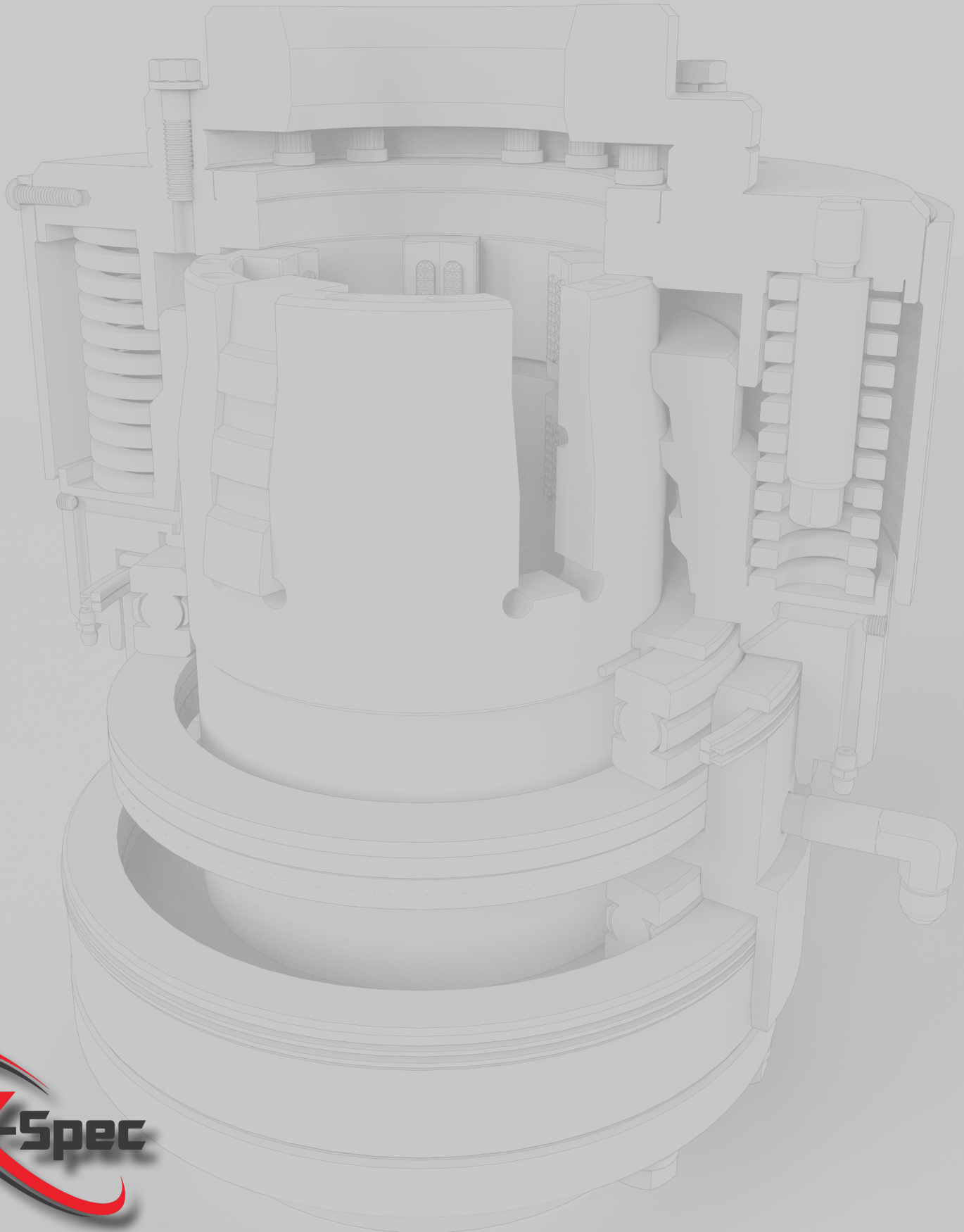
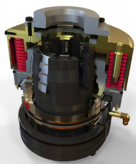


# Christensen P Chuck 56-1000

## Technical Manual





## Security & Warnings

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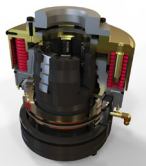


This operating and maintenance manual is a guide to reduce the risk of accidents as well as ensure a long service life of the mechanical parts. This guide is based on the experience of the manufacturer with operations on the field and the technical knowledge of the drilling equipment. However, supervisors, operators or present trainers on site are often the best judges to assess the level of risk associated with the operations. The vigilance of the operator and his immediate superior is highly recommended and, at all times.

### CAUTION !

**Occupational accidents are almost always unpredictable. It is therefore important to be very vigilant and anticipate possible situations where a work-related accident may occur.**

- The operator must be conscientious and trustworthy at work.
- The operator should always have security in mind and be informed of security regulations on the work site.
- The operator should have all the skills and knowledge necessary to safely operate the equipment.
- The operator should always wear the appropriate safety equipment such as safety goggles, earplugs/muffs, security hat, security boots and proper attire.
- He/she should always follow the instructions in the service and operation manuals.
- In addition, before starting the equipment, the operator should always ensure that there is no risk to physical injury or possible material damage.
- The operator should always recognize the limits of the equipment and never use it for any other purpose than for its intended use.
- It is strictly forbidden to operate this equipment under the influence of alcohol and/or drugs.



# Security & Warnings

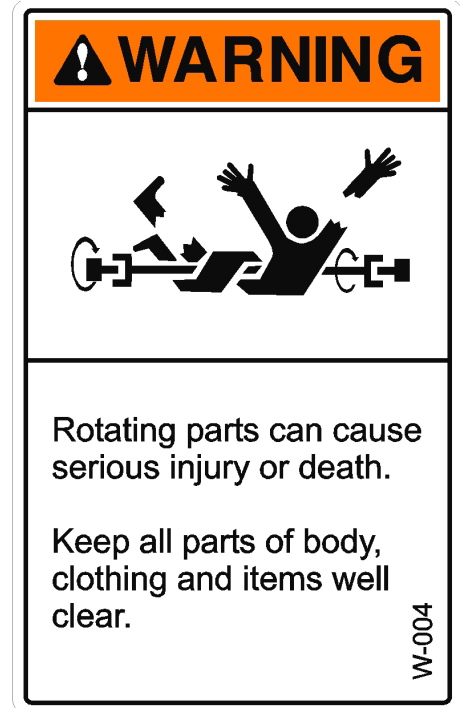
## Occupational safety

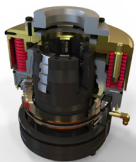
Before starting work :

- Familiarize yourself with the service and operation manuals and follow their instructions.
- Plan ahead the work to be done to avoid potential accidents.
- If an accident or fire occurs, act rapidly and use all the necessary tools available. Inform yourself on first aid techniques and how to extinguish a fire. Ensure that you can reach help at any time.
- Before starting your work shift, always check the state of the equipment and test the different functions.
- For safe operation, clothes should not be baggy, sleeves should not be hanging. Hair should be tied back and bracelets and rings should be removed. A common-sense approach of the proper attire will prevent potential physical injury from the mechanisms.
- Always wear all the appropriate security wear (hat, boots, goggles, earplugs/muffs and overalls).

