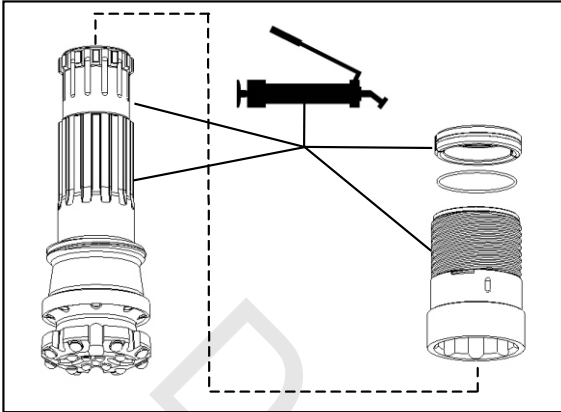
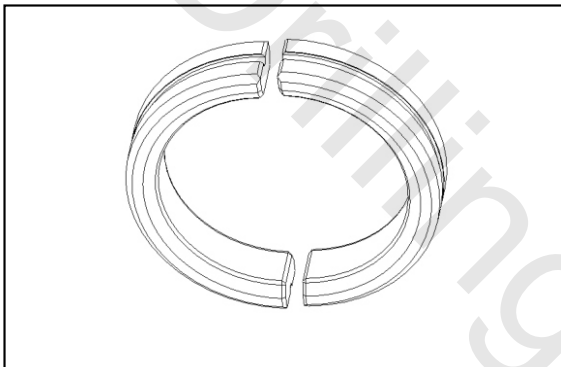


COMMISSIONING OF RC HAMMERS AND BITS Cont.



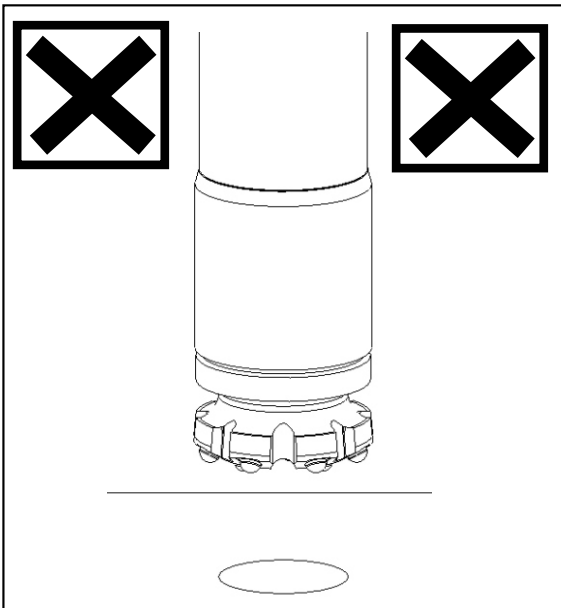
Grease Components

Grease all threads and splines when assembling drill bit into hammer.



BIT RETAINING RINGS

Never mix pairs of bit retaining rings which generally are manufactured as matching pairs and always re-fit them in the same position as when dismantled.



Check Drill Bit Diameter

Never try to use a drill bit which is larger in diameter than a partially drilled hole.



Commissioning

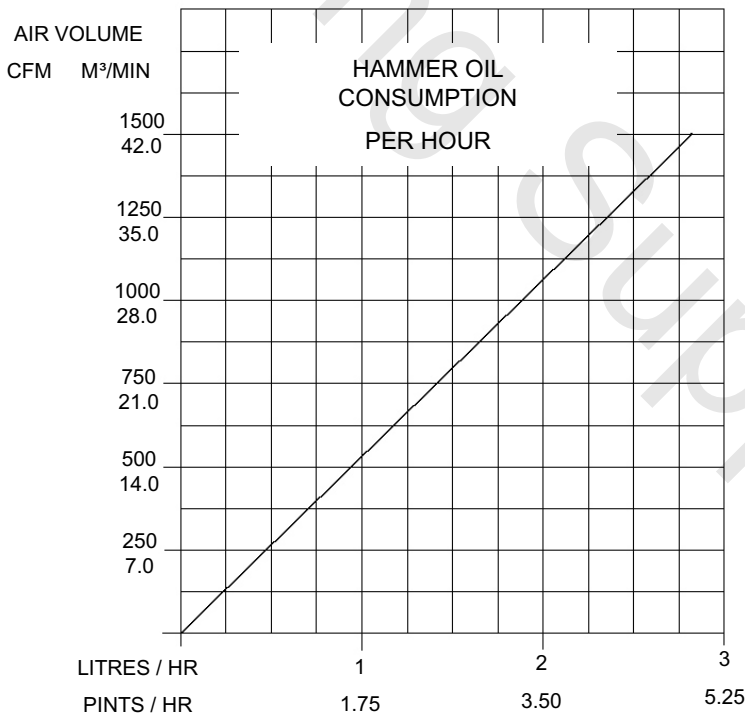
- Ensure hammer lubricator is working
- Pour ½ pint (0.30 litres) of air line oil into hammer
- When attached to drill rig, blow through with air to ensure all internal parts are lubricated
- Operate at low pressure initially, progressively increasing, during the first hour, in order to run in the hammer.

LUBRICANTS

Lubricating oil.

Just like any other piece of precision machinery, the DTH hammer must be lubricated and small quantities of oil should be injected into the air stream at regular interval whilst the hammer is working. Rock drill oils are recommended because these contain the emulsifying and viscosity additives necessary to deal with high pressure and high air flow conditions in which water is usually present, if only from condensation in the air line.

Oil not only provides slip to prevent pick up and premature failure of components but it also acts as a seal on the surface of running parts to use air efficiently without pressure loss. It is therefore of paramount importance that the correct grade of oil is used at the appropriate consumption rate to suit volume and pressure, in line with the hammer manufacturers recommendation. Most modern valveless hammers, particularly when operating at high pressures need a heavy oil providing of course that ambient temperatures allow the oil to run through the airline.



DTH hammers need -

- 1/3rd of imp.pint of oil per hour per 100 CFM of air consumed.

