



Champion RC160

OPERATIONS MANUAL

Care & Maintenance Instructions

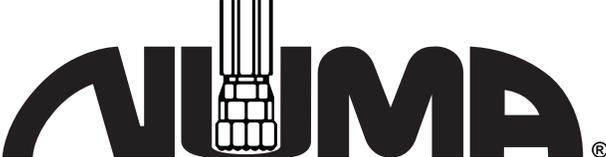
- Do not discard this manual.
- Keep manual readily available for reference during operation or when servicing product.
- Before operation and maintenance, read and comprehend operations manual content.

- **Customer Service:** 800.356.NUMA or 860.923.9551
- **Email:** numa@numahammers.com
- **Website:** www.numahammers.com
- **Mailing Address:** P.O. Box 348, Thompson, CT 06277 USA

Patents: 6,883,618 7,442,074 10,612,310 11,085,242 EP 3 803 032 B1 KR-101340351 EP-2029325
CN-101448608 BR-P10711711 AU2007254317 AU2007254317 WO2007/136658

TABLE OF CONTENTS

	Page
Section I Description	1
Functional Description.....	2
1. Backhead.....	2
2. Check Valve Seat	2
3. Check Valve.....	2
4. Check Valve Spring	2
5. Collection Tube	2
6. Collection Tube Housing.....	2
7. Belleville Washers	2
8. Feed Tube Housing	2
9. Feed Tube Compression Ring	3
10. Feed Tube	3
11. Piston.....	3
12. Case	3
13. Bit Bearing.....	3
14. Snap Ring	3
15. Bit Retaining Rings.....	3
16. Thrust Washers	3
17. Chuck.....	4
18. Chuck Bushing	4
19. Drive Plates	4
 Section II Maintenance	 5
Disassembly.....	5
Inspection.....	8
General Assembly	11
Feed Tube Assembly	11
Hammer Assembly	12
 Section III Parts Identification	 14
Champion RC160 Exploded View	14 & 15
Part Number Reference.....	14 & 15
 Section IV Air Consumption Charts.....	 16
 Section V Lubrication	 17
 Section VI Storage	 18
Short Term.....	18
Long Term	18
Restarting.....	19
 Section VII Button Bit Maintenance	 20
General	20
Sharpening.....	20
 Section VIII Champion RC160 Recommended Spares.....	 21



NUMA[®]
HAMMERS AND BITS
WARRANTIES AND REMEDIES

LIMITED WARRANTY

Numa warrants that the Product will be new and free from defects in material and workmanship under normal use as contemplated by this Contract for a period of six (6) months from the date of shipment.

Except for the foregoing warranty, Numa disclaims all warranties and representations wherever made, including warranties of merchantability, durability, length of service, or fitness for a particular purpose.

Any alteration or modification of the original product without the express written consent of Numa will void this warranty.

REMEDY

If, during such warranty period, Buyer promptly notifies Numa in writing of any defect and establishes that the above warranty is not met, Numa shall either repair or replace the Product or credit the customer, as it deems necessary to meet the warranty.

Such repair, replacement, or credit of Product shall constitute complete fulfillment of Numa's obligation under this warranty, and upon the expiration of the original warranty period, all of Numa's obligations hereunder shall terminate.

LIMITATION OF LIABILITY

Numa shall not be liable to Buyer whether in contract, in tort (including negligence and strict liability), under any warranty or otherwise, for any special, indirect, incidental or consequential loss or damage whatsoever, including (without limitation) loss arising from delay, cost or capital and loss of profits or revenues. The remedies set forth in this Contract are exclusive, and the total cumulative liability of Numa under this Contract or for any act or omission in connection therewith or related thereto, whether in contract, in tort (including negligence and strict liability), under any warranty or otherwise, is limited to the price paid by Buyer for the Product.

The **WARNINGS**, **CAUTIONS** and **NOTES** used throughout the text of this instruction book are defined as follows:

WARNING	A specific procedure or practice that must be strictly followed, or a specific condition that must be met, to prevent possible bodily harm.
CAUTION	A specific procedure or practice that must be strictly followed, or a specific condition that must be met, to prevent damage to the equipment.
NOTE	Important supplemental information.

Numa[®], Champion[®], and Patriot[®] are registered trademarks of Numa.

SECTION I DESCRIPTION

GENERAL DESCRIPTION

The Champion RC160 is a valveless, pneumatically operated reverse circulation drill designed to utilize Numa 16" to 20" (406 mm to 508 mm) diameter reverse circulation bits in a wide range of drilling applications.

The Champion RC160 hammer design incorporates a hardened case and a large diameter collection tube. The large bore design of the Champion RC160 provides high performance levels as associated with other Numa down hole hammers.

The Champion RC160 was specifically designed to provide maximum performance on the drill rigs that are most commonly used in large diameter drilling applications. The Champion RC160 hammer is designed to operate using air pressure from 100 PSI to 200 PSI (6.9 Bar to 13.8 Bar) with compressors having 2000 CFM (944 Litres/Second) or more.

