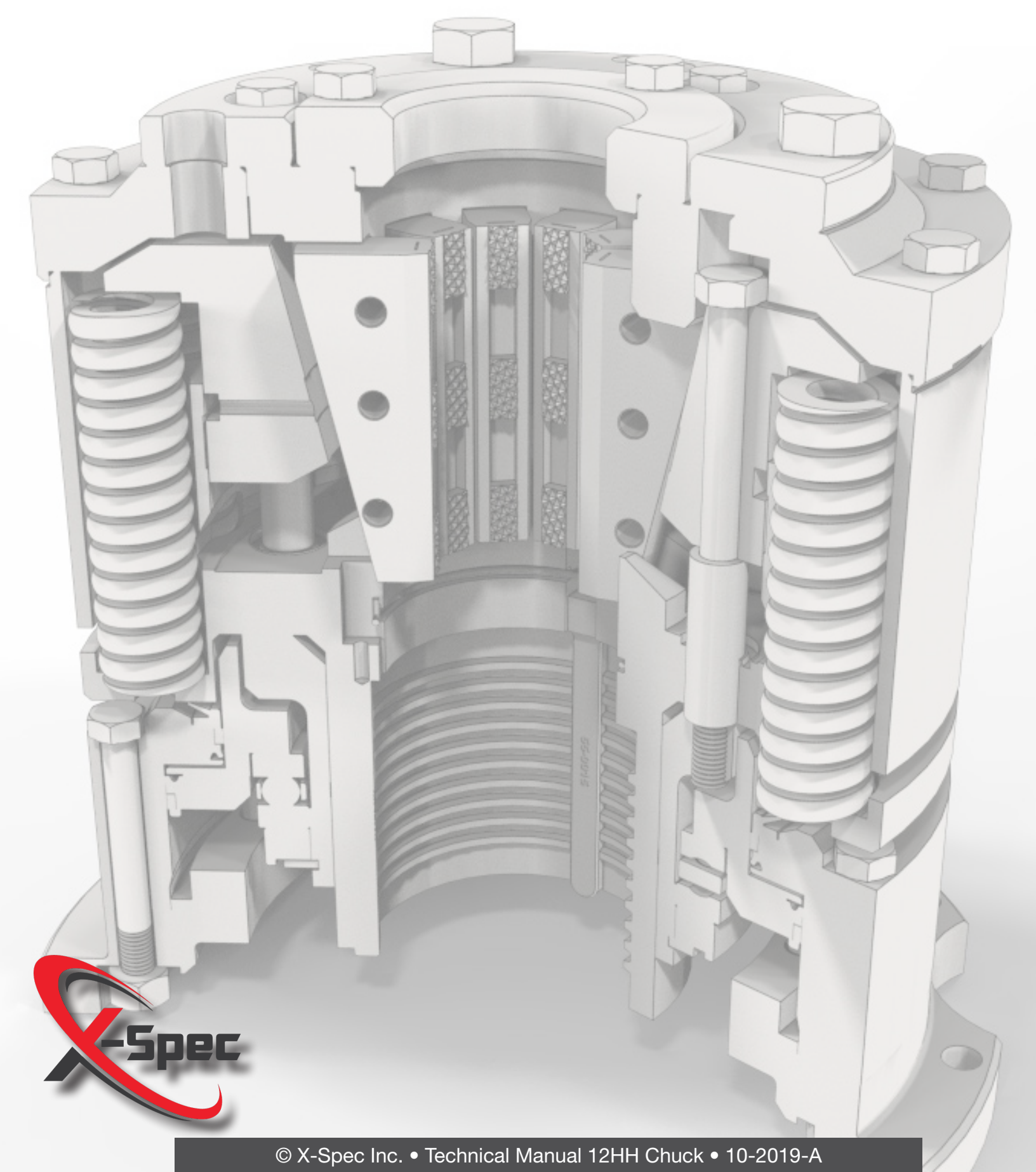
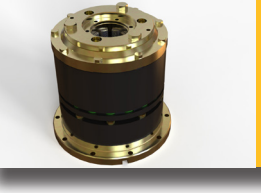
12HH Chuck
55-1000

Technical Manual





55-1000

12HH Chuck

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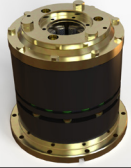


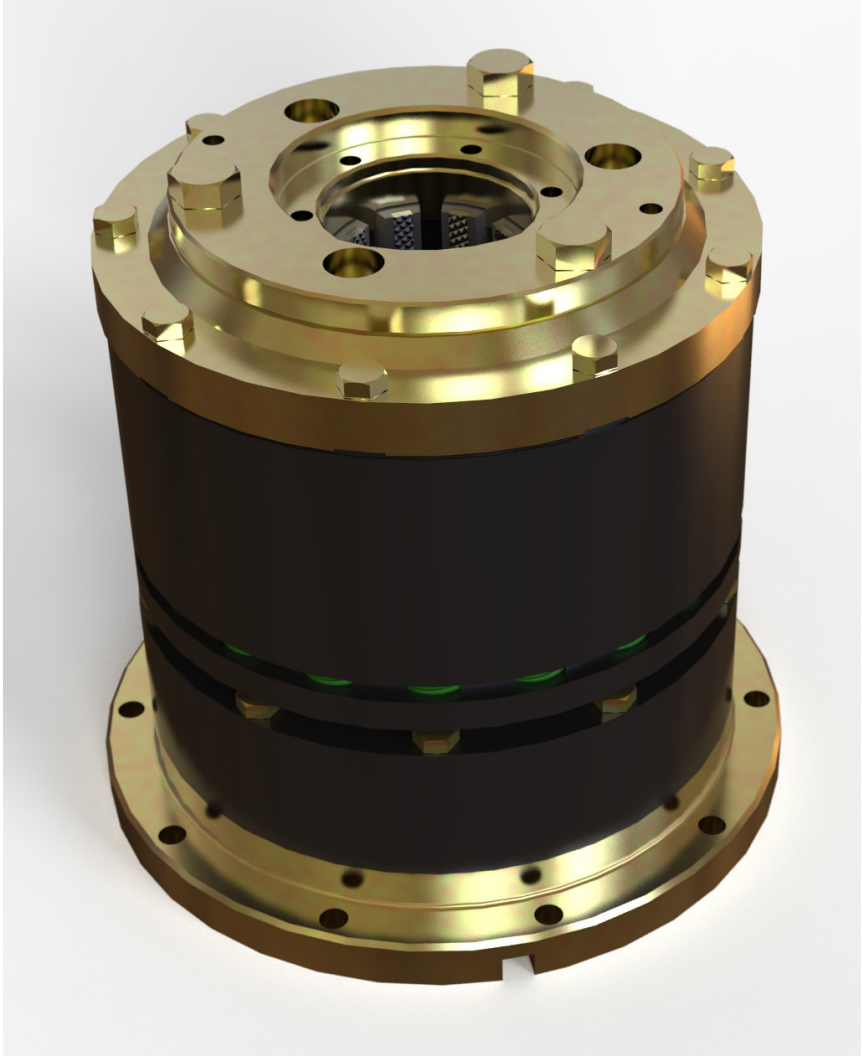
Specifications

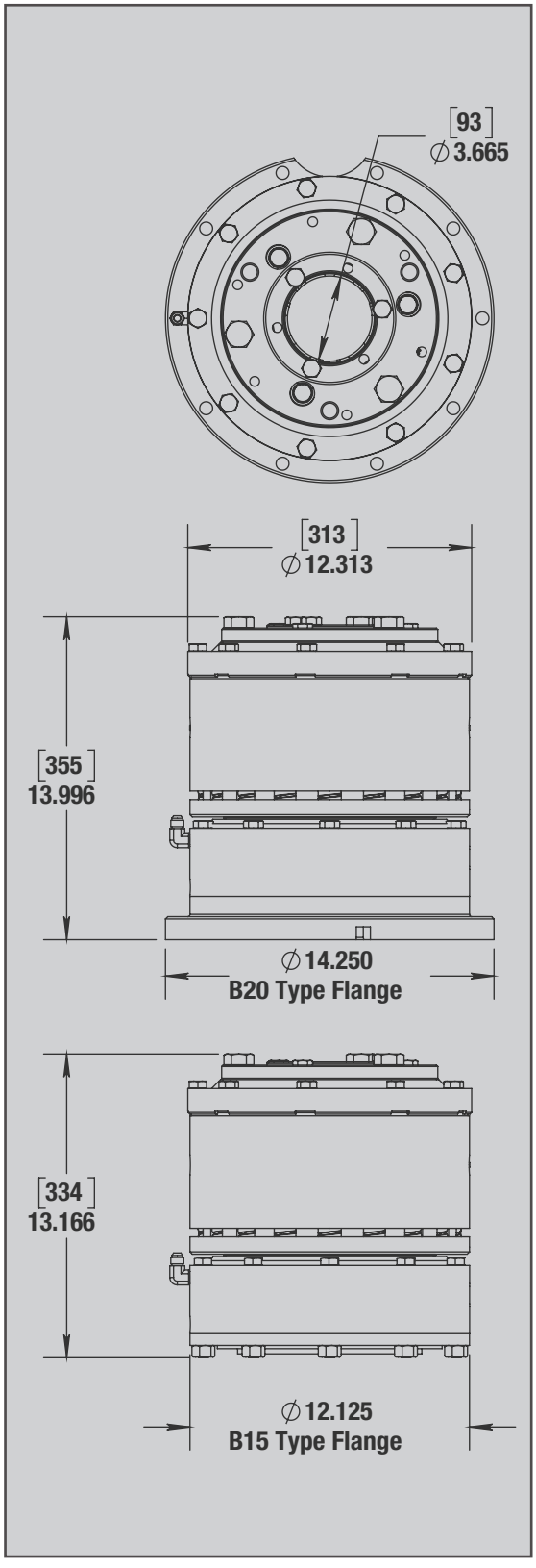
Description

- Spring applied, hydraulic release
- H W/L rod capacity , 3-11/16” inside diameter (93mm)
- Each set uses 9 jaws with 3 carbides each

Specifications

MAXIMUM INSIDE DIAMETER	**3.665” (93 MM)**
HOLDING CAPACITY	**26,000 LBS (11,800 KG)**
WEIGHT (B20 ADAPTER FLANGE)	**275 LBS (125 KG)**
WEIGHT (B15 ADAPTER FLANGE)	**255 LBS (115 KG)**



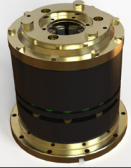


Security & Warnings

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.