Or

- 0.20L of oil per hour per 3M3/Min of air consumed

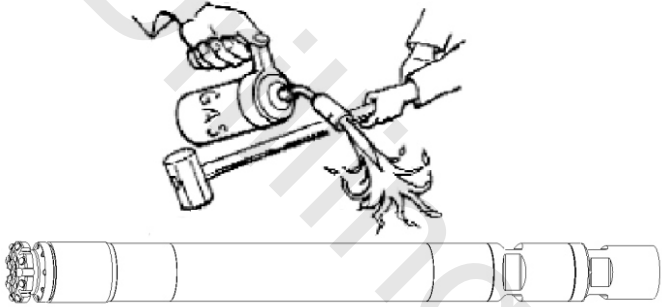
Up to double the amount of oil is required when used with water injection

At temperatures below 5°C oil with an antifreeze additive may be required

MAKE	AMBIENT TEMPERATURE			HAMMER GREASE	
	BELOW 10°C	FROM 10°C TO 32°C	ABOVE 32°C	HAMMER THREAD GREASE	HAMMER 'O' RING GREASE
HALCO	HS3	HS200	HS200	FAXENE CP COMPOUND	FAXANE H76
MOLYBOND	MOLYHAMMER 320			GOG	-
BP	ENERGOL RD-E100	MACCURAT D220	MACCURAT D220	ENERGREASE AS11	-
CALTEX	CALTEX ARIES 100	CALTEX ARIES 320	CALTEX ARIES 320	THREADTEX	-
CASTROL	RD OIL 100	RD OIL 150	RD OIL 150 or MAGNA CF220	-	RED RUBBER GREASE
ELF	PERFORA 100	PERFORA 220	PERFORA 220	TIFORA CA	NATURELF GEP2
ESSO	AROX EP46	AROX EP150	AROX EP150 or FEBIS K220	-	-
GULF	GULFSTONE	GULFSTONE HEAVY	GULFSTONE HEAVY	ANTI NO.2	-
MOBIL	ALMO 527	ALMO 529	VACTRA OIL NO.4	MOBILTEMP SHC460	-
SHELL	TORCULA 100	TONNA TX220	TONNA TX220	HIGH PRESS. THREAD	-
TEXICO	AIRES 100	WAY LUBRICANT X220	WAY LUBRICANT X220	-	-

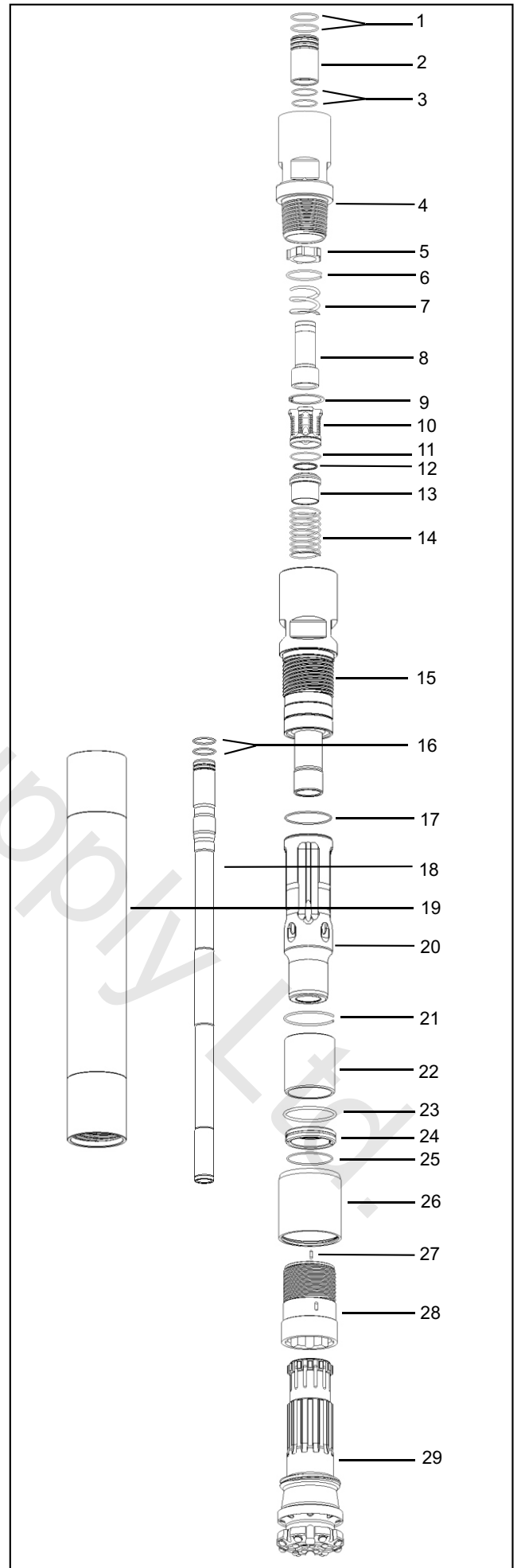
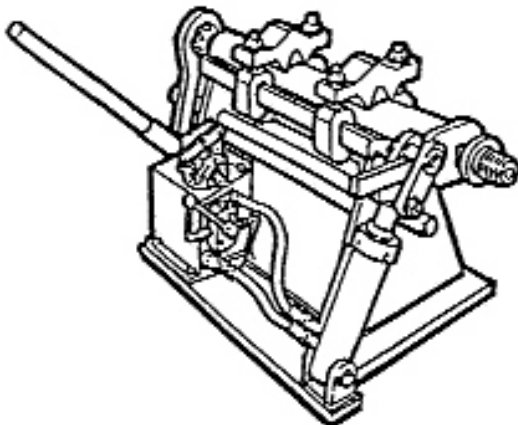
RC412 & RC512 DISMANTLING

Do not apply heat or direct impact to the outside of a hammer to assist unscrewing as this usually damages the equipment



Halco offer a range of hammer stripping benches to facilitate hammer dismantling and re-assembly.

HYDRAULIC STRIPPING BENCH



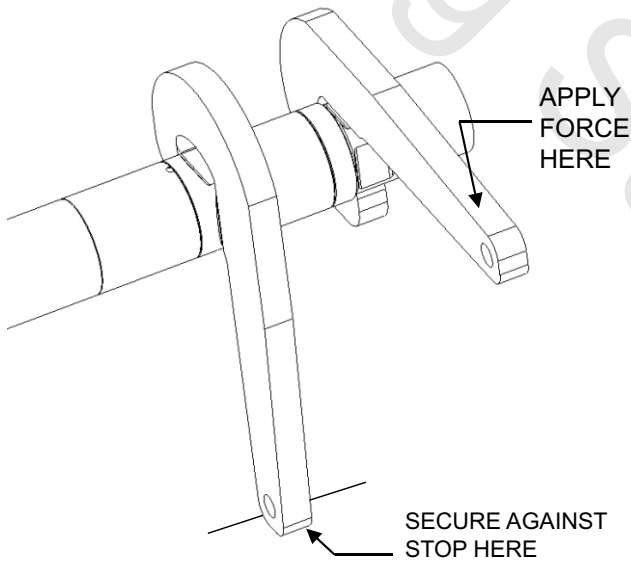
RC412 & RC512 DISMANTLING CONT.

A To remove Sub Adaptor and Drill Bit, it is essential that the cylinder is clamped in the correct position, away from threads which could be damaged and preferably where the top adaptor register and piston are located in order to provide support. Ensure Piston (20) is located within the Piston Guide Bush (22). Position clamps (X) from Chuck/Cylinder joint and (Y) from Top Adaptor/cylinder joint.

