

NORTH HOUSTON MACHINE, INC.

1979–2013



14202 PINE MEADOW LANE
TOMBALL, TEXAS 77377

TELEPHONE: 800-364-6973

FAX: 281-255-3863

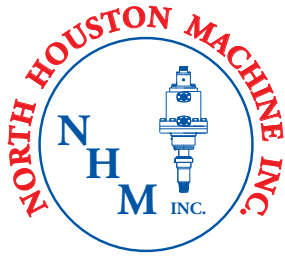
EMAIL: nhmi@earthlink.net

SALES: sales@northhoustonmachine.com



www.northhoustonmachine.com

NORTH HOUSTON



OUR STATEMENT OF QUALITY ASSURANCE

N.H.M., INC. has a complete modern machine shop that specializes in custom design products, such as rotary heads, swivels, side feed and conventional, for air, water, or mud

drilling. Computer-aided design and drafting are also used in the design and detail of all products.

Our custom-designed and manufactured top head drives used with hydraulically operated drilling rigs develop torque up to 15,000 ft. lbs. Swivels can be furnished with either high-pressure or low-pressure packing and different packing compounds.

We design and manufacture custom swivels, drill pipe, and tool joints for water and seismic drilling. A patented breakout system requiring no tongs or wrenches can be included. The breakout system can be either manual or automatic in operation.

SELECTING A SWIVEL

Before purchasing, careful consideration should be given to the type and size of a swivel to insure the correct loads, shock loads, and bearing capacity, which will increase the longevity of each swivel.

MAINTENANCE AND REPAIR

North Houston Machine, Inc. offers an extensive service department to repair or rebuild our products. We have original OEM parts manufactured at our plant for a factory-reconditioned unit. As with all our units, we strongly suggest a scheduled maintenance program be followed to insure the maximum performance and life of our units. If a unit is in need of repair, please contact a representative for the proper procedure to return the unit or for NHM, Inc. to send repair parts.

LIMITED WARRANTY

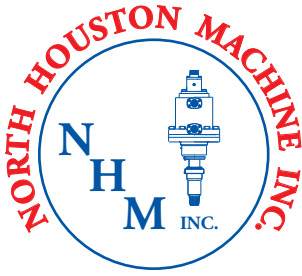
Every reasonable effort is made to guard against a defective material or workmanship entering into the manufacture of products by **N.H.M., Inc.** However in the event of failure or defective part within one year of purchase, our entire liability is limited to the value or replacement of such defective part within that period. **N.H.M., Inc.** expressly disclaims liability for incidental or consequential damages. Any modification to the manufactured products voids any expressed warranty and, **N.H.M., Inc.** will not be responsible for bodily injury, loss of life, or property damage if such should occur in connection with the use of its products. No warranty is given on parts that are normally subject to rapid wear, such as packing, wash pipes, wear bushing, stripper rubbers, springs, bearings, etc. Seller's total responsibility for any claims, damages, losses, or liabilities arising out of, or related to, all products covered there under shall not exceed the purchase price of the products.



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FOR DRILL PIPE AND CUSTOM UNITS, PLEASE
CONSULT MANUFACTURING IN TOMBALL, TEXAS.