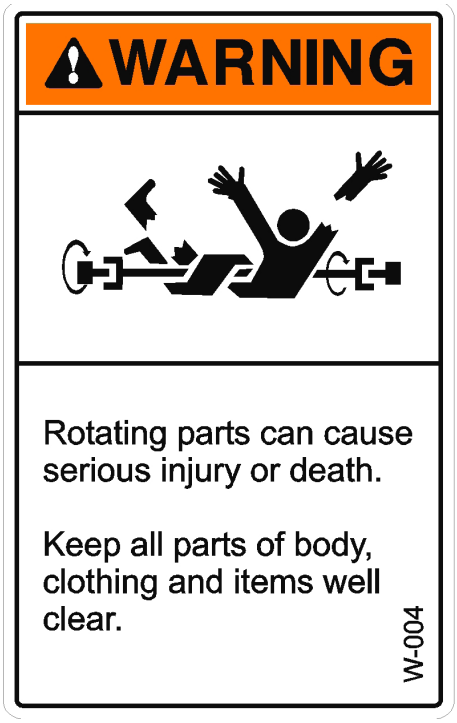
CAUTION !
Occupational accidents are almost always unpredictable. It is therefore important to be very vigilant and anticipate possible situations where a work-related accident may occur.

- 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

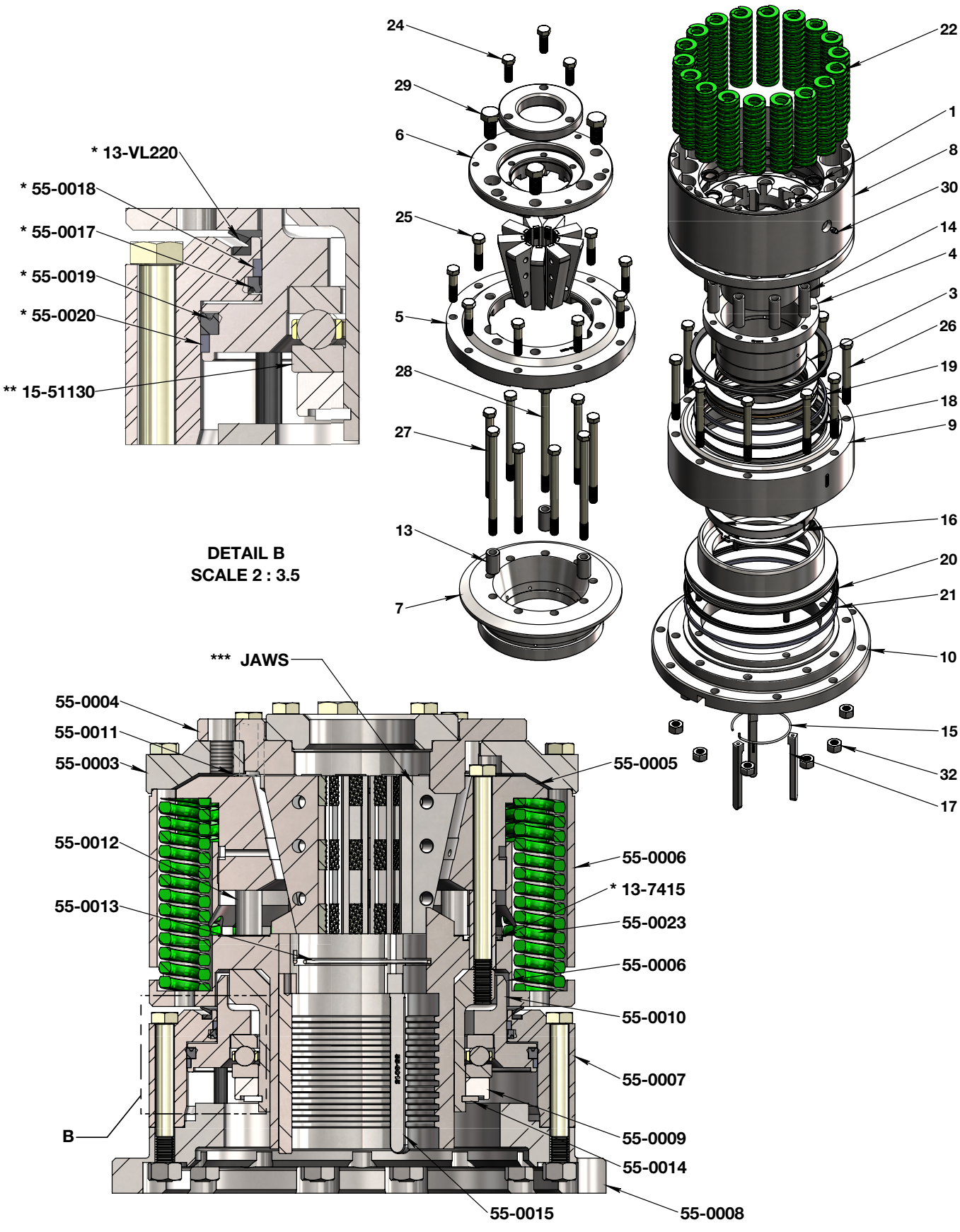


Before starting work :

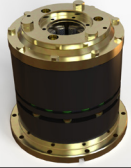
- Familiarize yourself with the service and operation manuals and follow their instructions.
- Plan ahead the work to be done to avoid potential accidents.
- If an accident or fire occurs, act rapidly and use all the necessary tools available. Inform yourself on first aid techniques and how to extinguish 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.22)
- When drillling an up hole, it is critical to verify the integrity of the 6x **3/4-10 x 1-1/2" Grade 8 Yellow Zinc Finish Hex Cap Screw** holding the **Top Cap Adapter 55-0004 (See step 30).** Failure of these bolts will cause the rods to be free from falling back from into the hole.



