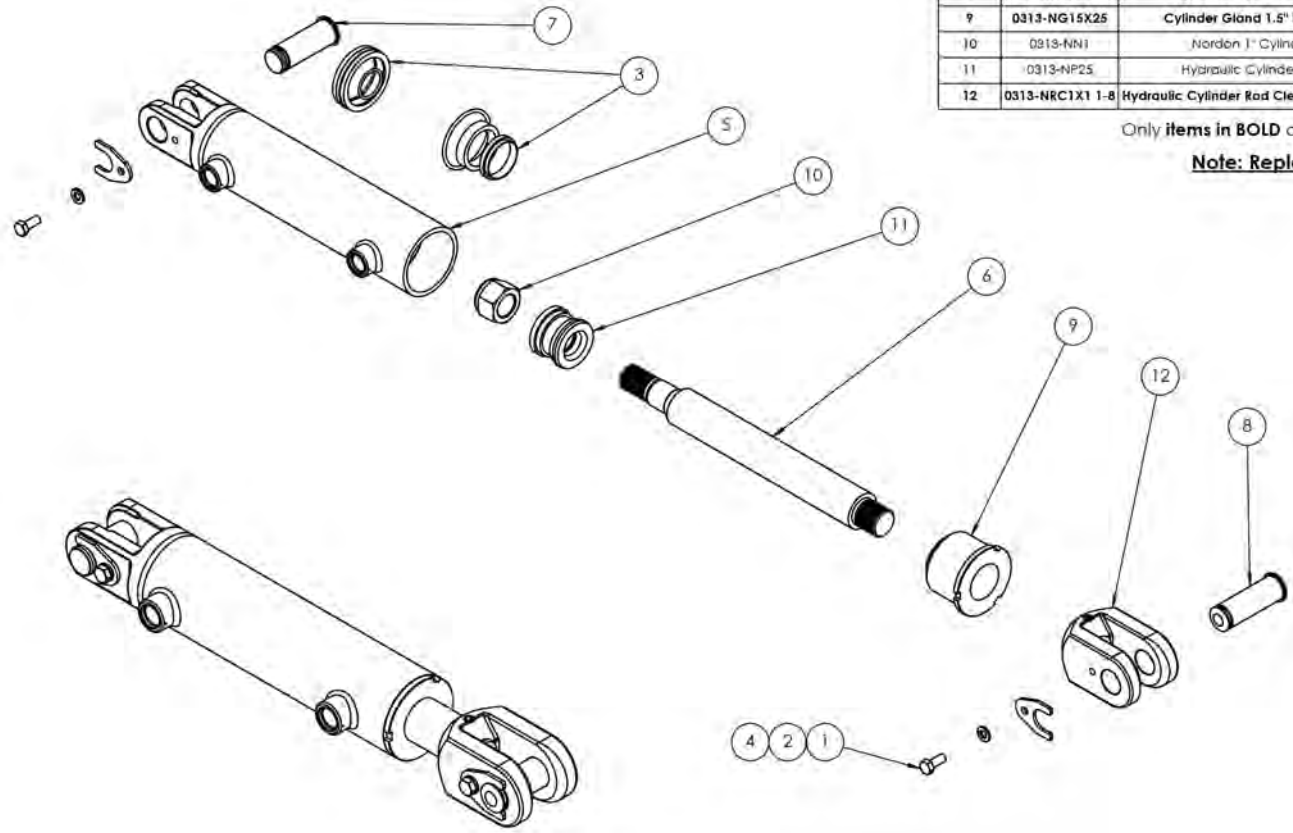


| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|----------|------------------------|--|------------|----------|
| 1 | 0313-2506EXT8 | 2.5" Bore x 6" Stroke Cylinder Barrel | A-0 | 1 |
| 2 | 0313-NG15X25 | Cylinder Gland 1.5" Rod x 2.5" Barrel | | 1 |
| 3 | 0313-NN1 | Nordon 1" Cylinder Rod Nut | | 1 |
| 4 | 0313-NP2 | Nordon 2" Cylinder Piston | | 1 |
| 5 | 0313-NRC2-CL001 | Rod Clevis C2 for 1" pins | | 1 |
| 6 | 0313-2506EXTR | 2.5" x 6" Extended Cylinder Rod | | 1 |
| 7 | 0312-N25 | Nordon 2.5" Cylinder Seal Kit | A-0 | 1 |
| 8 | 0313-10I23M3 | Retaining Lug | A-0 | 2 |
| 9 | 0211-820 | M8 x 20 Class 8.8 ZP Bolt | | 2 |
| 10 | 0231-58 | Washer Spring M8 | | 2 |
| 11 | 0313-NCP1X63 | Hydraulic Cylinder Pin 1" x 63mm | | 1 |
| 12 | 0313-NCP1X68D5 | Hydraulic Cylinder Pin 1" x 68mm | | 1 |

Only **items in BOLD** are available as spare parts



| | | | |
|---------------------|---|---------------------|----------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-2506EXT | 2.5" Bore x 6" Stroke Extended Cylinder | | A-1 |



| ITEM NO. | PART NUMBER | Description | Revision | QTY. |
|----------|------------------------|---|----------|------|
| 1 | 0211-B20 | M8 x 20 Class 8.8 ZP Bolt | | 2 |
| 2 | 0231-S8 | Washer Spring M8 | | 2 |
| 3 | 0312-N25 | Nordon 2.5" Cylinder Seal Kit | A-0 | 1 |
| 4 | 0313-10I23M3 | Retaining Lug | A-0 | 2 |
| 5 | 0313-256SP-B | 2.5" x 6" Hydraulic Cylinder Barrel | A-0 | 1 |
| 6 | 0313-256SP-R | Shaft for 0311-256SP-WT | | 1 |
| 7 | 0313-NCP1X63 | Hydraulic Cylinder Pin 1" x 63mm | | 1 |
| 8 | 0313-NCP1X68DS | Hydraulic Cylinder Pin 1" x 68mm | | 1 |
| 9 | 0313-NG15X25 | Cylinder Gland 1.5" Rod x 2.5" Barrel | | 1 |
| 10 | 0313-NN1 | Nordon 1" Cylinder Rod Nut | | 1 |
| 11 | 0313-NP25 | Hydraulic Cylinder Piston 2 1/2" | A-0 | 1 |
| 12 | 0313-NRC1X1 1-8 | Hydraulic Cylinder Rod Clevis 1" Pin 1 1/8" Thread | A-0 | 1 |

Only items in **BOLD** are available as spare parts

Note: Replaces Cylinder 0311-5041

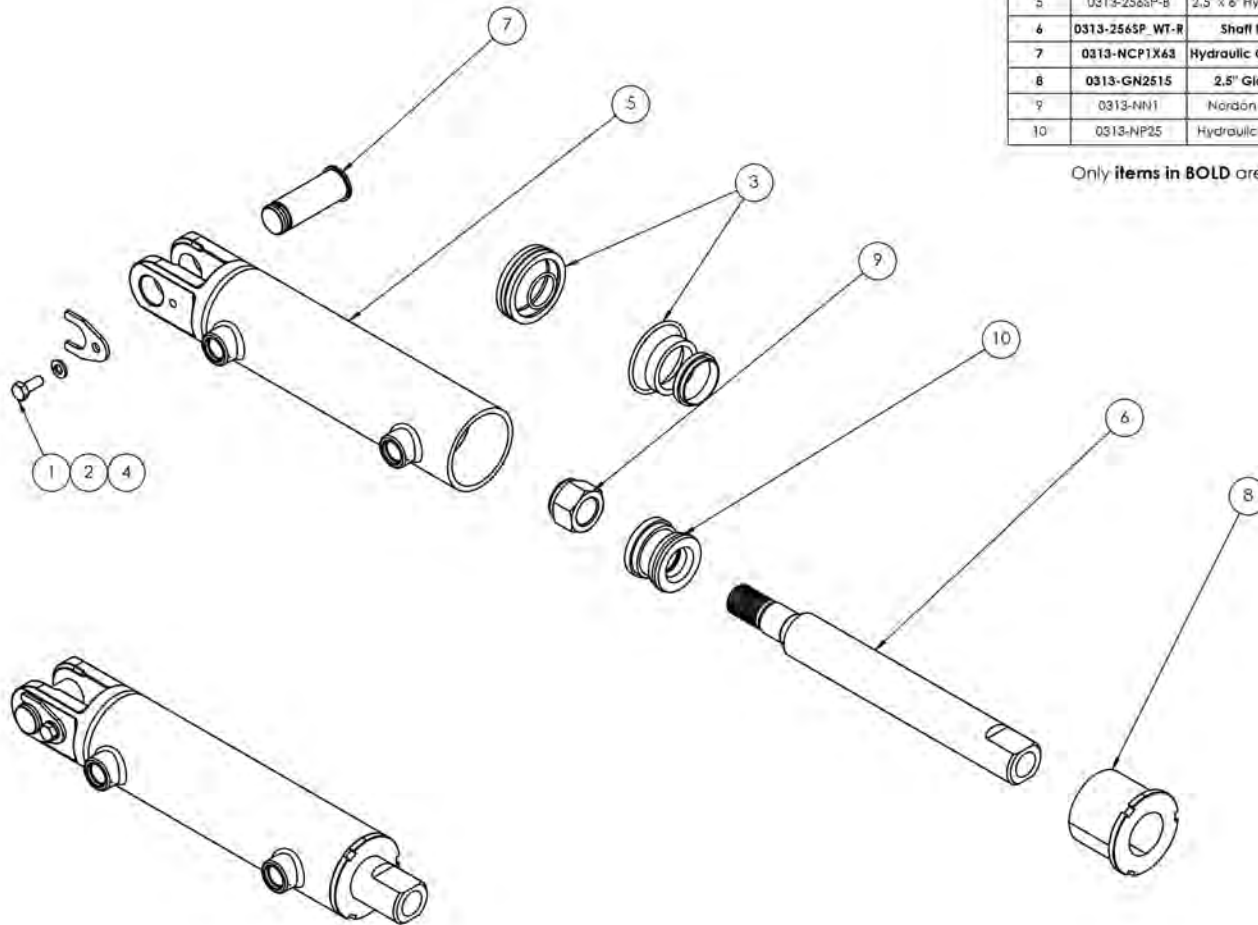


Part Number
0311-256SP

Description
2.5" Bore x 6" Stroke 1.5" Rod Side Port Cylinder

(a) Machines Built:

Revision
B-0



| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|----------|------------------------|---|------------|----------|
| 1 | 0211-620 | M8 x 20 Class 8.8 IP Bolt | | 1 |
| 2 | 0231-56 | Washer Spring M8 | | 1 |
| 3 | 0312-N25 | Nordon 2.5" Cylinder Seal Kit | A-0 | 1 |
| 4 | 0313-10I23M3 | Retaining Lug | A-0 | 1 |
| 5 | 0313-2565P-B | 2.5" x 6" Hydraulic Cylinder Barrel | A-0 | 1 |
| 6 | 0313-2565P-WT-R | Shaft for 0311-2565P-WT | | 1 |
| 7 | 0313-NCP1X63 | Hydraulic Cylinder Pin 1" x 63mm | | 1 |
| 8 | 0313-GN2515 | 2.5" Gland to suit 1.5" Rod | | 1 |
| 9 | 0313-NN1 | Nordon 1" Cylinder Rod Nut | | 1 |
| 10 | 0313-NP25 | Hydraulic Cylinder Piston 2.1/2" | A-0 | 1 |

Only **items in BOLD** are available as spare parts.

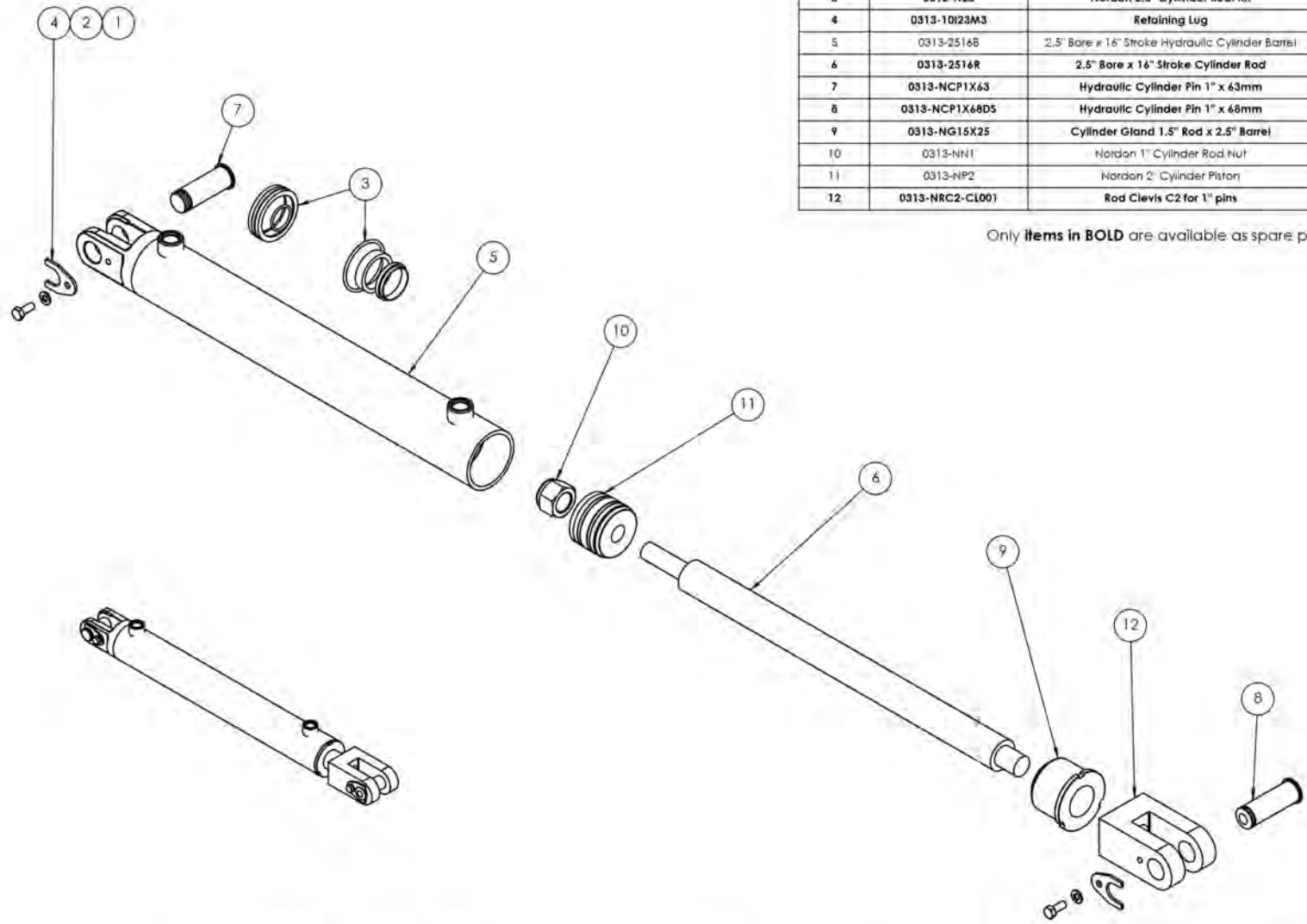


Part Number **0311-256SP-WT** Description 2.5" Bore x 6" Stroke x 1.5" Rod Side Port Wing Tensioner

For Machines Built:

Revision

B-0

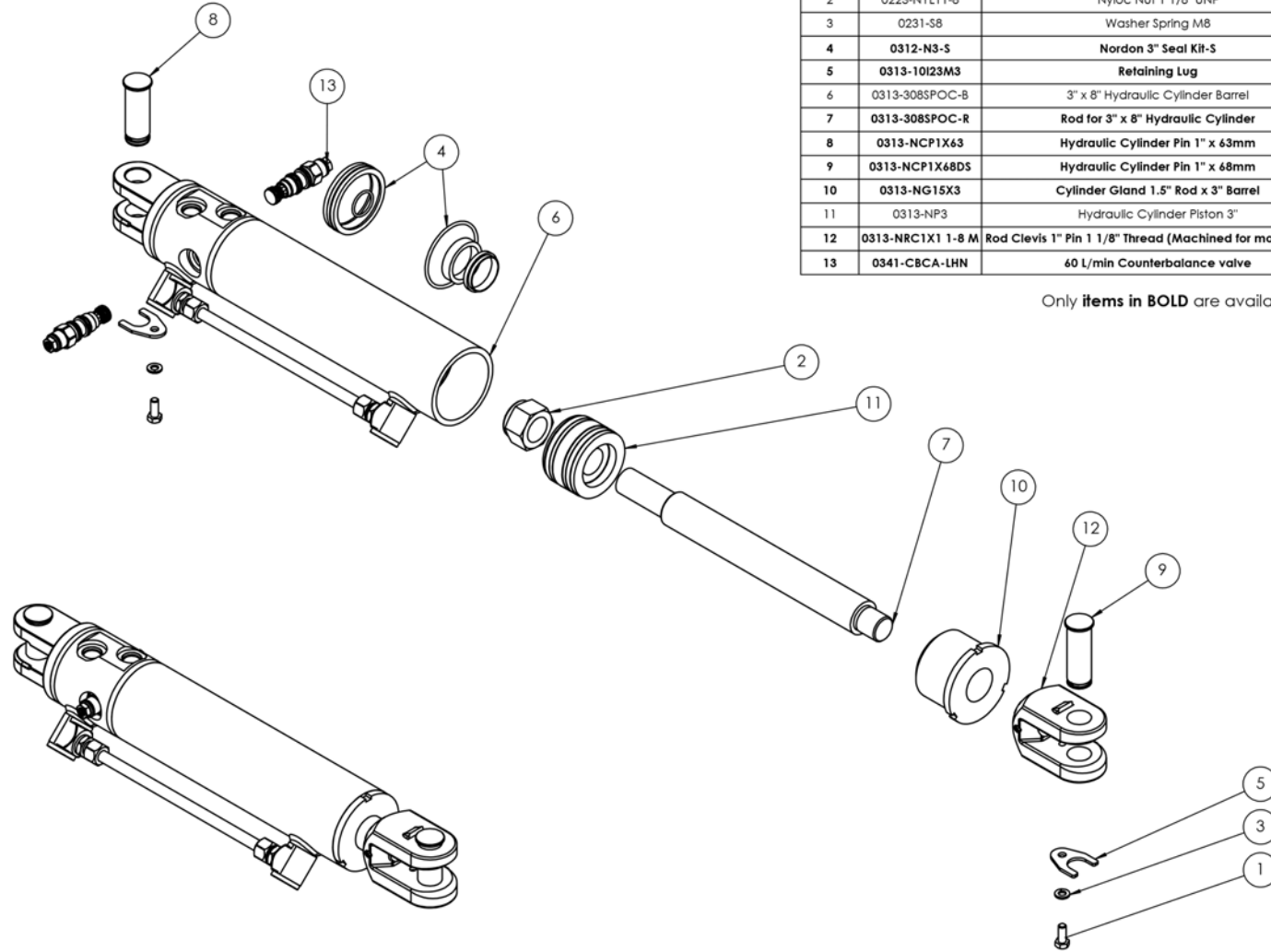


| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|----------|---------------------|--|----------|
| 1 | 0211-820 | M8 x 20 Class 8.8 ZF Bolt | 2 |
| 2 | 0231-58 | Washer Spring M8 | 2 |
| 3 | 0312-N25 | Nordon 2.5" Cylinder Seal Kit | 1 |
| 4 | 0313-10I23M3 | Retaining Lug | 2 |
| 5 | 0313-2516B | 2.5" Bore x 16" Stroke Hydraulic Cylinder Barrel | 1 |
| 6 | 0313-2516R | 2.5" Bore x 16" Stroke Cylinder Rod | 1 |
| 7 | 0313-NCP1X63 | Hydraulic Cylinder Pin 1" x 63mm | 1 |
| 8 | 0313-NCP1X68D5 | Hydraulic Cylinder Pin 1" x 68mm | 1 |
| 9 | 0313-NG15X25 | Cylinder Gland 1.5" Rod x 2.5" Barrel | 1 |
| 10 | 0313-NN1 | Nordon 1" Cylinder Rod Nut | 1 |
| 11 | 0313-HP2 | Nordon 2" Cylinder Piston | 1 |
| 12 | 0313-NRC2-CL001 | Rod Clevis C2 for 1" pins | 1 |

Only items in **BOLD** are available as spare parts



| | | | |
|------------------|---|---------------------|----------|
| Part Number | Description | For Machines built: | Revision |
| 0311-2516 | 2.5" Bore x 16" Stroke Hydraulic Cylinder | | B-0 |