Champion RC160		
Weight w/o Bit	2875 lbs.	(1304 kg)
Outside Diameter	15-1/2"	(394 mm)
Hammer Length:		
Shoulder to Shoulder	81-3/4"	(208 cm)
Shoulder to Bit Face	91-3/4"	(233 cm)

Table 1-1 General Hammer Specifications

16"	(406 mm)	*	950 lbs.	(431 kg)
18"	(457 mm)	*	1100 lbs.	(499 kg)
20"	(508 mm)		1121 lbs.	(510 kg)

Table 1-2 General Bit Specifications

* Bit weights are approximate

NOTE

NUMA 16" TO 20" (406 MM TO 508 MM) BITS ARE AVAILABLE IN A CONCAVE FACE DESIGN WITH A LARGE CENTER COLLECTION TUBE TO TAKE ADVANTAGE OF THE CHAMPION RC160 PERFORMANCE. OTHER SIZES MAY BE AVAILABLE UPON REQUEST.

FUNCTIONAL DESCRIPTION

1. BACKHEAD



The backhead connects the hammer to the drill rod. Backheads can be manufactured to be compatible with several reverse circulation drill rod designs. Please contact your distributor or regional salesperson for more information. Wrench flats are provided for disassembly.

2. CHECK VALVE SEAT



The check valve seat provides the sealing surface for the check valve and guides the collection tube.

3. CHECK VALVE



The check valve maintains pressure in the hammer when the air supply has been shut off. The check valve in the hammer balances the hydrostatic pressure in the hole thereby preventing contaminants from entering the hammer.

4. CHECK VALVE SPRING



The check valve spring provides tension under the check valve to keep it closed. It is compressed as the air is turned on.

5. COLLECTION TUBE



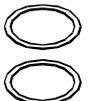
The collection tube extends from the backhead to the bit and transfers the collected drill cuttings to the inner drill pipe of the reverse circulation drill rod. The collection tube is designed to be easily replaced without removing the backhead from the drill.

6. COLLECTION TUBE HOUSING



The collection tube housing aligns the collection tube. Holes in the collection tube housing allow the transfer of air to the feed tube assembly.

7. BELLEVILLE WASHERS



Two Belleville washers sit between the collection tube housing and the feed tube housing to keep the feed tube housing tight against the shoulder in the hammer.

8. FEED TUBE HOUSING



The feed tube housing is aligned in the main bore of the hammer. It sits against a shoulder in the case and is held in position by the backhead, collection tube housing and Belleville washer combination. The feed tube housing locates and aligns the feed tube.

9. FEED TUBE COMPRESSION RING



A feed tube compression ring sits between the feed tube and the feed tube housing and keeps the feed tube assembly tight.

10. FEED TUBE



The feed tube supplies the main air into the chambers located in the piston. It seats on a shoulder in the feed tube housing and is designed with a long bearing surface to maintain alignment in the feed tube housing.

11. PISTON



The piston functions as the only moving part in the hammer, controlling the operational air cycle. The percussive action of the piston striking the bit transfers the energy through the bit in order to fracture rock formations.

12. CASE



The case is designed to contain the internal parts which make up the hammer assembly. The case is hardened to resist wear and to extend life in abrasive conditions.

13. BIT BEARING



The bit bearing guides the top end of the bit to insure proper alignment between the piston and the bit. The bit bearing is positioned in the chuck end of the case and is held in place by the snap ring.

14. SNAP RING



The snap ring sits in a groove in the case and retains the bit bearing.

15. BIT RETAINING RINGS



The bit retaining rings are designed to allow the bit to move between the drilling and cleaning positions and prevent the bit from coming completely out of the hammer. The bit retaining rings consist of two matched halves and are held together with the bit retaining ring o-ring.

16. THRUST WASHERS



Two brass thrust washers, one located between the backhead and the case and one between the chuck and the case, provide for easy disassembly.

17. CHUCK



The chuck threads into the bottom end of the case with a large cross section thread form. It has internal splines that transmit rotation to the bit through a set of delrin drive plates.

18. CHUCK BUSHING



The chuck bushing is a nylon insert located in the bottom end of the chuck to provide a bearing surface between the lower bit shank and the chuck.

19. DRIVE PLATES



The plastic drive plates provide wear protection for the splines. They are inserted between the chuck and the bit. A complete drive plate set (12) is sent with each bit.

SECTION II MAINTENANCE

DISASSEMBLY

- Maintenance should be performed in a clean environment.