DETAIL B
SCALE 2 : 3.5



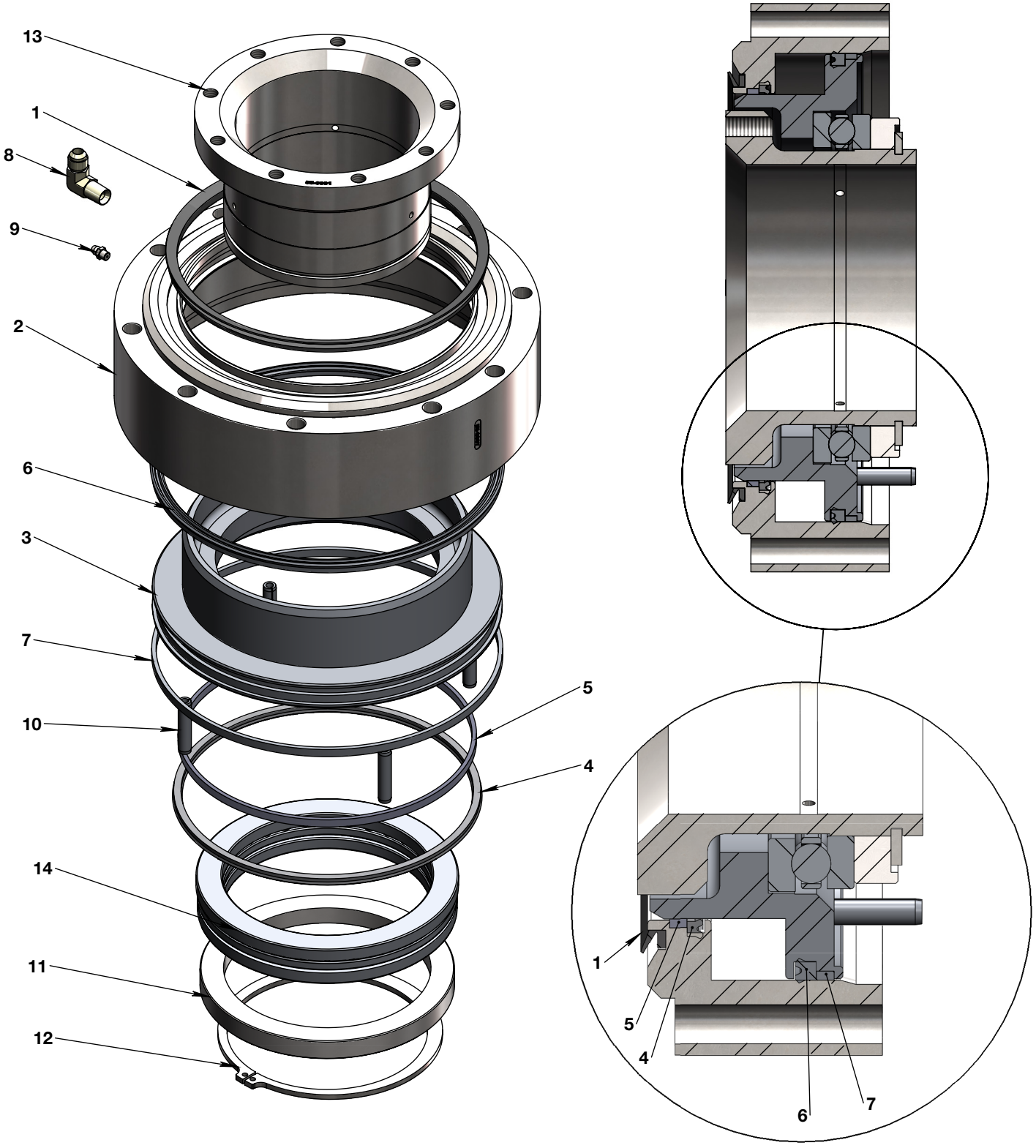
Assembly Kit Order

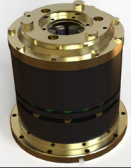
Item #	Part #	Description	Weight (lbs)	Copco P/N	Mirow P/N
1-32	55-1000	12HH Chuck Assembly	276	2920224	18120001

Parts List

Item #	Part #	Description	Qty	Copco P/N	Mirow P/N
*1	13-7415	Oil Seal	9	5040192	18100156
*2	13-VL220	V-Ring	1	5041022	18100065
**3	15-51130	Thrust Bearing	1	5000199	18100157
4	55-0001	Actuator Sleeve	1	3506928	18100123
5	55-0003	Top Cap Holder (6 Holes)	1	3506906	18100122
6	55-0004	Top Cap Adapter	1	3506907	18100071
7	55-0005	Chuck Bowl, 12.5 Deg	1	2920390	18100067
8	55-0006	Chuck Housing	1	3506870	18100091
9	55-0007	Chuck Cylinder	1	3506909	18100024
10	55-0008	Chuck Adapter	1	3506910	18100147
11	55-0009	Back Up Ring	1	3506882	18100086
12	55-0010	Chuck Piston, c/w Spring Pins	1	3506908	18100023
13	55-0011	Top Spacer	3	3506878	18100058
14	55-0012	Bottom Spacer	9	3506880	18100059
15	55-0013	Key Locking Spring	1	3506879	18100158
16	55-0014	Retaining Ring	1	5054078	18100285
17	55-0015	Key,12HH Chuck	3	3506881	18100041
*18	55-0017	U Cup Seal, Ø8-1/4”	1	5035016	18100062
*19	55-0018	Wear Ring, Ø8-1/4”	1	5035018	18100063
*20	55-0019	U Cup Seal, Ø10”	1	5035015	18100061
*21	55-0020	Wear Ring, Ø10”	1	5035017	18100064
22	55-0023	Compression Spring	18	5200517	18100155
23	2501-0604	90° M-JIC #6 / M-NPT #4	1	5290662	
24	15209	1/2-13 x 1-1/2” Grade 8 Yellow Zinc Finish Hex Cap Screw	3	5115003	HHCS120131125
25	15212	1/2-13 x 2-1/4” Grade 8 Yellow Zinc Finish Hex Cap Screw	9	5115303	HHCS120132145
26	15221	1/2-13 x 4-1/2” Grade 8 Yellow Zinc Finish Hex Cap Screw	10	5125103	HHCS120134125
27	15226	1/2-13 x 6-1/2” Grade 8 Yellow Zinc Finish Hex Cap Screw	6	5125503	HHCS120136125
28	15229	1/2-13 x 8” Grade 8 Yellow Zinc Finish Hex Cap Screw	3	5125803	HHCS120138005
29	15359	3/4-10 x 1-1/2” Grade 8 Yellow Zinc Finish Hex Cap Screw	3	5119006	HHCS340101125
30	58834	1/4-28 Straight Steel Zinc Self-Tapping Grease fitting	3	5200812	GF14028S
31	64313	3/8” x 1-3/4” Plain Finish Steel Slotted Spring Pin	4		
32	124755	1/2-13 Yellow Zinc Plated A194 2-H Heavy Hex Nut	10	5173024	NUTHH12013

* Seal Kit #55-0022 includes items marked *
** Pack with grease before installing in chuck assembly
*** Jaw set includes 9 matched jaws serviced only in sets of 9





Assembly Kit Order

Item #	Part #	Description	Weight
1-14	55-0200	Chuck Piston/Cylinder Assy (c/w Bearing, Actuator Sleeve and Backup Ring)	65
1-10	55-0205	Chuck Piston/Cylinder Assy (Piston and Cylinder with seals only)	47

Parts List

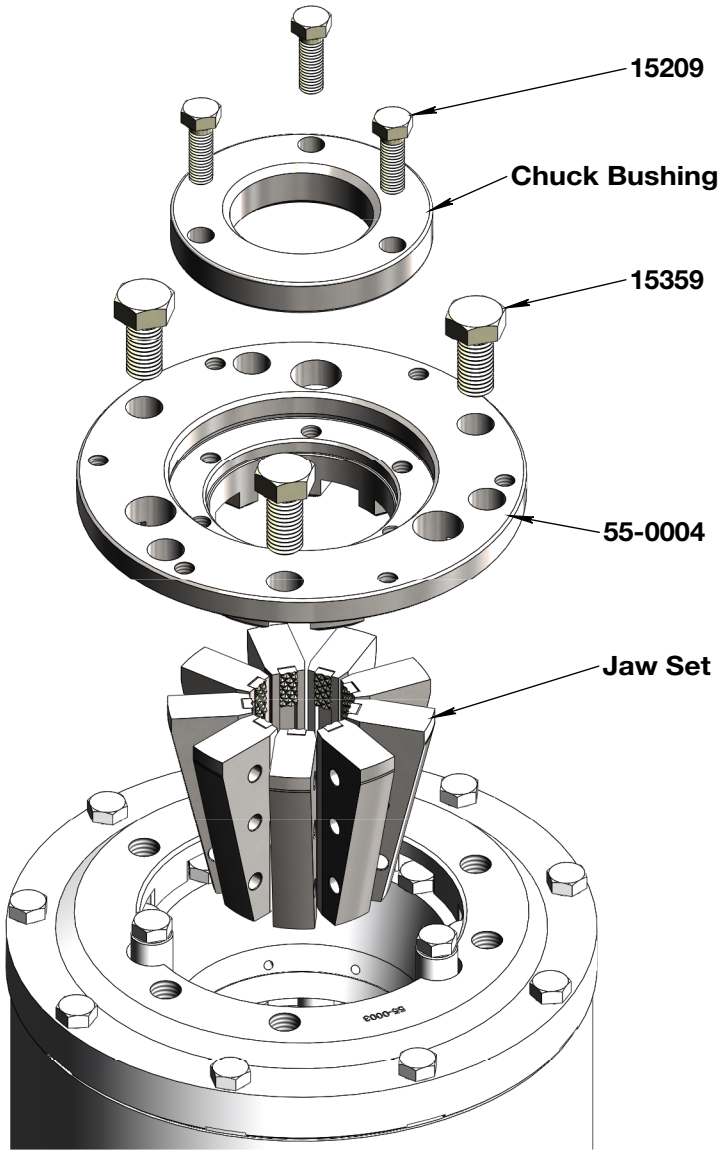
Item #	Part #	Description	Qty	Weight
1	13-VL220	V-Ring	1	0,056
2	55-0007	Chuck Cylinder	1	34,467
3	55-0010	Chuck Piston, c/w Spring Pins	1	12,277
4	55-0017	U Cup Seal, Ø8-1/4”	1	0,043
5	55-0018	Wear Ring, Ø8-1/4”	1	0,034
6	55-0019	U Cup Seal, Ø10”	1	0,084
7	55-0020	Wear Ring, Ø10”	1	0
8	2501-0604	90° M-JIC #6 / M-NPT #4	1	0,1
9	58834	1/4-28 Straight Steel Zinc Self-Tapping Grease fitting	1	0,01
10	64313	3/8” x 1-3/4” Plain Finish Steel Slotted Spring Pin	4	0,0346
11	55-0009	Back Up Ring	1	2,157
12	55-0014	Retaining Ring	1	0,302
13	55-0001	Actuator Sleeve	1	10,266
14	15-51130	Thrust Bearing	1	5,229

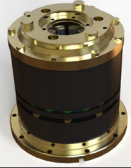
Both Piston/cylinder assemblies can be ordered to save time when a leak occurs on site or a bearing becomes damaged

Options & Accessories

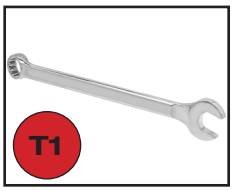
Jaws & Bushings

SIZE	Jaw Set			Chuck Bushing		
	X-Spec P/N	Copco P/N	Mirow P/N	X-Spec P/N	Copco P/N	Mirow P/N
JKT/AW/AQ ROD EW CSG	30-16-00	2920391	N/A	55-0046	2920401	N/A
BW/BWL/BQ ROD AW CSG	30-16-01	2920392	18100012	55-0047	2920402 3506864	18100068
NWL/NQ ROD	30-16-02	2920394	18100135	55-0048	2920404 3506867	18100153
BW CSG	30-16-06	2920395	18100134	55-0049	2920405 3506868	18100206
HW/HWL/HQ ROD NW CSG	30-16-03	2920396	18100145	N/A	N/A	N/A