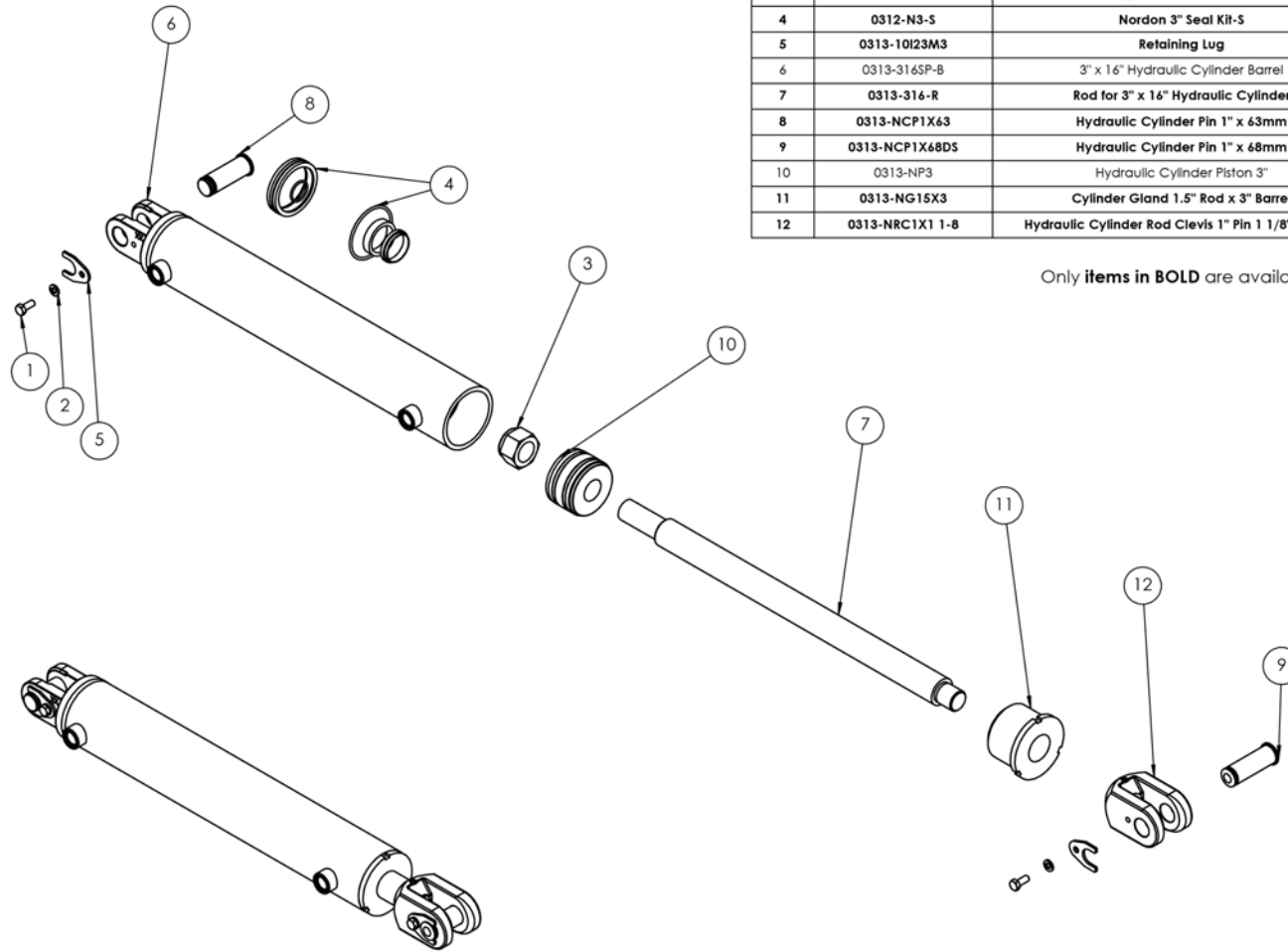


| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|----------|--------------------------|---|----------|------|
| 1 | 0211-820 | M8 x 20 Class 8.8 ZP Bolt | | 2 |
| 2 | 0223-NYL11-8 | Nyloc Nut 1 1/8" UNF | | 1 |
| 3 | 0231-58 | Washer Spring M8 | | 2 |
| 4 | 0312-N3-S | Nordon 3" Seal Kit-S | | 1 |
| 5 | 0313-10I23M3 | Retaining Lug | A-0 | 2 |
| 6 | 0313-308SPOC-B | 3" x 8" Hydraulic Cylinder Barrel | A-0 | 1 |
| 7 | 0313-308SPOC-R | Rod for 3" x 8" Hydraulic Cylinder | A-0 | 1 |
| 8 | 0313-NCP1X63 | Hydraulic Cylinder Pin 1" x 63mm | | 1 |
| 9 | 0313-NCP1X68DS | Hydraulic Cylinder Pin 1" x 68mm | | 1 |
| 10 | 0313-NG15X3 | Cylinder Gland 1.5" Rod x 3" Barrel | A-0 | 1 |
| 11 | 0313-NP3 | Hydraulic Cylinder Piston 3" | A-0 | 1 |
| 12 | 0313-NRC1X1 1-8 M | Rod Clevis 1" Pin 1 1/8" Thread (Machined for mount plate) | A-0 | 1 |
| 13 | 0341-CBCA-LHN | 60 L/min Counterbalance valve | | 2 |

Only items in **BOLD** are available as spare parts



| | | | |
|---------------------|---|---------------------|----------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-308SPOC | 3" Bore 8" Stroke NI Cylinder with Int DCBV Valve | | D-0 |



| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|----------|-----------------------|--|----------|------|
| 1 | 0211-820 | M8 x 20 Class 8.8 ZP Bolt | | 2 |
| 2 | 0231-S8 | Washer Spring M8 | | 2 |
| 3 | 0223-NYL11-8 | Nyloc Nut 1 1/8" UNF | | 1 |
| 4 | 0312-N3-S | Nordon 3" Seal Kit-S | | 1 |
| 5 | 0313-10I23M3 | Retaining Lug | A-0 | 2 |
| 6 | 0313-316SP-B | 3" x 16" Hydraulic Cylinder Barrel | A-0 | 1 |
| 7 | 0313-316-R | Rod for 3" x 16" Hydraulic Cylinder | A-0 | 1 |
| 8 | 0313-NCP1X63 | Hydraulic Cylinder Pin 1" x 63mm | | 1 |
| 9 | 0313-NCP1X68DS | Hydraulic Cylinder Pin 1" x 68mm | | 1 |
| 10 | 0313-NP3 | Hydraulic Cylinder Piston 3" | A-0 | 1 |
| 11 | 0313-NG15X3 | Cylinder Gland 1.5" Rod x 3" Barrel | A-0 | 1 |
| 12 | 0313-NRC1X1 1-8 | Hydraulic Cylinder Rod Clevis 1" Pin 1 1/8" Thread | A-0 | 1 |

Only items in **BOLD** are available as spare parts

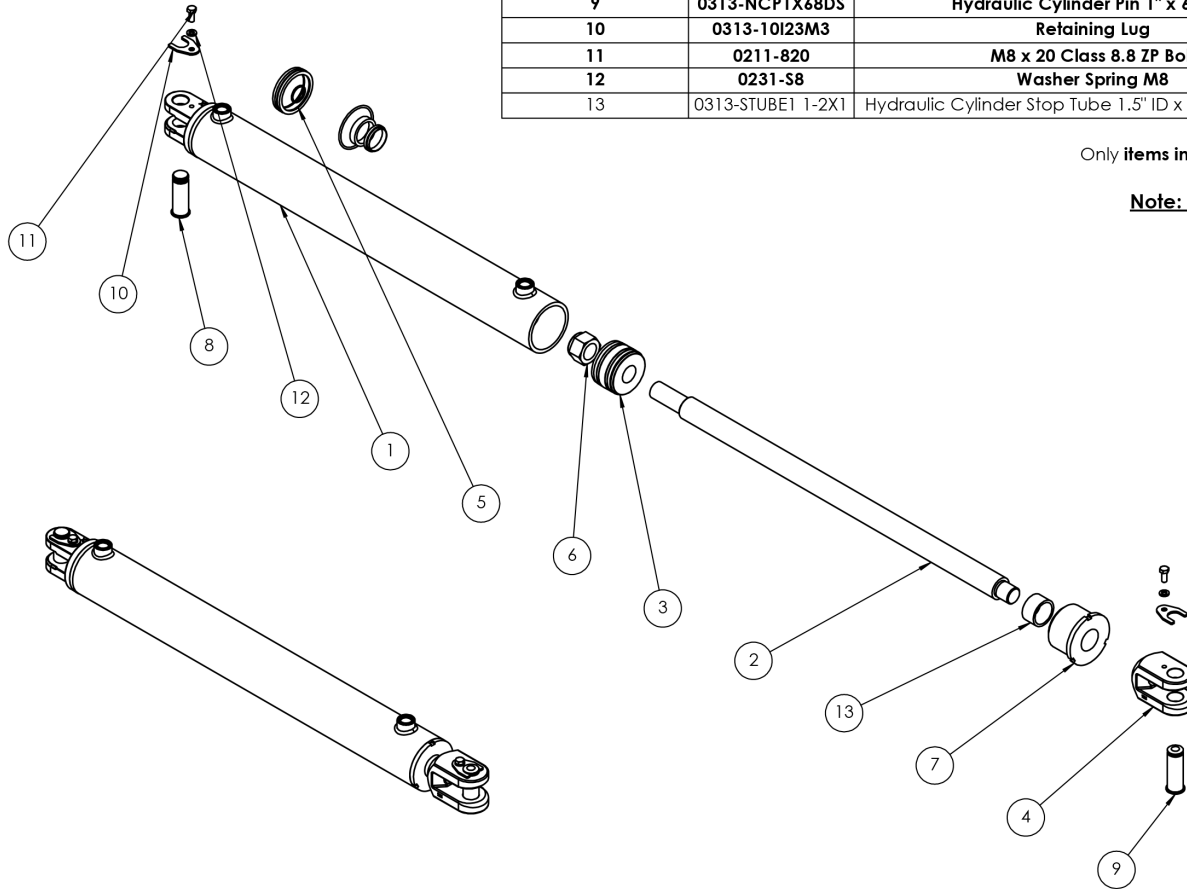


| | | | |
|-------------------|--|---------------------|----------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-316SP | 3" Bore x 16" Stroke 1.5" Rod Side Port Hydraulic Cylinder | | B-0 |

| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|-----------|-----------------------|---|------------|----------|
| 1 | 0313-324-BSTSP | 3" x 24" STSP Hydraulic Cylinder Barrel | | 1 |
| 2 | 0313-324-R | Rod for 3" x 24" Hydraulic Cylinder | A-0 | 1 |
| 3 | 0313-NP3 | Hydraulic Cylinder Piston 3" | A-0 | 1 |
| 4 | 0313-NRC1X1 1-8 | Hydraulic Cylinder Rod Clevis 1" Pin 1 1/8" Thread | A-0 | 1 |
| 5 | 0312-N3-S | Nordon 3" Seal Kit-S | A-0 | 1 |
| 6 | 0223-NYL11-8 | Nyloc Nut 1 1/8" UNF | | 1 |
| 7 | 0313-NG15X3 | Cylinder Gland 1.5" Rod x 3" Barrel | A-0 | 1 |
| 8 | 0313-NCP1X63 | Hydraulic Cylinder Pin 1" x 63mm | | 1 |
| 9 | 0313-NCP1X68DS | Hydraulic Cylinder Pin 1" x 68mm | | 1 |
| 10 | 0313-10I23M3 | Retaining Lug | A-0 | 2 |
| 11 | 0211-820 | M8 x 20 Class 8.8 ZP Bolt | | 2 |
| 12 | 0231-S8 | Washer Spring M8 | | 2 |
| 13 | 0313-STUBE1 1-2X1 | Hydraulic Cylinder Stop Tube 1.5" ID x 1" (25mm) Long | | 1 |

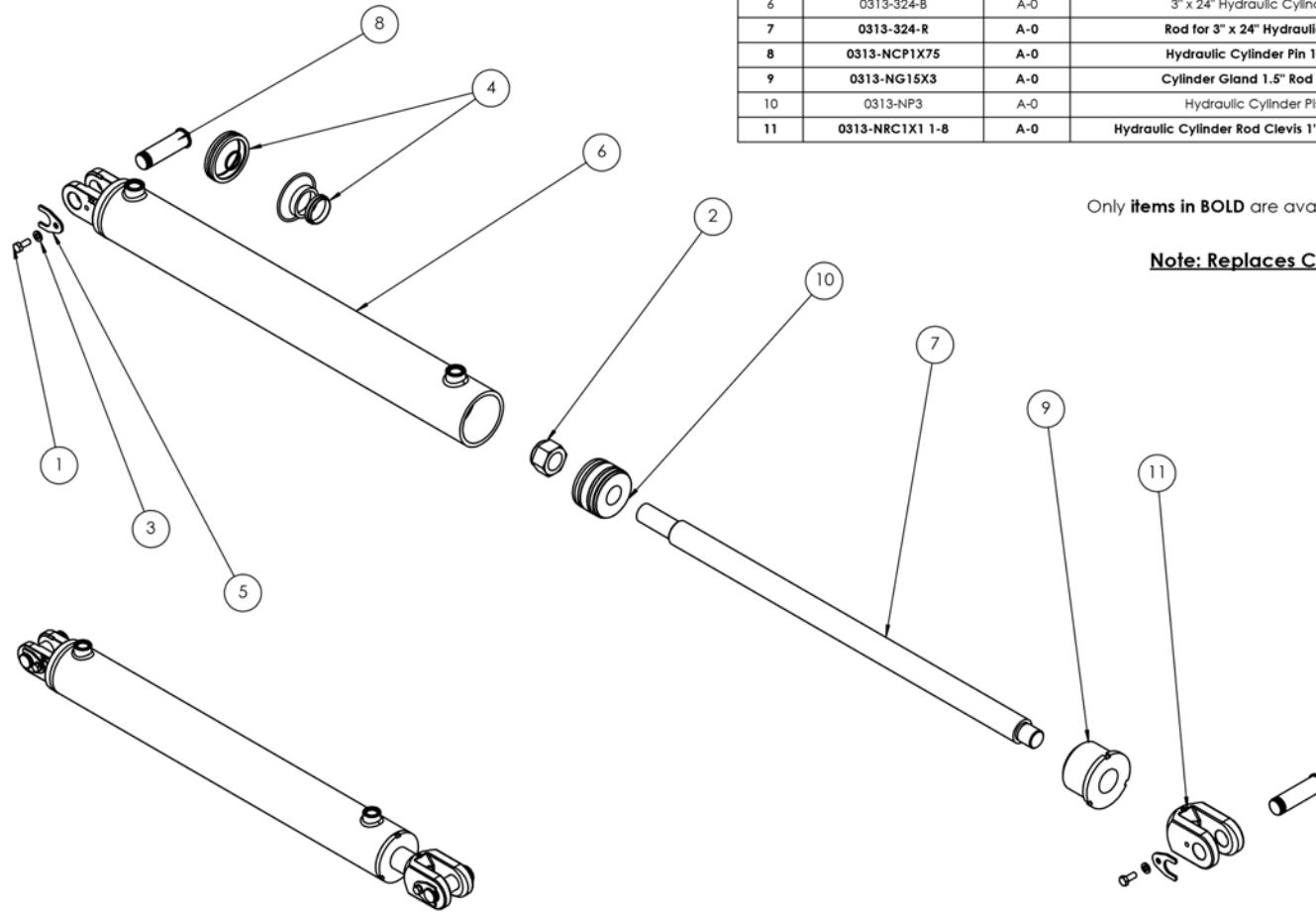
Only items in **BOLD** are available as spare parts

Note: Replaces Cylinder 0311-324SP



| | | | |
|---------------------|--|---------------------|------------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-324STSP | 3" Bore x 24" Stroke 1.5" Rod Hydraulic Cylinder Stop Tube Side Port | | B-0 |

| ITEM NO. | PART NUMBER | Revision | DESCRIPTION | QTY. |
|----------|------------------------|----------|---|------|
| 1 | 0211-820 | | M8 x 20 Class 8.8 ZP Bolt | 2 |
| 2 | 0223-NYL11-8 | | Nyloc Nut 1 1/8" UNF | 1 |
| 3 | 0231-S8 | | Washer Spring M8 | 2 |
| 4 | 0312-N3-S | A-0 | Nordon 3" Seal Kit-S | 1 |
| 5 | 0313-10I23M3 | A-0 | Retaining Lug | 2 |
| 6 | 0313-324-B | A-0 | 3" x 24" Hydraulic Cylinder Barrel | 1 |
| 7 | 0313-324-R | A-0 | Rod for 3" x 24" Hydraulic Cylinder | 1 |
| 8 | 0313-NCP1X75 | A-0 | Hydraulic Cylinder Pin 1" x 75mm | 2 |
| 9 | 0313-NG15X3 | A-0 | Cylinder Gland 1.5" Rod x 3" Barrel | 1 |
| 10 | 0313-NP3 | A-0 | Hydraulic Cylinder Piston 3" | 1 |
| 11 | 0313-NRC1X1 1-8 | A-0 | Hydraulic Cylinder Rod Clevis 1" Pin 1 1/8" Thread | 1 |



Only **items in BOLD** are available as spare parts

Note: Replaces Cylinder 0311-2957

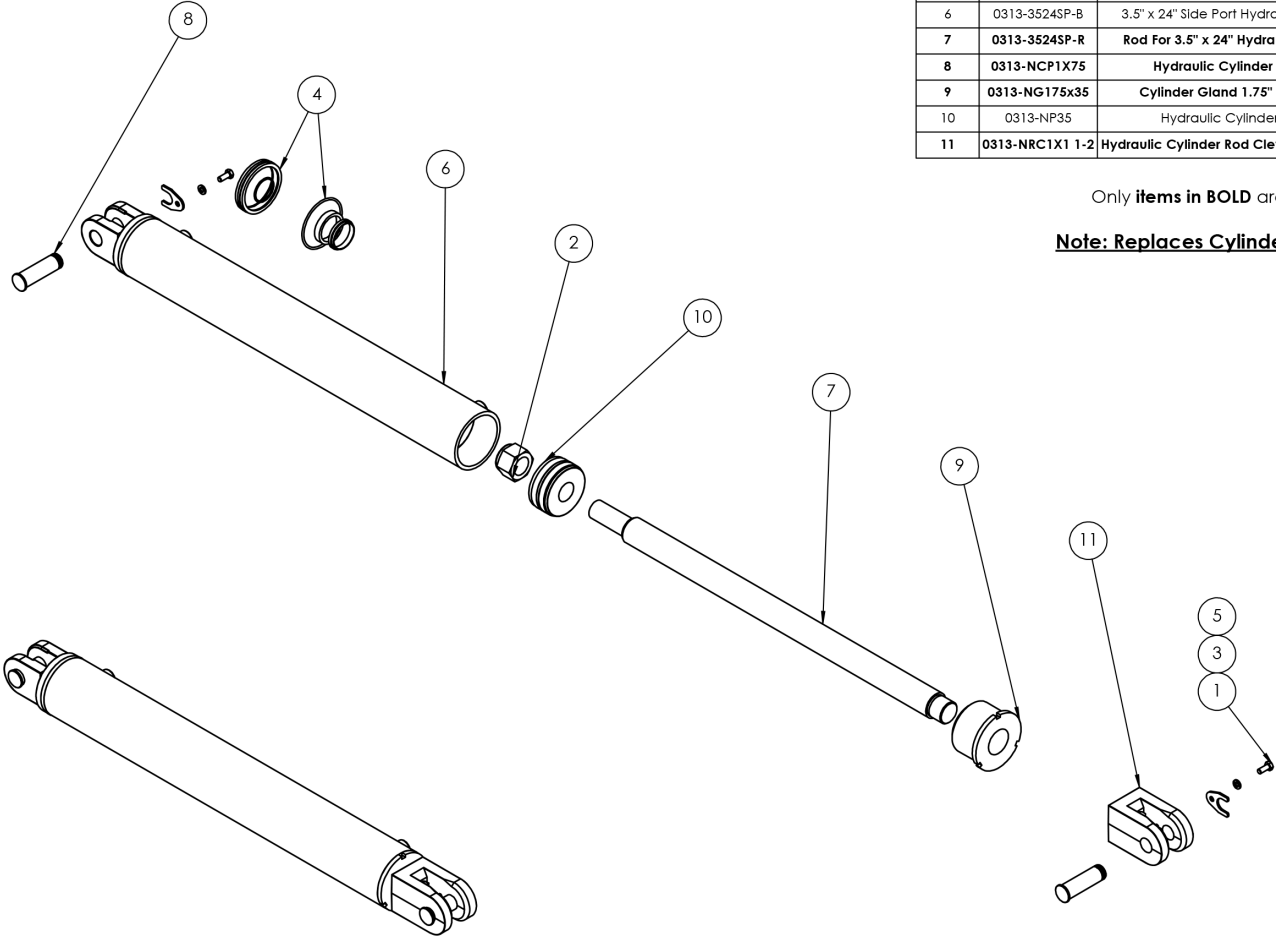


| | | | |
|-----------------|--|---------------------|----------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-324 | 3" Bore x 24" Stroke 1.5" Rod Hydraulic Cylinder | | C-0 |