CAUTION

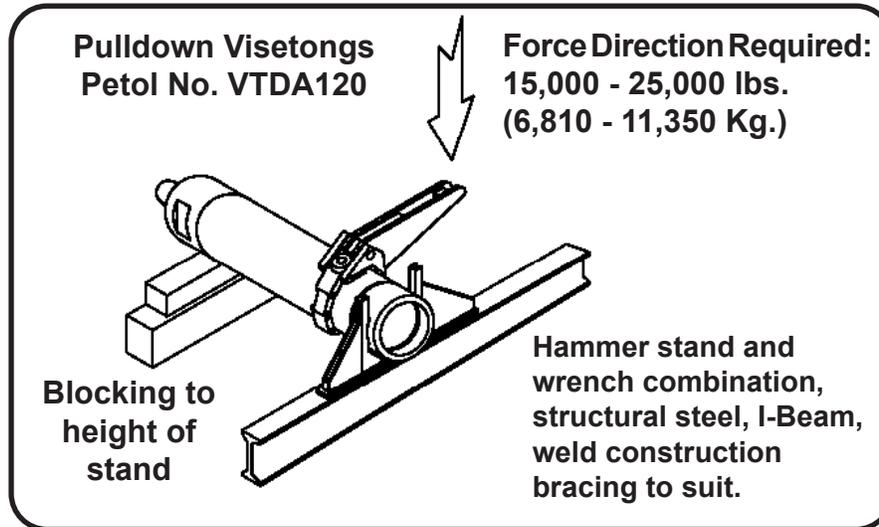
USE CAUTION WHEN HANDLING DOWN THE HOLE HAMMER PARTS. NUMA HAMMER PARTS ARE MANUFACTURED FROM HARDENED, HEAT TREATED MATERIALS. DROPPING OR STRIKING THESE PARTS MAY CAUSE SEVERE DAMAGE. STRIKING THE HAMMER PARTS WITH HAMMERS, CROWBARS OR LIKE INSTRUMENTS WILL VOID THE WARRANTY.

- Tools needed: hammer stand, 14-1/2" (368 mm) "J" or fork wrench (possibly incorporated in the hammer stand), overhead crane or lift truck, pulldown visetong with a 15-1/2" (394 mm) diameter capacity or a self contained power wrench capable of 150,000 foot pounds (20,700 KGM) of torque, lifting eyes, 2" (51 mm) diameter brass rod or mild steel rod 3 to 5 feet (1 m to 1.5 m) long, snap ring pliers, chains, lifting slings, a drift pin and several different sized screwdrivers.
- Clean the outside of the hammer. This will insure a good surface to clamp on.
- The collection tube can be replaced without disassembly of the hammer. Prior to removal of the collection tube, pressure wash the inside diameter of the collection tube to remove any cuttings or debris. The collection tube is equipped with two 3/4" (19 mm) holes to facilitate removal. With the hammer in a vertical position, use an overhead crane or lift truck of appropriate capacity to remove the collection tube. Thoroughly lubricate the collection tube O.D. and reverse the process to install the new collection tube.

CAUTION

FAILURE TO THOROUGHLY CLEAN THE COLLECTION TUBE BEFORE REMOVAL MAY ALLOW FOREIGN MATERIAL TO CONTAMINATE THE HAMMER.

- Using an overhead crane or lift truck of appropriate capacity, place the hammer on a hammer stand and secure it in the wrench. The chuck end can be held in the wrench by the 14-1/2" (368 mm) flats. The backhead is also held in the 14-1/2" (368 mm) wrench except with the addition of flat stock between the wrench and the backhead flats (as the backhead flats are 12-1/2" (318 mm) across). Place the visetongs on the area of the case where the bit bearing is located when working on the chuck end of the hammer. When working on the backhead end of the hammer, place the chain vise on the area of the case where the feed tube housing is located.



Hammer Stand/Wrench Diagram

Figure 2-1

CAUTION

THE ACCEPTABLE CLAMPING AREAS START 8" (203 MM) FROM EITHER CASE END, TO AN ADDITIONAL 10" (254 MM) BEYOND THIS POINT. PLACING THE VISETONG ON THE AREA OF THE CASE WHERE THE PISTON CYCLES CAN DISTORT THE CASE, RESTRICT PISTON MOVEMENT AND VOID THE WARRANTY.

- With the chuck secured in the fork wrench, (see figure 2-1) loosen the joint by turning the case with the visetongs. Remove the hammer from the wrench and reverse the hammer end to end in the hammer stand / wrench. With the backhead flats secured in the fork wrench (see figure 2-1), loosen the joint by turning the case with the visetongs.
- With the crane or lift truck, move the hammer into an upright position with the chuck end down. With an adequate lifting device, lift and support the hammer while unscrewing the chuck. After setting the hammer down, and while lifting and supporting the backhead, unscrew and remove the backhead from the case.
- Remove the backhead o-ring and thrust washer from the backhead.
- Remove the collection tube o-ring from the backhead I.D. on the drill rod mating end.
- Remove the check valve seat, the check valve and the check valve spring from the backhead end of the case. The check valve seat is equipped with two 1/2" (13 mm) UNC tapped holes for lifting eyes to facilitate removal.
- Using a small screwdriver, pick the check valve seat o-ring from the outside diameter of the check valve seat.