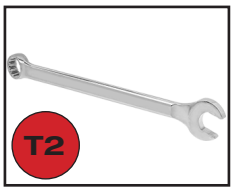


Tool List



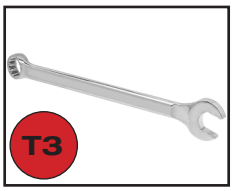
Open Wrench, 3/4"

P/N: TLWR-0.750



Open Wrench, 1-1/8"

P/N: TLWR-1.125



Open Wrench, 9/16"

P/N: TLWR-0.438

6-Point Standard Socket, 3/4" Size

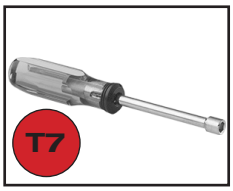
P/N: TLHS-0.750

6-Point Standard Socket, 7/8" Size

P/N: TLHS-0.875

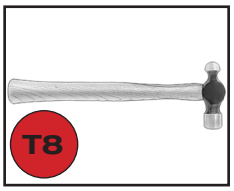
6-Point Standard Socket, 1-1/8" Size

P/N: TLHS-1.125



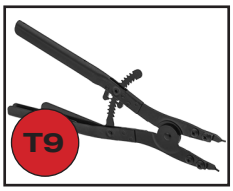
Nutdriver, 5/16" Size

P/N: TLND-0.750



Ball Peen Hammer

P/N: TLBPH-12

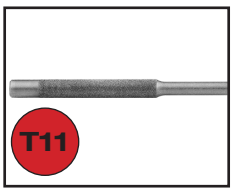


Locking Retaining Ring Plier for External Rings That Fit 3.5"-6.5" OD

P/N: TLSRP-6.500

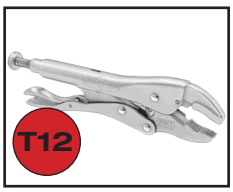
Seal Installation Tool

P/N: TLSP-7415



Nonmarring Pin-Removal Punch

P/N: TLBP-0.375



Locking Pliers,with Curved Jaws and Lever Release, 10" Overall Length

P/N: TLVG-10

Pistol-Grip Grease Gun

P/N: TLGG-16

Piston Push Plate

P/N: TLPP-7.250-0.75

Tool List

T15

Castrol Pyroplex Blue Grease

P/N: 105019

T16

White Lithium Grease

P/N: 893.10411

T17

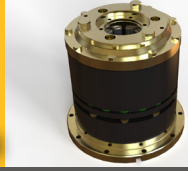
PTFE Pipe Sealant

P/N: 893.511050

T18

Anti-Seize Copper Spray

P/N: 893.10411



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1

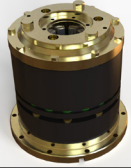
- Install **U Cup Seal Ø10" 55-0019** and **Wear Ring Ø10" 55-0020** onto **Piston 55-0010** with the lip facing down as shown in the picture
- **Make sure there is no gap where the ends of the wear ring meet. A gap will cause failure of the U Cup Seal**

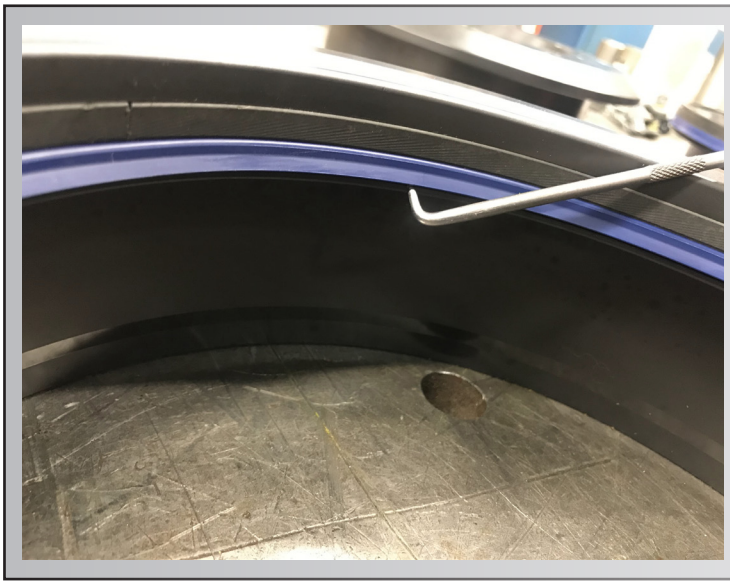
2

- Install 4x **3/8" x 1-3/4" Plain Finish Steel Slotted Spring Pin 64313** into the **Chuck Piston 55-0010.**

3

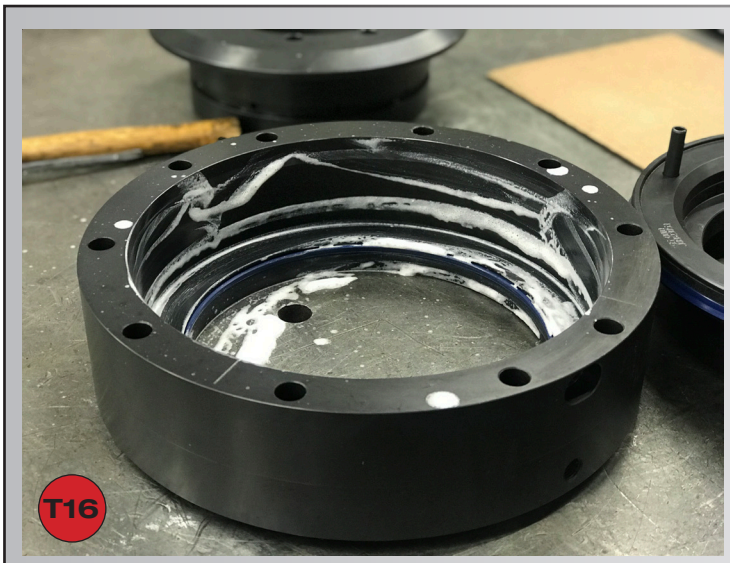
- Insert **Wear Ring Ø8-1/4" 55-0018** into the groove of **Chuck Cylinder 55-0007**
- **Make sure there is no gap where the ends of the wear ring meet. A gap will cause failure of the U Cup Seal**





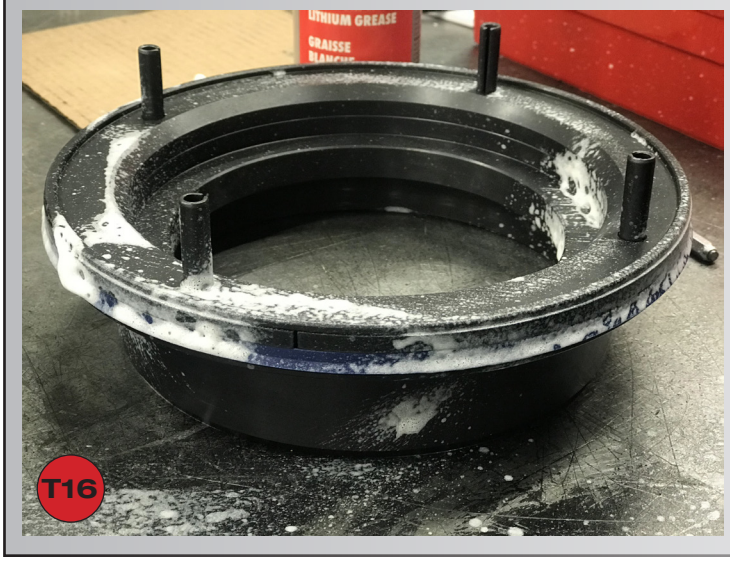
- Install **U Cup Seal Ø8-1/4" 55-0017** into the lower groove of the **Cylinder 55-0007** with the lip facing down as shown in the picture.

4



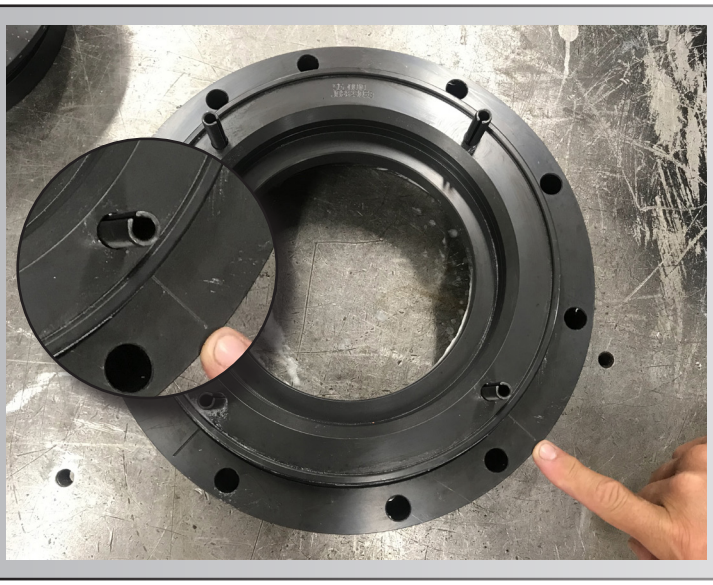
- Lubricate the inside face of the cylinder with grease. We suggest White lithium grease as shown in Tool List.