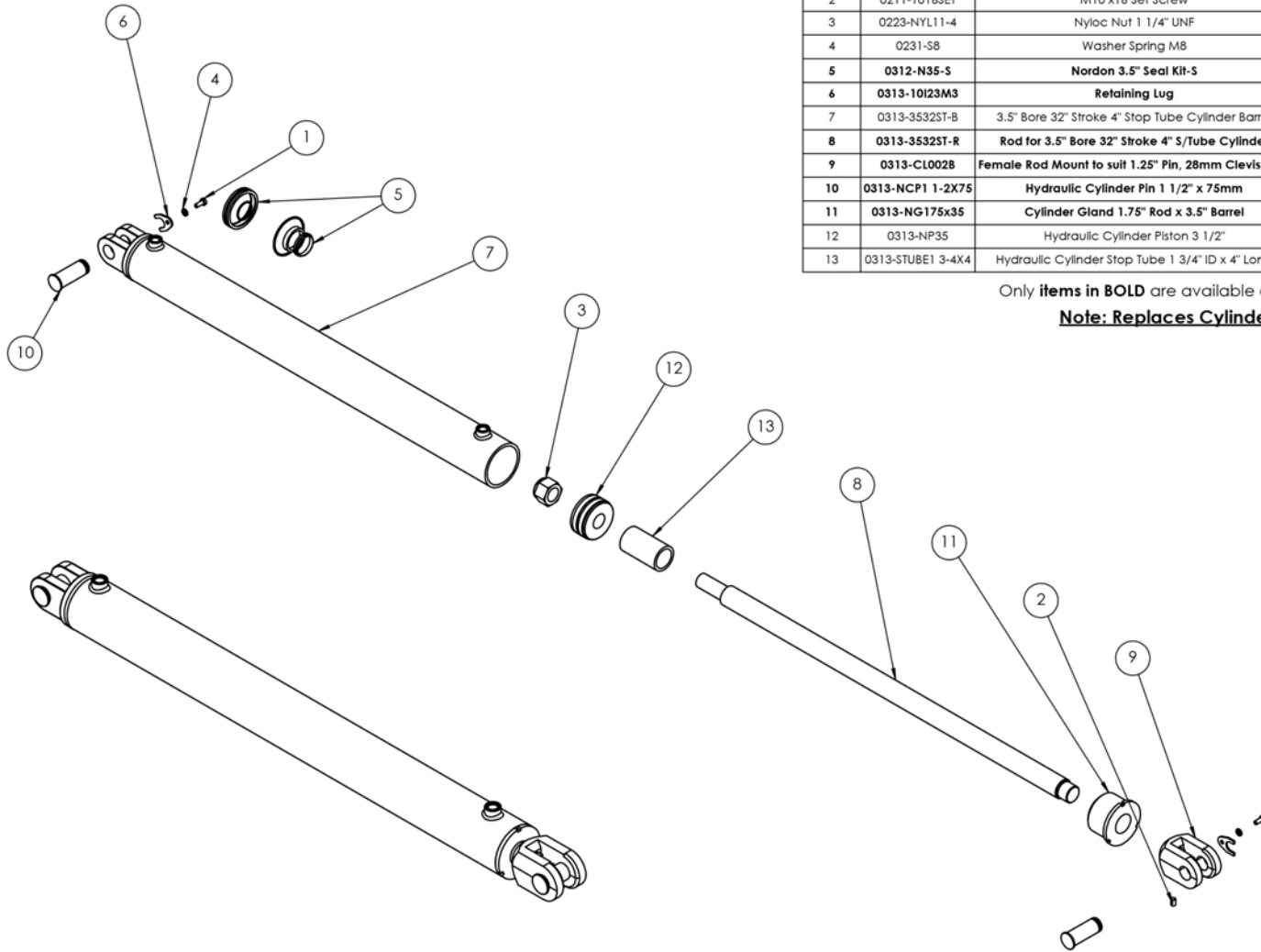
| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|-----------|------------------------|---|------------|----------|
| 1 | 0211-820 | M8 x 20 Class 8.8 ZP Bolt | | 2 |
| 2 | 0223-NYL11-4 | Nyloc Nut 1 1/4" UNF | | 1 |
| 3 | 0231-S8 | Washer Spring M8 | | 2 |
| 4 | 0312-N35-S | Nordon 3.5" Seal Kit-S | A-0 | 1 |
| 5 | 0313-10I23M3 | Retaining Lug | A-0 | 2 |
| 6 | 0313-3524SP-B | 3.5" x 24" Side Port Hydraulic Cylinder Barrel | A-0 | 1 |
| 7 | 0313-3524SP-R | Rod For 3.5" x 24" Hydraulic Cylinder Barrel | A-0 | 1 |
| 8 | 0313-NCP1X75 | Hydraulic Cylinder Pin 1" x 75mm | A-0 | 2 |
| 9 | 0313-NG175x35 | Cylinder Gland 1.75" Rod x 3.5" Barrel | A-0 | 1 |
| 10 | 0313-NP35 | Hydraulic Cylinder Piston 3 1/2" | A-0 | 1 |
| 11 | 0313-NRC1X1 1-2 | Hydraulic Cylinder Rod Clevis 1" Pin 1 1/2" Thread | A-0 | 1 |

Only items in **BOLD** are available as spare parts

Note: Replaces Cylinder 0311-2958 / 0311-324



| | | | |
|--------------------|---|---------------------|----------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-3524SP | 3.5" Bore x 24" Stroke 1.75" Rod Side Port Cylinder | | D-0 |



| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|----------|-------------------------|--|----------|------|
| 1 | 0211-820 | M8 x 20 Class 8.8 ZP Bolt | | 2 |
| 2 | 0211-1016SET | M10 x16 Set Screw | | 1 |
| 3 | 0223-NYL11-4 | Nyloc Nut 1 1/4" UNF | | 1 |
| 4 | 0231-S8 | Washer Spring M8 | | 2 |
| 5 | 0312-N35-S | Nordon 3.5" Seal Kit-S | | 1 |
| 6 | 0313-10I23M3 | Retaining Lug | A-0 | 2 |
| 7 | 0313-3532ST-B | 3.5" Bore 32" Stroke 4" Stop Tube Cylinder Barrel | A-1 | 1 |
| 8 | 0313-3532ST-R | Rod for 3.5" Bore 32" Stroke 4" S/Tube Cylinder | A-0 | 1 |
| 9 | 0313-CL002B | Female Rod Mount to suit 1.25" Pin, 28mm Clevis Gap | | 1 |
| 10 | 0313-NCP1 1-2X75 | Hydraulic Cylinder Pin 1 1/2" x 75mm | A-0 | 2 |
| 11 | 0313-NG175x35 | Cylinder Gland 1.75" Rod x 3.5" Barrel | A-0 | 1 |
| 12 | 0313-NP35 | Hydraulic Cylinder Piston 3 1/2" | A-0 | 1 |
| 13 | 0313-STUBE1 3-4X4 | Hydraulic Cylinder Stop Tube 1 3/4" ID x 4" Long | A-0 | 1 |

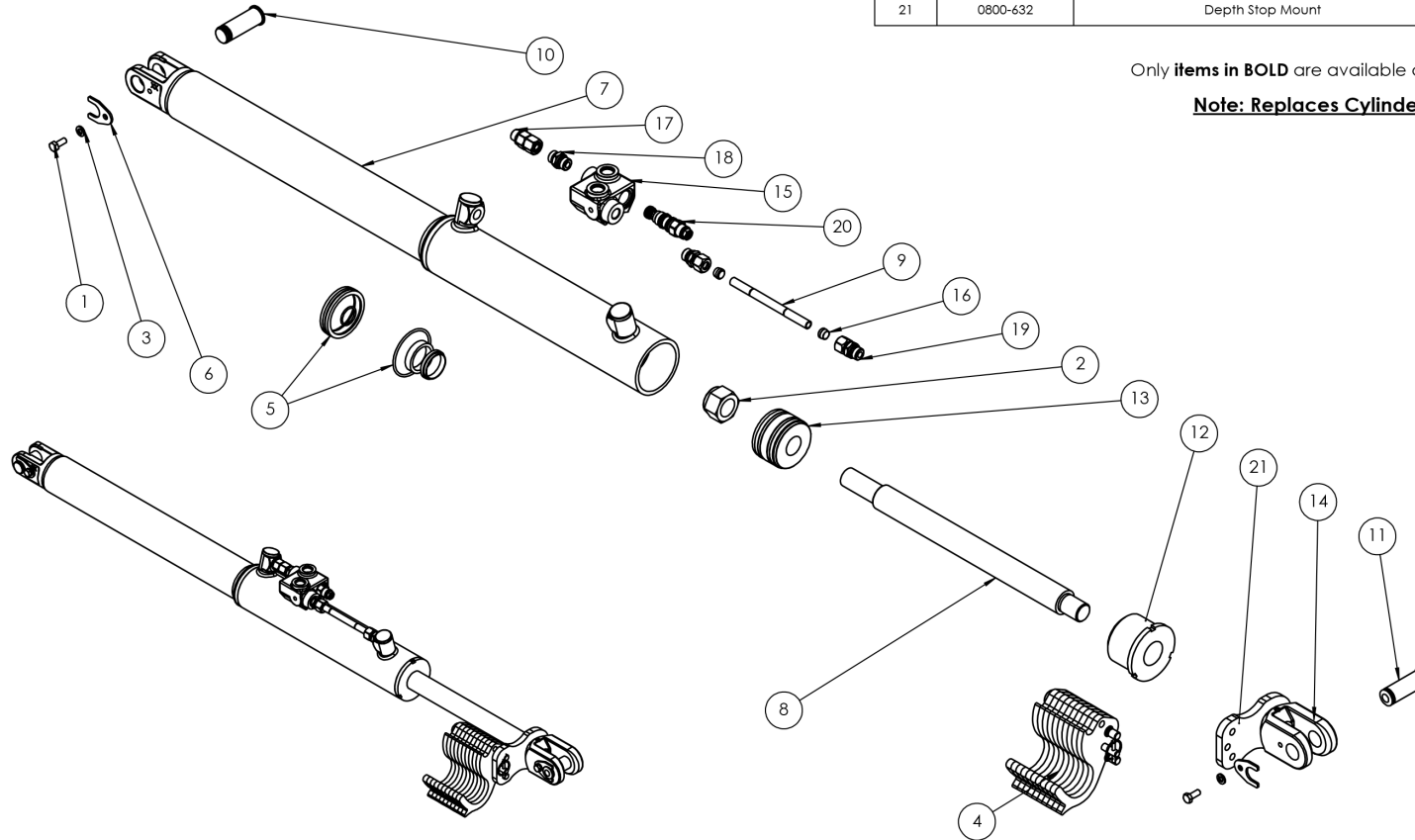
Only items in **BOLD** are available as spare parts

Note: Replaces Cylinder 0311-6896



| | | | |
|--------------------|---|---------------------|----------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-3532ST | 3.5" Bore x 32" Stroke 1.75" Rod Cylinder with 4" Stop Tube | | D-0 |

| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. | ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|----------|------------------|--|----------|------|----------|-------------------|--|----------|------|
| 1 | 0211-820 | M8 x 20 Class 8.8 ZP Bolt | | 2 | 11 | 0313-NCP1X68DS | Hydraulic Cylinder Pin 1" x 68mm | | 1 |
| 2 | 0223-NYL11-8 | Nyloc Nut 1 1/8" UNF | | 1 | 12 | 0313-NG15X3 | Cylinder Gland 1.5" Rod x 3" Barrel | A-0 | 1 |
| 3 | 0231-S8 | Washer Spring M8 | | 2 | 13 | 0313-NP3 | Hydraulic Cylinder Piston 3" | A-0 | 1 |
| 4 | 0311-DSK | Depth Stop Kit | A-0 | 1 | 14 | 0313-NRC1X1 1-8 M | Rod Clevis 1" Pin 1 1/8" Thread (Machined for mount plate) | A-0 | 1 |
| 5 | 0312-N3-S | Nordon 3" Seal Kit-S | A-0 | 1 | 15 | 0313-SCVB | Single Counterbalance Valve Body | A-0 | 1 |
| 6 | 0313-10I23M3 | Retaining Lug | A-0 | 2 | 16 | 0323-D12LLX | Tube Sealing Ring | | 2 |
| 7 | 0313-312EXT-B | 3" Bore x 12" Stroke Extended Cylinder Barrel | A-0 | 1 | 17 | 0323-EGE12SRED | Flareless Swivel BSPP Male Adaptor | | 1 |
| 8 | 0313-312EXT-R | Rod for 3" Bore x 12" Stroke Extended Hydraulic Cylinder | A-0 | 1 | 18 | 0323-GE12SRED | 24 Flareless BSPP Male Adaptor | | 1 |
| 9 | 0313-312EXT-TUBE | 312/412EXT Retract Port Tube | A-0 | 1 | 19 | 0323-GE12SRED | 24 Flareless BSPP Male Adaptor | | 2 |
| 10 | 0313-NCP1X63 | Hydraulic Cylinder Pin 1" x 63mm | | 1 | 20 | 0341-CBCA-LHN | 60 L/min Counterbalance valve | | 1 |
| | | | | | 21 | 0800-632 | Depth Stop Mount | B-0 | 1 |



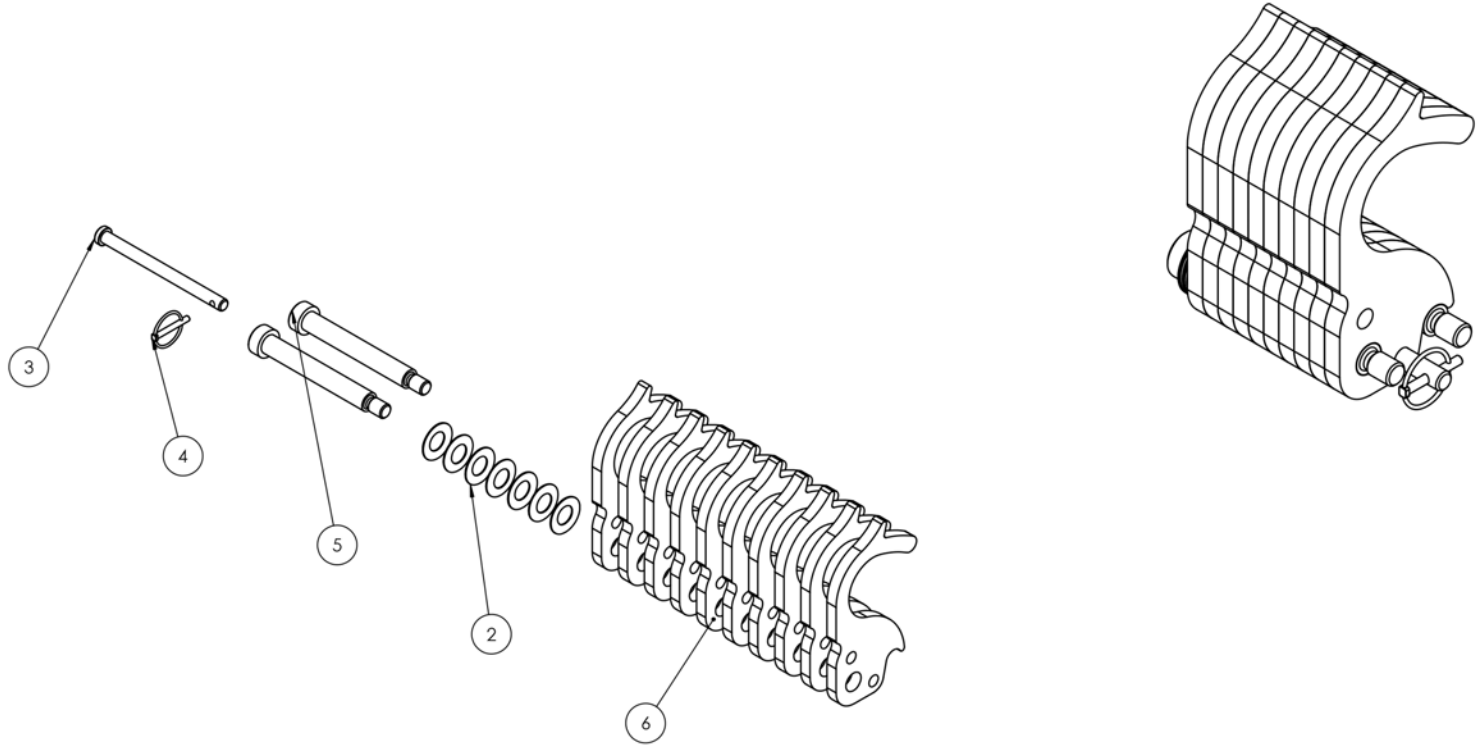
Only items in **BOLD** are available as spare parts

Note: Replaces Cylinder 0311-6002



| | | | |
|--------------------|---|---------------------|----------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-312EXT | 3" Bore x 12" Stroke 1.5" Rod Extended Hydraulic Cylinder | | H-0 |

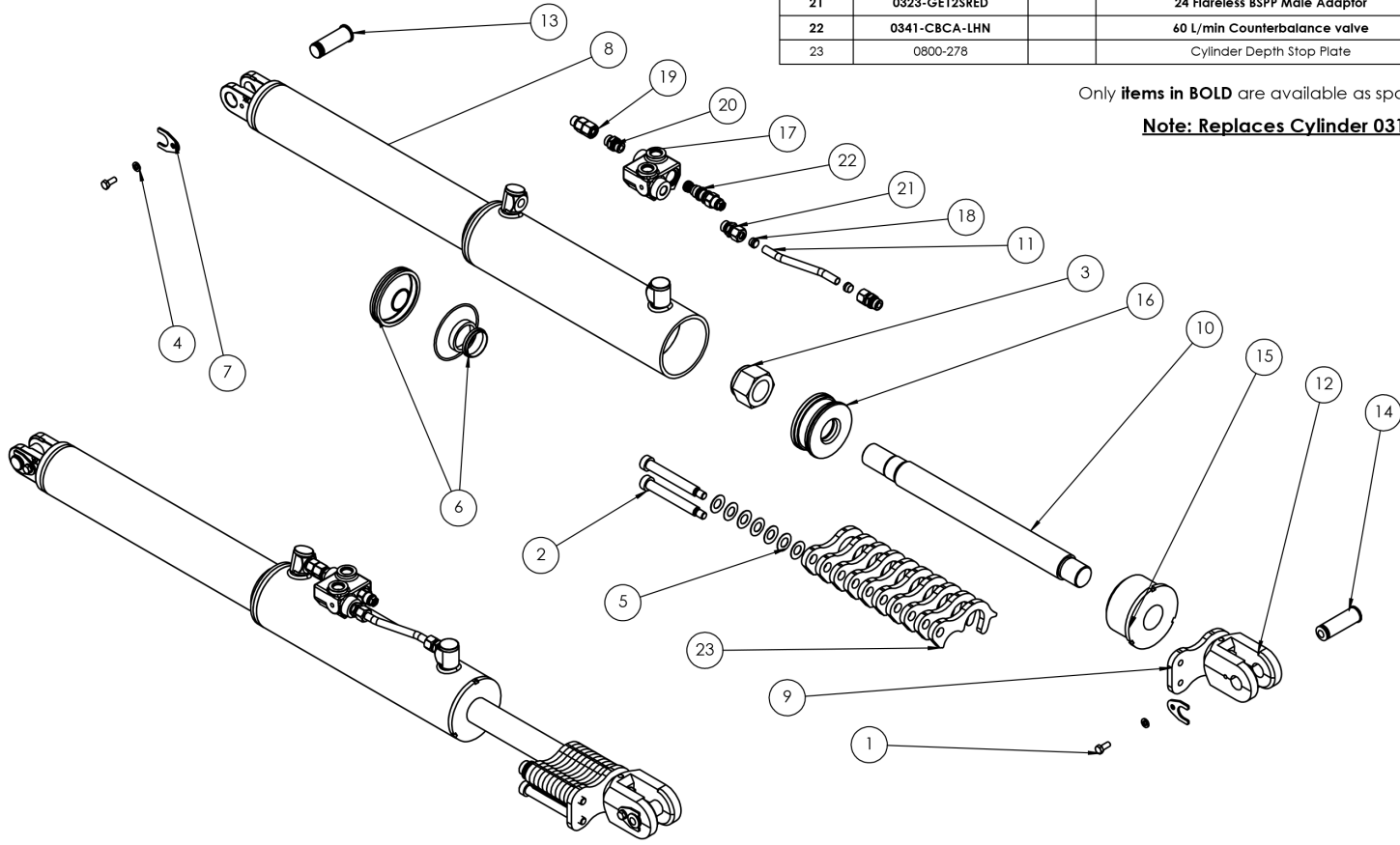
| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|----------|---------------------|---------------------------------------|----------|------|
| 1 | 0211-12110SHSCREW | Shoulder Screw M12 x 16 x 110 | A | 2 |
| 2 | 0231-SPRINGCUP | Compression Cup Washer | | 7 |
| 3 | 0266-Linch Pin 4x35 | Round Linch Pin Ø4.5mm x 35mm S3545 | | 1 |
| 4 | 0800-620 | Locking Depth Stop Plate for Cylinder | B-0 | 10 |
| 5 | 0801-P10-135 | Cylinder Depth Stop Lock Pin | A-0 | 1 |



| | | | |
|--------------------------------|-------------------------------|---------------------|-----------------|
| Part Number 0311-DSK | Description Depth Stop Kit | For Machines Built: | Revision A-0 |
|--------------------------------|-------------------------------|---------------------|-----------------|

| ITEM NO. | PART NUMBER | Revision | DESCRIPTION | QTY. |
|----------|--------------------------|----------|---|------|
| 1 | 0211-820 | | M8 x 20 Class 8.8 ZP Bolt | 2 |
| 2 | 0211-12110SHSCREW | A | Shoulder Screw M12 x 16 x 110 | 2 |
| 3 | 0223-NYL11-2 | | Nyloc Nut 1 1/2" UNF | 1 |
| 4 | 0231-S8 | | Washer Spring M8 | 2 |
| 5 | 0231-SPRINGCUP | | Compression Cup Washer | 7 |
| 6 | 0312-N4-S | A-0 | Nardon 4" Seal Kit-S | 1 |
| 7 | 0313-10I23M3 | A-0 | Retaining Lug | 2 |
| 8 | 0313-412EXT-B | B-0 | 4" Bore x 12" Stroke Extended Cylinder Barrel | 1 |
| 9 | 0313-412EXT-HAMP | A-0 | 0313-412EXT Height Adjustor Mount Plate | 1 |
| 10 | 0313-412EXT-R | B-0 | Rod For 4" x 12" Extended Hydraulic Cylinder | 1 |

| ITEM NO. | PART NUMBER | Revision | DESCRIPTION | QTY. |
|----------|-----------------------|----------|--|------|
| 11 | 0313-412EXT-TUBE | A-0 | 0311-412EXT Retract Part Tube | 1 |
| 12 | 0313-CL002 | | Female Rod Mount to suit 1.25" Pin, 28mm Clevis Gap | 1 |
| 13 | 0313-NCP1X63 | | Hydraulic Cylinder Pin 1" x 63mm | 1 |
| 14 | 0313-NCP1X71 | | Hydraulic Cylinder Pin 1" x 71mm | 1 |
| 15 | 0313-NG175X4 | A-0 | Cylinder Gland 1.75" Rod x 4" Barrel | 1 |
| 16 | 0313-NP4 | A-0 | Hydraulic Cylinder Piston 4" | 1 |
| 17 | 0313-SCVB | A-0 | Single Counterbalance Valve Body | 1 |
| 18 | 0323-D12LLX | | Tube Sealing Ring | 2 |
| 19 | 0323-EGE12SRED | | Flareless Swivel BSPP Male Adaptor | 1 |
| 20 | 0323-GE12SRED | | 24 Flareless BSPP Male Adaptor | 1 |
| 21 | 0323-GE12SRED | | 24 Flareless BSPP Male Adaptor | 2 |
| 22 | 0341-CBCA-LHN | | 60 L/min Counterbalance valve | 1 |
| 23 | 0800-278 | | Cylinder Depth Stop Plate | 10 |