- Remove the collection tube housing. The collection tube housing is equipped with two 1/2" (13 mm) UNC tapped holes for lifting eyes to facilitate removal.
- Using a screwdriver, pick the two o-rings from the inside diameters of the collection tube housing.
- Remove the belleville washers.
- Remove the feed tube assembly. The feed tube assembly is equipped with two 1/2" (13 mm) UNC tapped holes for lifting eyes to facilitate removal.
- Raise the piston out of the backhead end of the case by inserting two 8" (203 mm) long, 1-1/4" (32 mm) diameter steels rods into the holes inside the piston. Put one rod in the bottom and another rod 180 degrees opposite in the top hole. Lift the piston out with nylon straps and a suitable lifting device.
- Remove the thrust washer from the chuck.
- Remove the bit retaining rings o-ring from the bit retaining rings.
- Removal of the chuck bushing is not necessary for routine maintenance. If necessary, lay the chuck on its side so that the bit end is facing you. Locate the seam in the chuck bushing. Insert a screwdriver into the slot in the middle of the seam and pry the chuck bushing from the under cut. Remove the chuck bushing from the bit end of the chuck.
- Removal of the bit bearing and snap ring in the chuck end of the case is not necessary routine maintenance. If necessary, remove the snap ring from the groove. Press the bit bearing out the chuck end of the case.
- Disassembly of the feed tube assembly is not necessary for routine maintenance. If necessary, support the feed tube housing and suspend it in the air. Remove the feed tube snap ring with a large screwdriver. Lower the feed tube assembly until the feed tube contacts the work bench. The weight of the feed tube housing will let it ride down the outside of the feed tube. Wrap a nylon strap around the flange of the feed tube and lift it out of the feed tube housing. Slide the feed tube compression ring off the end of the feed tube. (See figure 3-2 for the feed tube assembly exploded view diagram). Using a small screwdriver, pick the feed tube o-rings from the grooves in the feed tube housing and the orifice o-ring from the inside diameter of the feed tube.

INSPECTION

- All parts should be washed in a clean solvent before they are inspected and reassembled.

WARNING

USE CLEANING FLUIDS THAT ARE NONFLAMMABLE AND AVOID BREATHING THE FLUID VAPORS.

- Handle all parts carefully, hardened parts may chip if dropped on a hard surface.

BACKHEAD

- Inspect the threads for cracks and burrs.
- Remove all burrs on the thread area with a fine file.
- Replace if necessary.

CHECK VALVE SEAT

- Inspect the outside diameters for nicks, burrs and scoring.
- Remove all minor irregularities with emery cloth.
- Replace if necessary.

CHECK VALVE/CHECK VALVE SPRING

- Inspect the outside diameters for nicks, burrs and scoring.
- Remove all minor irregularities with emery cloth.
- Replace if necessary.

COLLECTION TUBE & COLLECTION TUBE HOUSING

- Inspect the outside diameter for nicks, burrs and scoring.
- Remove all minor irregularities with emery cloth.
- Check the I.D. size (at the chuck end) of the collection tube. The tube I.D. should be no bigger than 4-3/4" (121 mm).
- Inspect the weld at the collar for cracks.
- Replace if necessary.

BELLEVILLE WASHERS

- Inspect the belleville washers for severe wear indications or cracks.
- Replace if necessary.

FEED TUBE ASSEMBLY

- Inspect all makeup surfaces for indentations or nicks caused by wear.
- Remove all minor irregularities with emery cloth.
- Replace if necessary.

PISTON

- Inspect the striking face, inside and outside diameters for nicks, scoring and cracks.
- Polish the piston with emery cloth to remove all minor irregularities. Cracked pistons should be replaced.
- Wash the piston thoroughly, inside and out, to remove all emery dust.
- Replace if necessary.

CASE

- Inspect the outside diameter for excessive wear or cracks. Inspect the internal case bore for scoring.
- Remove all minor irregularities with fine honing stones.
- Clearance between the piston and the case should not exceed .020" (.50 mm).
- Replace if necessary.

BIT BEARING

- Inspect the inside and outside diameters for nicks and burrs.
- Remove all internal irregularities with a fine honing stone.
- Remove all external irregularities with emery cloth.
- Clearance between the bit shank and bit bearing should not exceed .030" (.76 mm).
- Replace if necessary.

SNAP RING

- Inspect the snap rings for severe wear indications.
- Replace if necessary.

CHUCK

- Inspect for cracks and burrs.
- For continued use, the outside diameter should be larger than or the same as the outside of the case or the same. Collar length should not be less than 5-1/4" (133 mm).

CAUTION

IF THE COLLAR LENGTH IS LESS THAN 5-1/4" (133 MM) AND THE BIT IS UNDER LOAD CONDITIONS, CONTACT BETWEEN THE SHOULDER OF THE BIT RETAINING RINGS AND THE BOTTOM OF THE BIT RETAINING RING AREA ON THE BIT, COULD CAUSE THE BIT TO FAIL IN THIS AREA.

- Torsional play in the splines should not exceed .250" (6.4 mm).
- Replace if necessary.

CHUCK BUSHING

- Inspect for damage such as cracks and deformations.
- Replace if necessary.

O-RINGS

- Inspect for damage such as cracks and deformations.
- Replace if necessary.

THRUST WASHERS

- Inspect for damage such as cracks and deformations.
- Replace if necessary.

DRIVE PLATES

- Inspect for damage such as cracks and deformations.
- Replace if necessary.

GENERAL ASSEMBLY INSTRUCTIONS

- Assembly should be performed in a clean environment.
- All parts should be cleaned thoroughly and wiped dry before assembly.
- Oil all parts by hand using Rock Drill Oil to insure easy assembly.
- Coat all thread connections and thrust washers with a thread compound to allow joints to thread easily.