## Operational warnings

- Never put the chuck in high speed rotation while the hydraulic pressure is off (jaws opened) and then close the the jaws rapidly on the rod. This will cause the springs to compress and release rapidly, allowing the 3 parts of the thrust bearing to become separated and then shocked back together, **causing immediate failure of the thrust bearing.**
- Always grease the chuck as per instructions supplied on the Maintenance page (p.16)



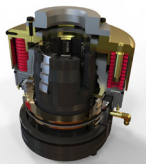


# 56-1000

## Christensen P Chuck

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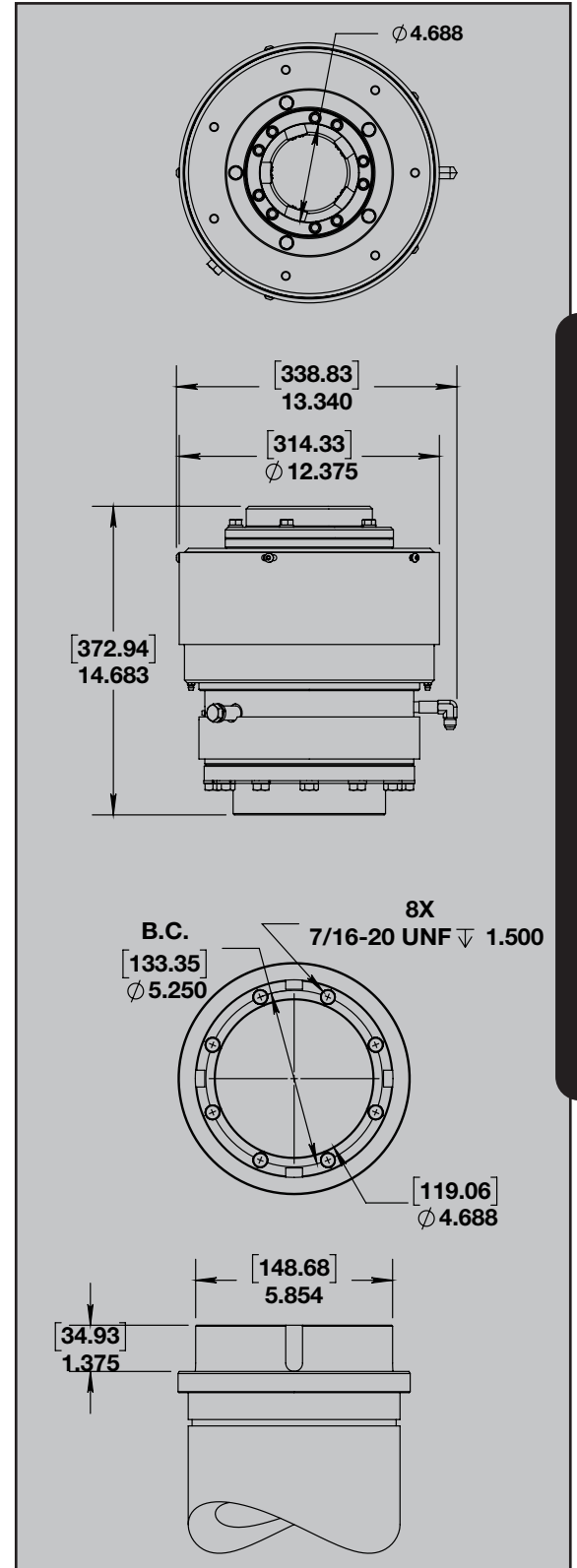
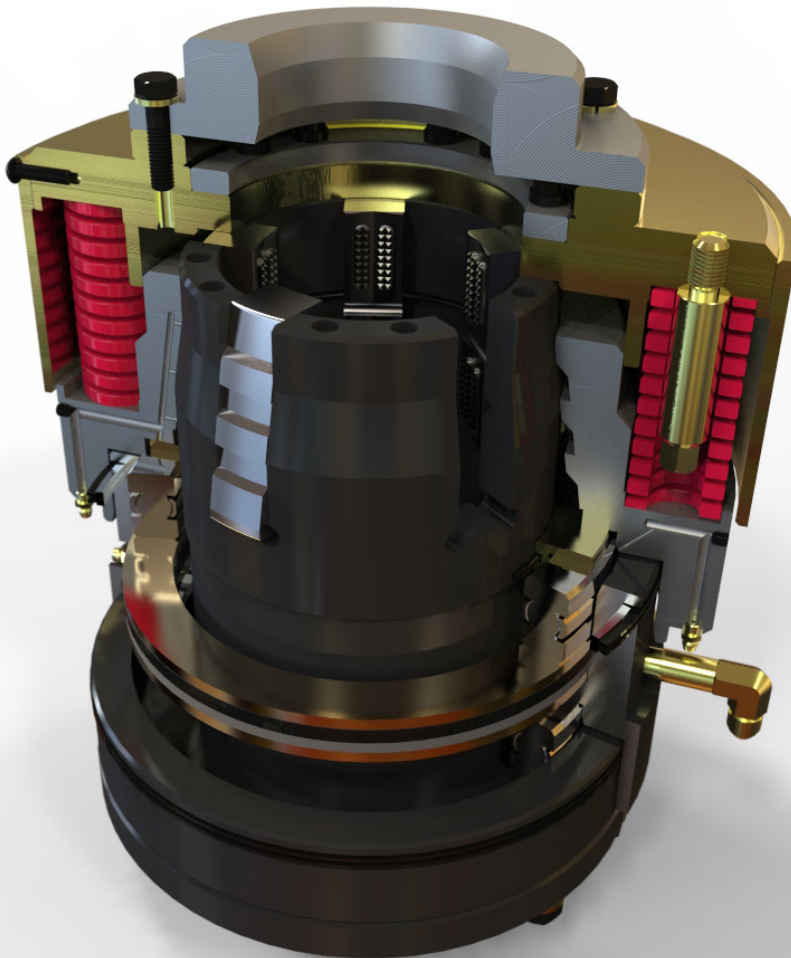
# Specifications

## Description

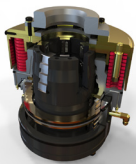
- Spring applied, hydraulic release
- P W/L rod capacity , 4-5/8" inside diameter (117mm)
- Each set uses 5 jaws with 4 carbides each

## Specifications

|                                   |                        |
|-----------------------------------|------------------------|
| Maximum Inside Diameter           | 4.625" (117 mm)        |
| Holding Capacity                  | 40,000 Lbs (18,000 Kg) |
| Weight (Without jaws and bushing) | 210 Lbs (95 Kg)        |