Only **items in BOLD** are available as spare parts

Note: Replaces Cylinder 0311-6357

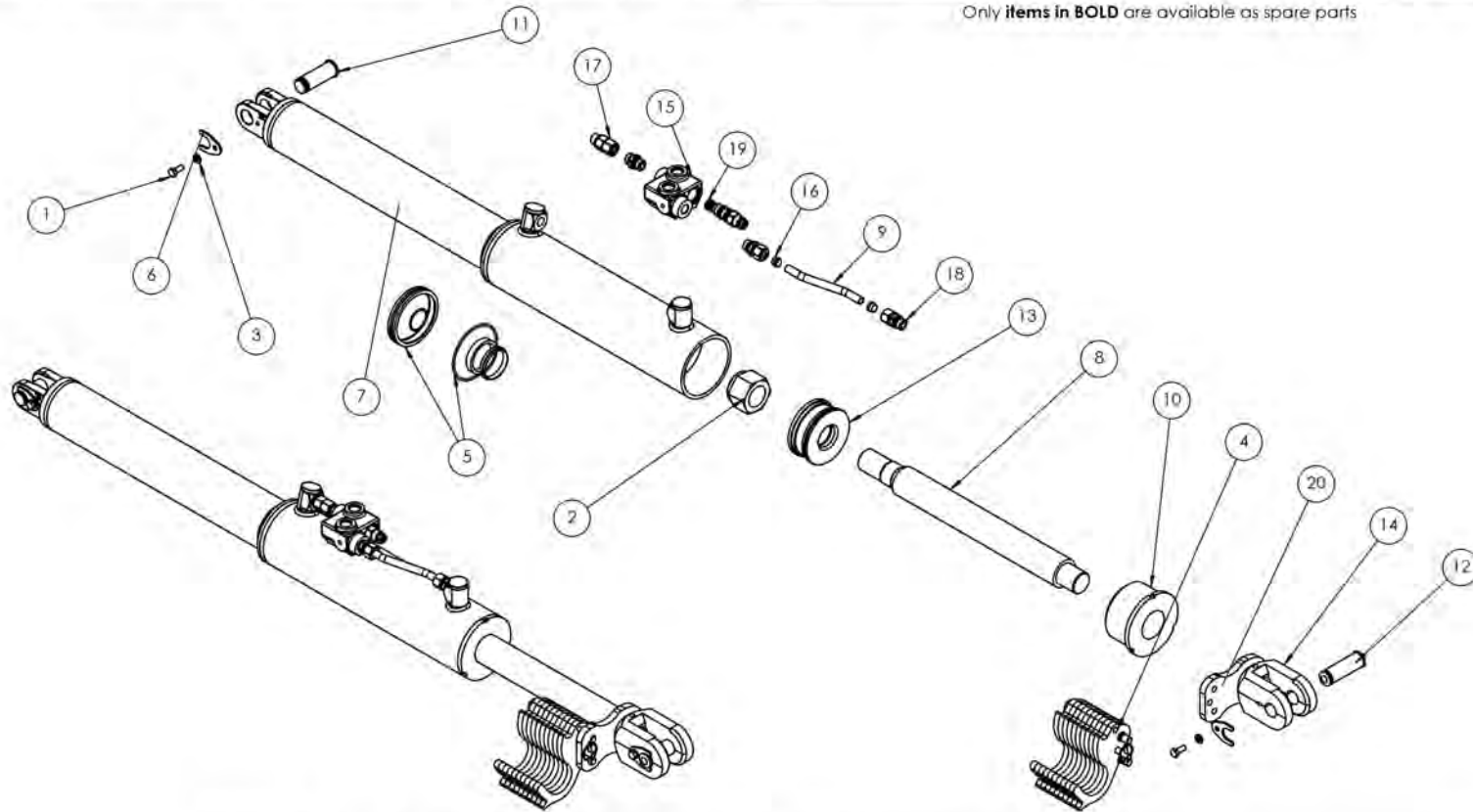


| | | | |
|--------------------|--|---------------------|----------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-412EXT | 4" Bore 12" Stroke 1.75" Rod Extended Hydraulic Cylinder | | F-0 |

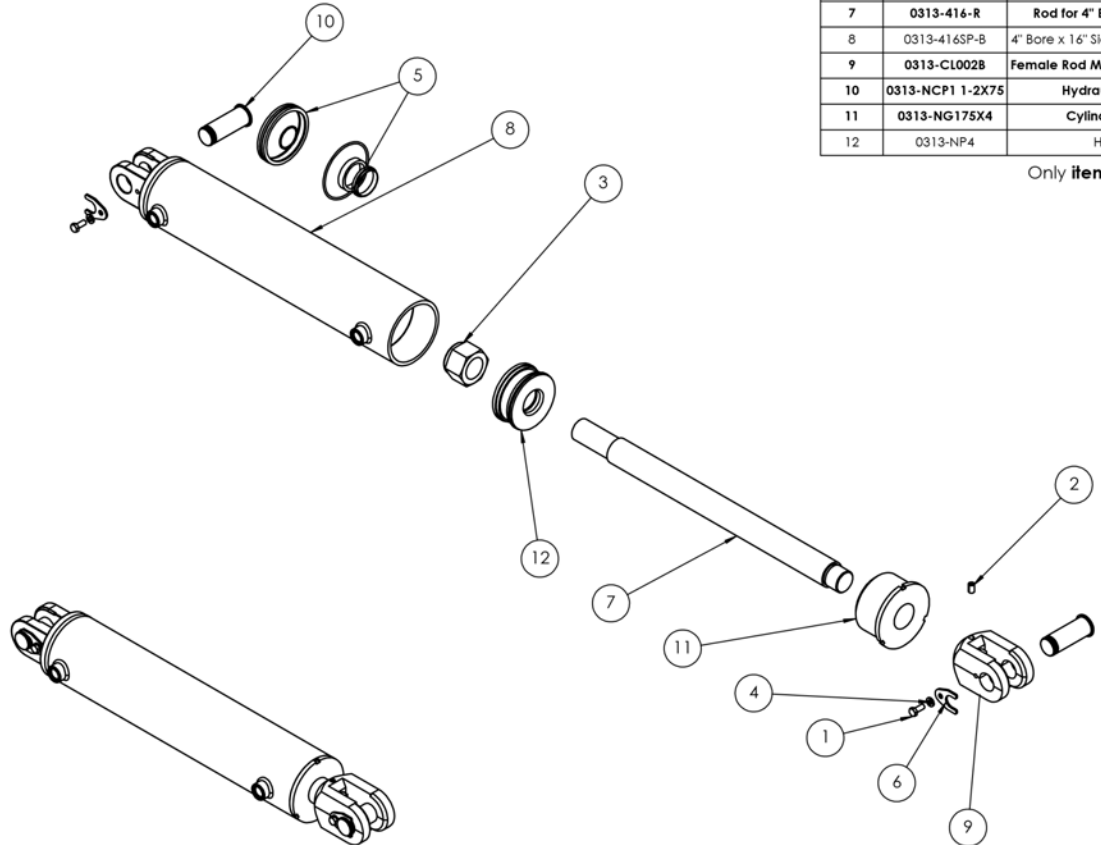
| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|----------|-------------------------|--|----------|----------|
| 1 | 0211-B20 | M8 x 20 Class 8.8 ZP Bolt | | 2 |
| 2 | 0223-NYL11-2 | Nylac Nut 1 1/2" UNF | | 1 |
| 3 | 0231-S8 | Washer Spring M8 | | 2 |
| 4 | 0311-DSK | Depth Stop Kit | A-0 | 1 |
| 5 | 0312-N4-2 | Nordon 4" Bore 2" Rod Seal Kit | | 1 |
| 6 | 0313-10123MS | Retaining Lug | A-0 | 2 |
| 7 | 0313-412EXT-B | 4" Bore x 12" Stroke Extended Cylinder Barrel | B-0 | 1 |
| 8 | 0313-412EXT-R2 | 2" Rod For 4" x 12" Extended Hydraulic Cylinder | A-0 | 1 |
| 9 | 0313-412EXT-TUBE | 0311-412EXT Retract Part Tube | A-0 | 1 |
| 10 | 0313-GN4020 | Cylinder Gland 2" Rod x 4" Barrel | | 1 |

| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|----------|---------------------|---|----------|----------|
| 11 | 0313-NCP1X63 | Hydraulic Cylinder Pin 1" x 63mm | | 1 |
| 12 | 0313-NCP1X71 | Hydraulic Cylinder Pin 1" x 71mm | | 1 |
| 13 | 0313-NP4 | Hydraulic Cylinder Piston 4" | A-0 | 1 |
| 14 | 0313-CL002 | Female Rod Mount to suit 1.25" Pin, 28mm Clevis Gap | | 1 |
| 15 | 0313-SCV8 | Single Counterbalance Valve Body | A-0 | 1 |
| 16 | 0323-D12LLX | Tube Sealing Ring | | 2 |
| 17 | 0323-EGE125RED | Flareless Swivel BSPP Male Adaptor | | 1 |
| 18 | 0323-GE125RED | 24 Flareless BSPP Male Adaptor | | 3 |
| 19 | 0341-CBCA-LHN | 60 L/min Counterbalance valve | | 1 |
| 20 | 0800-632 | Depth Stop Mount | A-0 | 1 |

Only items in **BOLD** are available as spare parts



| Part Number | Description | Revision |
|----------------------|---|----------|
| 0311-412EXT-2 | 4" Bore 12" Stroke 2" Rod Extended Hydraulic Cylinder | D-0 |



| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|----------|-------------------------|--|----------|------|
| 1 | 0211-820 | M8 x 20 Class 8.8 ZP Bolt | | 2 |
| 2 | 0211-1016SET | M10 x 16 Set Screw | | 1 |
| 3 | 0223-NYL11-2 | Nyloc Nut 1 1/2" UNF | | 1 |
| 4 | 0231-S8 | Washer Spring M8 | | 2 |
| 5 | 0312-N4-S | Nordon 4" Seal Kit-5 | A-0 | 1 |
| 6 | 0313-10I23M3 | Retaining Lug | A-0 | 2 |
| 7 | 0313-416-R | Rod for 4" Bore x 16" Stroke Hydraulic Cylinder | A-0 | 1 |
| 8 | 0313-416SP-B | 4" Bore x 16" Side Port Stroke Hydraulic Cylinder Barrel | A-0 | 1 |
| 9 | 0313-CL002B | Female Rod Mount to suit 1.25" Pin, 28mm Clevis Gap | | 1 |
| 10 | 0313-NCP1 1-2X75 | Hydraulic Cylinder Pin 1 1/2" x 75mm | A-0 | 2 |
| 11 | 0313-NG175X4 | Cylinder Gland 1.75" Rod x 4" Barrel | A-0 | 1 |
| 12 | 0313-NP4 | Hydraulic Cylinder Piston 4" | A-0 | 1 |

Only items in **BOLD** are available as spare parts

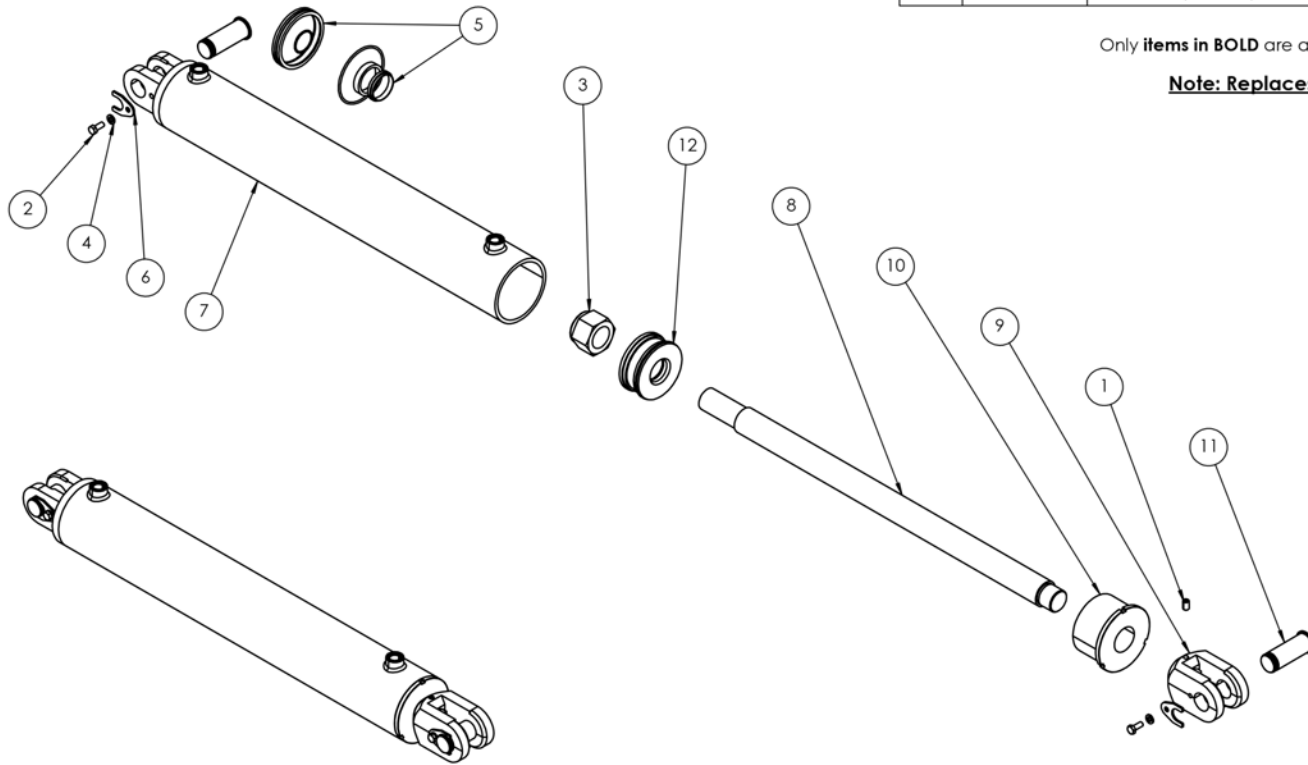


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|-------------------|---|---------------------|------------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-416SP | 4" Bore 16" Stroke 1.75" Rod Hydraulic Cylinder | | B-0 |

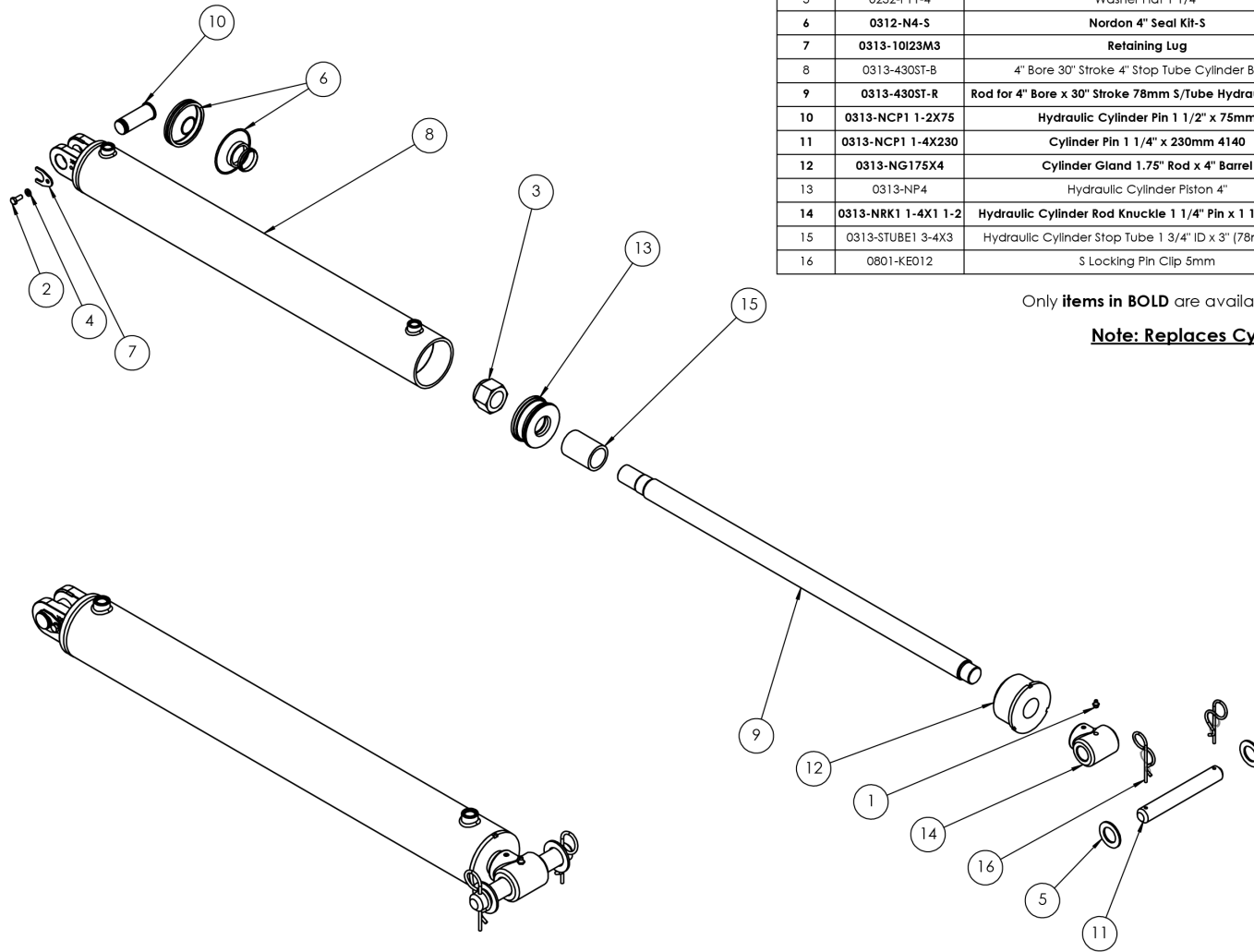
| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|----------|---------------------|---|----------|------|
| 1 | 0211-1016SET | M10 x16 Set Screw | | 1 |
| 2 | 0211-820 | M8 x 20 Class 8.8 ZP Bolt | | 2 |
| 3 | 0223-NYL11-2 | Nyloc Nut 1 1/2" UNF | | 1 |
| 4 | 0231-S8 | Washer Spring M8 | | 2 |
| 5 | 0312-N4-S | Nordon 4" Seal Kit-S | A-0 | 1 |
| 6 | 0313-10I23M3 | Retaining Lug | A-0 | 2 |
| 7 | 0313-424-B | 4" Bore x 24" Stroke Hydraulic Cylinder Barrel | | 1 |
| 8 | 0313-424-R | Rod for 4" Bore x 24" Stroke Hydraulic Cylinder | A-0 | 1 |
| 9 | 0313-CL002B | Female Rod Mount to suit 1.25" Pin, 28mm Clevis Gap | | 1 |
| 10 | 0313-GN4017-S | 4.0" Steel Gland - 1.75" Shaft | | 1 |
| 11 | 0313-NCP1 1-2X75 | Hydraulic Cylinder Pin 1 1/2" x 75mm | A-0 | 2 |
| 12 | 0313-NP4 | Hydraulic Cylinder Piston 4" | A-0 | 1 |

Only **items in BOLD** are available as spare parts

Note: Replaces Cylinder 0311-3786



| | | | |
|-----------------|---|---------------------|----------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-424 | 4" Bore 24" Stroke 1.75" Rod Hydraulic Cylinder | | D-0 |