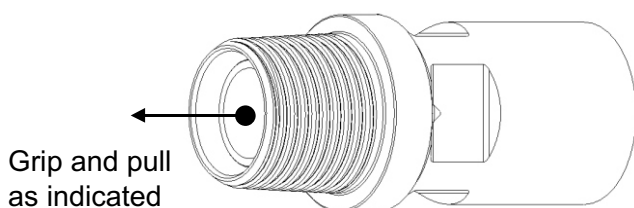
X = 180mm **Y** = 165mm



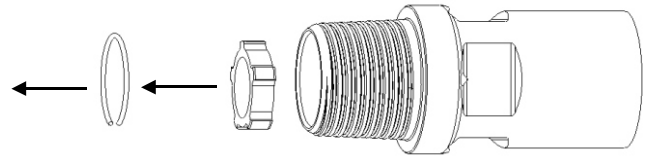
B Place a spanner on the Top Adaptor (15) flats and position against a stop. Place another spanner on the Sub Adaptor (4) flats and apply a force to this spanner to break the Sub Adaptor/Top Adaptor joint. Unscrew Sub Adaptor (4).



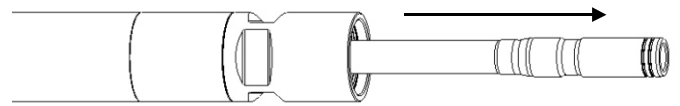
C To dismantle Sub Adaptor Assembly, secure Sub Adaptor Body (4) in a vice, grip and pull Upper Sample Tube (8) to release the holding 'O' Rings (3) in the Tube Connector (2). Remove Upper Sample Tube (8) and Spring (7) from Sub Adaptor Body (4). From the other end of the Sub Adaptor Body (4) remove the Tube Connector (2)



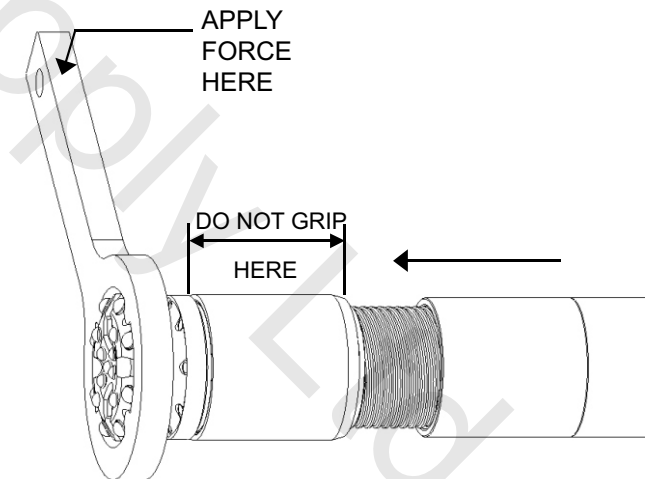
D Remove Snap Ring or Circlip (6) and Spider (5) from Sub Adaptor Body (4).



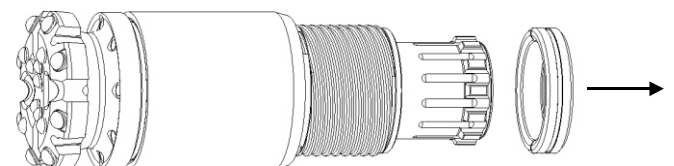
E Remove Sample Tube (18) from Hammer assembly.



F Place a bit spanner or chain wrench over the Drill Bit (29) **do not** grip on the Bit Catcher (26) apply a force to the handle to break the Chuck/Cylinder joint. Unscrew and remove the Bit (29), Chuck (28), Bit Catcher (26) and Bit Retaining Rings (24).

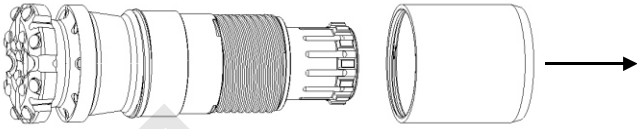


G Remove Bit Retaining Rings (24) from Drill Bit (29).

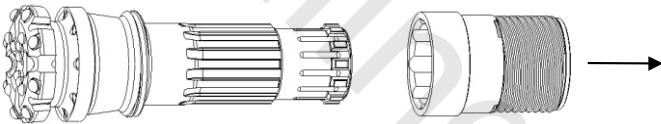


RC412 & RC512 DISMANTLING CONT.

H Lift Bit Catcher (26) over Key (27) and unscrew past bit catcher thread on the backhead of the Drill Bit (29).

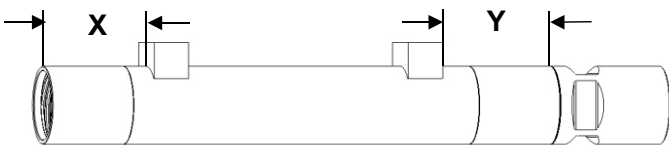


I Remove Chuck (28) from Drill Bit (29).

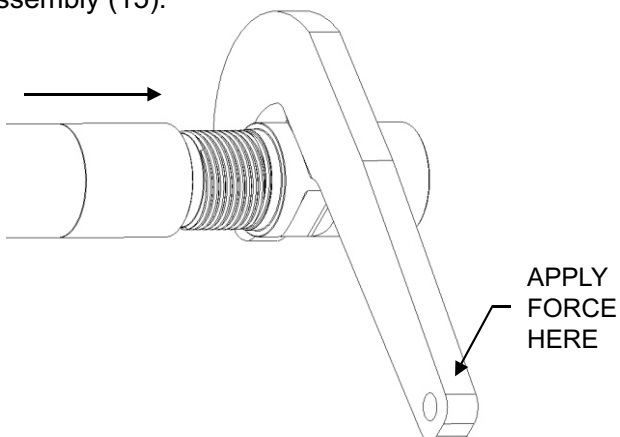


J To remove the Top Adaptor (15) loosen the clamps, leave the Piston Guide Bush (22) in position and push Piston (20) to the Top Adaptor end of the hammer to provide support for the Cylinder (19). Reposition clamp Y 200mm from the Top Adaptor/Cylinder joint and retighten the clamps.