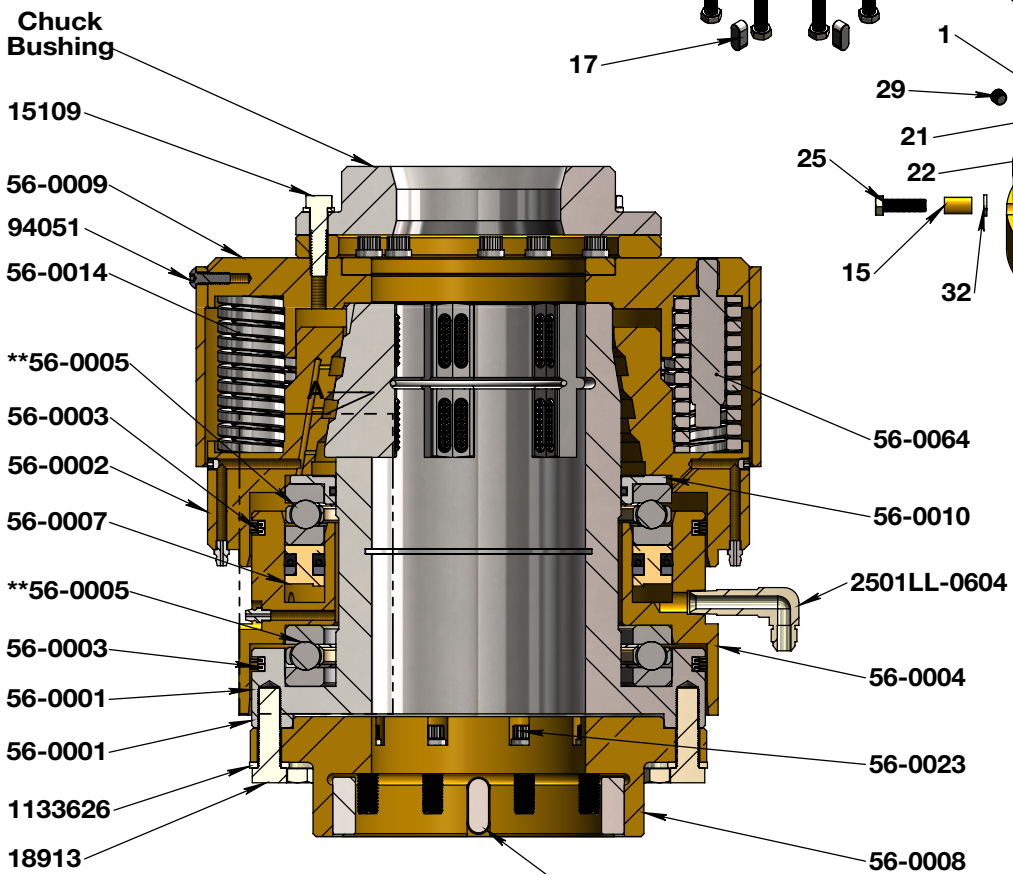
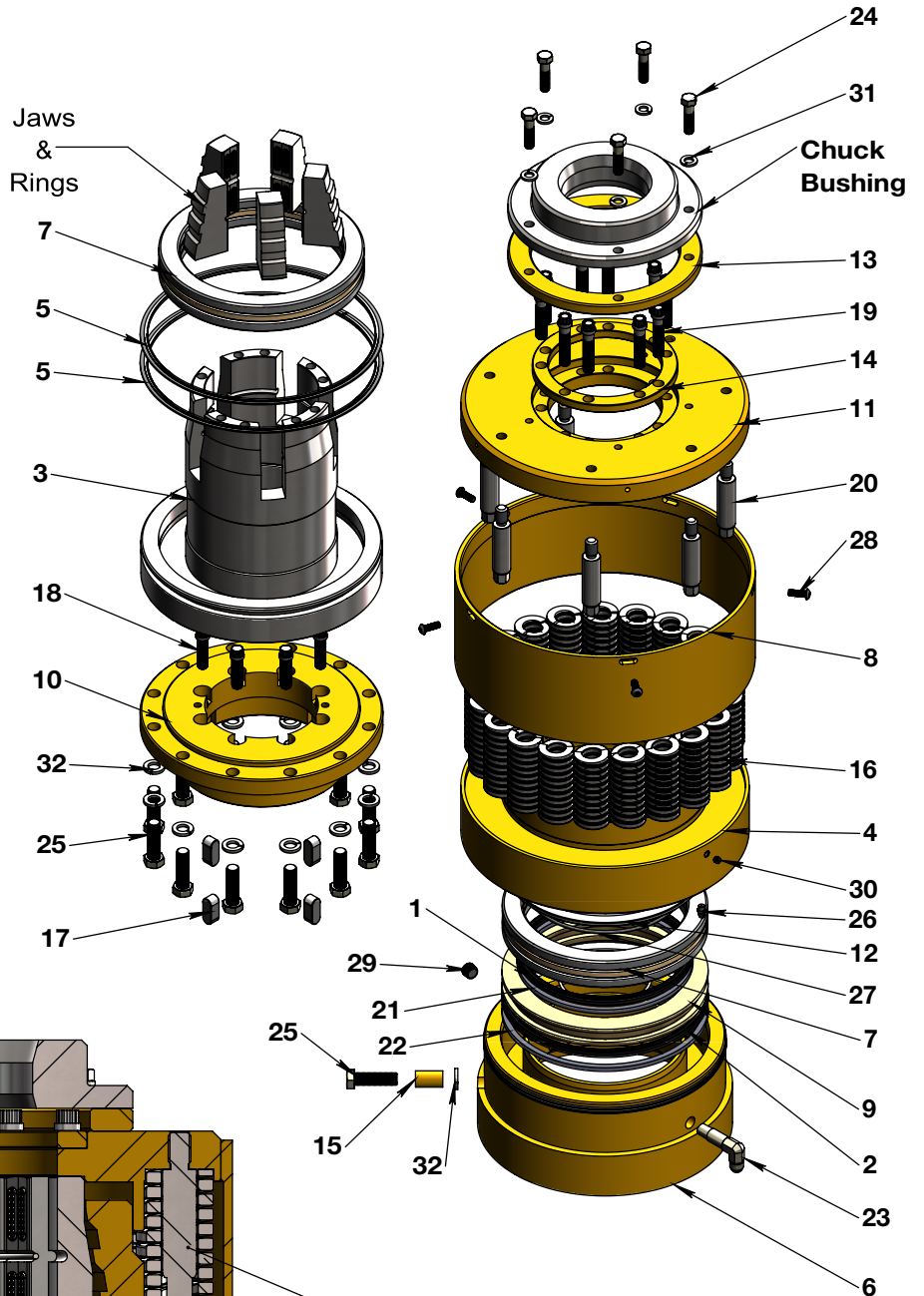
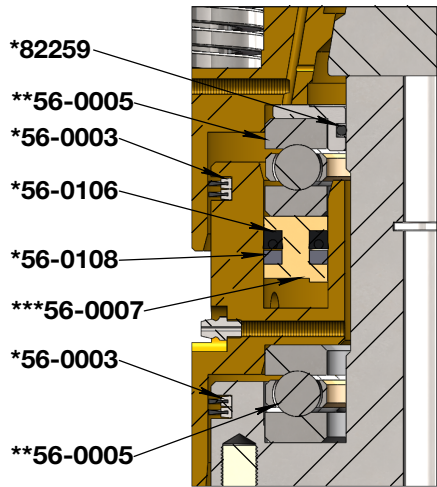
Specifications

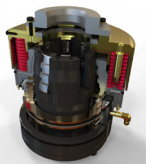


# 56-1000

## Christensen P Chuck

Assembly Drawings





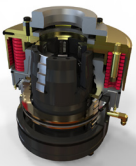
## Assembly Kit Order

| Item # | Part #  | Description                  | Weight (lbs) |
|--------|---------|------------------------------|--------------|
| 1-34   | 56-1000 | Christensen P Chuck Assembly | 205          |

## Parts List

| Item # | Part #        | Description   | Qty | Weight (lbs) |
|--------|---------------|---|-----|--------------|
| 1      | 13P250-06.750 | Inside Seal   | 1   | 0.06         |
| 2      | 13P250-08.000 | Outside Seal  | 1   | 0.071        |
| 3      | 56-0001       | Chuck Base  | 1   | 41.644       |
| 4      | 56-0002       | Chuck Bowl  | 1   | 43.921       |
| 5      | 56-0003       | Brush Seal  | 4   | 0.16         |
| 6      | 56-0004       | Cylinder  | 1   | 26.527       |
| 7      | 56-0005       | Ball Thrust Bearing, Christensen Chuck                      | 2   | 6.592        |
| 8      | 56-0006       | Spring Guard  | 1   | 9.665        |
| 9      | 56-0007       | Piston, Brass   | 1   | 4.022        |
| 10     | 56-0008       | Adapter plate   | 1   | 20.627       |
| 11     | 56-0009       | Top Plate   | 1   | 25.435       |
| 12     | 56-0010       | Seal Retainer   | 1   | 1.603        |
| 13     | 56-0011       | Spacer Ring   | 1   | 2.811        |
| 14     | 56-0012       | Spacer  | 1   | 0.983        |
| 15     | 56-0013       | Spacer Tube   | 1   | 0.049        |
| 16     | 56-0014       | Compression Spring  | 21  | 0.877        |
| 17     | 56-0017       | Key   | 4   | 0.08         |
| 18     | 56-0023       | Special Bolt, Short   | 8   | 0.08         |
| 19     | 56-0024       | Special Bolt, Long  | 10  | 0.106        |
| 20     | 56-0064       | Spring Guide  | 7   | 0.376        |
| 21     | 56-0107       | Inside Guide  | 1   | 0.043        |
| 22     | 56-0108       | Outside Guide   | 1   | 0.05         |
| 23     | 2501LL-0604   | 90° Extra Long M-JIC #6 / M-NPT #4                          | 1   | 0.153        |
| 24     | 15109         | 3/8-16 x 1-1/2" Grade 8 Yellow Zinc Finish Hex Cap Screw    | 5   | 0.0626       |
| 25     | 18913         | 1/2-20 x 1-3/4" Grade 8 Yellow Zinc Finish Hex Cap Screw    | 13  | 0.1326       |
| 26     | 58834         | 1/4-28 Straight Steel Zinc Self-Tapping Grease fitting      | 3   | 0.01         |
| 27     | 82259         | O-Ring  | 1   | 0.0142       |
| 28     | 94051         | 1/4-20 x 3/4" Hex Drive Alloy Steel Button Socket Cap Screw | 5   | 0.012        |
| 29     | 94133         | 1/4" NPTF Steel Socket Head Pipe Plug 3/4" Taper Dryseal    | 1   | 0.019        |
| 30     | 141571        | 1/4-28 x 1/4" Hex Drive Cup Point Steel Socket Set Screw    | 2   | 0.002        |
| 31     | 1133622       | 3/8 Zinc Finish Medium Split Lock Washer                    | 5   | 0.006        |
| 32     | 1133626       | 1/2 Zinc Finish Medium Split Lock Washer                    | 13  | 0.013        |