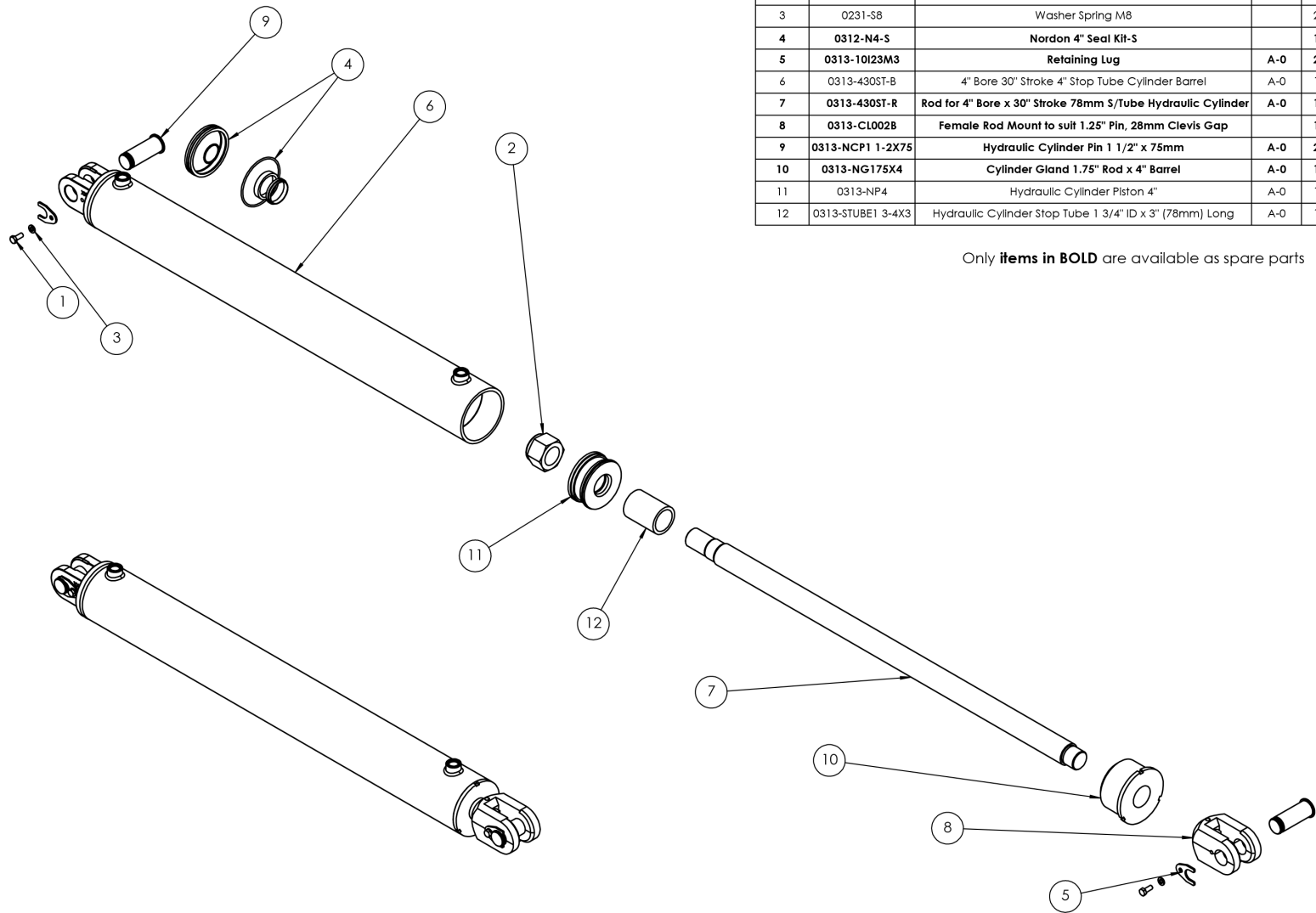
| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|----------|----------------------------|--|----------|------|
| 1 | 0181-GN1-8 | Grease Nipple 1/8" BSP | A | 1 |
| 2 | 0211-820 | M8 x 20 Class 8.8 ZP Bolt | | 1 |
| 3 | 0223-NYL11-2 | Nyloc Nut 1 1/2" UNF | | 1 |
| 4 | 0231-S8 | Washer Spring M8 | | 1 |
| 5 | 0232-F11-4 | Washer Flat 1 1/4" | | 2 |
| 6 | 0312-N4-S | Nordon 4" Seal Kit-S | A-0 | 1 |
| 7 | 0313-10123M3 | Retaining Lug | A-0 | 1 |
| 8 | 0313-430ST-B | 4" Bore 30" Stroke 4" Stop Tube Cylinder Barrel | A-0 | 1 |
| 9 | 0313-430ST-R | Rod for 4" Bore x 30" Stroke 78mm S/Tube Hydraulic Cylinder | A-0 | 1 |
| 10 | 0313-NCP1 1-2X75 | Hydraulic Cylinder Pin 1 1/2" x 75mm | A-0 | 1 |
| 11 | 0313-NCP1 1-4X230 | Cylinder Pin 1 1/4" x 230mm 4140 | A-0 | 1 |
| 12 | 0313-NG175X4 | Cylinder Gland 1.75" Rod x 4" Barrel | A-0 | 1 |
| 13 | 0313-NP4 | Hydraulic Cylinder Piston 4" | A-0 | 1 |
| 14 | 0313-NRK1 1-4X1 1-2 | Hydraulic Cylinder Rod Knuckle 1 1/4" Pin x 1 1/2" Thread | A-0 | 1 |
| 15 | 0313-STUBE1 3-4X3 | Hydraulic Cylinder Stop Tube 1 3/4" ID x 3" (78mm) Long | A-0 | 1 |
| 16 | 0801-KE012 | S Locking Pin Clip 5mm | A | 2 |

Only **items in BOLD** are available as spare parts

Note: Replaces Cylinder 0311-4781



| | | | |
|-------------------|---|---------------------|----------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-430ST | 4" Bore x 30" Stroke 1.75" Rod Cylinder with 3" Stop Tube | | D-0 |

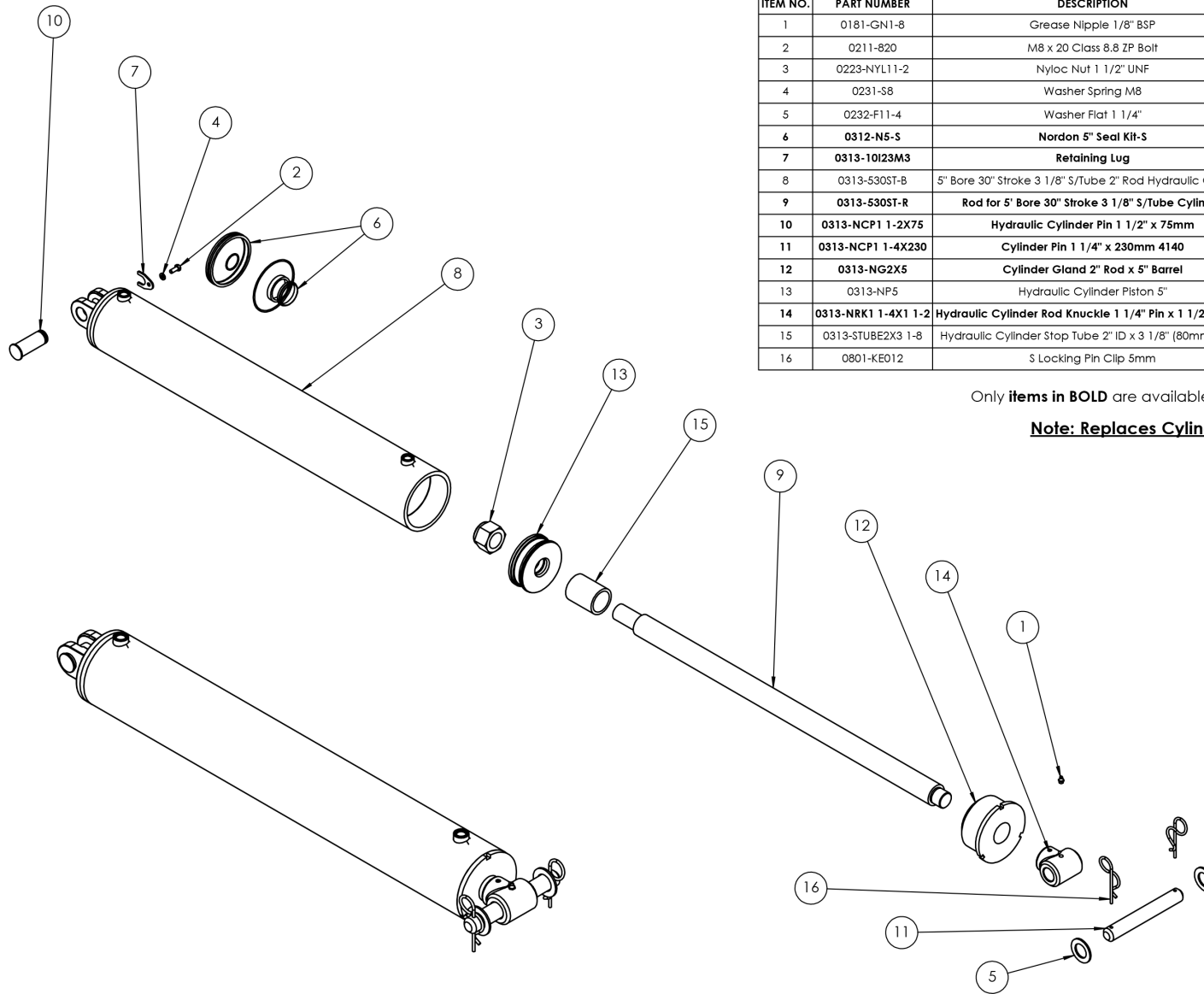


| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|----------|---------------------|--|----------|------|
| 1 | 0211-B20 | M8 x 20 Class 8.8 ZP Bolt | | 2 |
| 2 | 0223-NYL11-2 | Nyloc Nut 1 1/2" UNF | | 1 |
| 3 | 0231-S8 | Washer Spring M8 | | 2 |
| 4 | 0312-N4-S | Nordon 4" Seal Kit-S | | 1 |
| 5 | 0313-10123M3 | Retaining Lug | A-0 | 2 |
| 6 | 0313-430ST-B | 4" Bore 30" Stroke 4" Stop Tube Cylinder Barrel | A-0 | 1 |
| 7 | 0313-430ST-R | Rod for 4" Bore x 30" Stroke 78mm S/Tube Hydraulic Cylinder | A-0 | 1 |
| 8 | 0313-CL002B | Female Rod Mount to suit 1.25" Pin, 28mm Clevis Gap | | 1 |
| 9 | 0313-NCP1 1-2X75 | Hydraulic Cylinder Pin 1 1/2" x 75mm | A-0 | 2 |
| 10 | 0313-NG175X4 | Cylinder Gland 1.75" Rod x 4" Barrel | A-0 | 1 |
| 11 | 0313-NP4 | Hydraulic Cylinder Piston 4" | A-0 | 1 |
| 12 | 0313-STUBE1 3-4X3 | Hydraulic Cylinder Stop Tube 1 3/4" ID x 3" (78mm) Long | A-0 | 1 |

Only **items in BOLD** are available as spare parts



| | | | |
|----------------------|---|---------------------|----------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-430ST-C2 | 4" Bore 30" Stroke 3" S/Tube 1.75" Rod Hydraulic Cylinder with Stop Tube & Clevis | | C-0 |



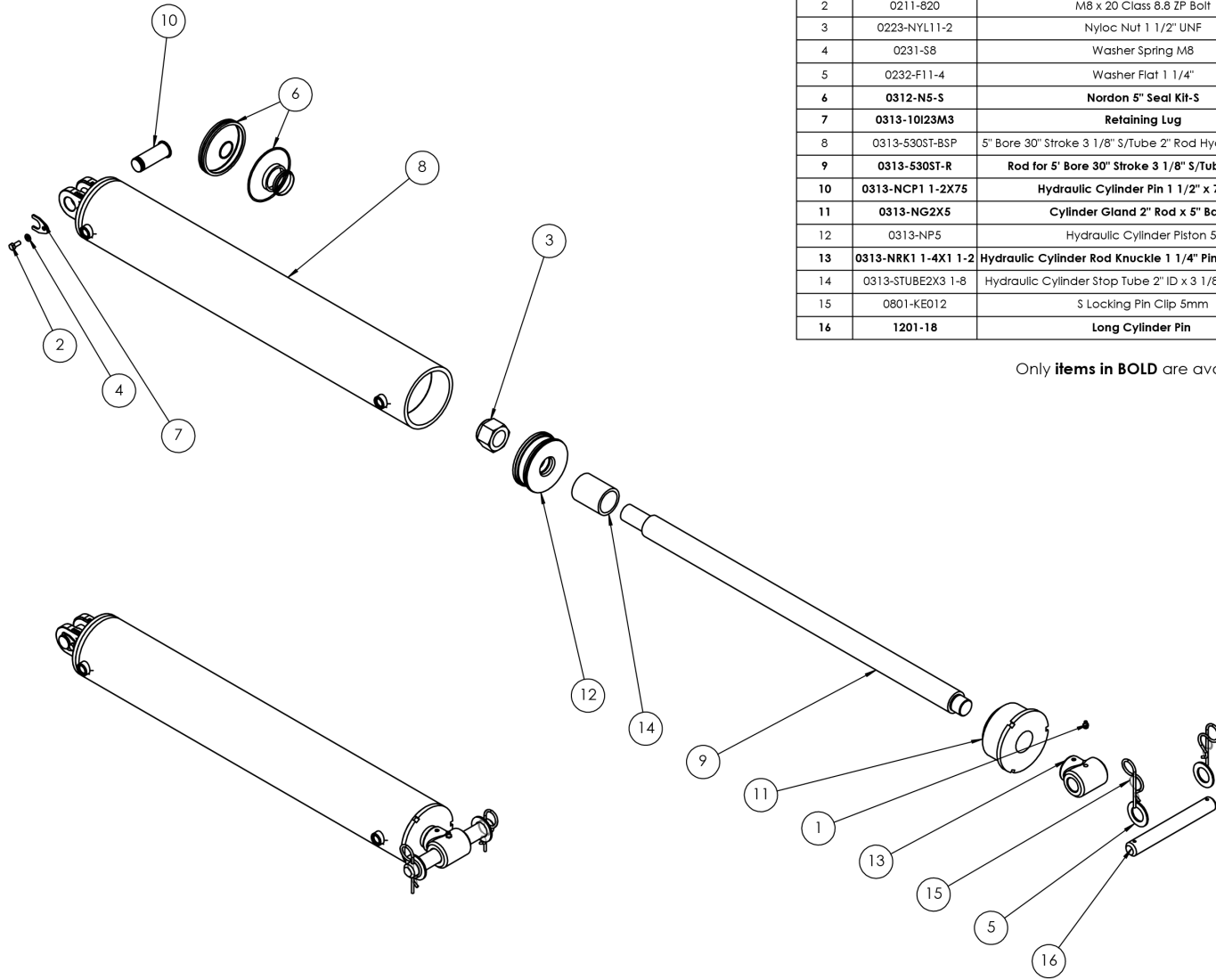
| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|----------|----------------------------|--|------------|----------|
| 1 | 0181-GN1-8 | Grease Nipple 1/8" BSP | A | 1 |
| 2 | 0211-B20 | M8 x 20 Class 8.8 ZP Bolt | | 1 |
| 3 | 0223-NYL11-2 | Nyloc Nut 1 1/2" UNF | | 1 |
| 4 | 0231-S8 | Washer Spring M8 | | 1 |
| 5 | 0232-F11-4 | Washer Flat 1 1/4" | | 2 |
| 6 | 0312-N5-S | Nordon 5" Seal Kit-S | A-0 | 1 |
| 7 | 0313-10I23M3 | Retaining Lug | A-0 | 1 |
| 8 | 0313-530ST-B | 5" Bore 30" Stroke 3 1/8" S/Tube 2" Rod Hydraulic Cylinder | A-0 | 1 |
| 9 | 0313-530ST-R | Rod for 5" Bore 30" Stroke 3 1/8" S/Tube Cylinder | A-0 | 1 |
| 10 | 0313-NCP1 1-2X75 | Hydraulic Cylinder Pin 1 1/2" x 75mm | A-0 | 1 |
| 11 | 0313-NCP1 1-4X230 | Cylinder Pin 1 1/4" x 230mm 4140 | A-0 | 1 |
| 12 | 0313-NG2X5 | Cylinder Gland 2" Rod x 5" Barrel | A-0 | 1 |
| 13 | 0313-NP5 | Hydraulic Cylinder Piston 5" | A-0 | 1 |
| 14 | 0313-NRK1 1-4X1 1-2 | Hydraulic Cylinder Rod Knuckle 1 1/4" Pin x 1 1/2" Thread | A-0 | 1 |
| 15 | 0313-STUBE2X3 1-8 | Hydraulic Cylinder Stop Tube 2" ID x 3 1/8" (80mm) Long | A-0 | 1 |
| 16 | 0801-KE012 | S Locking Pin Clip 5mm | A | 2 |

Only items in **BOLD** are available as spare parts

Note: Replaces Cylinder 0311-5040



| | | | |
|-------------------|--|---------------------|------------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-530ST | 5" Bore x 30" Stroke 2" Rod Cylinder with 3-1/8" Stop Tube | | C-0 |

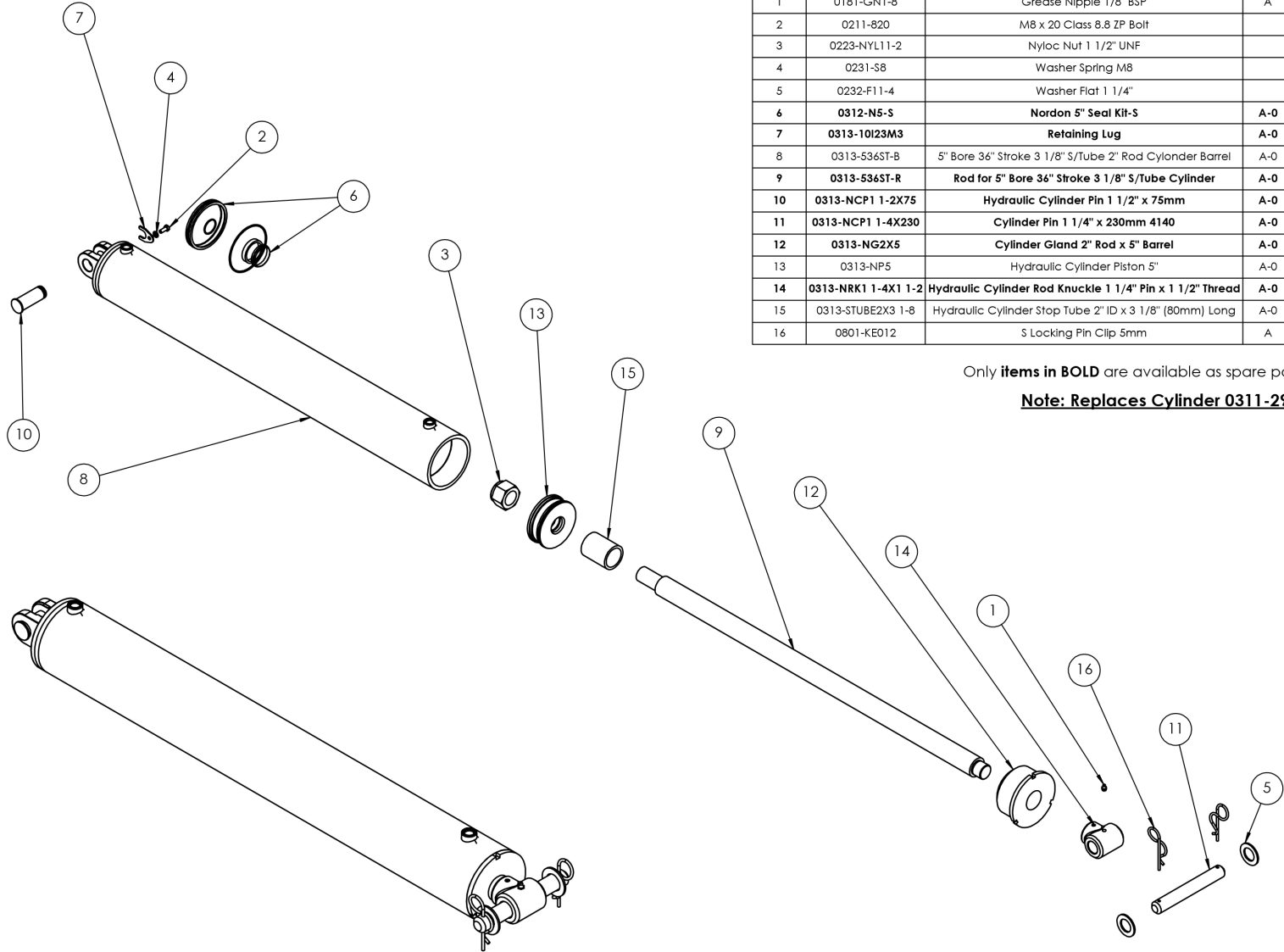


| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|----------|----------------------------|--|------------|----------|
| 1 | 0181-GN1-8 | Grease Nipple 1/8" BSP | A | 1 |
| 2 | 0211-820 | M8 x 20 Class 8.8 ZP Bolt | | 1 |
| 3 | 0223-NYL11-2 | Nyloc Nut 1 1/2" UNF | | 1 |
| 4 | 0231-S8 | Washer Spring M8 | | 1 |
| 5 | 0232-F11-4 | Washer Flat 1 1/4" | | 2 |
| 6 | 0312-N5-S | Nordon 5" Seal Kit-S | A-0 | 1 |
| 7 | 0313-10123M3 | Retaining Lug | A-0 | 1 |
| 8 | 0313-530ST-BSP | 5" Bore 30" Stroke 3 1/8" S/Tube 2" Rod Hydraulic Cylinder | | 1 |
| 9 | 0313-530ST-R | Rod for 5" Bore 30" Stroke 3 1/8" S/Tube Cylinder | A-0 | 1 |
| 10 | 0313-NCP1 1-2X75 | Hydraulic Cylinder Pin 1 1/2" x 75mm | A-0 | 1 |
| 11 | 0313-NG2X5 | Cylinder Gland 2" Rod x 5" Barrel | A-0 | 1 |
| 12 | 0313-NP5 | Hydraulic Cylinder Piston 5" | A-0 | 1 |
| 13 | 0313-NRK1 1-4X1 1-2 | Hydraulic Cylinder Rod Knuckle 1 1/4" Pin x 1 1/2" Thread | A-0 | 1 |
| 14 | 0313-STUBE2X3 1-8 | Hydraulic Cylinder Stop Tube 2" ID x 3 1/8" (80mm) Long | A-0 | 1 |
| 15 | 0801-KE012 | S Locking Pin Clip 5mm | A | 2 |
| 16 | 1201-18 | Long Cylinder Pin | A | 1 |