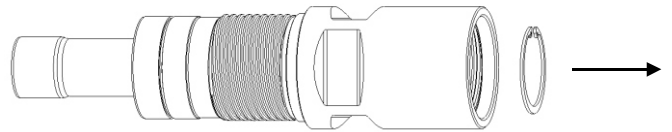
X = 180mm **Y** = 200mm



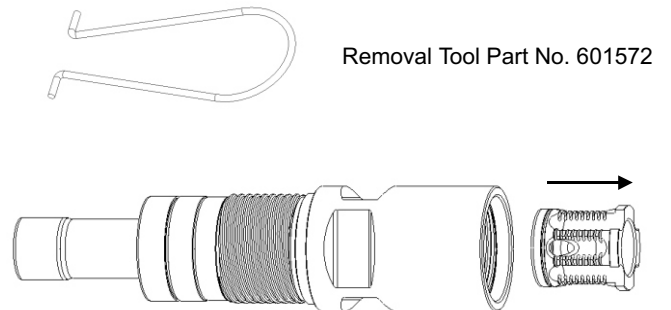
K Place spanner on Top Adaptor flats and apply a force to the handle to break the Top Adaptor/Cylinder joint. Unscrew and remove the Top Adaptor assembly (15).



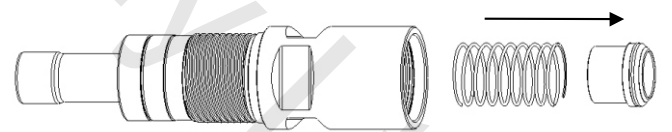
L Remove Circlip (9) from Top Adaptor Assembly (15).



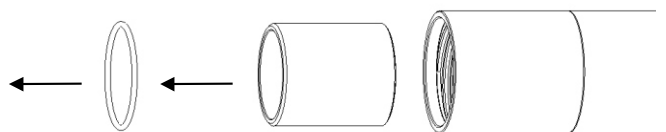
M Using removal tool illustrated below remove Non Return Valve Seat & Filter (10) from Top Adaptor Assembly (15).



N Remove Non Return Valve (13) and Non Return Valve Spring (14) from Top Adaptor Assembly (15)



O Remove securing 'O' Ring (23) from Cylinder (19), then slide Piston Guide Bush (22) out of the Cylinder (19).



Note! Condition of 'O' Rings should be checked frequently when changing Drill. Replace if damaged.

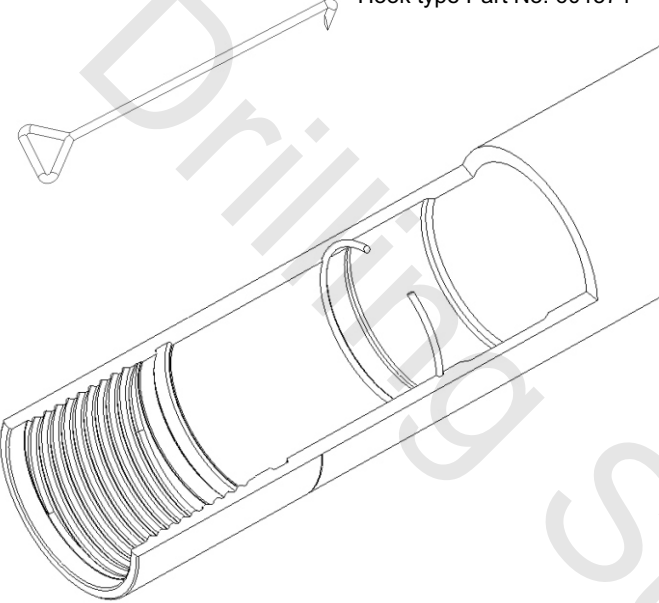
RC412 & RC512 DISMANTLING CONT.

P Remove Snap Ring (21) from Cylinder (19) with the simple tools illustrated below.

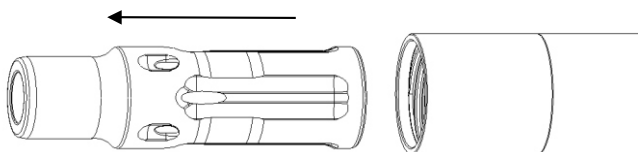
Snap Ring Removal Tool –
Lever type Part No. 601642



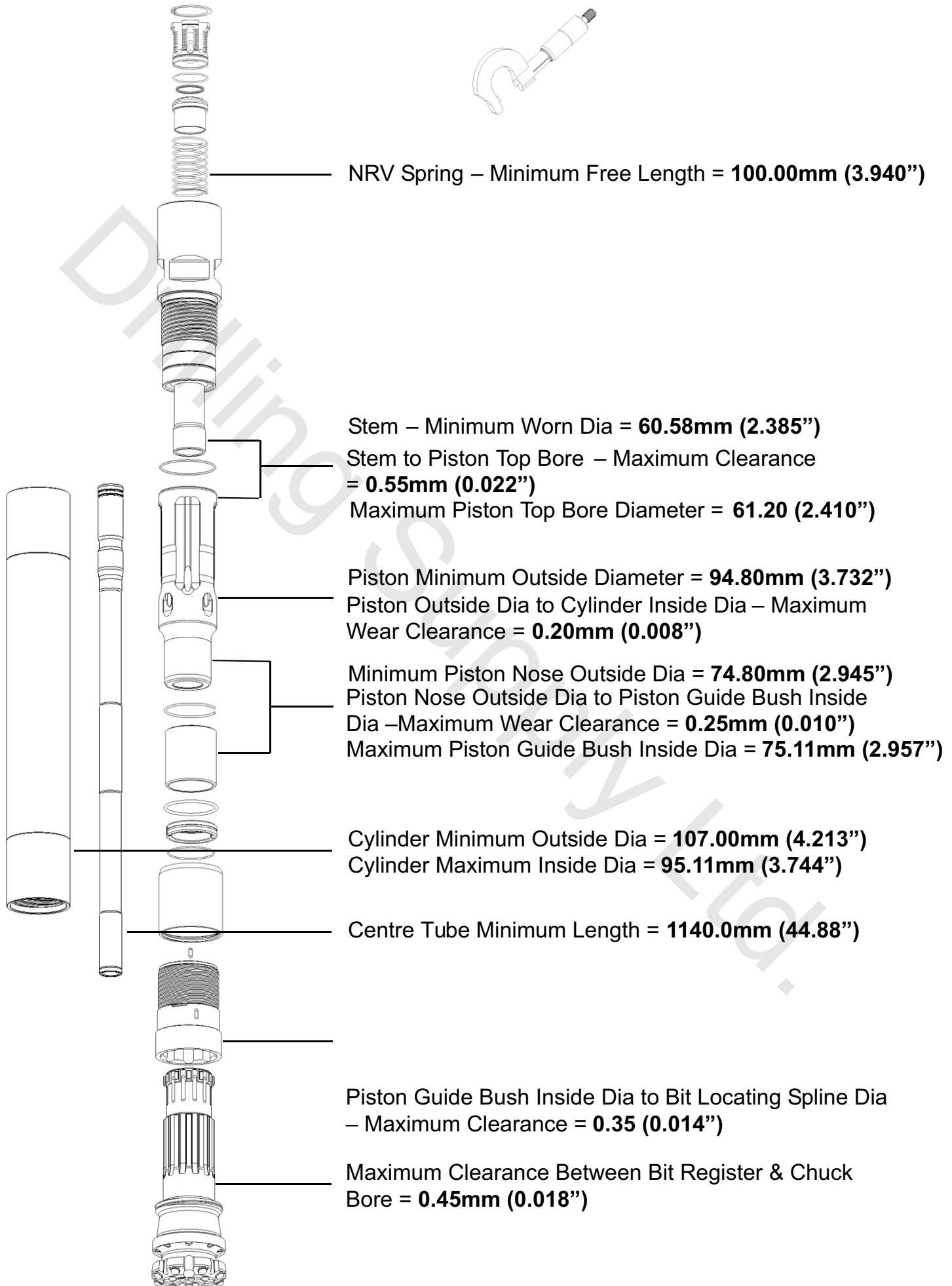
Snap Ring Removal Tool –
Hook type Part No. 601574



