

18120008 Drillhead Assembly

The assembly of the drillhead is accomplished in the sequence listed below. However, extra attention should be taken when installing the following;

- 1) Taper Roller Bearings - Preload (installing shims)
- 2) Chuck Assembly - location and tightening locknut

NOTE: a) the housing and all internal parts must be thoroughly cleaned and free from burrs before assembly.

b) all seals, o-rings and other internal parts must be oiled and/or greased before assembly.

- 1) GEAR ASSEMBLY: Assemble gears (items 3 & 6) on drive sleeve bushing (item 4), install keys (item 7). Install four bolts and nuts (items 55 & 56).
- 2) Install bearing cups (item 9) in the upper and lower bearing retainers (items 11 & 12).
- 3) Install bearing cone (inner) and one thrust washer (items 8 & 9) in the upper bearing retainer (item 11).
- 4) Install the upper bearing retainer (item 11) in the drillhead housing (item 1).
- 5) Install gear assembly into the housing.
- 6) Install drive sleeve (item 2) from the lock nut end of the housing and through the bore of the drive sleeve bushing (item 4), the thrust washer (item 8) and the bearing (item 9) at the chuck end of the housing.
- 7) Install the three drive sleeve keys (item 5)
- 8) Install the thrust washer (item 8) at the locknut end of the housing.
- 9) Install bearing cone (item 9) at the locknut end of the housing.
- 10) Install O-ring (item 15) in the lower bearing retainer (item 12)
- 11) **BEARING PRELOAD:** Install lower bearing retainer (item 12) in the housing and hand tighten bolts. With a feeler gauge, measuring between the drillhead housing and the lower bearing retainer. This is an approximate measure to determine what thickness of shims you will require. Remove the lower bearing retainer, add shim pack measured (item 10) and then reinstall the lower bearing retainer. Torque bolts (item 13) to 70 ft. lbs.
NOTE: verify that the gear assembly rolls freely. Grab one of the four bolts (item 55) and turn the gear assembly. If the gear assembly can rotate approximately a ¼ turn, then you have the proper preload (correct quantity of shims). If the gear assembly turns more, then you must remove the lower bearing retainer and remove some shims. If the gear assembly does not turn, then you must remove the lower bearing retainer and add more shims. Continue this procedure until the proper preload is attained.

- 12) Install oil seal (item 16), O-ring (item 18) and the upper clamp ring (item 17A) at the chuck and of the housing.
- 13) Install the oil seals (item 16 & 16A - **NOTE:** the National oil seal goes in first), O-ring (item 18) and the lower clamp ring (item 17) at the locknut end of the housing.
- 14) Install bearing (item 27) into housing.
- 15) Install bearing (item 30), bearing shield (item 69), primary gear (item 28), retaining rings (items 29A & 33), and drive tip (item 29C) on input drive shaft (item 29B). Install this shaft assembly into the motor adapter (item 31). Install the retaining ring (item 58) and the O-ring (item 32) in the motor adapter (item 31). Install this complete assembly in the drillhead housing and through the bearing (item 27). Install the five bolts (item 34) and torque to 70 ft. lbs.
- 16) Install **CHUCK ASSEMBLY** to drillhead housing
NOTE:
Before assembling the hydraulic chuck to the drillhead, the following must be done;
 - a) Take a wooden block and “bump” the spindle (item 2) at the locknut end. This will move the spindle (0.160” float) towards the chuck.
 - b) Install the hydraulic chuck assembly on the spindle. It must sit tight against the clamp ring (item 17). Again, “bump” the spindle at the locknut end, while turning the chuck assembly. This will ensure that all the spindle float is taken up in the chuck assembly.
 - c) Locate the bolts through the chuck adapter flange. Install lock washer and nuts and torque to 70 ft. lbs.
 - d) Install the three keys and the key locking spring in the chuck housing (turn the chuck assembly counter clockwise if necessary, to align the keyways in the spindle and the chuck housing).
NOTE: DO NOT TURN THE CHUCK HOUSING MORE THAN 1/3 TURN TO ALIGN KEYS
Install nut (item 19) and tighten to 2000 ft. lbs. Use an adaptor in the input shaft, a torque wrench (with a 5 foot bar) and a spanner wrench supporting the nut. Using the lowest ratio of the drillhead to assist in tightening this nut. This procedure will force the chuck housing tight against the clamp ring (item 17A).
To achieve 2000 ft. lbs. torque, you will require 370 ft. lbs. torque on your torque wrench..
- 17) Install the lock nut (item 20) on the spindle and use bolts (item 21) to lock it to the nut (item 19). Leave approximately 1/8” between the nut and the locknut.
- 18) Install the balance of the parts remaining (shifter assembly, lube pump, cover, etc.)
NOTE: Install silicone adhesive sealants under the housing cover (item 35) do not use a gasket.
- 19) Install hydraulic fittings and hoses.