Only items in **BOLD** are available as spare parts



| | | | |
|---------------------|--|---------------------|------------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-530STSP | 5" Bore 30" Stroke 3 1/8" S/Tube 2" Rod Hydraulic Cylinder | | B-0 |



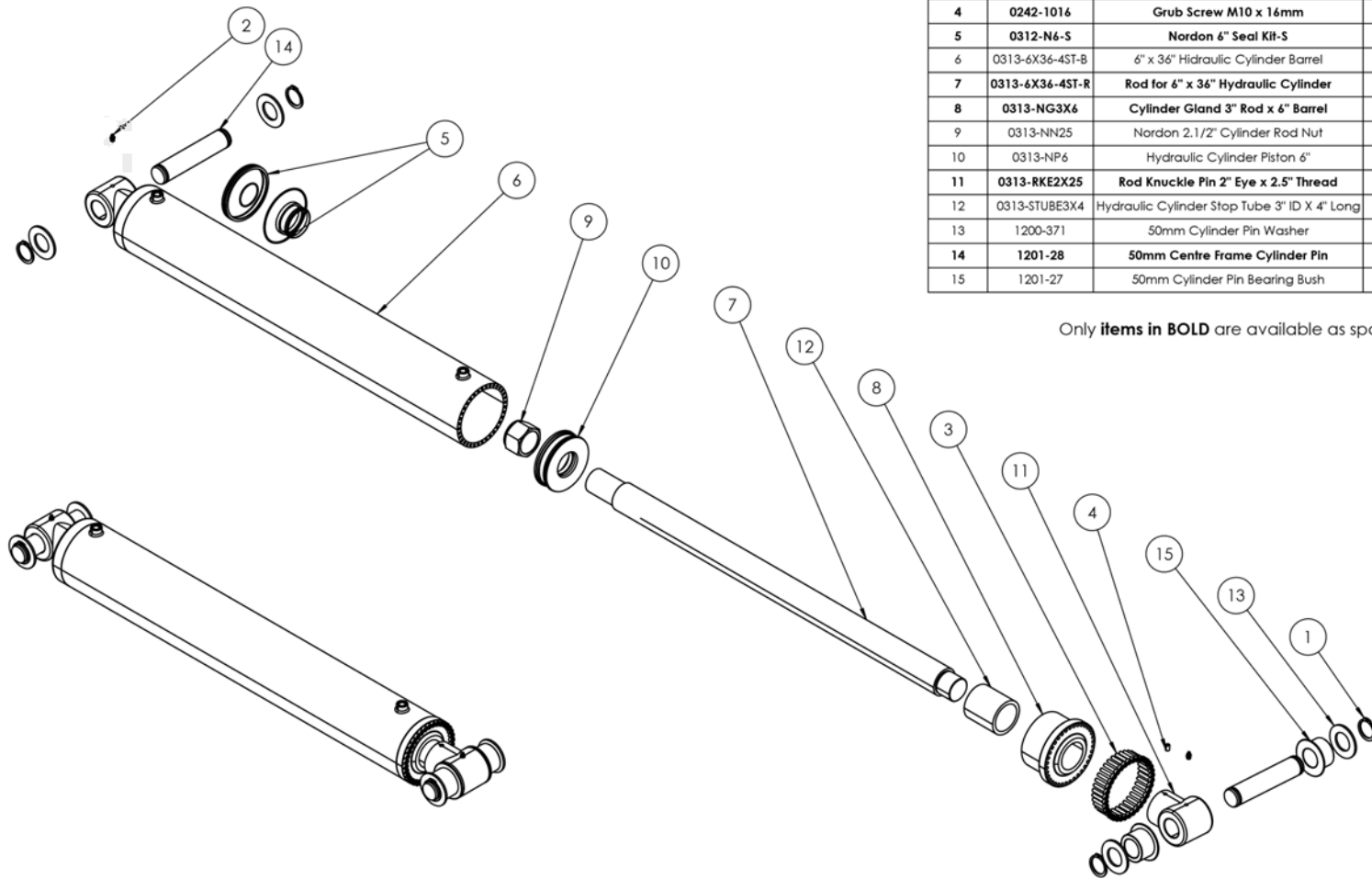
| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|-----------|----------------------------|--|------------|----------|
| 1 | 0181-GN1-8 | Grease Nipple 1/8" BSP | A | 1 |
| 2 | 0211-820 | M8 x 20 Class 8.8 ZP Bolt | | 1 |
| 3 | 0223-NYL11-2 | Nyloc Nut 1 1/2" UNF | | 1 |
| 4 | 0231-S8 | Washer Spring M8 | | 1 |
| 5 | 0232-F11-4 | Washer Flat 1 1/4" | | 2 |
| 6 | 0312-N5-S | Nordon 5" Seal Kit-S | A-0 | 1 |
| 7 | 0313-10I23M3 | Retaining Lug | A-0 | 1 |
| 8 | 0313-536ST-B | 5" Bore 36" Stroke 3 1/8" S/Tube 2" Rod Cylinder Barrel | A-0 | 1 |
| 9 | 0313-536ST-R | Rod for 5" Bore 36" Stroke 3 1/8" S/Tube Cylinder | A-0 | 1 |
| 10 | 0313-NCP1 1-2X75 | Hydraulic Cylinder Pin 1 1/2" x 75mm | A-0 | 1 |
| 11 | 0313-NCP1 1-4X230 | Cylinder Pin 1 1/4" x 230mm 4140 | A-0 | 1 |
| 12 | 0313-NG2X5 | Cylinder Gland 2" Rod x 5" Barrel | A-0 | 1 |
| 13 | 0313-NP5 | Hydraulic Cylinder Piston 5" | A-0 | 1 |
| 14 | 0313-NRK1 1-4X1 1-2 | Hydraulic Cylinder Rod Knuckle 1 1/4" Pin x 1 1/2" Thread | A-0 | 1 |
| 15 | 0313-STUBE2X3 1-8 | Hydraulic Cylinder Stop Tube 2" ID x 3 1/8" (80mm) Long | A-0 | 1 |
| 16 | 0801-KE012 | S Locking Pin Clip 5mm | A | 2 |

Only items in **BOLD** are available as spare parts

Note: Replaces Cylinder 0311-2956



| | | | |
|-------------------|--|---------------------|------------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-536ST | 5" Bore x 36" Stroke 2" Rod Cylinder with 3" Stop Tube | | D-0 |



| ITEM NO. | PART NUMBER | DESCRIPTION | Revision | QTY. |
|----------|------------------------|--|------------|-----------|
| 1 | 0172-D1400-50 | Circlip External 50mm | | 4 |
| 2 | 0181-GN3-8 | Grease Nipple 3/8" | | 2 |
| 3 | 0211-SH840 | Socket Head Bolt M8 x 40 | | 36 |
| 4 | 0242-1016 | Grub Screw M10 x 16mm | | 1 |
| 5 | 0312-N6-S | Nordon 6" Seal Kit-S | A-0 | 1 |
| 6 | 0313-6X36-4ST-B | 6" x 36" Hydraulic Cylinder Barrel | | 1 |
| 7 | 0313-6X36-4ST-R | Rod for 6" x 36" Hydraulic Cylinder | | 1 |
| 8 | 0313-NG3X6 | Cylinder Gland 3" Rod x 6" Barrel | | 1 |
| 9 | 0313-NN25 | Nordon 2.1/2" Cylinder Rod Nut | | 1 |
| 10 | 0313-NP6 | Hydraulic Cylinder Piston 6" | | 1 |
| 11 | 0313-RKE2X25 | Rod Knuckle Pin 2" Eye x 2.5" Thread | | 1 |
| 12 | 0313-STUBE3X4 | Hydraulic Cylinder Stop Tube 3" ID X 4" Long | | 1 |
| 13 | 1200-371 | 50mm Cylinder Pin Washer | B-0 | 4 |
| 14 | 1201-28 | 50mm Centre Frame Cylinder Pin | B-0 | 2 |
| 15 | 1201-27 | 50mm Cylinder Pin Bearing Bush | A-0 | 2 |

Only **items in BOLD** are available as spare parts



| | | | |
|----------------------|--|---------------------|------------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-6X36-4ST | 6" Bore x 36" Stroke 3" Rod Cylinder with 4" Stop Tube | | C-0 |

Hydraulic Cylinder Supplement Parts Manual Index - EzyFit



Nordon cylinders are currently used on Kelly frames and supersede previous EzyFit cylinders, as outlined below.

EzyFit spare parts are still available for your existing cylinders and include clevises, rods, seal kits and some pistons as outlined below:

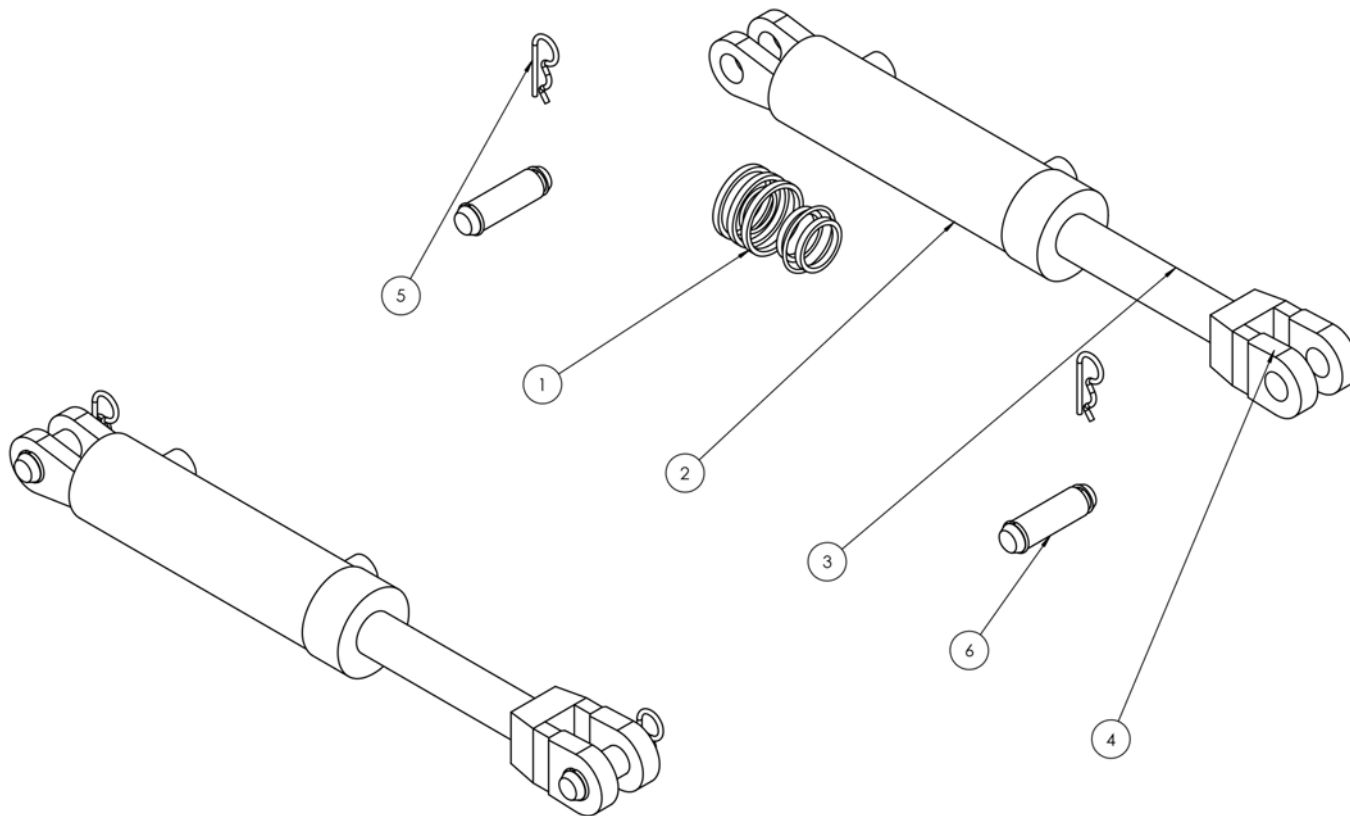
| Page No. | EzyFit Cylinder | Seal Kit Number | Description | Clevis | Rod | Gland | Piston | Current Nordon Offering |
|----------|-----------------|-----------------|--|--|------------|------------------------------------|------------|-------------------------|
| 34 | 0311-5041 | 0312-EF0006 | 2.5" Bore x 6" Stroke 1.5" Rod Side Port | 0313-6002C | 0313-5041R | 0313-5041G 0313-5041GN = nut | 0313-5041P | 0311-256SP |
| 35 | 0311-6002* | 0312-EF0054 | 3" Bore x 12" Stroke 1.5" Rod Extended | 0313-6002C | 0313-6002R | 0313-2957G 0313-2957GN = nut | | 0311-312EXT |
| 36 | 0311-2957 | 0312-EF0054 | 3" Bore x 24" Stroke 1.5" Rod | 0313-6002C | 0313-2957R | 0313-2957G 0313-2957GN = nut | 0313-2957P | 0311-324 |
| 37 | 0311-2958 | 0312-EF0202 | 3.5" Bore x 24" Stroke 1.75" Rod Side Port | 0313-6002C | 0313-2958R | 0313-2958G 0313-2958GN = nut | 0313-2958P | 0311-3524SP |
| 38 | 0311-6896 | 0312-EF0202 | 3.5" Bore x 32" Stroke 1.75" Rod with 4" Stop Tube | 0313-6896C | | | | 0311-3532ST |
| 39 | 0311-6357* | 0312-EF0316 | 4" Bore x 12" Stroke 1.75" Rod Extended | 0313-6357C 0313-6357CP = with spacers | 0313-6357R | 0313-6357G | 0313-6357P | 0311-412EXT |
| | 0311-2938** | 0312-EF0316 | 4" Bore x 8" Stroke | 0313-6357C | 0313-2938R | 0313-6357G | 0313-6357P | |
| 40 | 0311-3786 | 0312-EF0316 | 4" Bore x 24" Stroke 1.75" Rod | | | 0313-6357G | 0313-6357P | 0311-424 |
| 41 | 0311-4781 | 0312-EF2960 | 4" Bore x 30" Stroke 1.75" Rod with 3" Stop Tube | | 0313-4781R | 0313-2960G | 0313-2960P | 0311-430ST |
| 42 | 0311-5040 | 0312-EF2956 | 5" Bore x 30" Stroke 2" Rod with 3" Stop Tube | 0313-2956K | 0313-5040R | 0313-5040G | 0313-5040P | 0311-530ST |
| 43 | 0311-2956 | 0312-EF2956 | 5" Bore x 36" Stroke 2" Rod with 3" Stop Tube | 0313-2956K | 0313-2956R | 0313-5040G | 0313-5040P | 0311-536ST |
| 44 | 0311-2960** | 0312-EF2960 | | | 0313-2960R | 0313-2960G | 0313-2960P | |

* 1/2" Tubeline for 6002, 6357 cylinders = 0313-6002TUBE

** Drawing is not available

| ITEM NO. | PART NUMBER | Revision | DESCRIPTION | QTY. |
|----------|----------------------|----------|--|----------|
| 1 | 0312-EF0006 | | Seal Kit 2.5" | 1 |
| 2 | 0313-5041B | A | 2.5" x 6" Cylinder Barrel Side Port | 1 |
| 3 | 0313-5041R | A | 2.5" x 6" Cylinder Rod | 1 |
| 4 | 0313-6002C | | Clevis For 2957- 5041- 6002- 2958 Cylinders | 1 |
| 5 | 0511-RCLIP4 | | R Clip 4mm | 2 |
| 6 | 0801-44082938 | A | Clevis Pin 1" x 75mm | 2 |

Only **items in BOLD** are available as spare parts

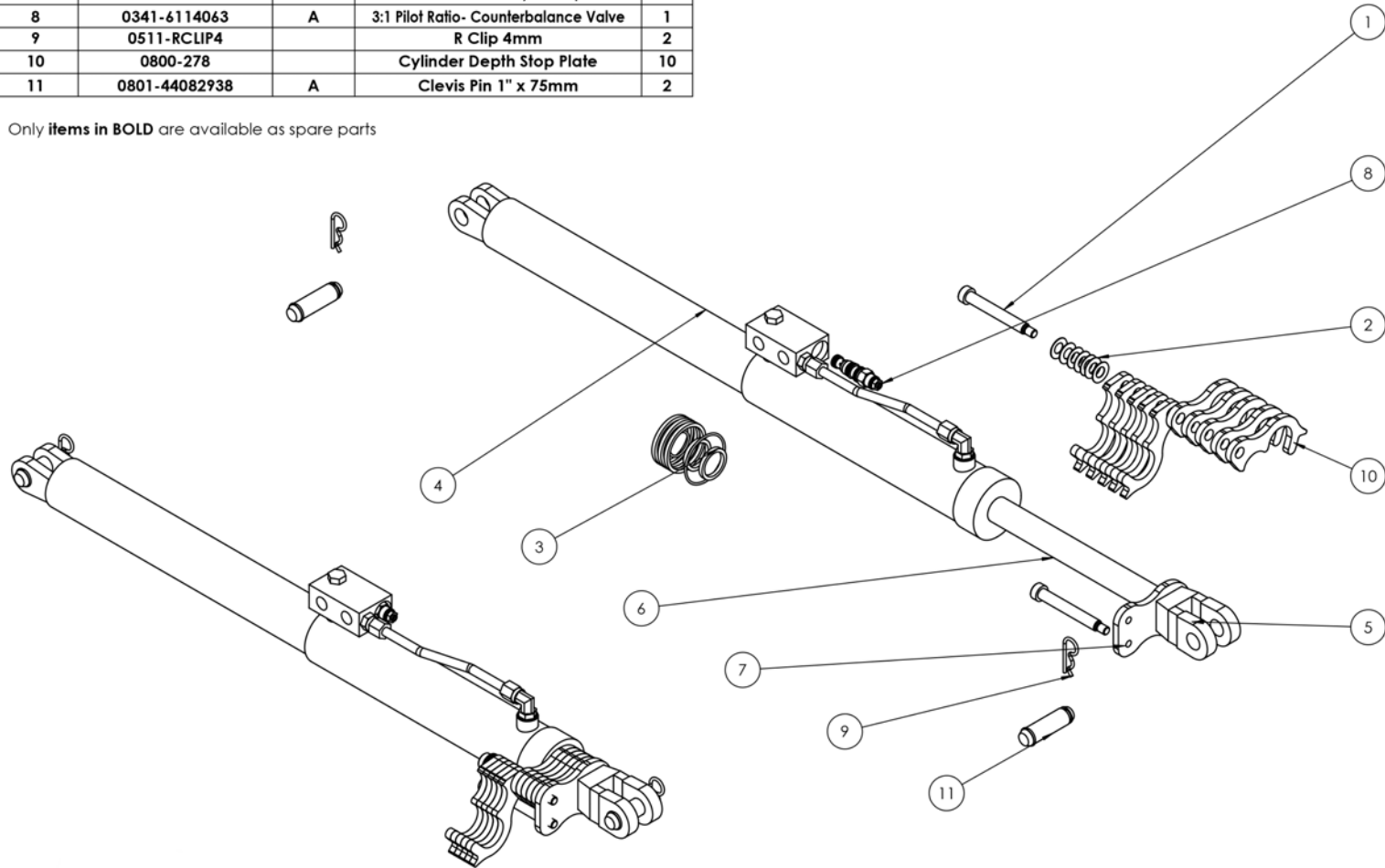


KELLY

| Part Number | Description | For Machines Built: | Revision |
|------------------|----------------------------------|---------------------|----------|
| 0311-5041 | Hyd Cylinder 2.5" x 6" Side Port | All(2008)- | A |

| ITEM NO. | PART NUMBER | Revision | DESCRIPTION | QTY. |
|----------|--------------------------|----------|--|------|
| 1 | 0211-12110SHSCREW | A | Shoulder Screw M12 x 16 x 110 | 2 |
| 2 | 0231-SPRINGCUP | | Compression Cup Washer | 7 |
| 3 | 0312-EF0054 | | Seal Kit 3" | 1 |
| 4 | 0313-6002B | | 3" x 12" EXT Cylinder Barrel | 1 |
| 5 | 0313-6002C | | Clevis For 2957- 5041- 6002- 2958 Cylinders | 1 |
| 6 | 0313-6002R | | 3" x 12" Cylinder Rod | 1 |
| 7 | 0313-6357CPLATE | | Mount Plate For 6357 Cylinder Spacers | 1 |
| 8 | 0341-6114063 | A | 3:1 Pilot Ratio- Counterbalance Valve | 1 |
| 9 | 0511-RCLIP4 | | R Clip 4mm | 2 |
| 10 | 0800-278 | | Cylinder Depth Stop Plate | 10 |
| 11 | 0801-44082938 | A | Clevis Pin 1" x 75mm | 2 |