FEED TUBE ASSEMBLY

- Install the feed tube o-rings in the two grooves located in the smallest inside diameter of the feed tube housing.
- Insert the orifice o-ring into the groove at the inside diameter of the feed tube.
- Place the feed tube compression ring over the bottom end of the feed tube then slide it along the feed tube until it seats against the feed tube collar.
- Position the piston vertically. Place the smallest outside diameter of the feed tube housing on the piston so that the bores will align. Insert the small end of the feed tube into the feed tube housing. Slide the feed tube into the feed tube housing until the feed tube compression ring seats against the feed tube housing shoulder. While applying pressure to the feed tube collar to expose the snap ring groove, use a large screwdriver to insert the feed tube snap ring. Remove the feed tube assembly from the piston.

HAMMER ASSEMBLY

- Using the overhead crane, turn the hammer case upside down in a vertical position so that the bit bearing bore is facing up.
- Insert the bit bearing into the chuck end of the case. This should be a close slip fit. Making sure the bearing makes contact with the shoulder provided for it in the case, insert the snap ring into the groove at the chuck end of the bit bearing diameter.
- Using the overhead crane, turn the hammer case so that the backhead end is facing up. The hammer case should still be in a vertical position.
- Lower the piston into the backhead end of the case using the 8" (203 mm) long, 1-1/4" (32 mm) diameter steel rods and the nylon straps.
- Install the feed tube assembly into the backhead end of the case, making sure it is firmly against the shoulder in the case. Due to close tolerances, caution is advised when inserting the feed tube assembly. It should not be forced into the case.
- Install the belleville washers in the counter bore of the feed tube assembly. See the stacking diagram on page 14 for proper installation.
- Install the collection tube housing o-ring and the collection tube o-ring in the I.D. of the collection tube housing.
- Install the collection tube housing. The collection tube housing will rest on the belleville washers.
- Place the check valve spring and check valve on the collection tube housing.
- Install the check valve seat o-ring into the groove on the outside diameter of the check valve seat.
- Lower the check valve seat through the check valve and check valve spring. Make sure the check valve seat is seated into the collection tube housing.
- Assemble the backhead o-ring into the groove in the backhead. Install the collection tube o-ring in the groove in the backhead on the drill rod mating end. With the thrust washer installed on the case shoulder, thread the backhead into the case and tighten until the shoulder is tight against the case.

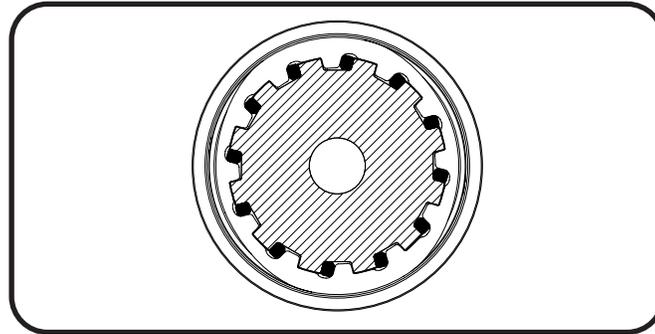
NOTE

DUE TO THE INTERNAL COMPRESSION SPRINGS, THE CHAMPION RC160 BACKHEAD CAN ONLY BE **FULLY** TIGHTENED WITH A POWER WRENCH ON THE RIG.

CAUTION

LIFTING THE CHAMPION RC160 HAMMER WITH THE THREAD JOINTS LOOSE MAY CAUSE DAMAGE TO THE THREADS.

- Install the chuck bushing in the chuck. With the bit face down, place the chuck over the top of the bit. Align the splines and lower the chuck completely onto the bit. Rotate the chuck counterclockwise until the splines meet and insert the drive plates between the chuck and bit splines. (See Figure 2-2)



*RC160 Drive Plate Positioning as Viewed from Top
Figure 2-2*

- Place the bit retaining rings, with the o-ring installed, over the chuck.
- Place the thrust washer against the chuck thread shoulder. With the crane or lift truck and appropriate lifting device, raise the hammer to allow clearance for the chuck. Place the chuck beneath the hammer, thread the hammer down on the chuck threads until flush to the thrust washer.
- With the hammer in a vertical position and the bit installed, insert the collection tube.

NOTE

THE COLLECTION TUBE SHOULD BE ASSEMBLED WITH THE BIT INSTALLED IN THE HAMMER AS THE COLLECTION TUBE, WHEN ASSEMBLED, PROTRUDES FROM THE BOTTOM END OF THE HAMMER, 4" (102 mm).