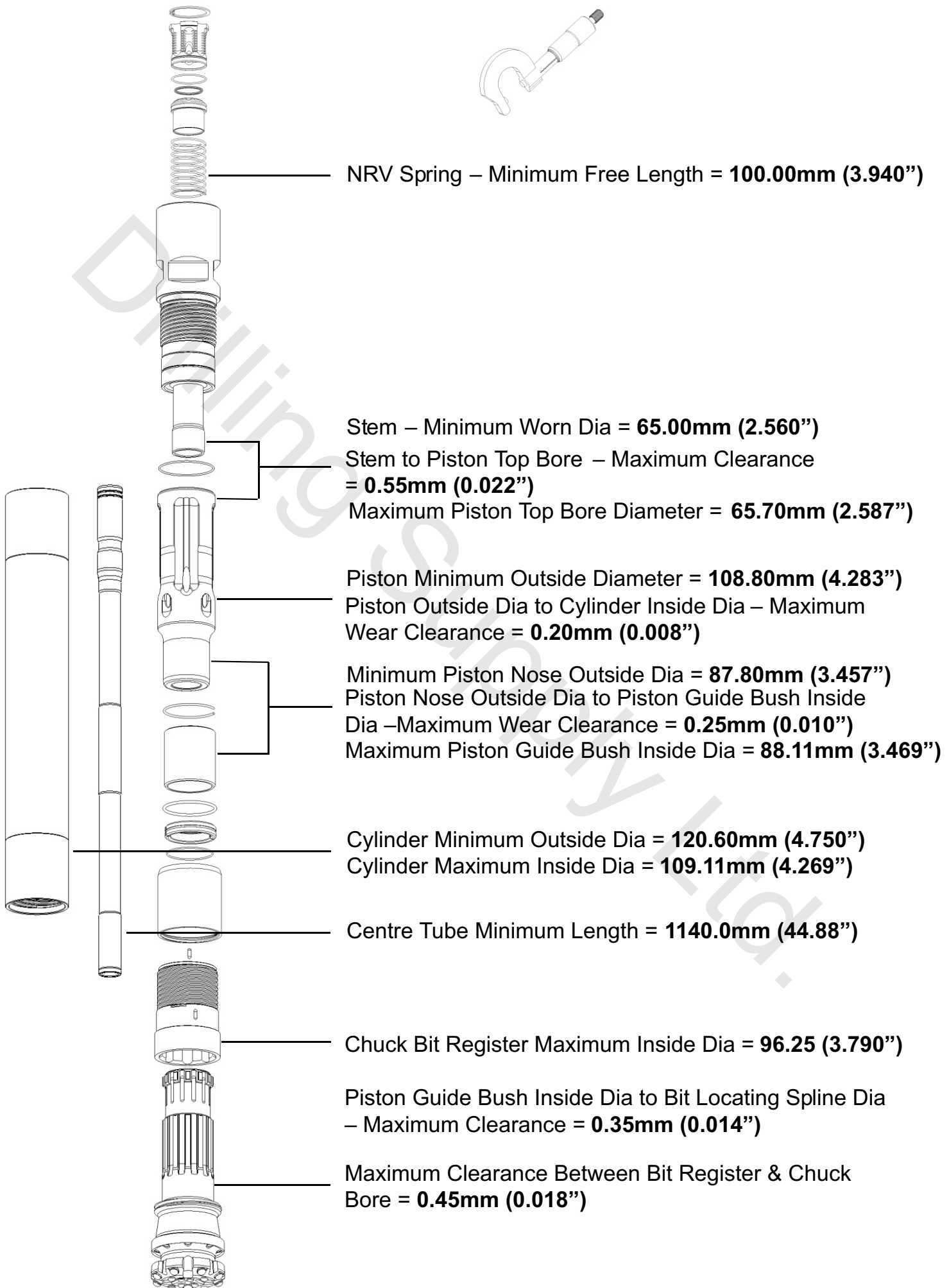
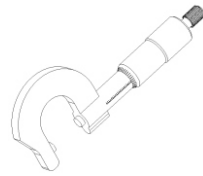
Q Remove Piston (20) from Cylinder (19).