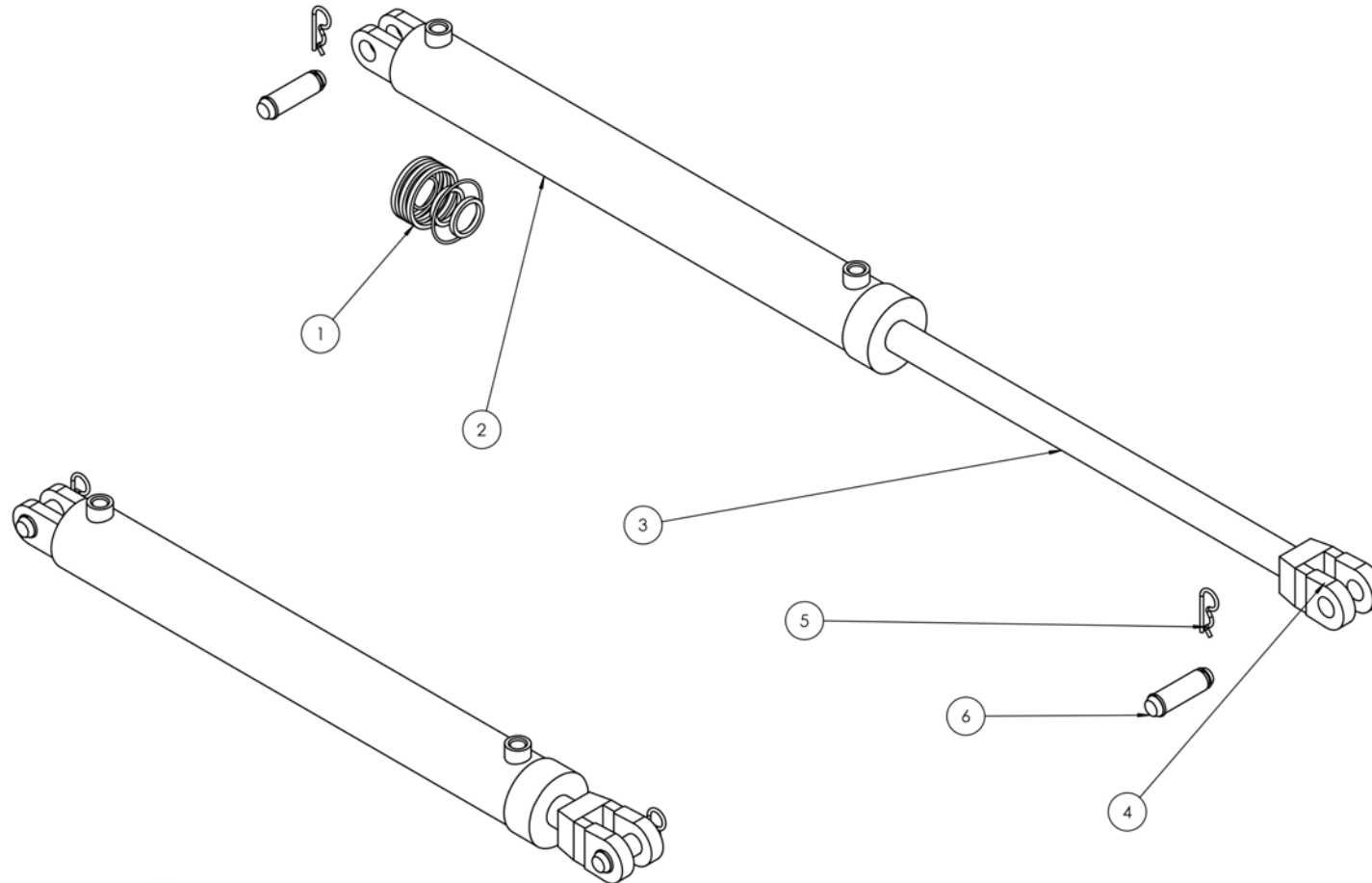
Only items in **BOLD** are available as spare parts



| | | | |
|------------------|------------------------------|---------------------|----------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-6002 | Hyd Cylinder 3 x 12 Extended | All (2008)- | A |

| ITEM NO. | PART NUMBER | Revision | DESCRIPTION | QTY. |
|----------|----------------------|----------|--|----------|
| 1 | 0312-EF0054 | | Seal Kit 3" | 2 |
| 2 | 0313-2957B | | 3" x 24" Cylinder Barrel | 1 |
| 3 | 0313-2957R | | 3" x 24" Cylinder Rod | 1 |
| 4 | 0313-6002C | | Clevis For 2957- 5041- 6002- 2958 Cylinders | 1 |
| 5 | 0511-RCLIP4 | | R Clip 4mm | 2 |
| 6 | 0801-44082938 | A | Clevis Pin 1" x 75mm | 2 |

Only items in **BOLD** are available as spare parts

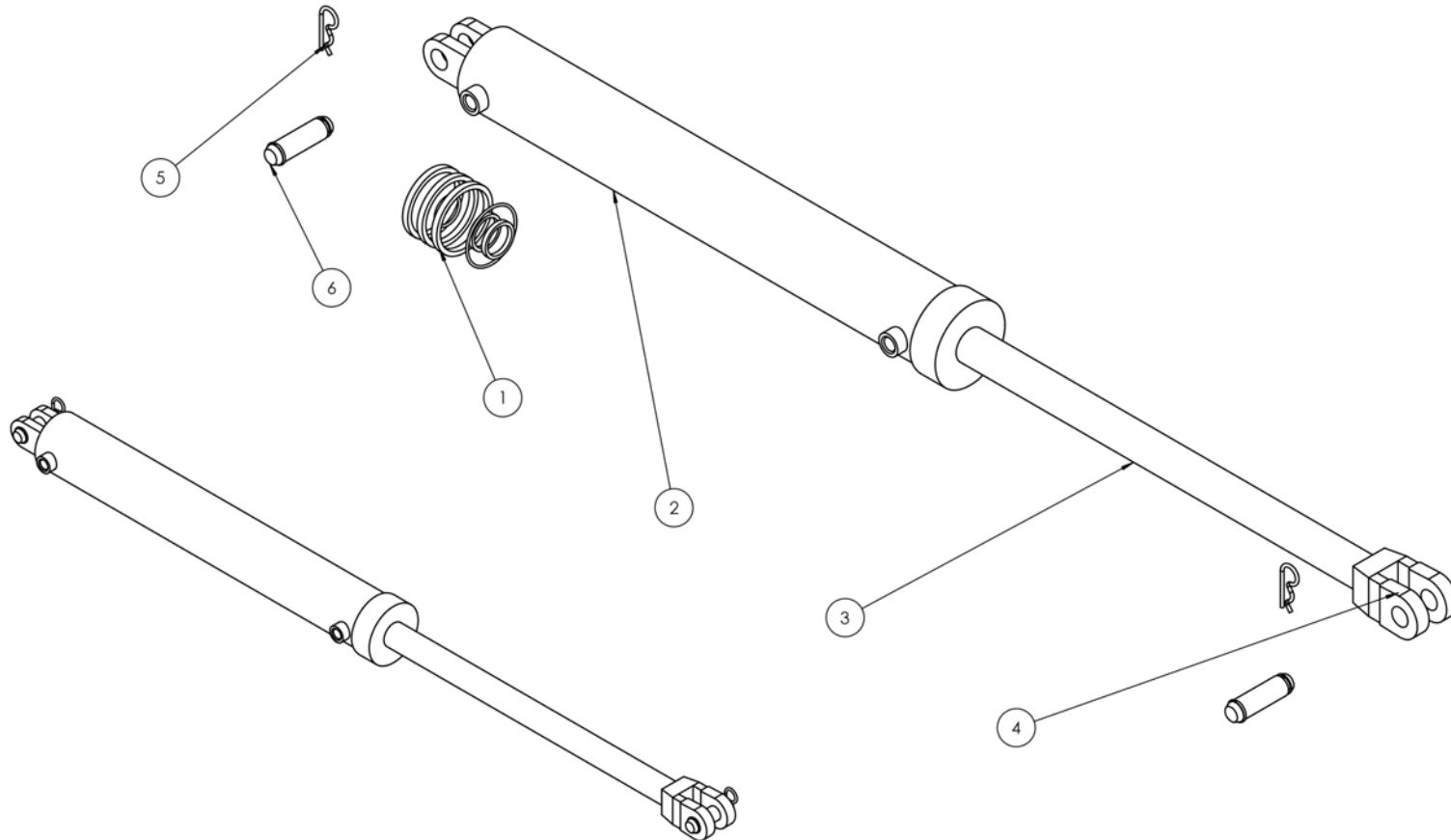


KELLY

| Part Number | Description | For Machines Built: | Revision |
|------------------|-----------------------------|---------------------|----------|
| 0311-2957 | 3" x 24" Hydraulic Cylinder | | A |

| ITEM NO. | PART NUMBER | Revision | DESCRIPTION | QTY. |
|----------|----------------------|----------|--|----------|
| 1 | 0312-EF0202 | | Seal Kit 3.5" | 1 |
| 2 | 0313-2958B | A | 3.5" x 24" Hydraulic Cylinder Barrel | 1 |
| 3 | 0313-2958R | A | 3.5" x 24" Hydraulic Cylinder Rod | 1 |
| 4 | 0313-6002C | | Clevis For 2957- 5041- 6002- 2958 Cylinders | 1 |
| 5 | 0511-RCLIP4 | | R Clip 4mm | 2 |
| 6 | 0801-44082938 | A | Clevis Pin 1" x 75mm | 2 |

Only **items in BOLD** are available as spare parts

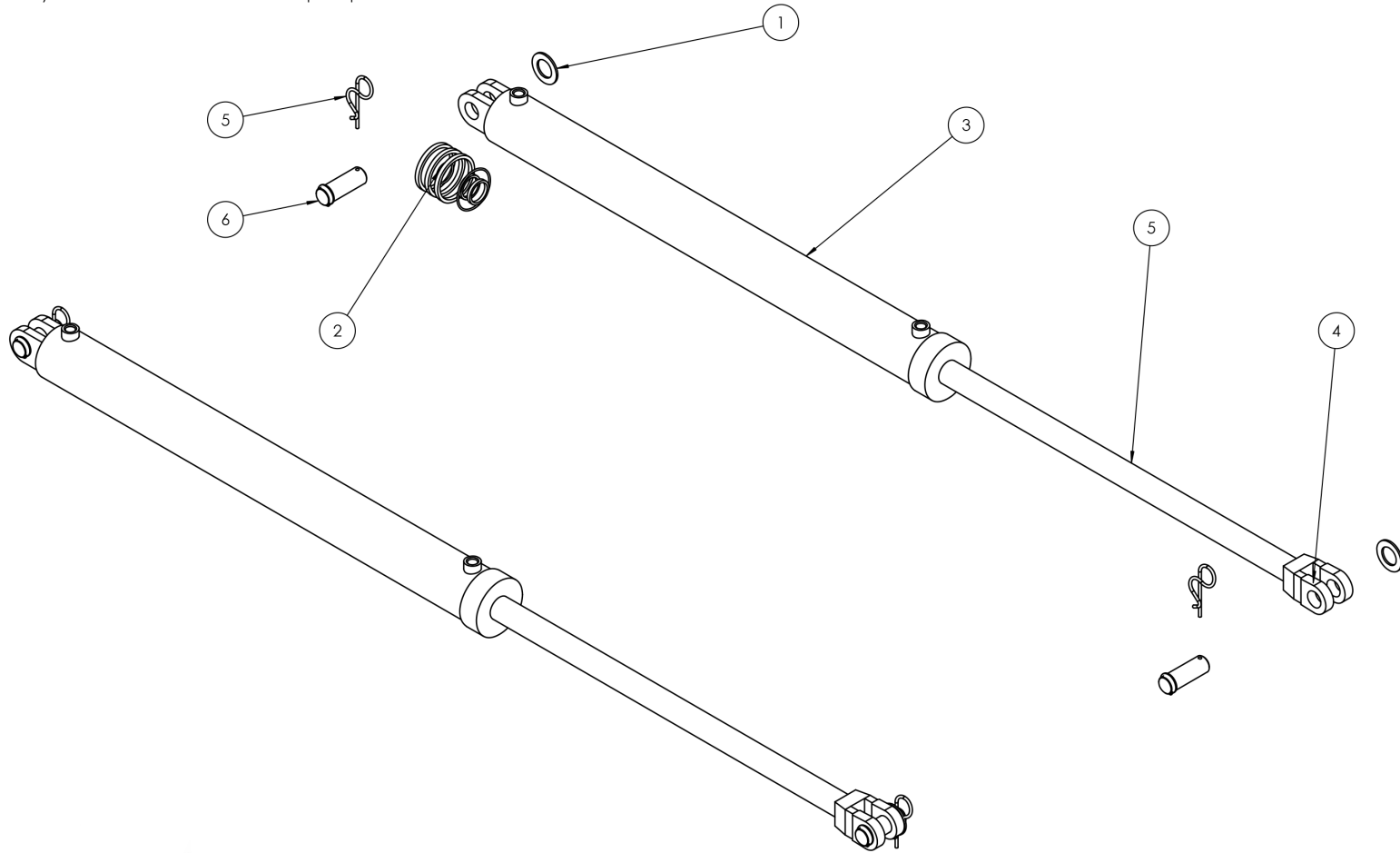


KELLY

| Part Number | Description | For Machines Built: | Revision |
|------------------|-------------------------|---------------------|----------|
| 0311-2958 | Hyd Cylinder 3.5" x 24" | 65'(112043-65)- | B |

| ITEM NO. | PART NUMBER | Revision | DESCRIPTION | QTY. |
|----------|----------------------|----------|--|----------|
| 1 | 0232-F11-4 | | Washer Flat 1 1/4" | 2 |
| 2 | 0312-EF0202 | | Seal Kit 3.5" | 1 |
| 3 | 0313-6896B | A | 3.5" x 32" Hydraulic Cylinder Barrel | 1 |
| 4 | 0313-6896C | | Clevis For 6896 Cylinder | 1 |
| 5 | 0313-6896R | A | 3.5" X 32" Hydraulic Cylinder Rod | 1 |
| 6 | 0801-44103786 | A | Cylinder Pin 1 1/4" x 94mm | 2 |
| 5 | 0801-KE012 | A | S Locking Pin Clip 5mm | 2 |

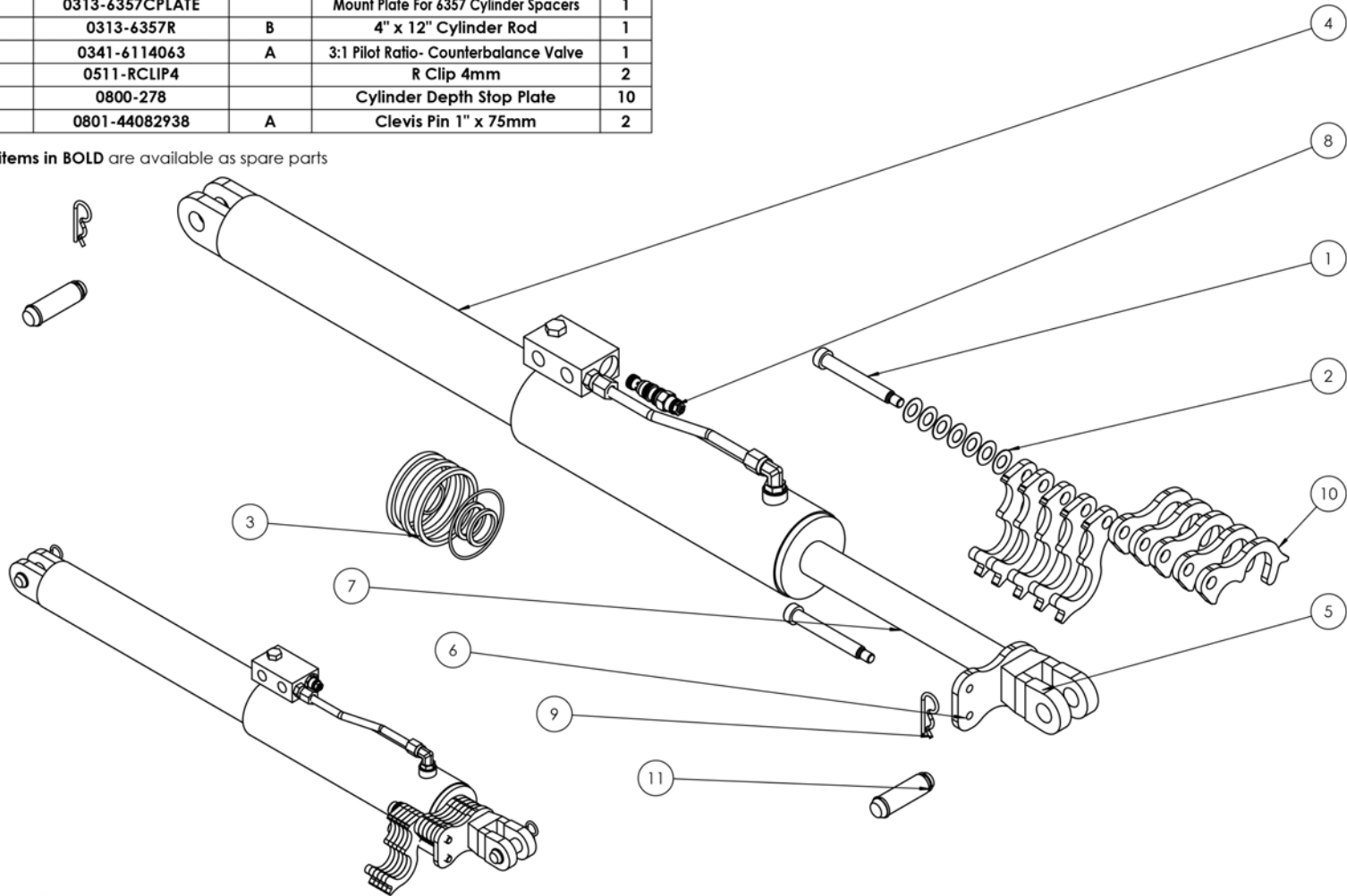
Only **items in BOLD** are available as spare parts



| | | | |
|---------------------------------|---|--|----------------------|
| Part Number 0311-6896 | Description Hyd Cylinder 3.5" x 32" + 4" Stop Tube | For Machines Built: 65'(112043-65 -) 60CT(113060-60CT -) | Revision A |
|---------------------------------|---|--|----------------------|

| ITEM NO. | PART NUMBER | Revision | DESCRIPTION | QTY. |
|----------|--------------------------|----------|---------------------------------------|------|
| 1 | 0211-12110SHSCREW | A | Shoulder Screw M12 x 16 x 110 | 2 |
| 2 | 0231-SPRINGCUP | | Compression Cup Washer | 7 |
| 3 | 0312-EF0316 | | Seal Kit 4" | 1 |
| 4 | 0313-6357B | | 4" x 12" EXT Cylinder Barrel | 1 |
| 5 | 0313-6357C | | Clevis For 3786 Cylinder | 1 |
| 6 | 0313-6357CPLATE | | Mount Plate For 6357 Cylinder Spacers | 1 |
| 7 | 0313-6357R | B | 4" x 12" Cylinder Rod | 1 |
| 8 | 0341-6114063 | A | 3:1 Pilot Ratio- Counterbalance Valve | 1 |
| 9 | 0511-RCLIP4 | | R Clip 4mm | 2 |
| 10 | 0800-278 | | Cylinder Depth Stop Plate | 10 |
| 11 | 0801-44082938 | A | Clevis Pin 1" x 75mm | 2 |

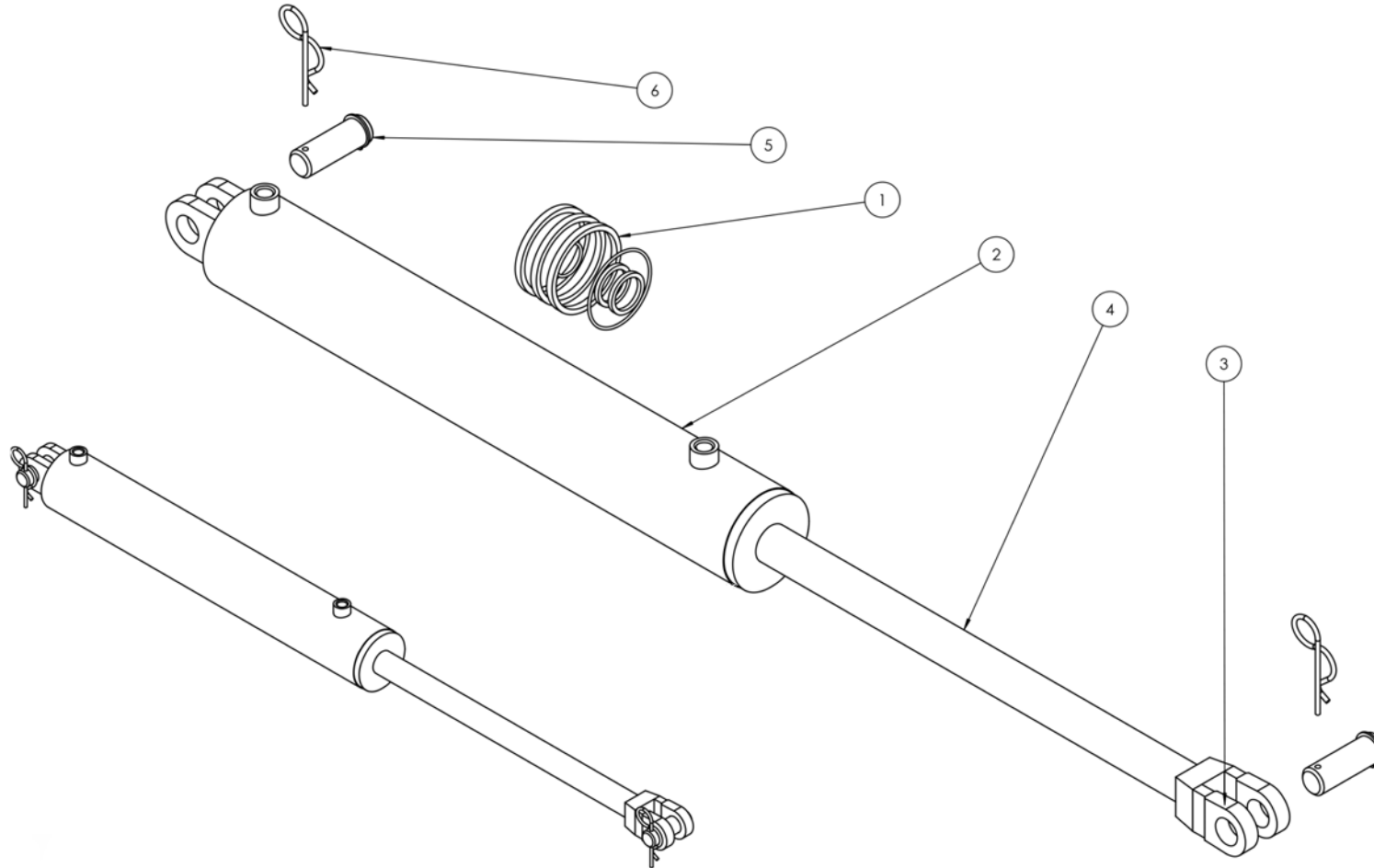
Only items in **BOLD** are available as spare parts



| | | | |
|---------------------------------|---|--|---------------|
| Part Number 0311-6357 | Description Hyd Cylinder 4 x 12 Extended | For Machines Built: 50/60 (1110200-60)- | Revision A |
|---------------------------------|---|--|---------------|

| ITEM NO. | PART NUMBER | Revision | DESCRIPTION | QTY. |
|----------|--------------------|----------|---------------------------------|----------|
| 1 | 0312-EF0316 | | Seal Kit 4" | 1 |
| 2 | 0313-3786B | | 4" x 24" Cylinder Barrel | 1 |
| 3 | 0313-3786C | | Clevis For 3786 Cylinder | 1 |
| 4 | 0313-3786R | | 4" x 24" Cylinder Rod | 1 |
| 5 | 0801-44103786 | A | Cylinder Pin 1 1/4" x 94mm | 2 |
| 6 | 0801-KE012 | A | S Locking Pin Clip 5mm | 2 |