5



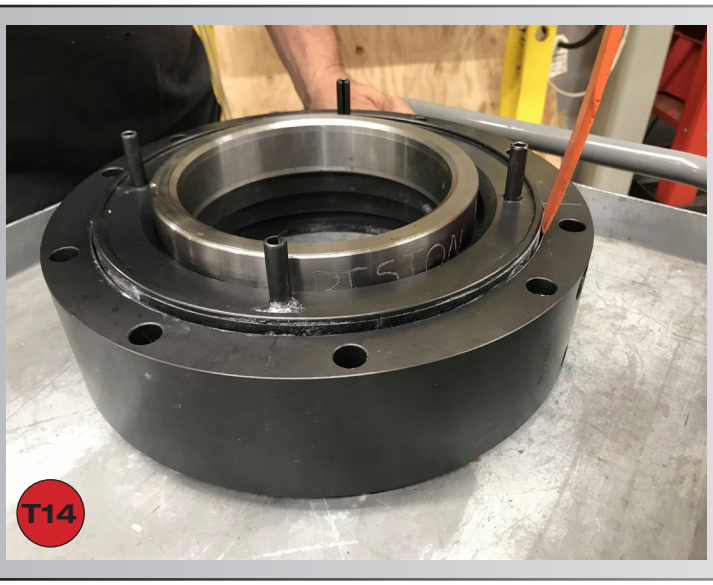
- Lubricate the outside face of the **Chuck Piston 55-0010** with grease.

6



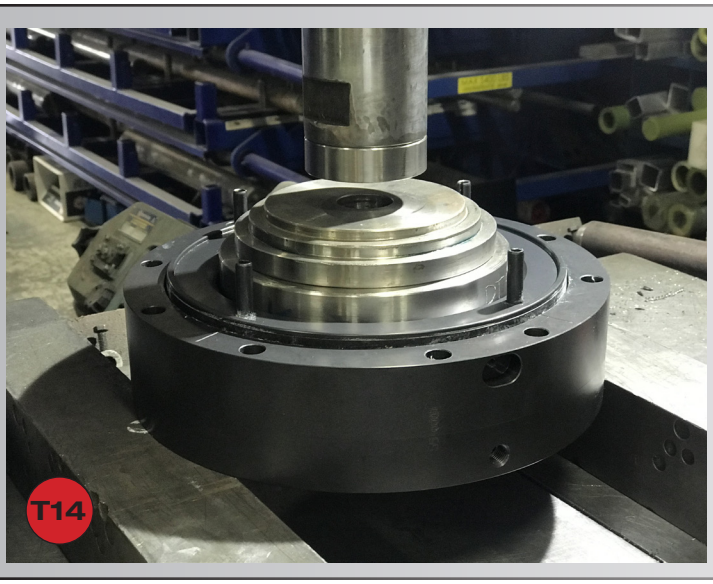
7

- Insert the **Chuck Piston 55-0010** into the **Chuck Cylinder 55-0007** making sure the spring pins are aligned with the marks on the Cylinder



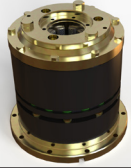
8

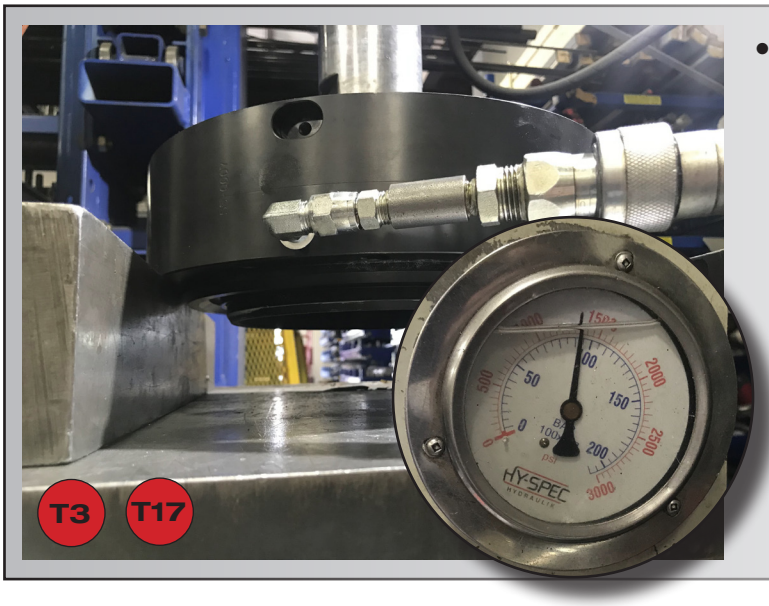
- Use a spacer ring (not included) or a round plate (OD 7.250") to press the **Chuck Piston 55-0010** gradually and in a straight manner into the **Chuck Cylinder 55-0007.** The use of a hydraulic press is greatly recommended. Use a thin plastic tool to make sure the seals and wear rings fit properly into the **Chuck Cylinder 55-0007.**



9

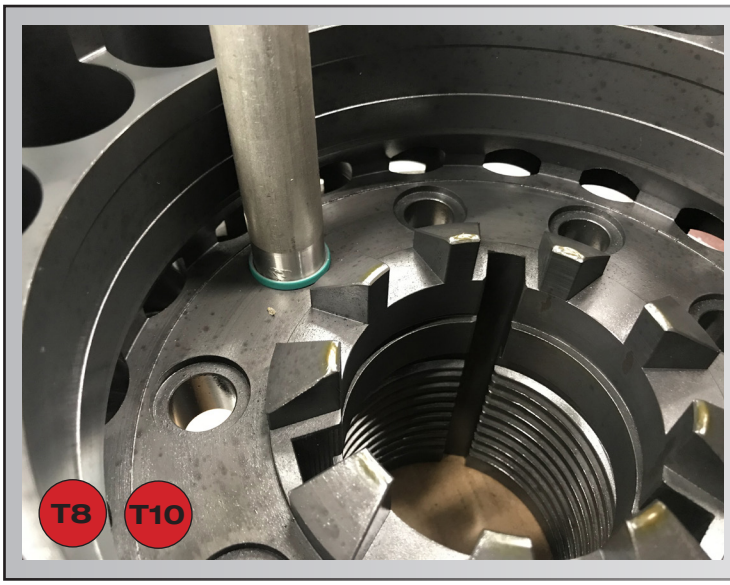
- Push **Chuck Piston 55-0010** into the **Chuck Cylinder 55-0007** until it can go no further. The **Chuck Piston 55-0010** will come out underneath the **Chuck Cylinder 55-0007**





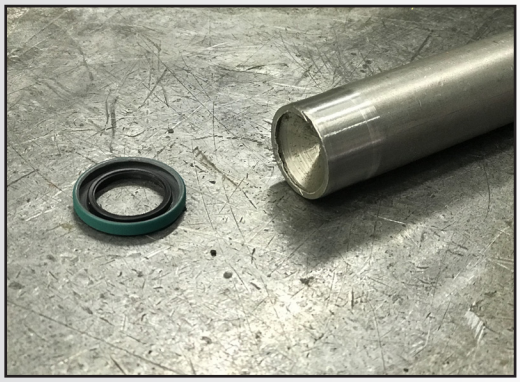
10

- Install fitting **90° M-JIC #6 / M-NPT #4 2501-0604** and test the assembly for leaks. Leave the pressure ON in the hydraulic press and test the system around 1500 psi. Wait 15 minutes. If a leak occurs, it should show rapidly. If there is a leak, remove the pressure and disassemble the piston and Cylinder and check for seal damage. Also make sure seals were installed with the lips pointing in the right direction.



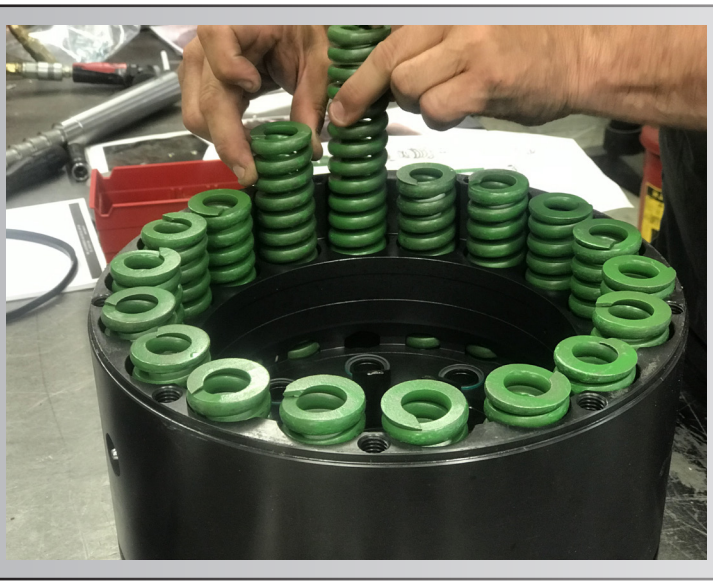
11

- Press the 9x **Oil Seal 13-7415** into the pockets of **Chuck Housing 55-0006**. A special tool is recommended.



12

- Install the **1/4-28 Straight Steel Zinc Self-Tapping Grease fitting 58834.** Use a 5/16" hex drive Nutdriver



- Insert the 21x **Compression springs 55-0023** into the **Chuck Housing 55-0006.**

13

- Spray White lithium grease on the **Oil Seals 13-4715.**

14

- Insert 9x **Bottom Spacers 55-0012** into the **Chuck Housing 55-0006** until they are approximately halfway.