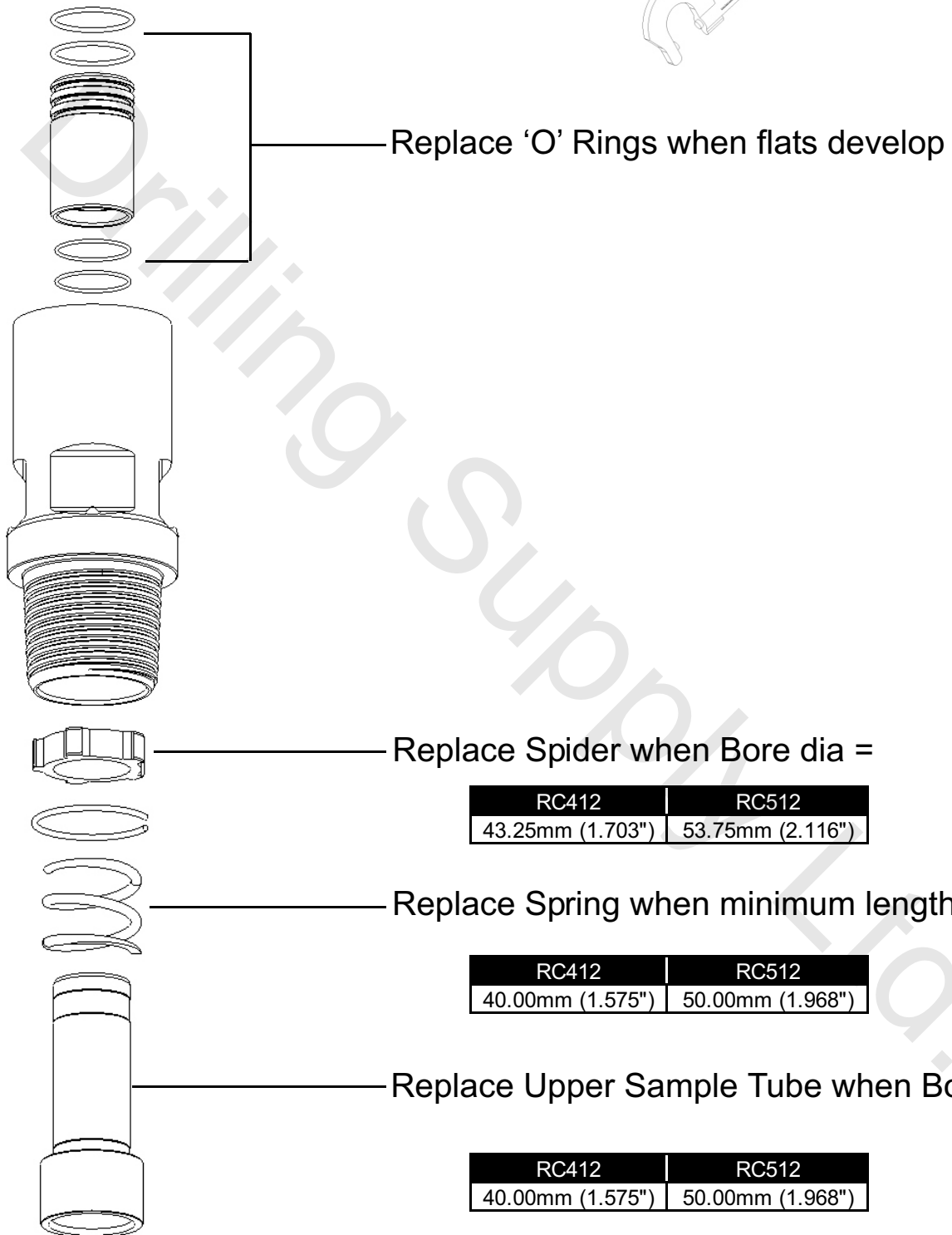
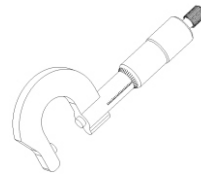
RC412 WEAR LIMITS



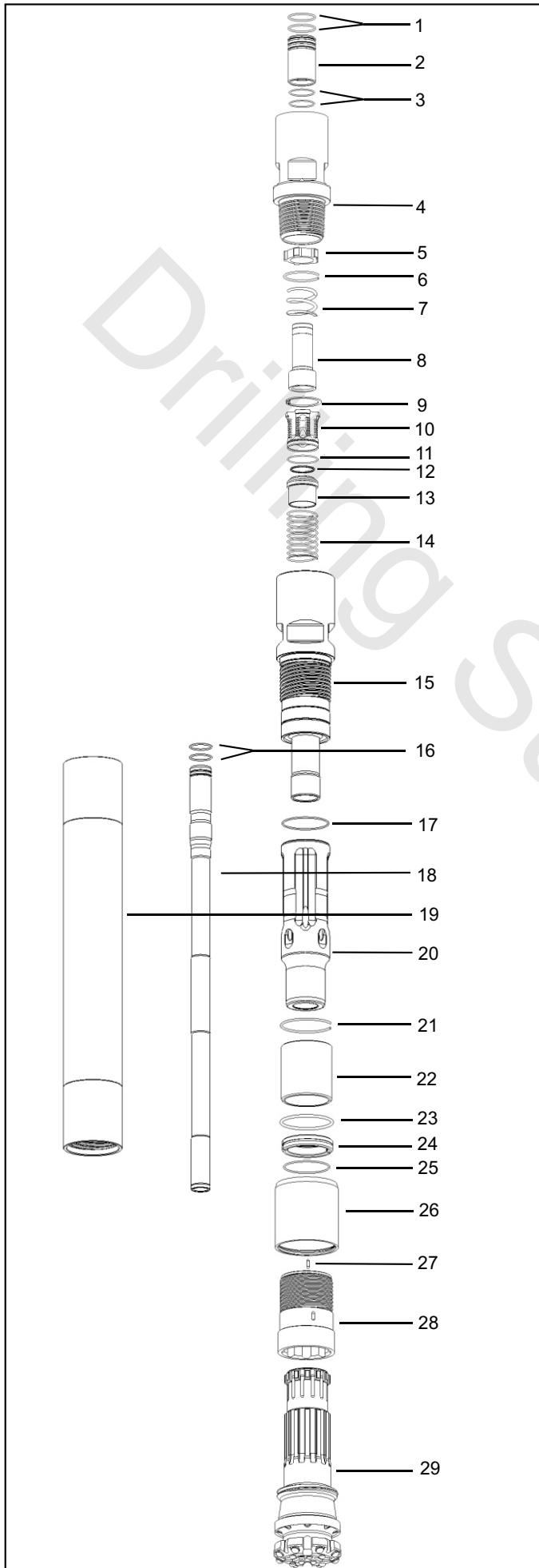
RC512 WEAR LIMITS



RC412 & RC512 SUB ADAPTOR WEAR LIMITS



RC412 & RC512 ASSEMBLY



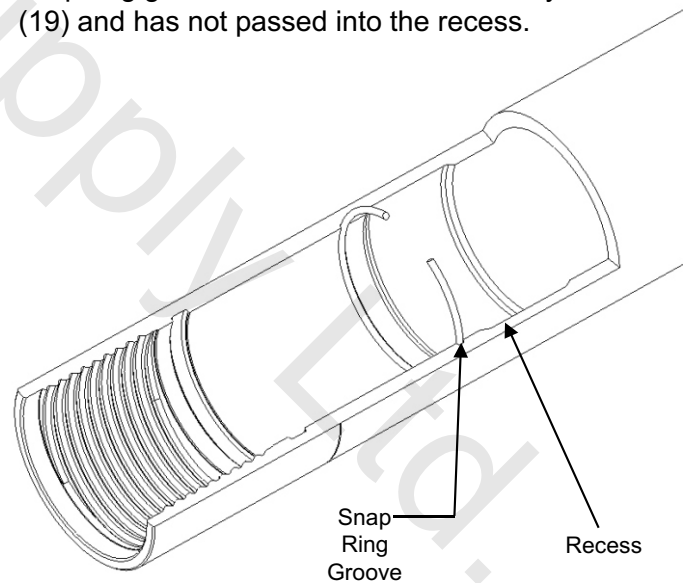
A Before assembly ensure that all components are cleaned, greased and lubricated. Lay out components in the order of the illustration (left) for ease of identification.