- \* Seal Kit #56-0105 includes items marked \*
- \*\* Pack with grease before installing in chuck assembly
- \*\*\* Seal Kit #56-0110 includes piston 56-0007



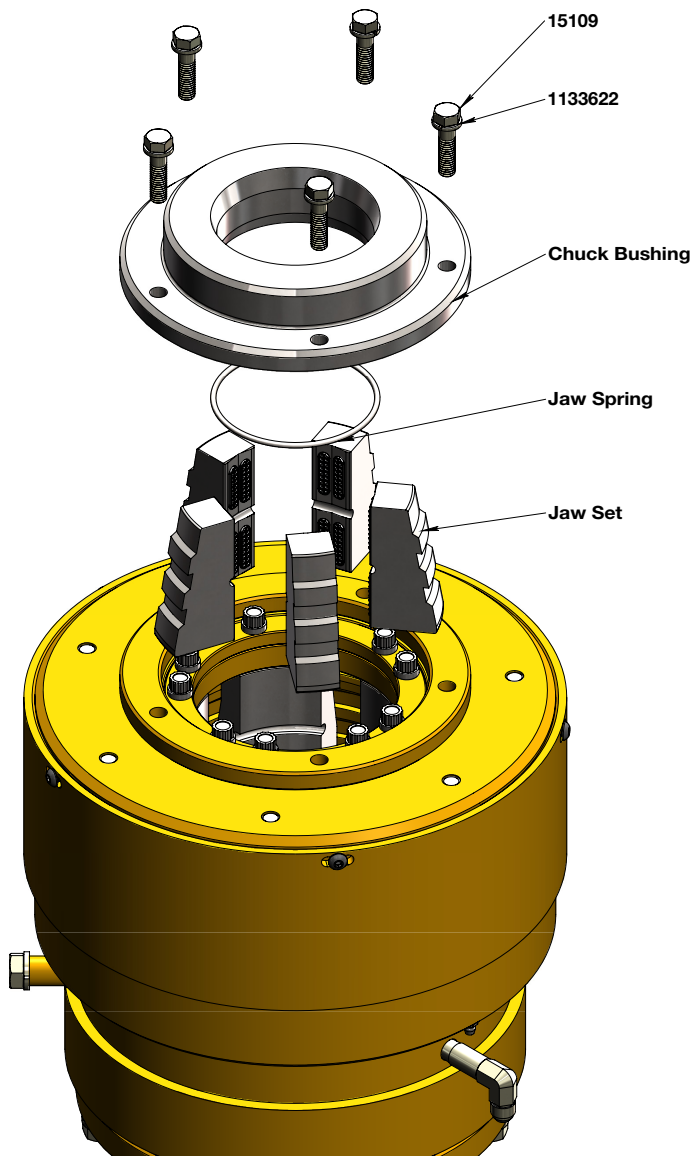
# 56-1000

## Christensen P Chuck

# Options & Accessories

### Jaws, Jaw Springs & Bushings

| SIZE                    | Jaw Set    |            | Guide Bushing |            | Jaw Spring |            |
|-------------------------|------------|------------|---------------|------------|------------|------------|
|                         | X-Spec P/N | Copco P/N  | X-Spec P/N    | Copco P/N  | X-Spec P/N | Copco P/N  |
| BW/BWL/BQ ROD<br>AW CSG | 30-20-01   | 3760007360 | 56-0020       | 3760007354 | 56-0040    | 3760009571 |
| NWL/NQ ROD              | 30-20-02   | 3760007361 | 56-0021       | 3760007355 | 56-0041    | 3760009569 |
| BW CSG                  | 30-20-06   | 3760007362 | 56-0037       | 3760007356 | 56-0044    | 3760009561 |
| HW/HWL/HQ ROD<br>NW CSG | 30-20-03   | 3760003350 | 56-0022       | 3760003317 | 56-0042    | 3760009572 |
| HW/HWL/HQ ROD<br>NW CSG | 30-20-04   | 3760007363 | 56-0036       | 3760007358 | 56-0043    | 3760009573 |



#### To Change Bushing:

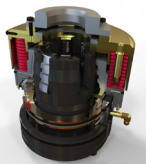
- Remove the 5x 3/8-16 x 1-1/2" Grade 8 Yellow Zinc Finish Hex Cap Screw (15109)
- Remove Chuck Bushing

#### To Change Jaw Set:

- Remove the 5x 3/8-16 x 1-1/2" Grade 8 Yellow Zinc Finish Hex Cap Screw (15109)
- Remove Chuck Bushing
- Remove jaws Spring
- Remove Jaw Set

Jaws & Jaw Springs





# Options & Accessories

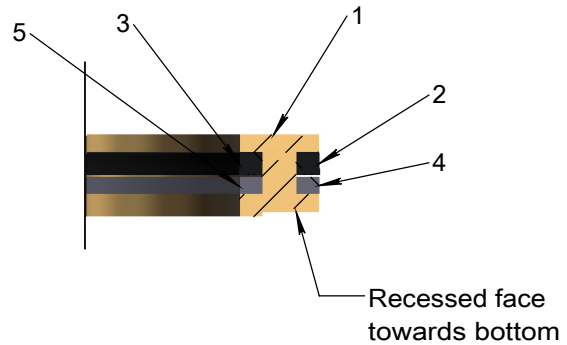
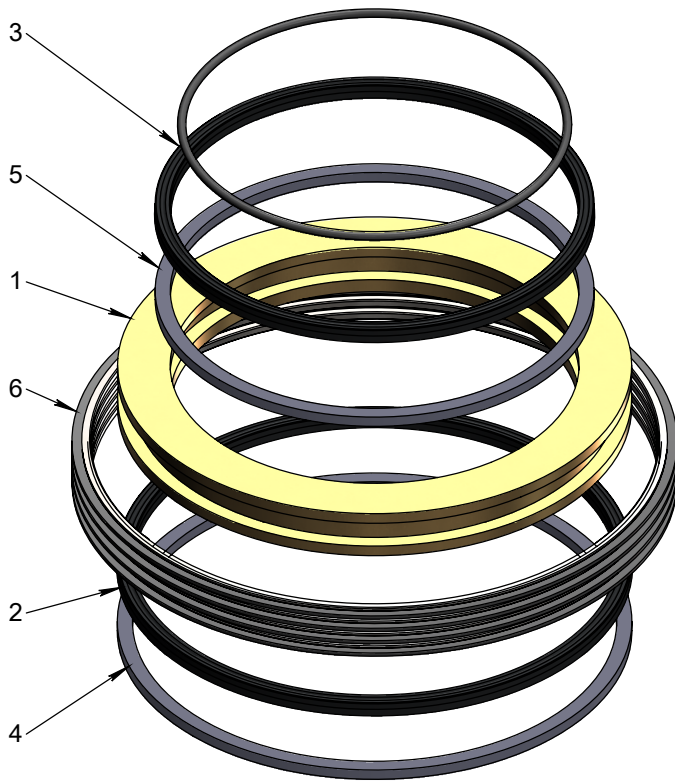
Piston & Seal Kit

## Assembly Kit Order

| Item # | Part #  | Description          | Weight (lbs) |
|--------|---------|----------------------|--------------|
| 1-7    | 56-0110 | Seal Kit, C/W Piston | 4.9          |
| 2-7    | 56-0105 | Seal Kit             | 0.6          |