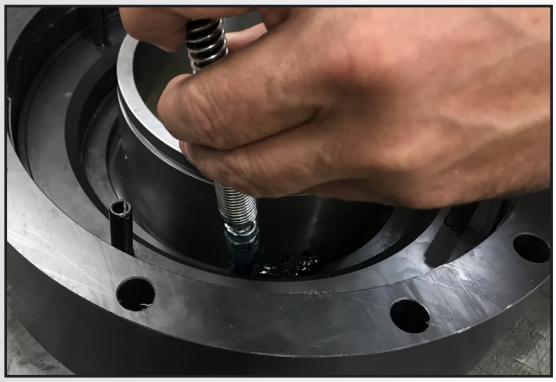
15

16

- Insert **Actuator Sleeve 55-0001** into the piston/cylinder assembly and turn over

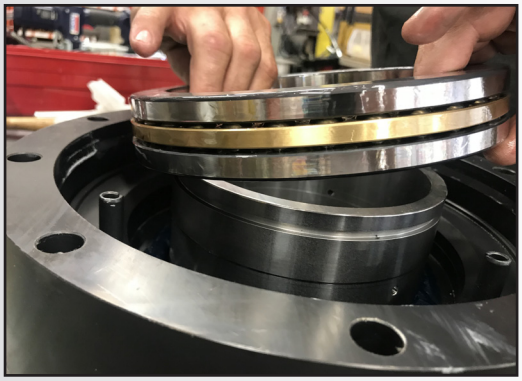
17

- Fill the cavity with grease. We recommend using Castrol Pyroplex Blue grease or equivalent.



18

- Install the largest of the 2 steel rings composing the **Thrust Bearing 15-51130** with the groove facing up and fill with grease.

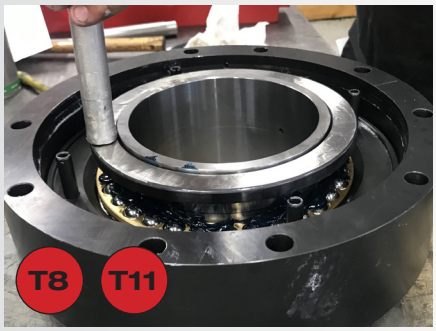


19

- Insert the center brass ring of the **Thrust Bearing 15-51130** and pack with grease.

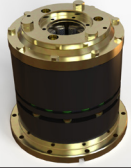
20

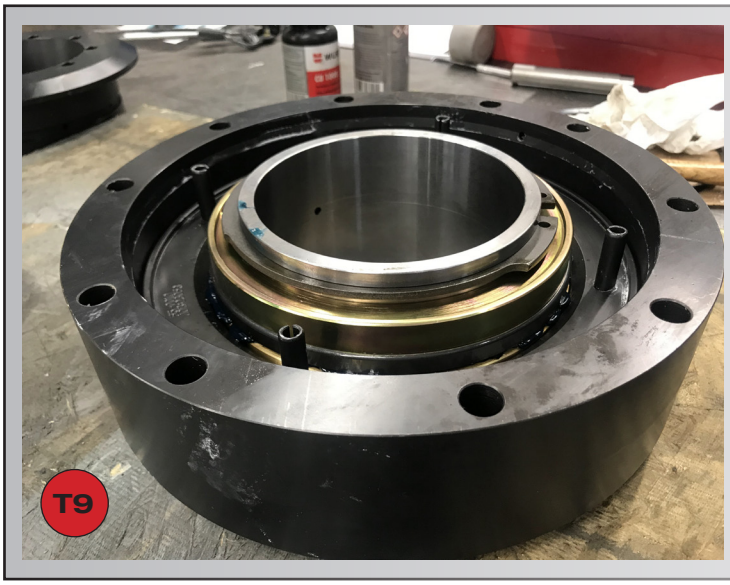
- Insert the smaller ring of the **Thrust Bearing 15-51130** until it sits against the bearing balls. Use a soft metal punch to press the ring into place.



21

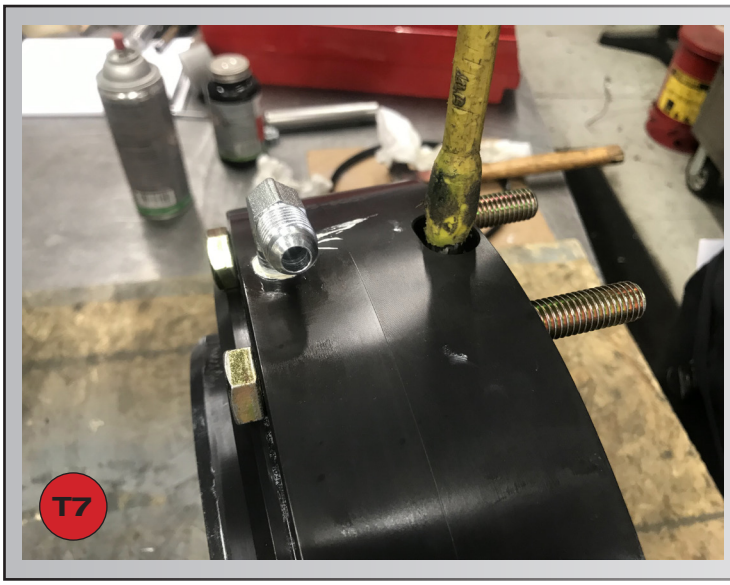
- Insert the **Back Up Ring 55-0009** over the **Actuator Sleeve 55-0001** until it rests agains the **Thrust Bearing 15-51130**





22

- Insert **Retaining Ring 55-0014** into the actuator Sleeve groove. Use retaining ring pliers for this step.

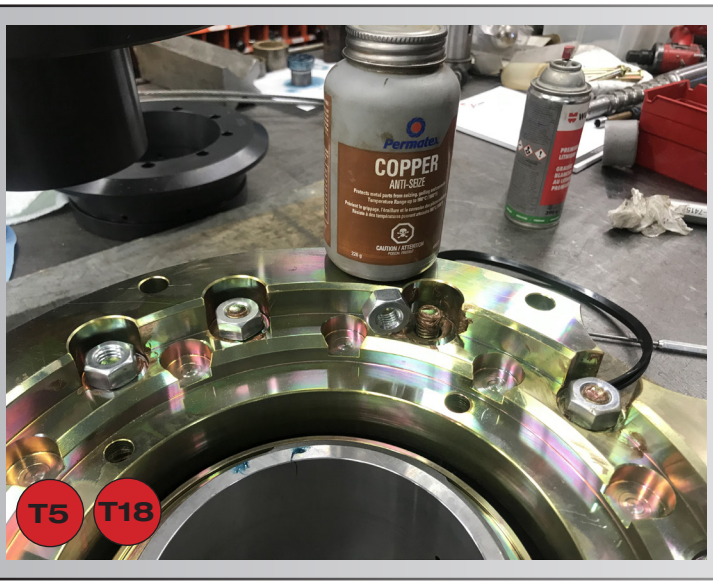


23

- Install the **1/4-28 Straight Steel Zinc Self-Tapping Grease fitting 58834.**

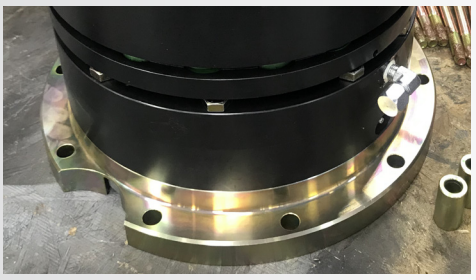
24

- Insert the 10x **1/2-13 x 4-1/2" Grade 8 Yellow Zinc Finish Hex Cap Screw 15221.**



- Install the **Chuck Adapter 55-0008** using the 10x **1/2-13 Yellow Zinc Plated A194 2-H Heavy Hex Nut 124755**.Position the notch in the adapter plate 90° with the hydraulic inlet fitting.

25

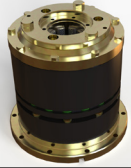


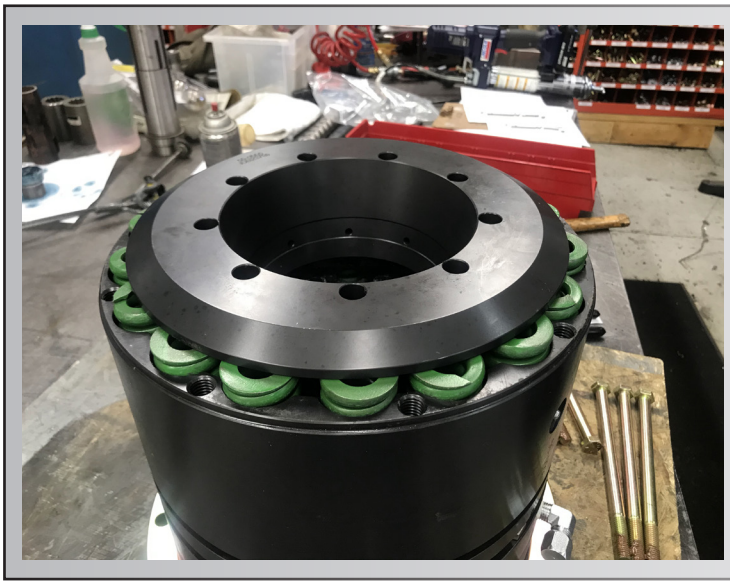
- Slide the **Chuck Housing 55-0006** into the **Actuator Sleeve 55-0001**. Make sure the **Bottom Spacers 55-0012** are aligned with the threaded holes in the **Actuator Sleeve 55-0001.**

26

- Put grease on the inside of the **Chuck Housing 55-0006**.