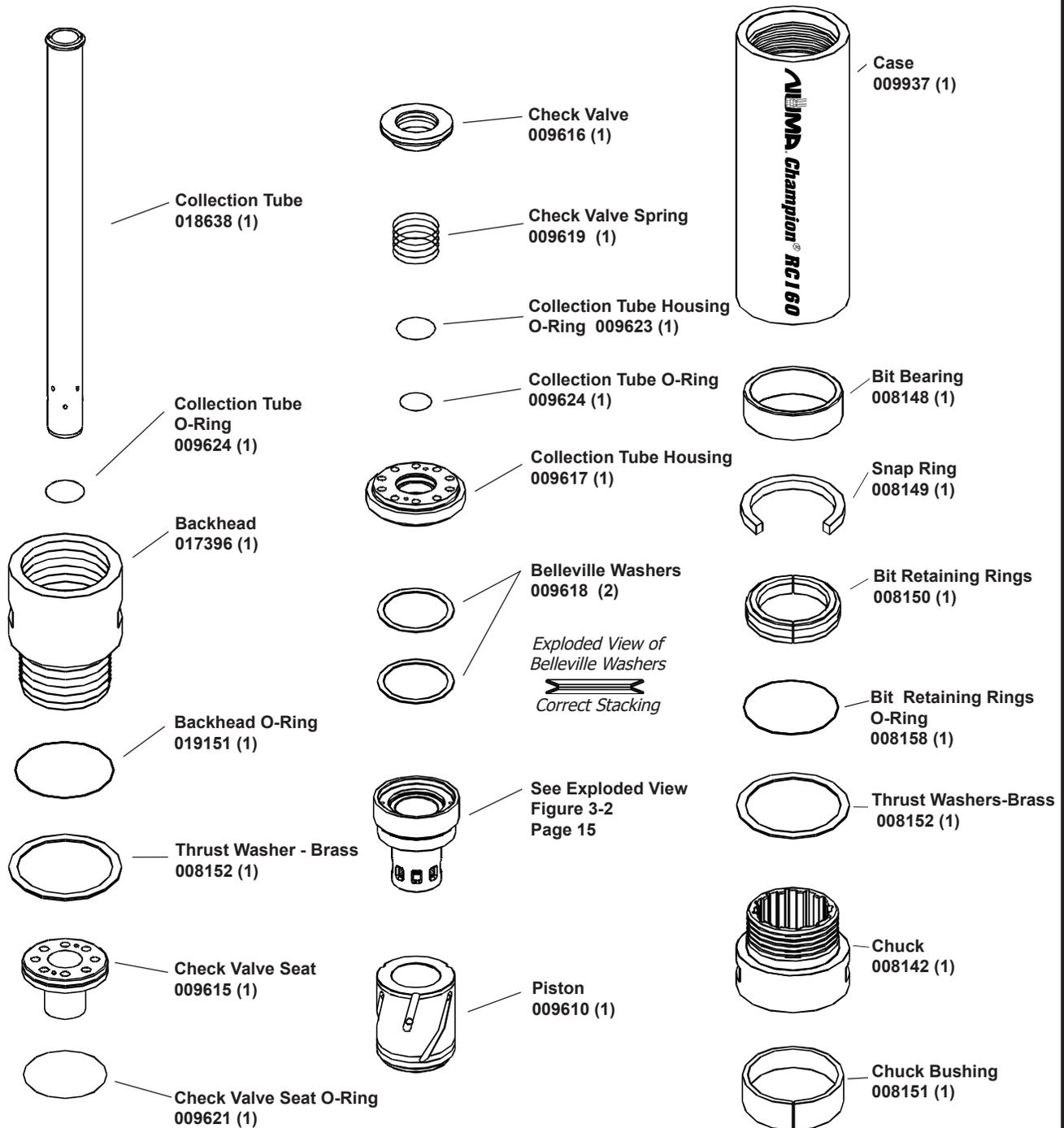
NOTE

LUBRICATING THE OUTSIDE DIAMETER OF THE COLLECTION TUBE PRIOR TO ASSEMBLY IS NECESSARY TO FACILITATE ASSEMBLY.

CAUTION

DUE TO CLOSE TOLERANCES BETWEEN THE CHAMPION RC160 INTERNAL PARTS AND THE CASE, NUMA CANNOT ACCEPT RESPONSIBILITY FOR DAMAGE CAUSED BY WELDING ON THE CASE OD. WELDING ON THE CASE CAN CREATE DISTORTION, CAUSE PREMATURE FAILURE AND VOID THE WARRANTY. CONTACT NUMA FOR SPECIAL INSTRUCTIONS IF WELDING THE CASE BECOMES UNAVOIDABLE.

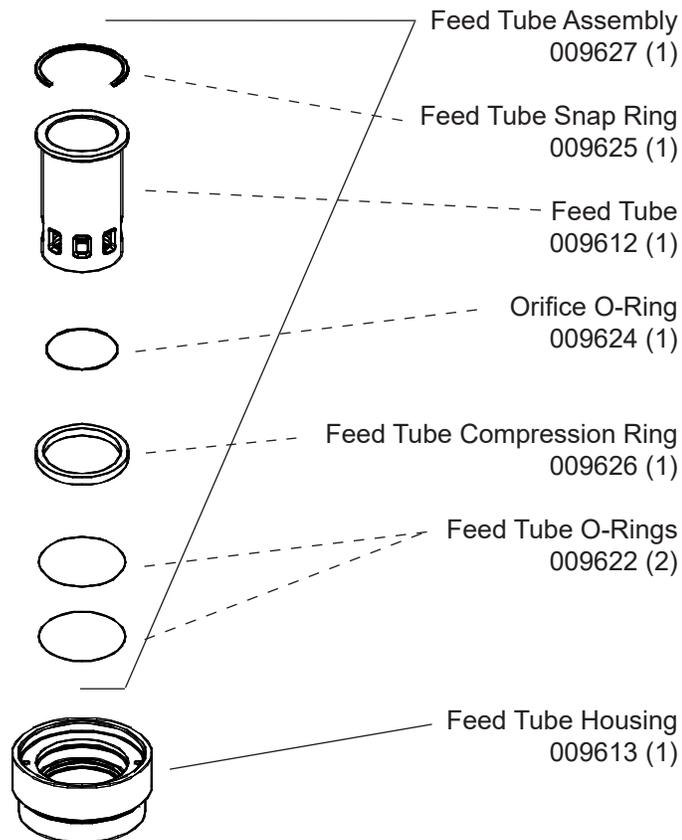
SECTION III
PARTS IDENTIFICATION
EXPLODED VIEW