## Parts List

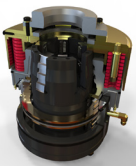
| Item # | Part #        | Description   | Qty | Weight (lbs) |
|--------|---------------|---------------|-----|--------------|
| 1      | 56-0007       | Piston, Brass | 1   | 4.022        |
| 2      | 13P250-08.000 | Outside Seal  | 1   | 0.071        |
| 3      | 13P250-06.750 | Inside Seal   | 1   | 0.06         |
| 4      | 56-0108       | Outside Guide | 1   | 0.05         |
| 5      | 56-0107       | Inside Guide  | 1   | 0.043        |
| 6      | 56-0003       | Brush Seal    | 4   | 0.16         |
| 7      | 82259         | O-Ring        | 1   | 0.0142       |



Assembled Piston  
Cross-Section

### Assembly Notes:

- Install nylon guides into piston (Items 4 & 5) first
- Install seals with the lip pointing towards the part of the piston with a recess
- When installing piston into cylinder 56-0004, (not shown) make sure the recessed face of the piston is pointing towards the bottom of the cylinder



# 56-1000

## Christensen P Chuck

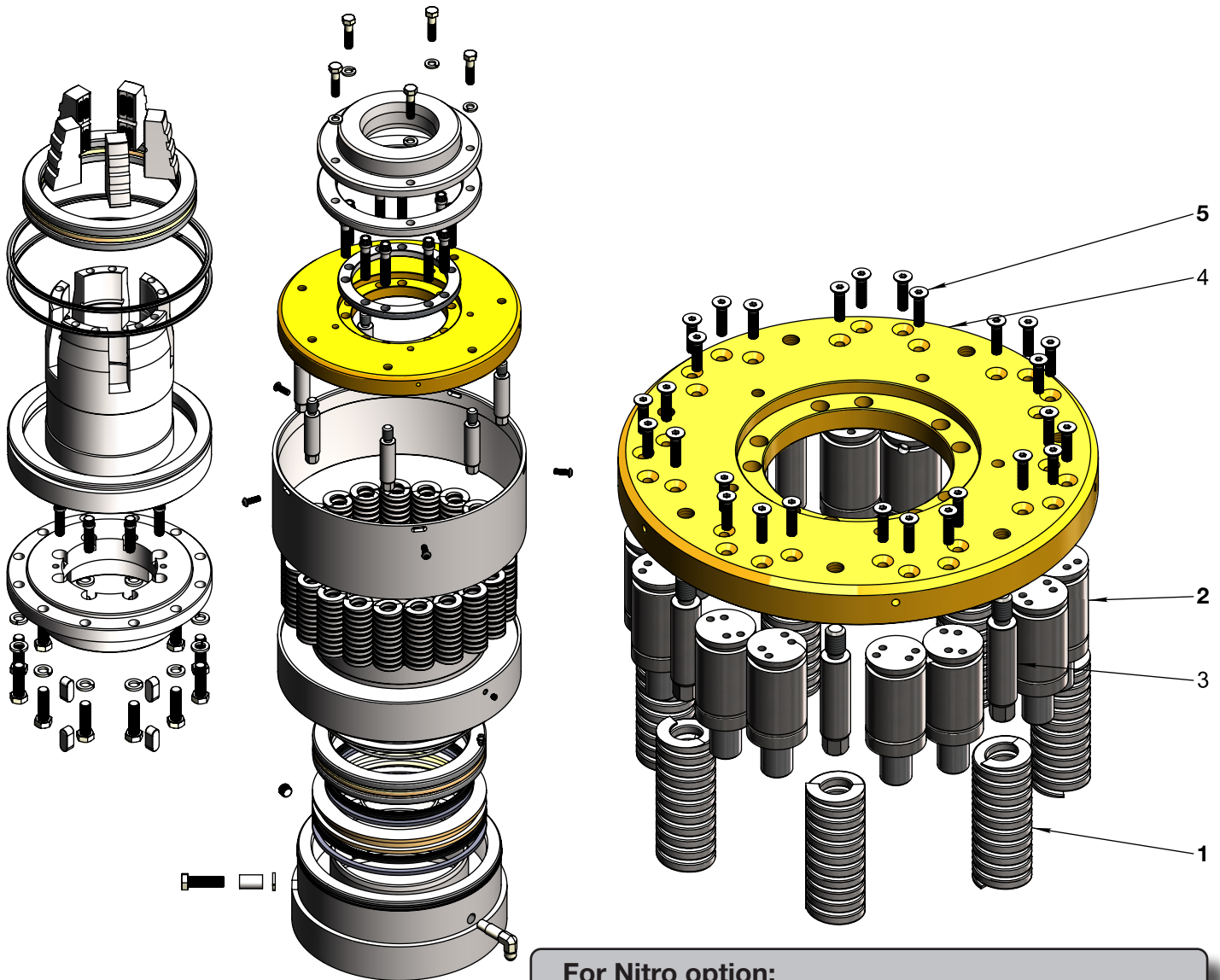
# Options & Accessories

### Nitrogen Booster Kit

## Parts List

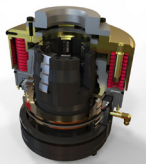
| Item # | Part #    | Description  | Qty | Weight (lbs) |
|--------|-----------|--|-----|--------------|
| 1      | 56-0014   | Compression Spring                                       | 7   | 0.878        |
| 2      | 56-0062   | Nitrogen Gas Spring                                      | 14  | 1.293        |
| 3      | 56-0064   | Spring Guide   | 7   | 0.376        |
| 4      | 56-0009-N | Top Plate, Nitro   | 1   | 25.018       |
| 5      | 141393    | M6-1.0 x 25mm Hex Drive Zinc Steel Flat Socket Cap Screw | 28  | 0.013        |

Nitrogen Booster Kit



**For Nitro option:**

- Change original top plate 56-0009 for 56-0009-N
- Replace 14 compression springs with nitrogen gas springs



# Options & Accessories

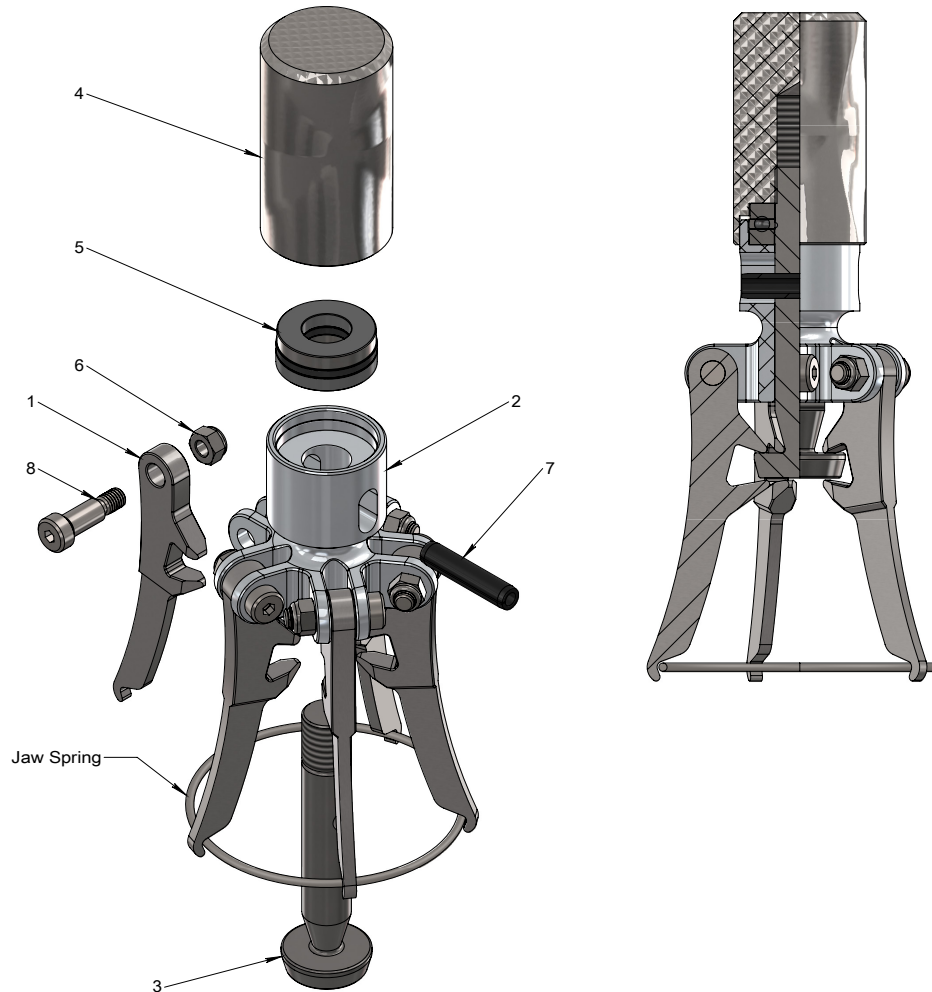
Jaw Spring Tool

## Assembly Kit Order

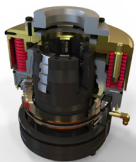
| Item # | Part #  | Description             | Weight (lbs) |
|--------|---------|-------------------------|--------------|
| 1-8    | 56-0200 | Jaw Spring Install Tool | 3.813        |