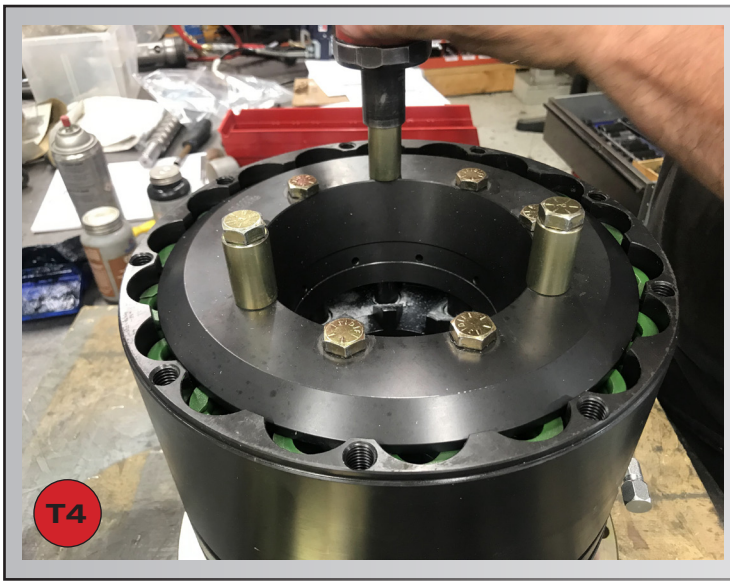
26





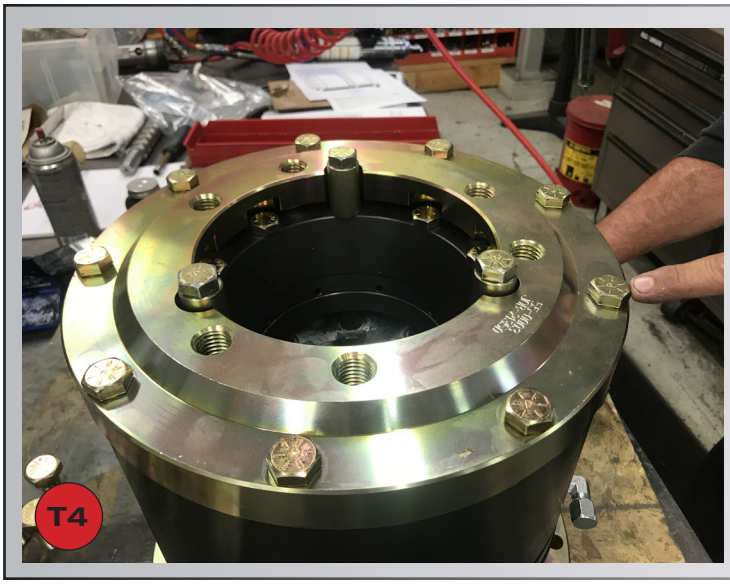
27

- Insert **Chuck Bowl 55-0005** into the **Chuck Housing 55-0006**. Align holes with the **Bottom Spacers 55-0012**



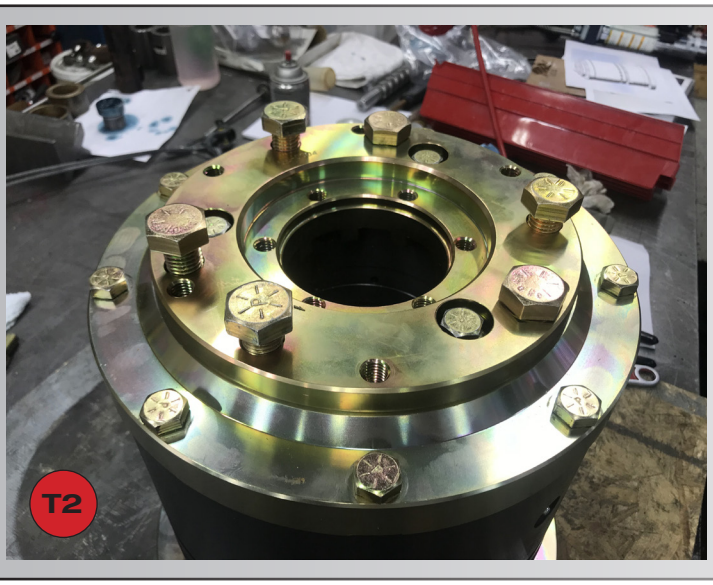
28

- Install the 6x **1/2-13 x 6-1/2" Grade 8 Yellow Zinc Finish Hex Cap Screw 15226.** Screw by hand only at this step
- Install the 3x Top Spacers 55-0011 using the 3x **1/2-13 x 8" Grade 8 Yellow Zinc Finish Hex Cap Screw 15229.**
- Tighten all Bolts in alternance, in a star pattern until the **Chuck Bowl 55-0005** rests tightly against the **Bottom Spacers 55-0012.** Torque bolts @ 80 ft-lbs.



29

- Install the **Top Cap Holder 55-0003** using the 9x **1/2-13 x 2-1/4" Grade 8 Yellow Zinc Finish Hex Cap Screw 15212.** Torque bolts @ 80 ft-lbs.



30

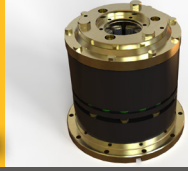
- Install the **Top Cap Adapter 55-0004** using the 6x **3/4-10 x 1-1/2" Grade 8 Yellow Zinc Finish Hex Cap Screw 15359**.Torque bolts @ 110 ft-lbs.

31

- The following articles are supplied with the chuck for assembly to the rotation unit
- 3x **1/2-13 x 1-1/2" Grade 8 Yellow Zinc Finish Hex Cap Screw 15209** (used for the guide bushing)
- 3x **Key 55-0015**
- 1x **Key Locking Spring 55-0013**

32

- This step is optional, but a transport plate can used to help manipulation of the chuck. Remove before use



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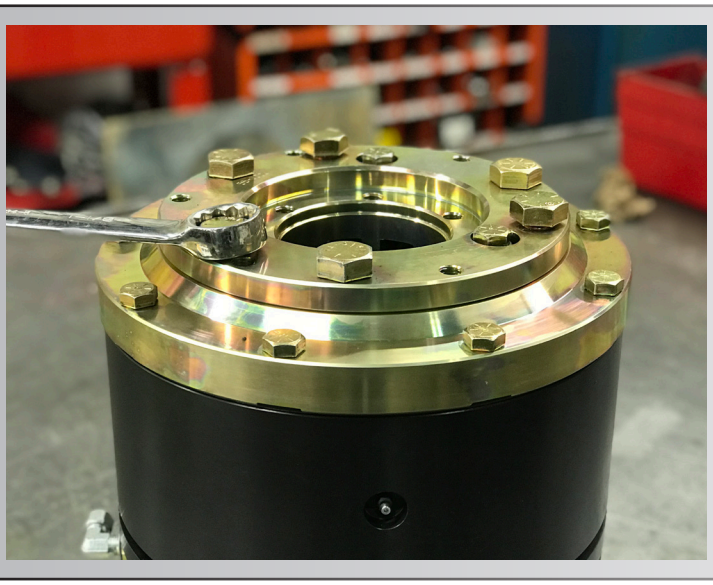
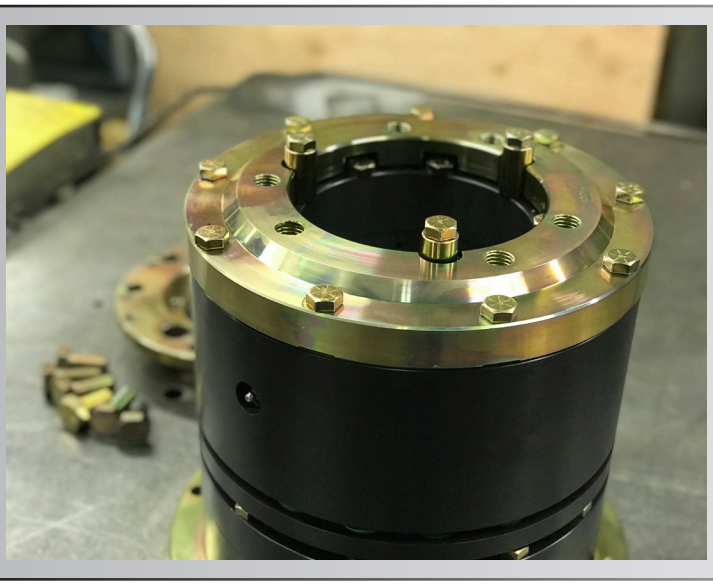