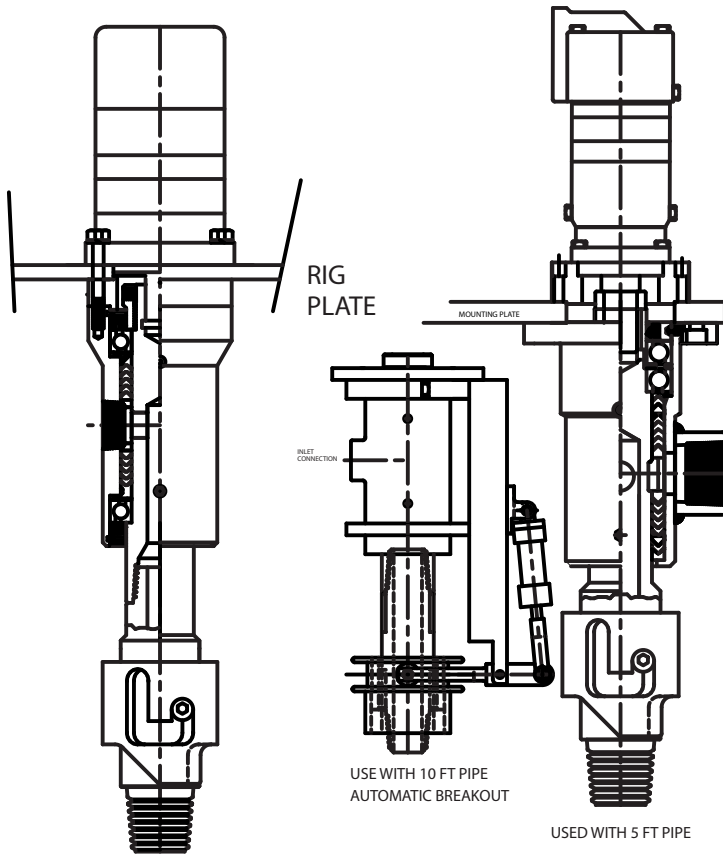


EXPERIENCE PERFOR

THE TOP HEAD DRIVES ILLUSTRATED HAVE NUMEROUS MOTORS THAT CAN BE USED DEPENDING UPON THE TORQUE AND SPEEDS REQUIRED.

EACH HYDRAULIC MOTOR IS DIFFERENT IN DISPLACEMENT, WHICH GOVERNS THE TORQUES AND SPEEDS AND HAS TO BE SIZED TO THE DESIRED REQUIREMENTS.

2000 CHAR LYNN HYDRAULIC MOTOR



MODEL 200 ROTARY HEAD WITH MANUAL BREAKOUT HYDRAULIC MOTOR

MARK I-II-III

MARK I Rotary Head Data:

PULLDOWN CAPACITY:	4,800 LBS
PULLBACK CAPACITY:	4,800 LBS
WATERCOURSE STANDARD	1 3/16"
WORKING PRESSURE	750 P.S.I.

MARK II Rotary Head Data:

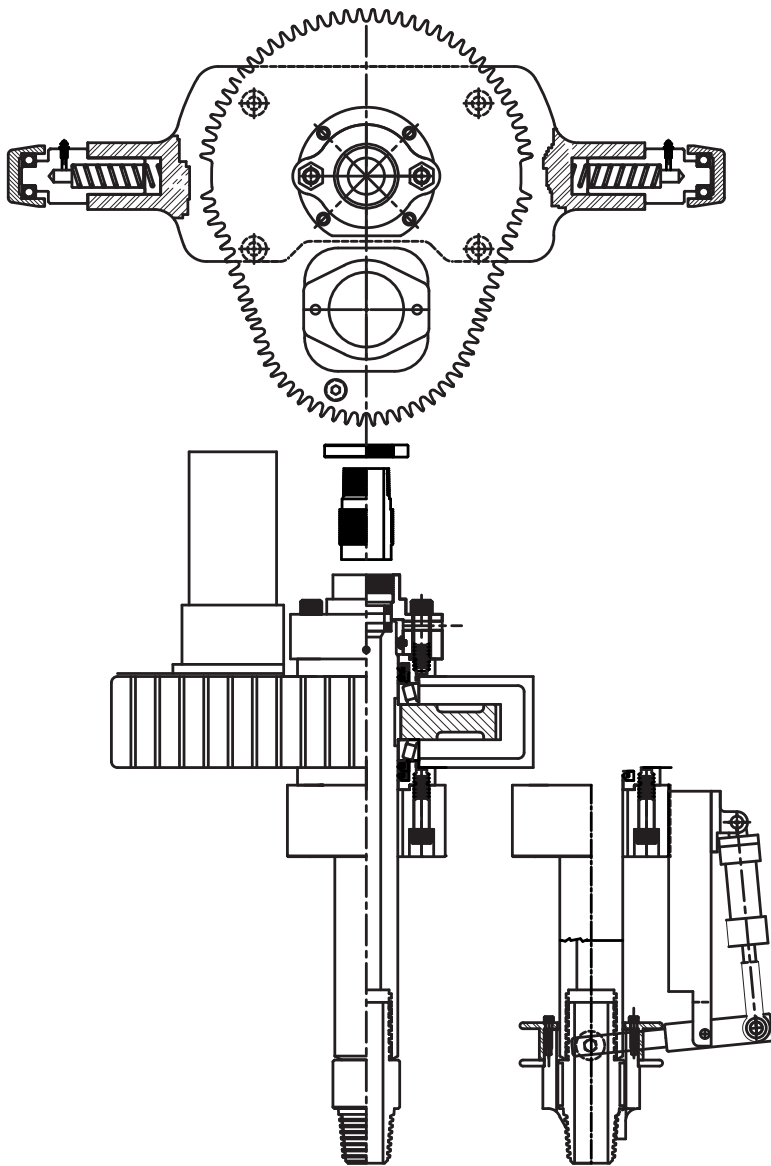
PULLDOWN CAPACITY:	5,872 LBS
PULLBACK CAPACITY:	5,872 LBS
WATERCOURSE STANDARD	1 3/16 I.D.
WORKING PRESSURE	750 P.S.I.