## Parts List

| Item # | Part #  | Description   | Qty | Weight (lbs) |
|--------|---------|---|-----|--------------|
| 1      | 56-0201 | Tool Leg  | 5   | 0.248        |
| 2      | 56-0202 | Body  | 1   | 0.499        |
| 3      | 56-0203 | Plunger   | 1   | 0.627        |
| 4      | 56-0204 | Knob  | 1   | 0.861        |
| 5      | 18298   | Thrust Bearing  | 1   | 0.2          |
| 6      | 37021   | 5/16-18 Grade 2 Zinc Finish NE Steel Nylon Insert Lock Nut      | 5   | 0.014        |
| 7      | 64313   | 3/8" x 1-3/4" Plain Finish Steel Slotted Spring Pin             | 1   | 0.0346       |
| 8      | 26329   | 3/8" Shoulder x 3/4" Shoulder Length Steel Socket Shoulder Bolt | 5   | 0.047        |



Assembly Instructions

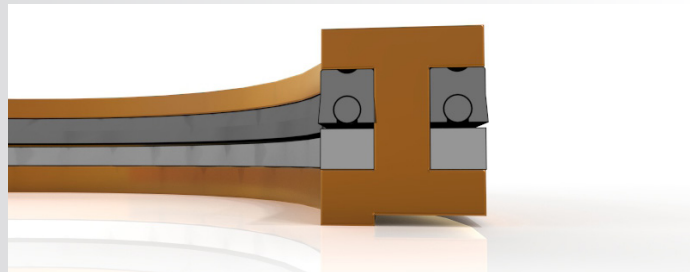


# 56-1000

## Christensen P Chuck

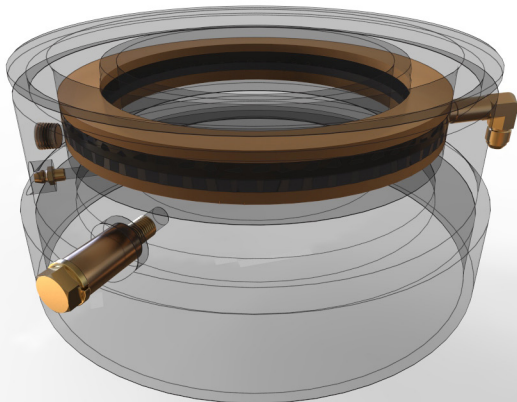
1

- Install **Nylon guides 56-0107** and **56-0108** into **Piston 56-0007** first
- Install seals with the lip pointing towards the part of the piston with a recess



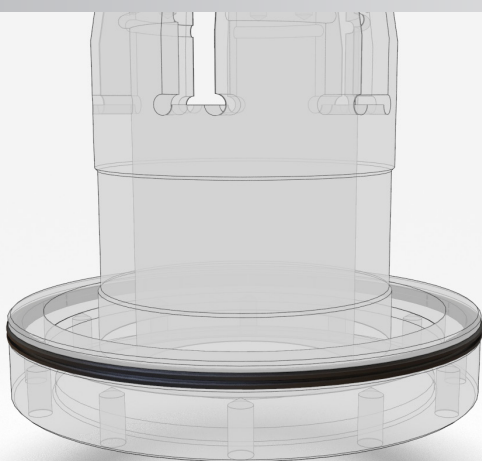
2

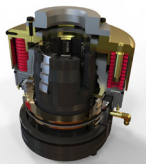
- When installing piston into **Cylinder 56-0004**, make sure the recessed face of the Piston is pointing towards the bottom of the cylinder
- Install **90° Extra Long M-JIC #6 / M-NPT #4 Fitting 2501LL-0604**
- Make sure to use thread sealant



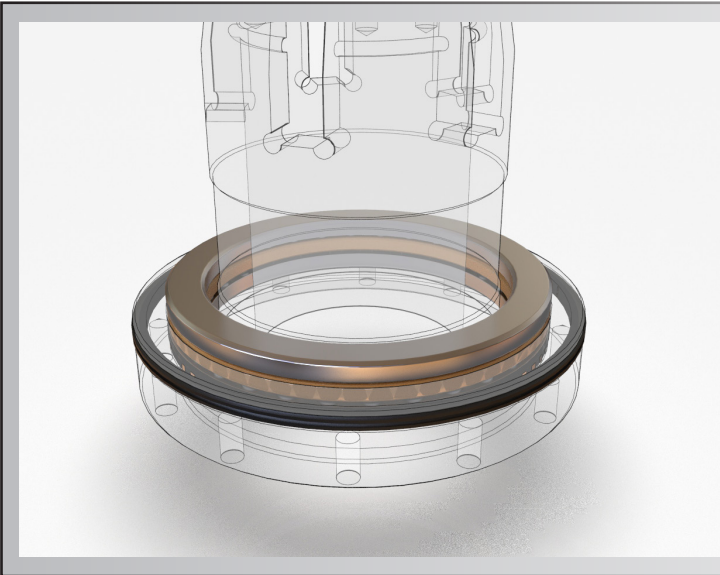
3

- Insert 2 **Brush Seals 56-0003** into the groove of **Chuck Base 56-0001**
- Make sure both brush gaps are not aligned



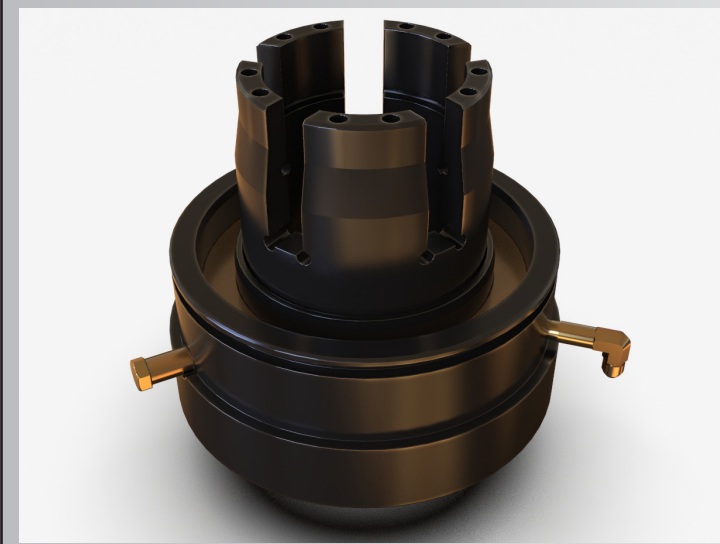


4



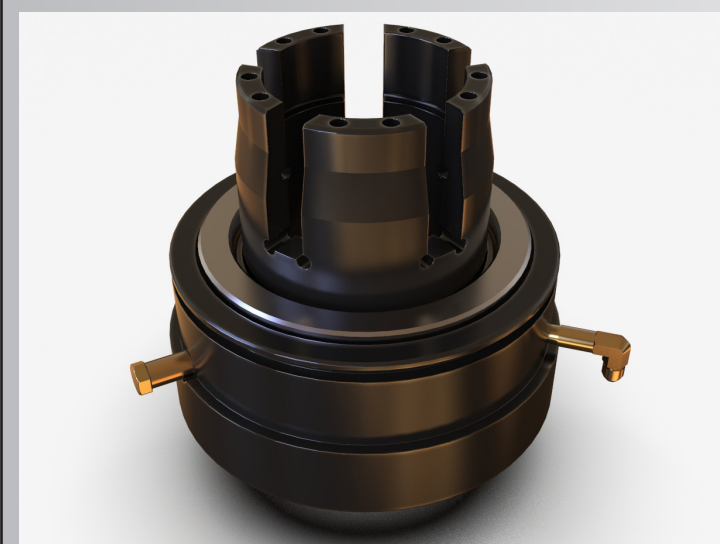
- Insert Thrust **Bearing 56-0005** into the **Chuck Base 56-0001**
- Pack bearing with grease before installing