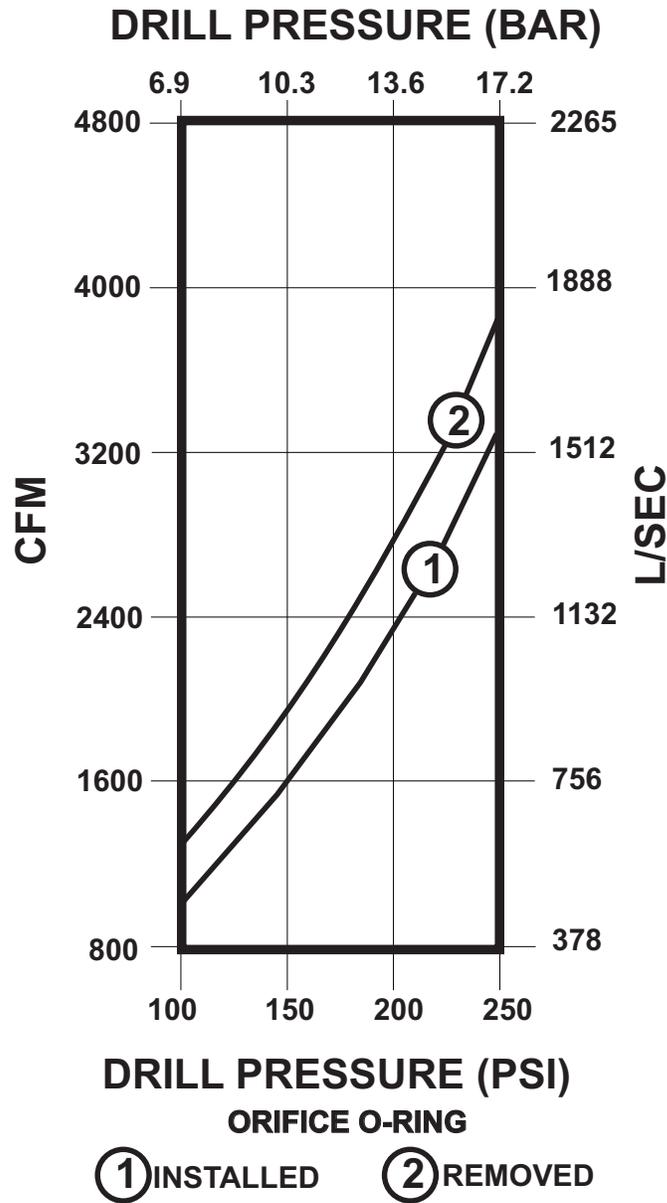
Hammer Assembly #017397
Figure 3-1

SECTION III
PARTS IDENTIFICATION
EXPLODED VIEW

Figure 3-2



SECTION IV AIR CONSUMPTION CHARTS CHAMPION RC160



** Operation Above 200 PSI (13.8 BAR) Is Not Recommended.*

NOTE

Numa RC hammers utilize an orifice o-ring as a choke. Removal of the orifice o-ring allows additional air to pass through the hammer for hole cleaning/flushing purposes.

SECTION V LUBRICATION

The Champion RC160 hammer requires a continuous supply of the correct type Rock Drill Oil. The Champion RC160 hammer consumes at least 10 quarts (10 litres) of Rock Drill Oil per hour in order to maintain adequate lubrication. See table 5-1 for recommended Rock Drill Oil.

	Medium SAE 30	Heavy SAE 50
Shell	Air Tool Oil S2 A 150	Air Tool Oil S2 A 320
Texaco / Caltex	Rock Drill Lube 100	Rock Drill Lube 320
Chevron	Vistac 150	Vistac 320
Conoco	Conoco 150	Conoco 320
Numa Bio Blend	RDP 150	RDP 320

Table 5-1
Recommended Rock Drill Oil

CAUTION

ROCK DRILL OILS ARE THE ONLY ACCEPTABLE LUBRICANTS. SAE 50 ROCK DRILL OIL SHOULD BE USED IN AMBIENT TEMPERATURES OF 80° FAHRENHEIT (27° CELSIUS) OR HIGHER. CONTACT NUMA FOR ACCEPTANCE OF ALTERNATIVE ROCK DRILL LUBRICANTS.

CAUTION

THE CHAMPION RC160 HAMMER, AS WITH ANY MACHINE, REQUIRES CONTINUOUS LUBRICATION. THE FAILURE TO SUPPLY ADEQUATE LUBRICATION TO THE HAMMER CAN CAUSE PREMATURE FAILURE AND MAY VOID THE WARRANTY.

SECTION VI STORAGE

When storing a Champion hammer, it is important to take the necessary steps in order to insure a smooth operation after restarting.