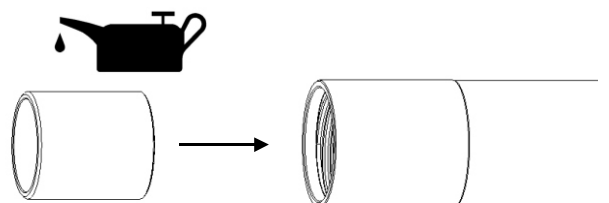
B Secure Cylinder (19) on a stripping bench or suitable stripping equipment. The Cylinder is **not reversible**, the bottom of the hammer is the cylinder end where the snap ring groove is situated as illustrated below.



C Insert Snap Ring (21). Ensure that it seats in the snap ring groove in the lower end of the cylinder (19) and has not passed into the recess.

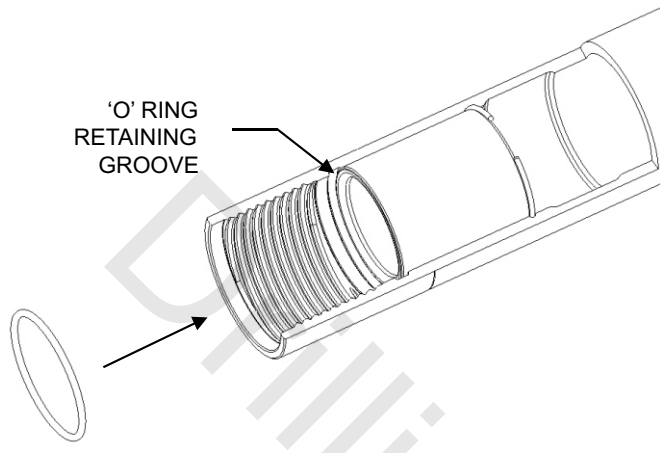


D Lightly coat the Piston Guide Bush (22) outside diameter and bore with hammer oil. Insert Piston Guide Bush (22) into Cylinder (19) with the smallest bore first. Ensure it seats up to the Snap ring (21).

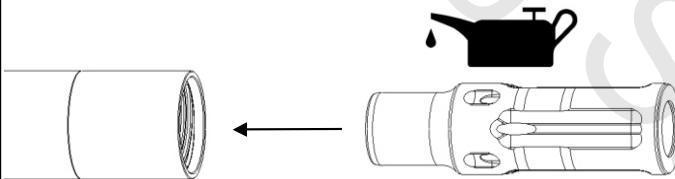


RC412 & RC512 ASSEMBLY CONT.

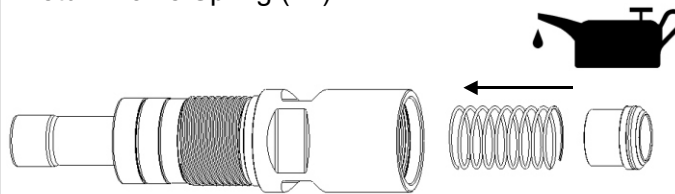
E Insert 'O' Ring (23) into Cylinder (19), ensure that it seats in the 'O' Ring Retaining Groove (illustrated below) and up to the Piston Guide Bush (22).



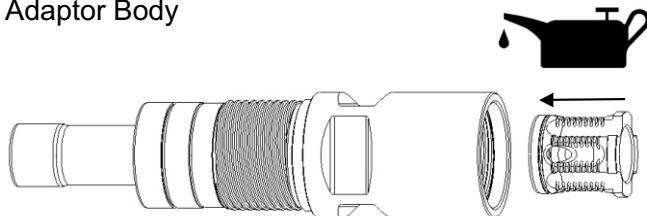
F Apply a light coating of hammer oil to the Piston (20) diameters and inside bore. Insert Piston (20) into Cylinder (19) from the top or adaptor end. Ensure it is facing the right way as illustrated.



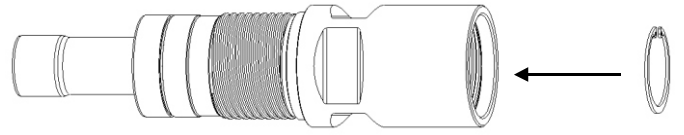
G Secure Top Adaptor Body (15) in a vice, insert Non Return Valve Spring (14) into Top Adaptor Body (15). Lightly coat Non Return Valve (13) with hammer oil and insert into Top Adaptor Body (15), ensure Non Return Valve (13) is seated on Non Return Valve Spring (14).



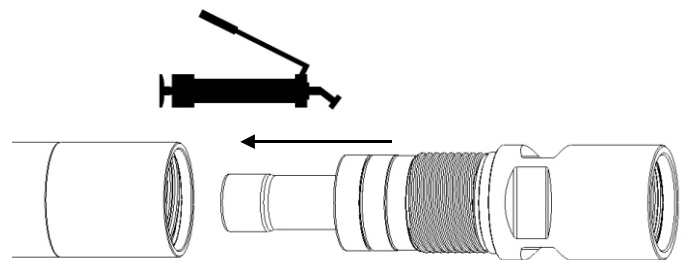
H Ensure that 'O' Ring (11) is fitted to Non Return Valve and Seat (10). Apply a light coating of hammer oil to the Non Return Valve Seat (10) insert into Top Adaptor Body (15) ensuring it is seated securely against the shoulder in the Top Adaptor Body



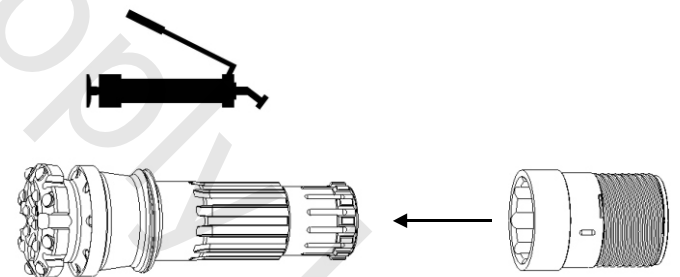
I Insert Circlip (9) into Top Adaptor Body (15) ensure that it seats in the Circlip Groove.



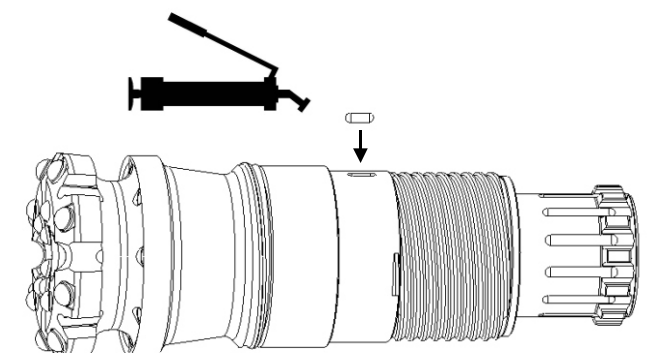
J Apply Anti-seizure grease to the Adaptor and Cylinder threads. Screw Top Adaptor Assembly (15) into Cylinder (19) and tighten.