5

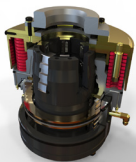


- Slide **Cylinder 56-0004** over **Base 56-0001**

6



- Insert Thrust **Bearing 56-0005** in the **Chuck Cylinder 56-0004**
- Pack bearing with grease before installing



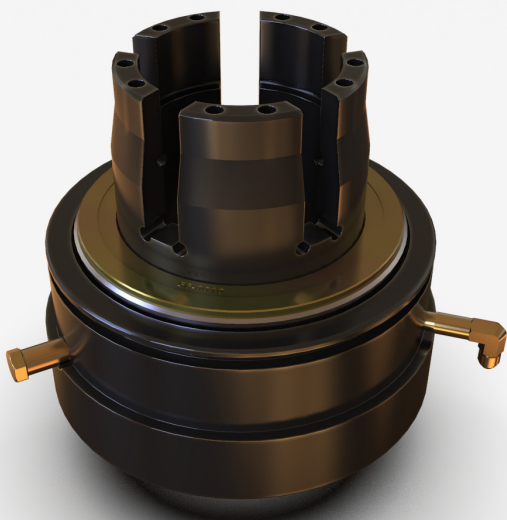
# 56-1000

## Christensen P Chuck



- Insert o-ring 82259 into Seal Retainer 56-0010

7



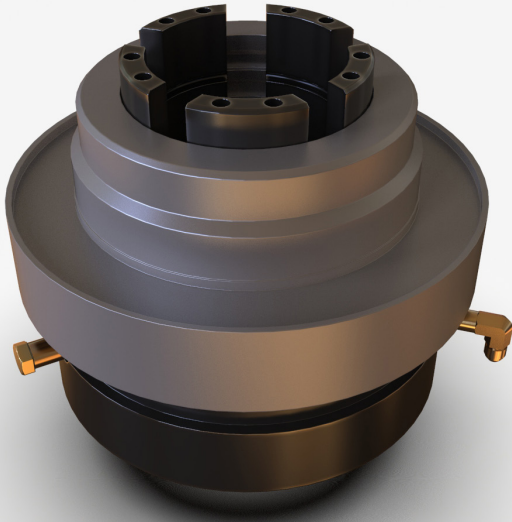
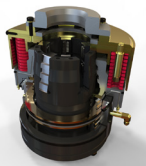
- Slide Seal Retainer 56-0010 over Base 56-0001 until it sits against the Piston 56-0007

8



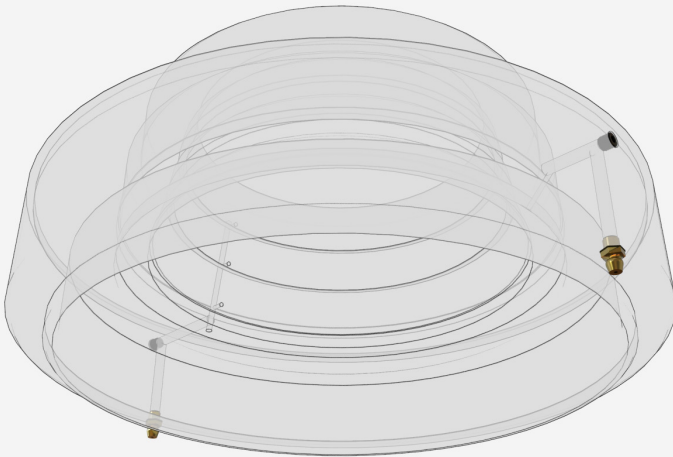
- Insert 2x Brush Seals 56-0003 into the groove of Chuck Cylinder 56-0004
- Make sure both brush gaps are not aligned to improve sealing

9



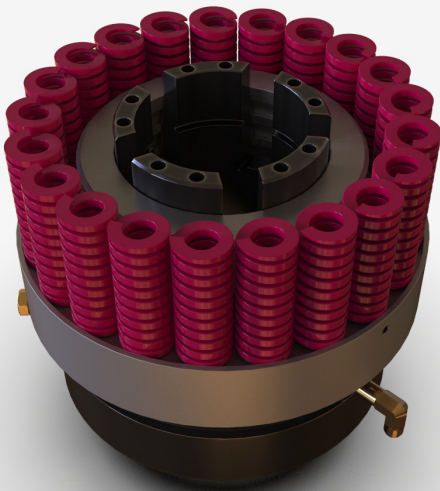
- Slide the **Bowl 56-0002** over the **Cylinder 56-0004** until it rests against **Seal Retainer 56-0010**

10



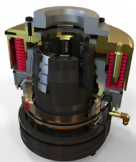
- Insert 2x **1/4-28 x 1/4" Hex Drive Cup Point Steel Socket Set Screw 141571** in the side holes of the **Chuck Bowl 56-0002** and 2x **1/4-28 Straight Steel Zinc Self-Tapping Grease fitting 58834** in the bottom of the **Chuck Bowl 56-0002**

11



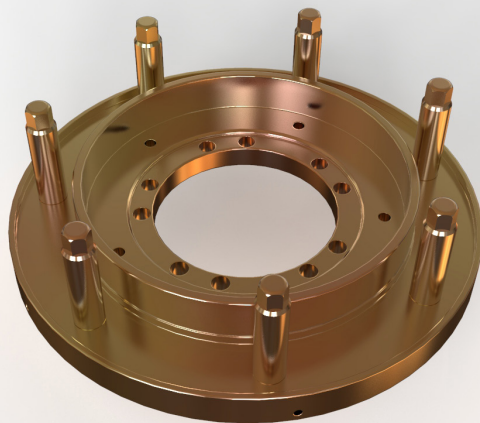
- Insert 21x **Compression Springs 56-0014** into the groove of the **Bowl 56-0002**

12



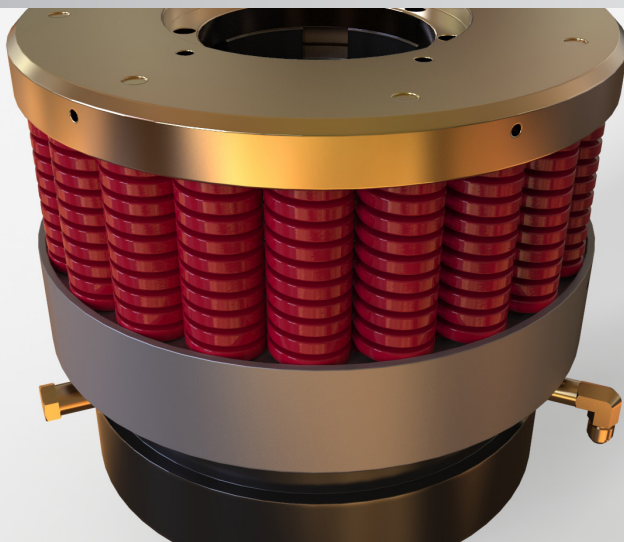
# 56-1000

## Christensen P Chuck



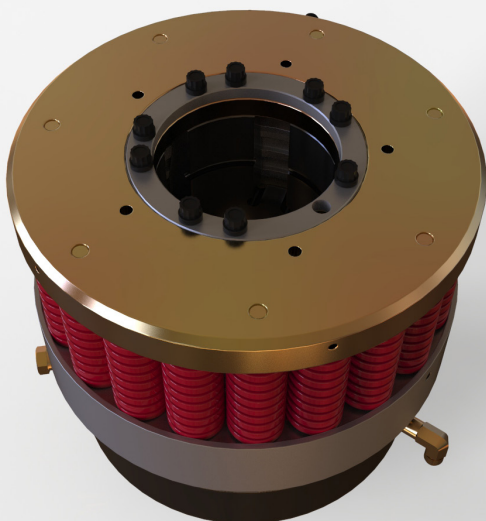
- Screw 7x **Spring Guide 56-0064** into the **Top Plate 68-0009**