When the hole is completed and the hammer is to be inactive for several weeks or longer the following steps should be followed:

Each drill rod should be blown clear of all water. During this process, turn on the in-line lubricator and blow until the rock drill oil can be seen from the bottom end of each drill rod. In addition, each rod (pin and box end) should be wiped clean and capped to prevent foreign contaminants from sticking to the connector ends.

SHORT TERM STORAGE

When the Champion hammer will be stored for only a short period of time the following steps should be taken:

- Blow the hammer clear of all water.
- Pour one quart (1 litre) of rock drill oil into the backhead. See table 5-1 on page 17 for suitable Rock Drill Oils.
- Turn the air on and cycle for 10 seconds. This will lubricate the internal parts.
- Cap the backhead and chuck end.
- Store the hammer horizontally in a dry environment.

LONG TERM STORAGE

When the Champion hammer will be stored for a long period of time the following steps should be taken:

- Blow the hammer clear of all water.
- If at all possible, the backhead and chuck should be broken loose on the drill rig, this is much easier than trying to do so in the shop.
- Disassemble the hammer.
- Inspect and wipe all the parts clean.

- Lubricate all the internal parts with rock drill oil. See table 5-1 on page 17 for suitable rock drill oils.
- Cap the backhead and chuck ends.
- Store the hammer horizontally in a dry environment.

RESTARTING

Before restarting the hammer after prolonged periods of inactivity, disassemble and inspect all internal hammer parts.

If any internal hammer parts have oxidized, use an emery cloth to polish each part. Wash each hammer part, wipe dry, relubricate with rock drill oil and reassemble the hammer.

CAUTION
FAILURE TO CHECK INTERNAL PARTS BEFORE RESTARTING THE HAMMER
MAY CAUSE SERIOUS DAMAGE TO THE HAMMER.

SECTION VII BUTTON BIT MAINTENANCE

GENERAL

Numa button bits are designed for fast penetration and long life. Keeping the carbide buttons sharp has a direct effect on both the penetration and the tool life.

As the bit wears, flat spots develop on the carbide buttons. These flat spots increase stress on the buttons causing the bit to work harder, which may cause button failure. Bit sharpening can minimize these problems.

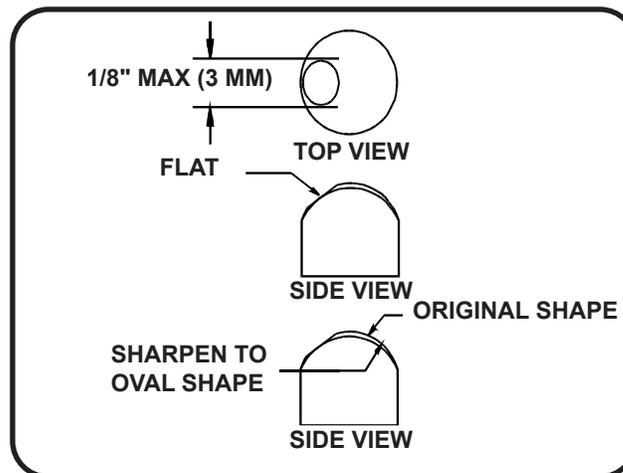
Gauge buttons will usually show the most wear and should be used to determine the frequency of bit sharpening. When the flats on the gauge buttons become a maximum of 1/8" (3 mm) wide, it is time to resharpen. Refer to figure 7-1.

SHARPENING

The following tools are required to resharpen a bit:

- Hand grinder (20,000 r.p.m.)
- Silicon carbide wheel 1" (25 mm) diameter, 60 - 80 grit
- Bit stand
- Pencil

Place a mark on the center of the button flat. Grind the button to its original shape leaving the mark untouched. Refer to figure 6-1. It is important to leave the center of the flat untouched to insure concentricity.



Button Resharpening
Figure 7-1

SECTION VIII RECOMMENDED SPARES CHAMPION RC160

Product Description	Part Number	Class 1	Class 2
Collection Tube	018638	4	8
Collection Tube O-Ring	009624	3	6
Backhead 10 Beco Box	017396	0	1
Backhead O-Ring	019151	2	4
Thrust Washer - Brass	008152	2	4
Check Valve Seat	009615	0	1
Check Valve Seat O-Ring	009621	2	4
Check Valve	009616	1	2
Check Valve Spring	009619	1	2
Collection Tube Housing O-Ring	009623	2	4
Collection Tube O-Ring	009624	3	6
Collection Tube Housing	009617	0	1
Belleville Washers	009618	0	2
Feed Tube Assembly	009627	1	2
Feed Tube Snap Ring	009625	1	2
Feed Tube	009612	1	2
Orifice O-Ring	009624	1	2
Feed Tube Compression Ring	009626	1	2
Feed Tube O-Ring	009622	2	4
Feed Tube Housing	009613	0	1
Piston	009610	1	2
Case	009937	0	1
Bit Bearing	008148	1	1
Snap Ring	008149	1	2
Bit Retaining Rings	008150	1	1
Bit Retaining Ring O-Ring	008158	2	4
Chuck	008142	1	2
Chuck Bushing	008151	1	2

For Complete Hammer Assembly #017397

Table 8-1

NOTE

Class 1 Represents a user of a Champion RC160 hammer that has readily available spare parts.

Class 2 Represents a user of a Champion RC160 hammer that does not have readily available spare parts.

NOTES

NOTES