MARK III Rotary Head Data:

PULLDOWN CAPACITY:	5,873 LBS.
PULLBACK CAPACITY:	9,513 LBS.
WATERCOURSE STANDARD	1 3/16 I.D.
WORKING PRESSURE	750 P.S.I.

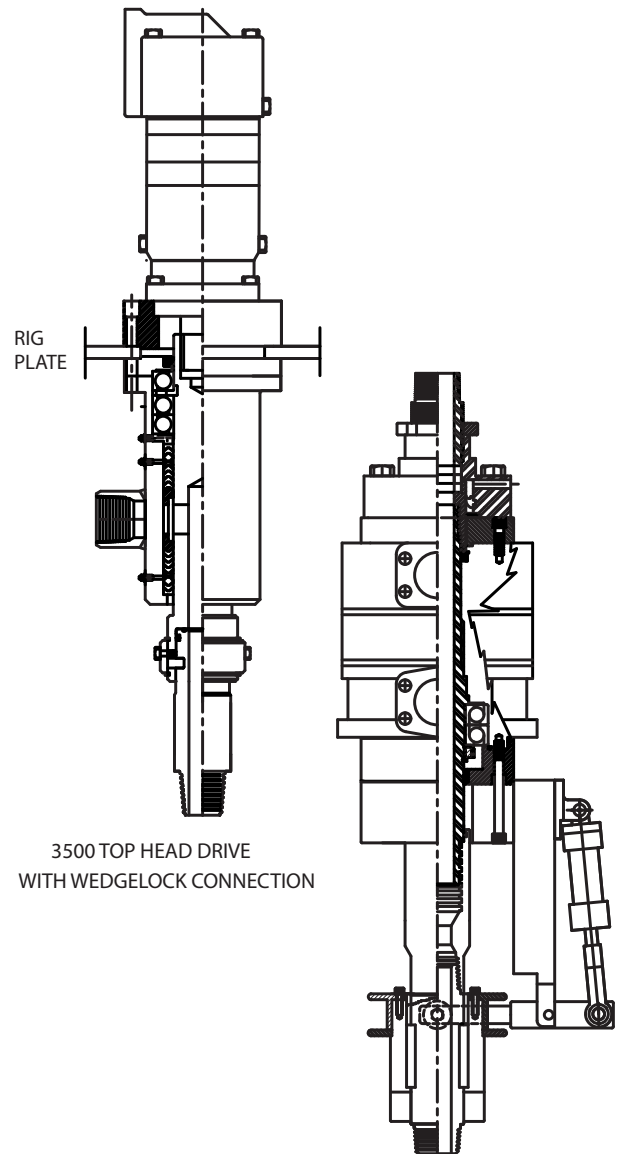
MANANCE

1,500NHM TOP HEAD DRIVE



SIMPLIFIED DESIGN TO ADAPT TO SMALL HYDRAULIC RIGS,
OFFERS AN ECONOMICAL WAY TO INSTALL A TOP HEAD DRIVE

10,000 CHAR LYNN HYDRAULIC MOTOR



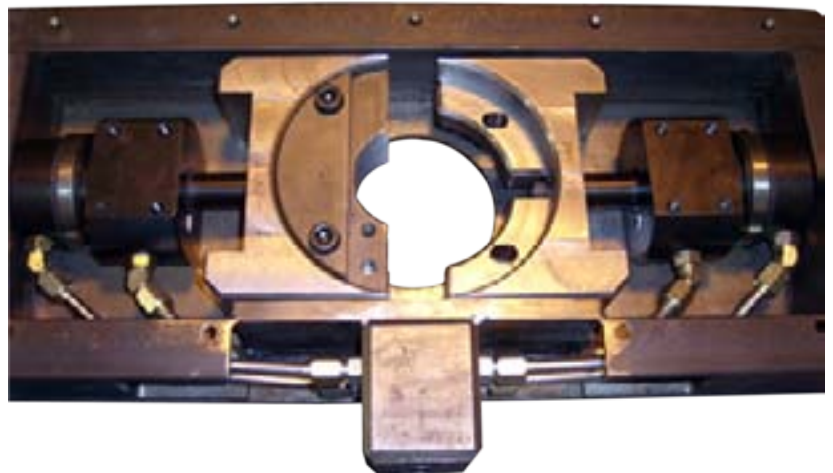
3500 TOP HEAD DRIVE
WITH WEDGELOCK CONNECTION