13



- Place **Top Plate 56-0009** over the **Compression Springs 56-0014**, making sure the spring guides are aligned within the the springs

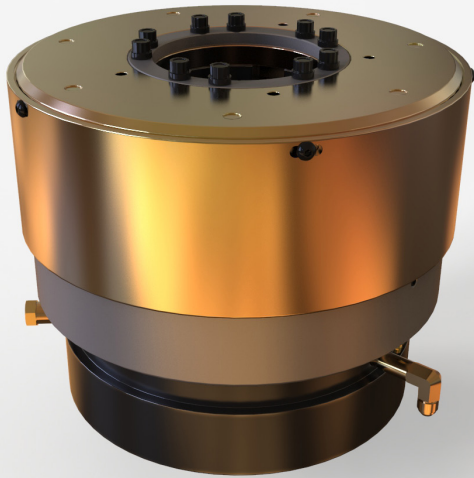
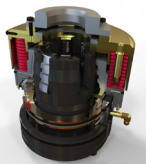
14



- Insert **Spacer Ring 56-0012** into **Top Plate 56-0009**, making sure holes are aligned
- Insert 10x **Long Special Bolt 56-0024**
- Tighten screws by hand until flange is against **Spacer Ring 56-0012**
- Tighten the 10 screws **in alternance in a star pattern** until the **Top Plate 56-0009** sits against the top of the **Base 56-0001**. Torque @ 90 ft-lbs
- When available, use a hydraulic press to compress the springs

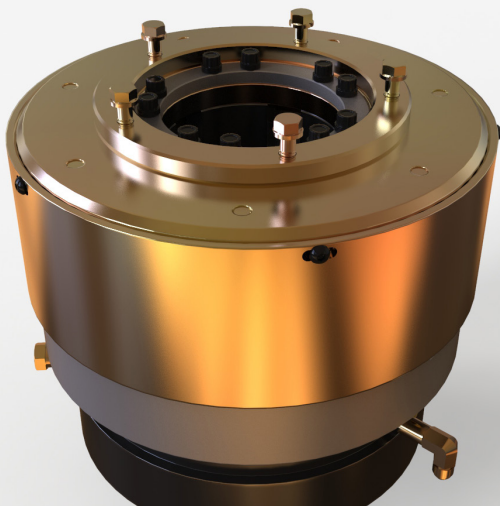
15





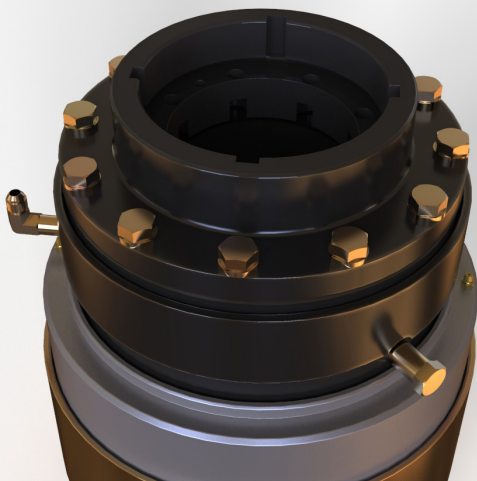
- Install the **Spring Guard 56-0006** and secure with 5x **1/4-20 x 3/4" ASTM F835 Hex Drive Zinc Finish Alloy Steel Button Socket Cap Screw 94051**

4



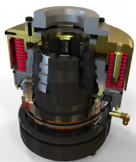
- Place **Spacer Ring 56-0011** over the **Top Plate 56-0009** and secure with 5x **3/8-16 x 1-1/2" Grade 8 Yellow Zinc Finish Hex Cap Screw 15109**

5



- After **Adapter Plate 56-0008** is bolted to the rotation unit using 8x **Special Bolt 56-0023**, secure chuck assembly to the Adapter Plate 58-0008 using 12x **1/2-20 x 1-1/2" Grade 8 Yellow Zinc Finish Hex Cap Screw 18920**
- Tighten the 12 screws **in alternance in a star pattern**

6

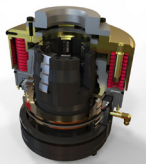


# 56-1000

## Christensen P Chuck

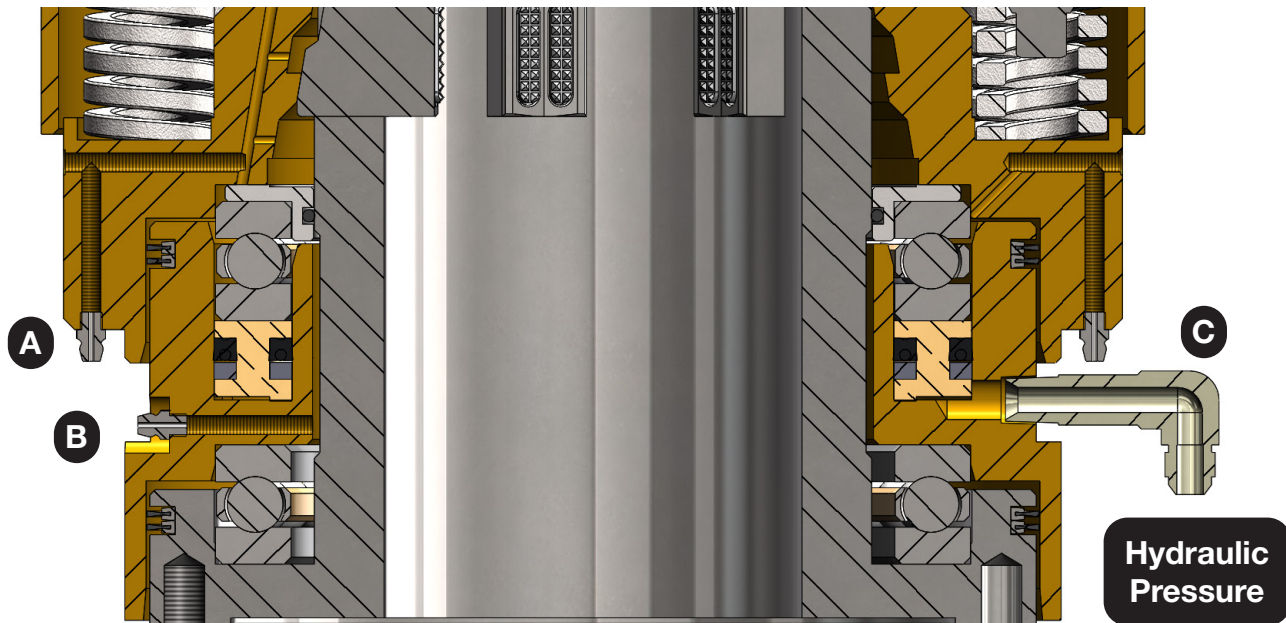
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# Maintenance

- When removing the **Top Plate 56-0009**, it is very important to unscrew the 10 **Long Special Bolts 56-0024** in alternance a **few turns at a time**. **Never remove the screws completely before pressure from the compression springs is released.**
- When the **Bowl 56-0002** becomes worn from the friction with the jaws, simply remove the **Top Plate 56-0009** and rotate the Bowl until the worn part does not align with the jaw slots in the **Base 56-0001**
- Grease points and frequency are as follows:



| Grease Point | Frequency  | Use  |
|--------------|------------|--|
| A            | 1x / Shift | Grease Jaws / Bowl Interface. Grease can also be applied directly to the back of the jaw upon insertion. It will also help the jaw stay in place |
| B            | 1x / Shift | Grease Lower Bearing   |
| C            | 1x / Shift | Grease Upper Bearing   |

- **Hydraulic pressure should be set to 1800 psi.** Hydraulic pressure is only used to open the clamp. Therefore, insufficient pressure can prevent the jaws from fully opening. Higher pressure could not be required and could make the seals fail prematurely.