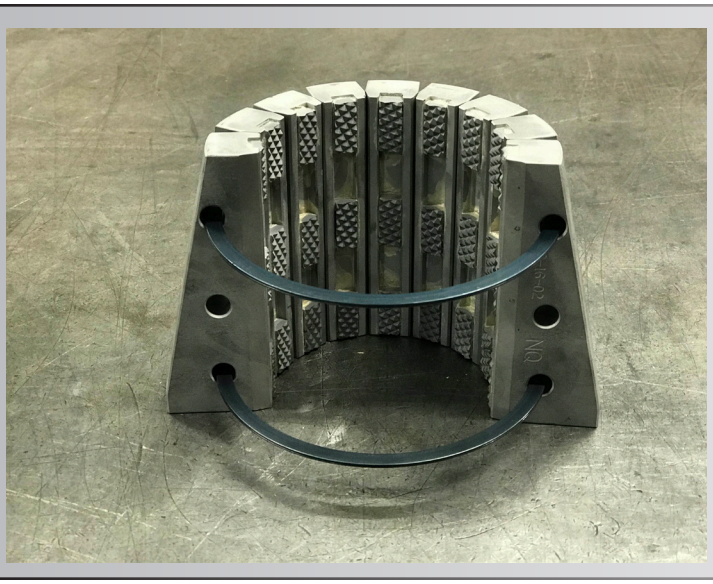
- Remove the 6x **3/4-10 x 1-1/2" Grade 8 Yellow Zinc Finish Hex Cap Screw 15359** holding the **Top Cap Adapter 55-0004.**

1



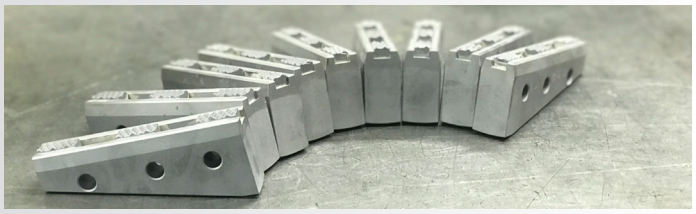
- Remove the **Top Cap Adapter 55-0004.**

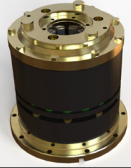
2

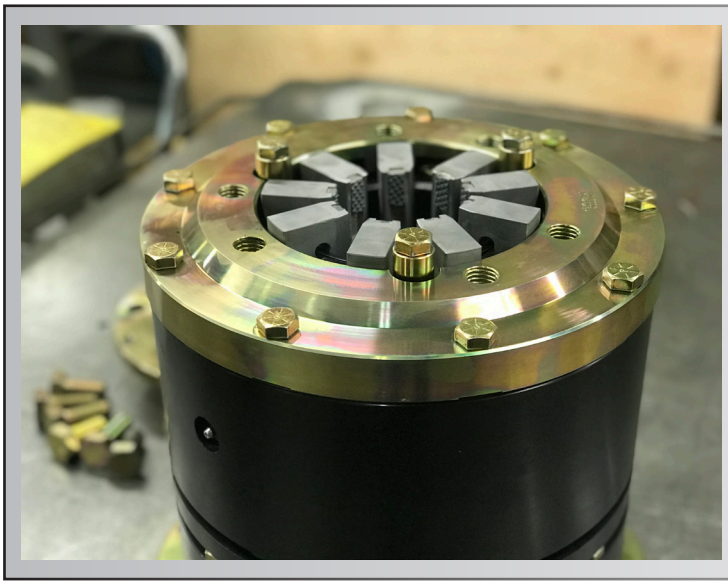


- Make sure the jaws are properly ringed.

3

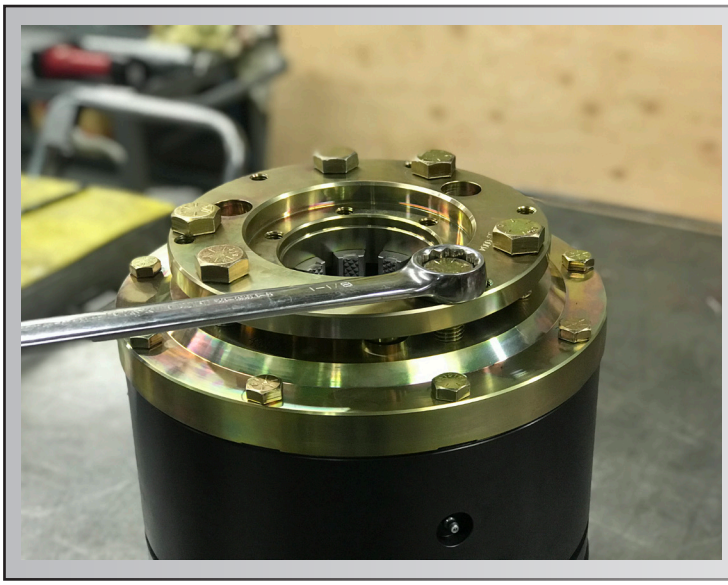






4

- Insert the jaws into the bowl with the widest face on the top.
- Push the jaws into place making sure they are aligned with the slots in the housing. This is easier when the chuck is in the fully opened position but requires hydraulic pressure.



5

- Insert the **Top Cap Adapter 55-0004** into place, making sure the slots are aligned with the jaws.
- Install the **Top Cap Adapter 55-0004** using the 6x **3/4-10 x 1-1/2" Grade 8 Yellow Zinc Finish Hex Cap Screw 15359**. Torque bolts @ 110 ft-lbs.

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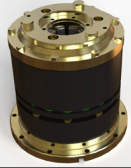
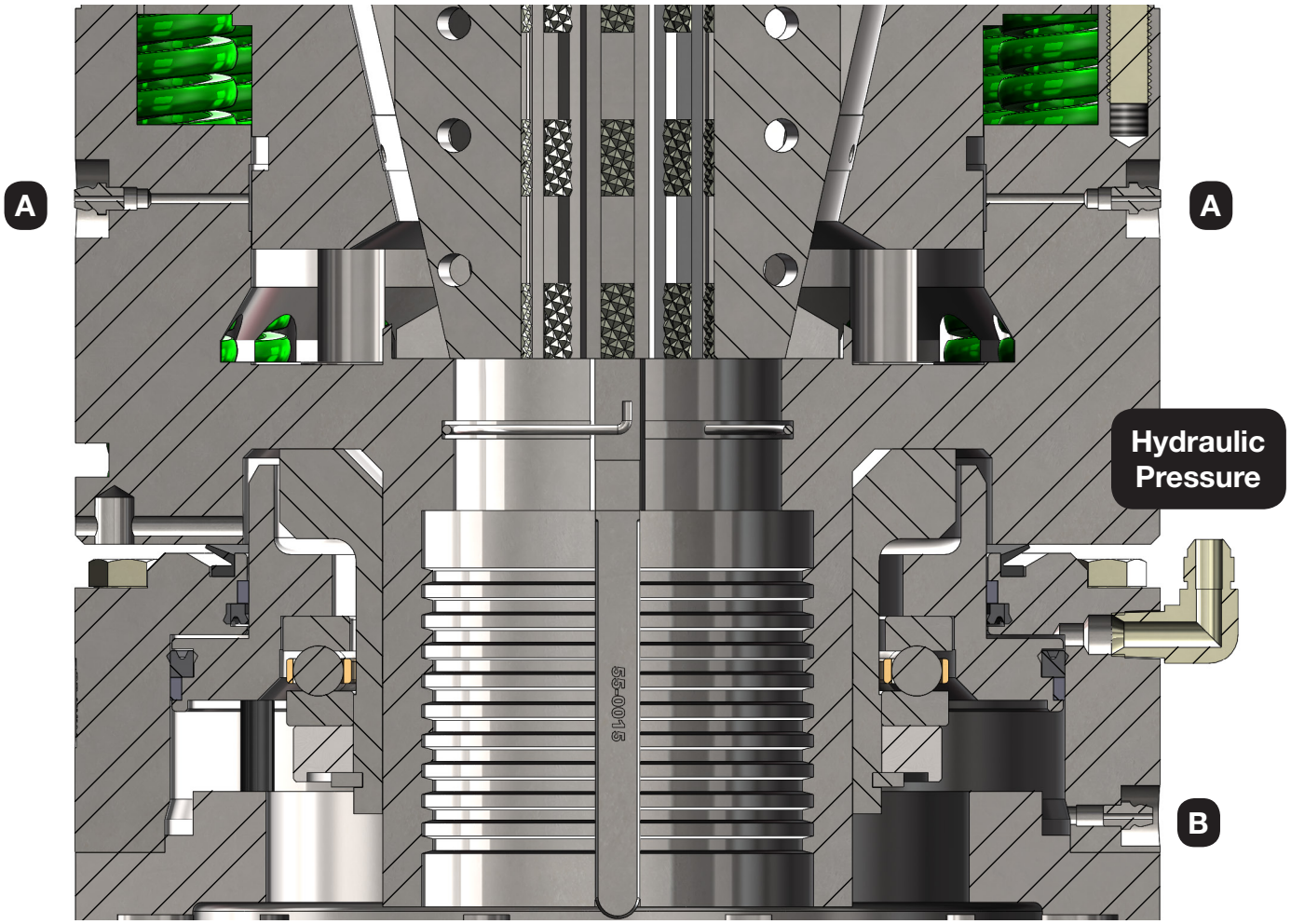


Maintenance

- When removing the **Chuck Bowl 55-0005**, it is very important to unscrew the 6x **1/2-13 x 6-1/2" Grade 8 Yellow Zinc Finish Hex Cap Screw 15226** and the 3x **1/2-13 x 8" Grade 8 Yellow Zinc Finish Hex Cap Screw 15229** in alternance a few turns at a time. **Never remove the screws completely before pressure from the compression springs is released**.
- Grease points and frequency are as follows:



Grease Point	Frequency	Use
A	1x / Shift	Grease Jaws / Bowl Interface as well as Chuck Housing/Chuck Bowl interface
B	1x / Shift	Grease thrust bearing

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