K Apply Anti-seizure grease to the Drill Bit Spline and slide Chuck (28) onto Drill Bit (29).

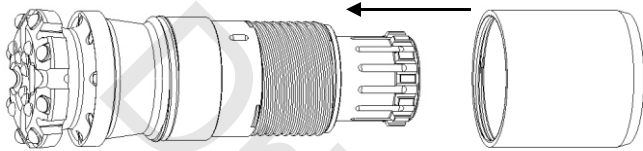


L Apply Anti-seizure grease to the Chuck registers and ensure that the Key (27) is inserted into the Chuck (28).

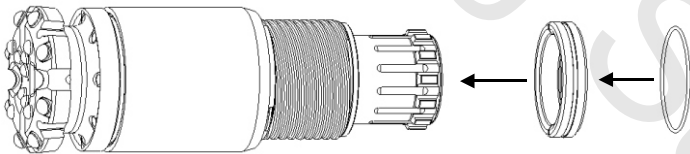


RC412 & RC512 ASSEMBLY CONT.

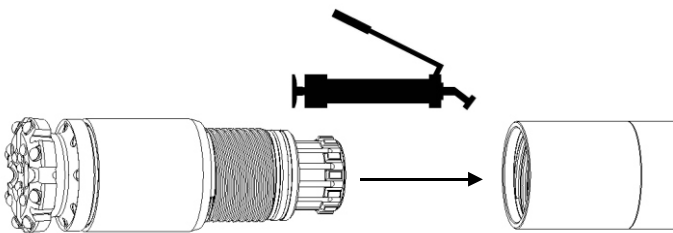
M Pass the Bit Catcher (26) over the Chuck (28). Screw the Bit Catcher (26) over the bit catcher thread on the Drill Bit (29). Rotate the Bit Catcher (26) until the Keyway in the Bit Catcher bore and the Key (27) in the chuck (28) are aligned and allow the Bit Catcher to drop until it is seated against the shoulder on the chuck.



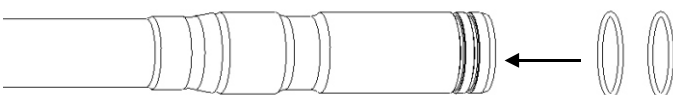
N Place Bit Retaining Rings (24) around the Drill Bit shank (29) and secure using 'O' Ring (25). Ensure 'O' Ring (25) is seated securely in the 'O' Ring Groove.



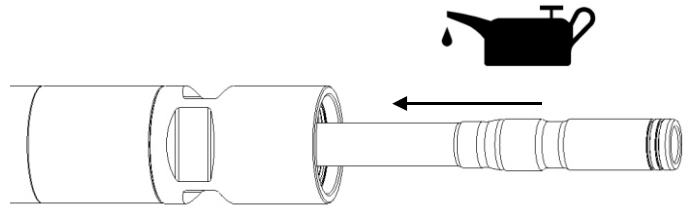
O Apply anti-seizure grease to the Chuck (28) and Cylinder (19) threads. Screw the Drill Bit Assembly into the Cylinder (19). Torque this joint to :-
RC412 = 5500 ftldf RC512 = 7000 ftldf



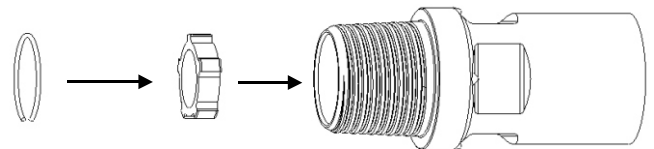
P Assemble the 2 'O' Rings (16) onto the Sample Tube (18), ensure they are seated in the 'O' Ring Grooves.



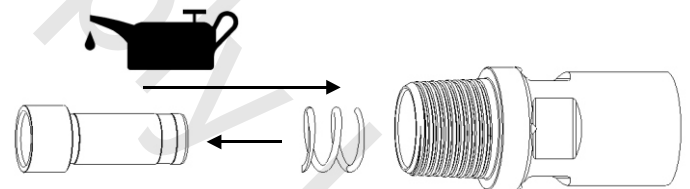
Q Apply a light coating of hammer oil to the Sample Tube (18) and insert into the hammer through the Top Adaptor (15) and the Non Return Valve (13).



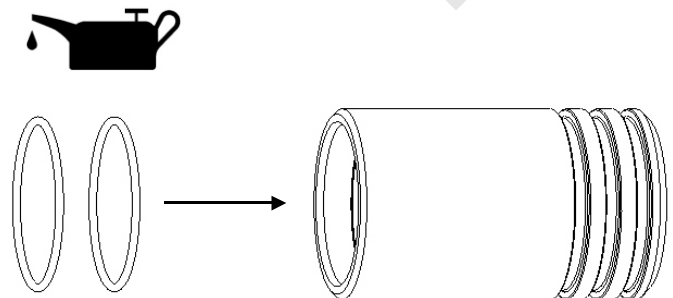
R Insert the Spider (5) into the Sub Adaptor Body (4). Insert the Snap Ring or Circlip (6) to secure Spider (5) into position. Ensure Snap Ring or Circlip is seated in the groove.



S Apply a light coating of hammer oil to the stem of the Upper Sample Tube (8). Slide Upper Sample Tube Spring (7) onto Upper Sample Tube (8) and insert into Sub Adaptor Body (4) through the Spider (5) bore.

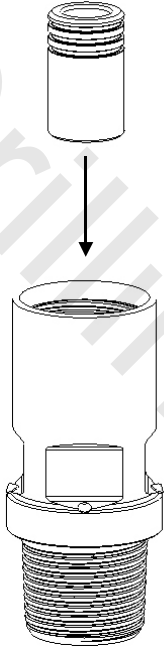


T Apply a light coating of hammer oil to the 2 'O' Rings (3). Insert the 2 'O' Rings (3) into the Bore of the Tube Connector (2).



RC412 & RC512 ASSEMBLY CONT.

U Place Sub Adaptor Assembly with the Upper Sample Tube (8) on a firm surface. Insert the Tube Connector (2) into the Sub Adaptor Body (4) and over the Upper Sample Tube (8). Gently tap the Tube Connector (2) until it is in position and the 'O' Rings (3) are compressed into the 'O' Ring grooves on the Upper Sample tube (8).



V Apply anti-seizure grease to the Sub adaptor Body (4) and Top Adaptor (15) threads. Screw the Sub Adaptor Assembly into the Top Adaptor and tighten. All joints should be torqued up to 6000 to 7500 ftldf.