Only **items in BOLD** are available as spare parts

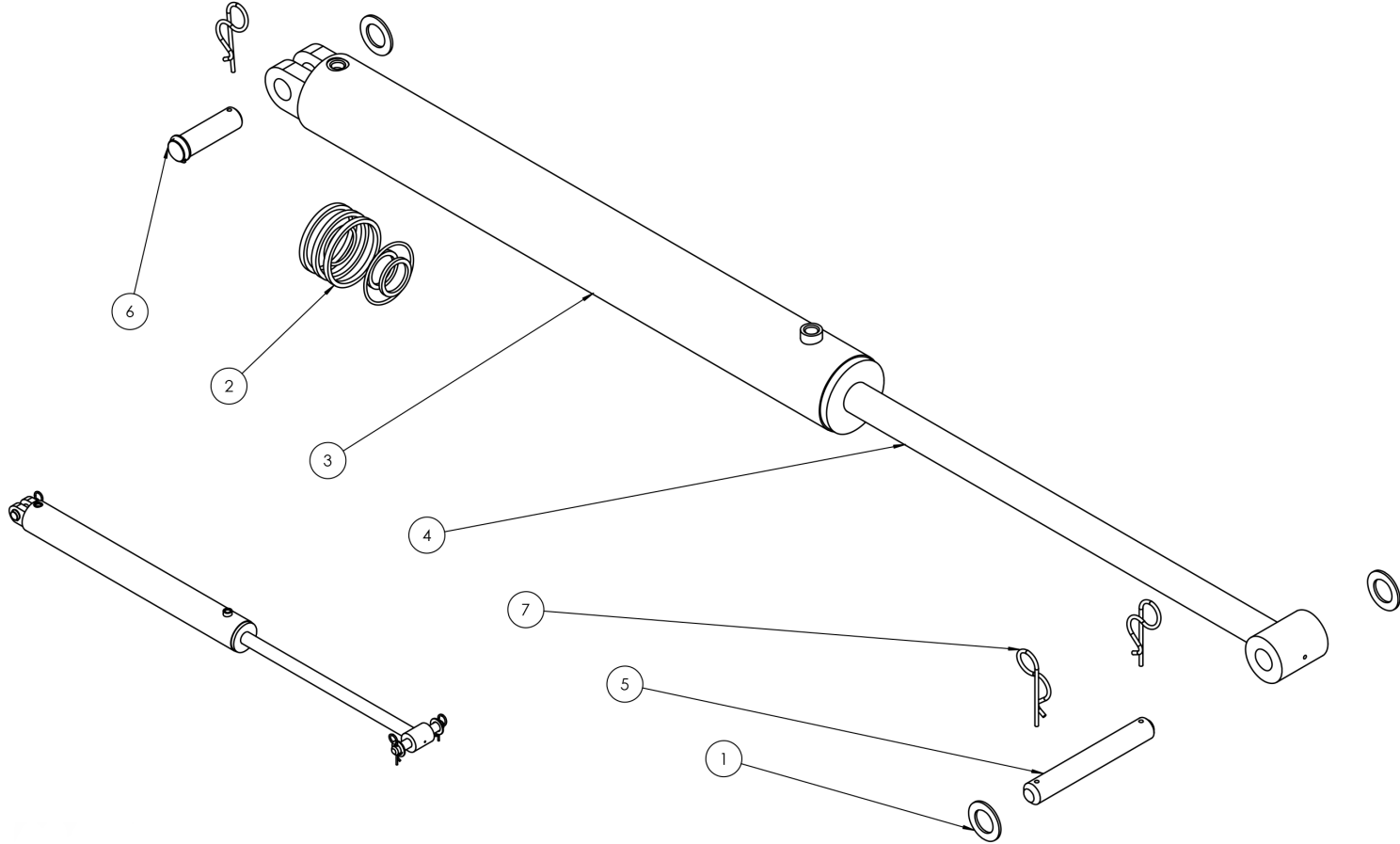


KELLY

| Part Number | Description | For Machines Built: | Revision |
|------------------|-----------------------------|---------------------|----------|
| 0311-3786 | 4" x 24" Hydraulic Cylinder | | A |

| ITEM NO. | PART NUMBER | Revision | DESCRIPTION | QTY. |
|----------|--------------------|----------|--|----------|
| 1 | 0232-F11-4 | | Washer Flat 1 1/4" | 3 |
| 2 | 0312-EF2960 | | Seal Kit 4" | 1 |
| 3 | 0313-4781B | | 4" x 30" Hydraulic Cylinder Barrel | 1 |
| 4 | 0313-4781R | | 4" x 30" Hydraulic Cylinder Rod | 1 |
| 5 | 0801-44102956-1 | B | Cylinder Pin 1 1/4" x 230mm 4140 | 1 |
| 6 | 0801-44102956-2 | A | Cylinder Pin 1 1/4" x 116mm | 1 |
| 7 | 0801-KE012 | A | S Locking Pin Clip 5mm | 3 |

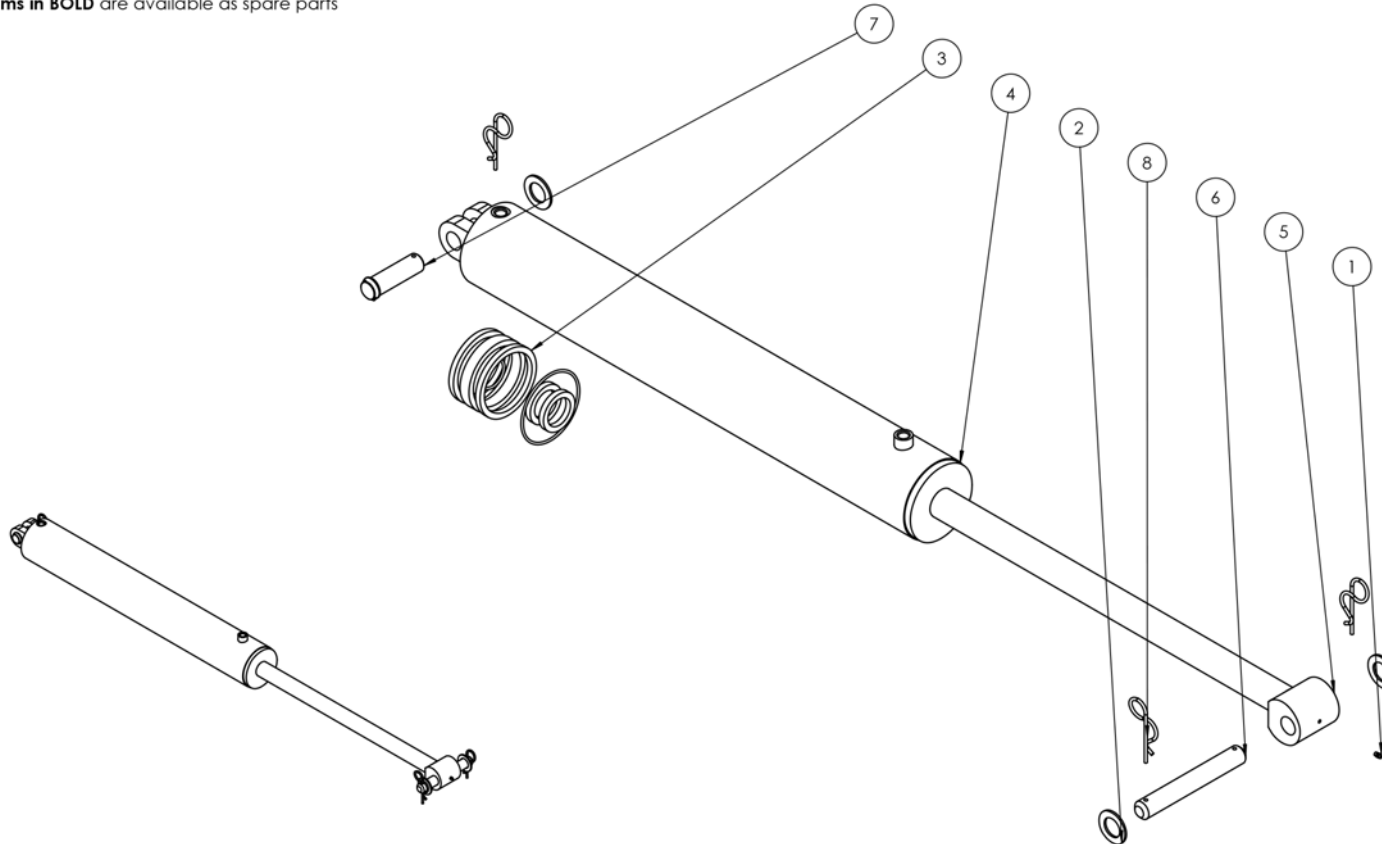
Only **items in BOLD** are available as spare parts



| | | | |
|---------------------------------|--|---------------------------------|---------------|
| Part Number 0311-4781 | Description 4" x 30" Hydraulic Cylinder | For Machines Built: 30' Only | Revision A |
|---------------------------------|--|---------------------------------|---------------|

| ITEM NO. | PART NUMBER | Revision | DESCRIPTION | QTY. |
|----------|------------------------|----------|---|------|
| 1 | 0181-GN1-4 | | Grease Nipple 1/4" UNF | 1 |
| 2 | 0232-F11-4 | | Washer Flat 1 1/4" | 3 |
| 3 | 0312-EF2956 | | Seal Kit 5" | 1 |
| 4 | 0313-5040B | | 5" x 30" Cylinder Barrel | 1 |
| 5 | 0313-5040R | | 5" x 30" Cylinder rod | 1 |
| 6 | 0801-44102956-1 | B | Cylinder Pin 1 1/4" x 230mm 4140 | 1 |
| 7 | 0801-44102956-2 | A | Cylinder Pin 1 1/4" x 116mm | 1 |
| 8 | 0801-KE012 | A | S Locking Pin Clip 5mm | 3 |

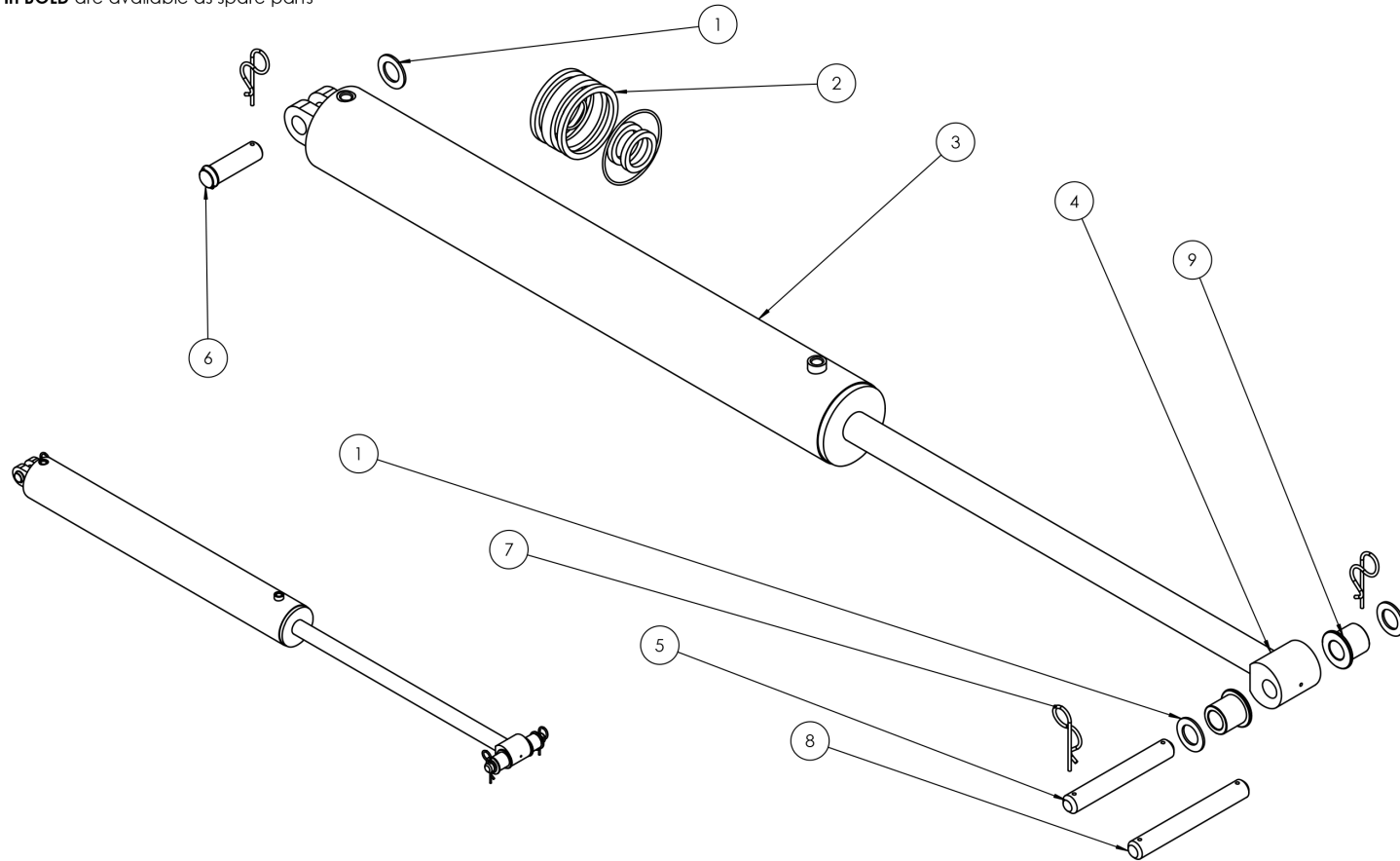
Only items in **BOLD** are available as spare parts



| | | | |
|------------------|-----------------------------|---------------------|----------|
| Part Number | Description | For Machines Built: | Revision |
| 0311-5040 | 5" x 30" Hydraulic Cylinder | | A |

| ITEM NO. | PART NUMBER | Revision | DESCRIPTION | 60CT/QTY. |
|----------|------------------------|----------|---|-----------|
| 1 | 0232-F11-4 | | Washer Flat 1 1/4" | 3 |
| 2 | 0312-EF2956 | | Seal Kit 5" | 1 |
| 3 | 0313-2956B | A | 5" x 36" Hydraulic Cylinder Barrel | 1 |
| 4 | 0313-2956R | A | 5" x 36" Hydraulic Cylinder Rod | 1 |
| 5 | 0801-44102956-1 | B | Cylinder Pin 1 1/4" x 230mm 4140 | 1 |
| 6 | 0801-44102956-2 | A | Cylinder Pin 1 1/4" x 116mm | 1 |
| 7 | 0801-KE012 | A | S Locking Pin Clip 5mm | 3 |
| 8 | 1201-18 | A | Long Cylinder Pin | 1 |
| 9 | 1201-19 | A | Long Cylinder Pin Bearing Bush | 2 |

Only **items in BOLD** are available as spare parts

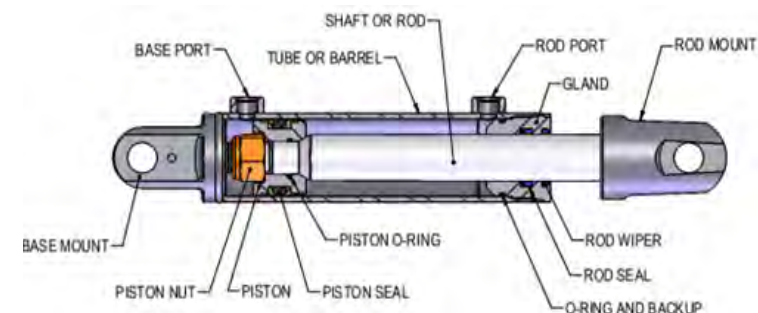


| | | | |
|---------------------------------|--------------------------------------|--|---------------|
| Part Number 0311-2956 | Description Hyd Cylinder 5" x 36" | For Machines Built: 65'(112043-65)- & 60CT(113060-60CT)- | Revision A |
|---------------------------------|--------------------------------------|--|---------------|

Cylinder Service Procedure

Tools Required:

- Cylinder Component Diagram
- 6" Chain Vice bolted to a Bench
- 'C' Spanner suitable for diameter of Cylinder
- Scriber
- Blunt Screw Driver
- Torch
- Cleaning Solution
- **Drain Tray**
- **Air Gun**
- **Soft Hammer**
- **Torque Rench**
- **Adjustable Stand to support Shaft**
- **Socket required for bore size**
- **1.5" Bore = 7/8"**
- **2.0" Bore = 1.1/16"**
- **2.5" Bore = 1.7/16"**
- **3.0" Bore = 1.5/8"**
- **3.5" Bore = 1.13/16"**
- **4.0" Bore = 2.1/4"**



1. Drain oil from cylinder
2. Secure cylinder in chain vice
3. Fully extend the rod carefully by placing air pressure into rear port of cylinder
4. *****Warning: Ensure gland has not been removed or loosened before extending with air*****
5. Remove gland from barrel with 'C' spanner, ensuring rod is supported (see image)
6. Remove rod assembly from barrel (Take note of piston seal may be cut on rod port when removing from barrel) (see image)
7. Clamp rod in vice while supporting rod on stand (ensuring shaft is protected from damage)
8. Remove piston nut, piston and gland from rod
9. Remove seals from piston using a blunt screwdriver, ensuring seal removal tool does not damage seal area on piston.
(Take note of position of seals and direction parts face)
10. Remove O-ring from internal diameter of piston
11. Remove rod wiper and rod seal from gland with scriber, ensuring seal removal tool does not damage seal groove in gland.
Insert scriber into centre of seal and prize out. Take note of the direction of seal faces
12. Remove O-ring and back-up ring from gland outer diameter, noting position of each and direction back-up ring faces



Step 5



Step 6

Cylinder Service Procedure

13. Clean all parts

14. Inspect all parts for damage. Check:

- gland seal & O-ring groove is clean and in good condition, no scratches or rust,
- piston is clean and in good condition, no scratches or rust on seal areas and no damage to outer diameter of piston
- rod is clean and in good condition, no scratches on shaft, not bent, no damage to thread
- piston does not have excessive clearance (max 0.15mm)
- tube is clean with no scores in bore, no rust, no damage to O-ring seal area or thread

15. Install rod seal into gland seal groove, innermost groove, with seal facing pressure side of gland (see drawing)

16. Install rod wiper into gland (outer groove)

17. Install O-ring & back up washer to outside of gland

18. Install piston seals onto piston (see drawing)

19. Install O-ring to groove inside piston

20. Lubricate piston seals and gland seals with hydraulic oil

21. Install gland onto rod with wiper seal of gland going on first

22. Install piston onto shaft with taper end on first

23. Install new Nyloc Nut and tension to

1.5" Bore = 27Nm

3.0" Bore = 344Nm

2.0" Bore = 203Nm

3.5" Bore = 417Nm

2.5" Bore = 324Nm

4.0" Bore = 720Nm

24. Lubricate inside of barrel with hydraulic oil

25. Place rod assembly into cylinder (ensuring seal is not damaged on thread or port hole)

26. Tap rod assembly in halfway up the barrel to allow gland to be screwed in

27. Lubricate gland O-ring & back-up ring and ensure tube is lubricated and coat threads and bearing area of gland with 'Anti-Seize'

28. Install gland into barrel and tighten up with 'C' Spanner ensuring gland locks up to end of barrel and tension to:

1.5" Bore = 236Nm
3.0" Bore = 1895Nm

2.0" Bore = 560Nm
3.5" Bore = 3010Nm

2.5" Bore = 1090Nm
4.0" Bore = 4494Nm



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