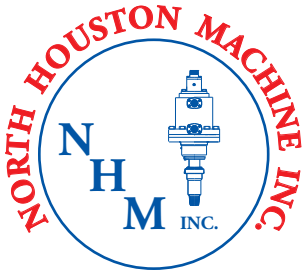
MODEL 4000 HYDRAULIC
WITH AUTO BREAKOUT

NOTE:

WEDGELOCK CONNECTIONS COVERED BY N.H.M.,
INC. U.S. PATENT NO. 5,409,324 AND 5,588,772
AND PATENT PENDING.

BREAK OUT TOOLS

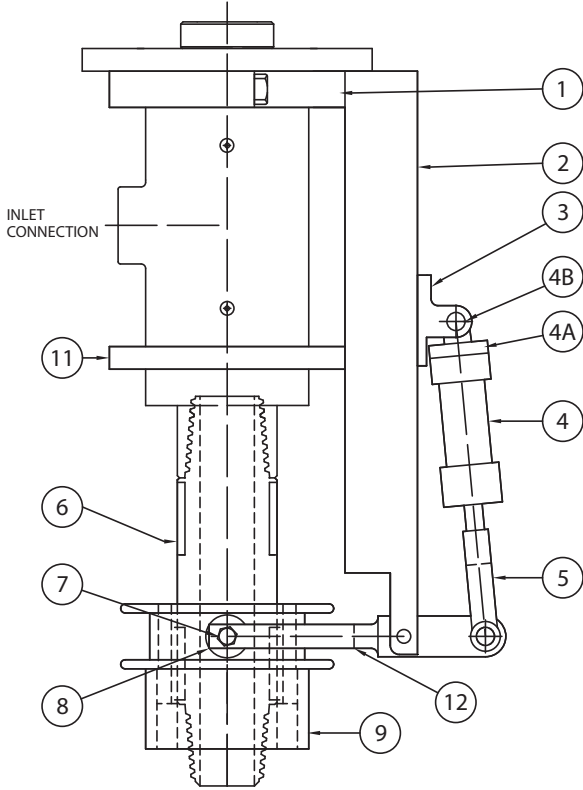




AUTOMATIC BREAKOUT SYSTEM

AUTOMATIC LUG PIPE BREAKOUT SYSTEM

AUTOMATIC BREAKOUT UNIT CAN BE ADAPTED TO ANY TYPE OF TOP HEAD DRIVE UNIT. ILLUSTRATED IS THE 2000 SERIES TOP HEAD DRIVE.



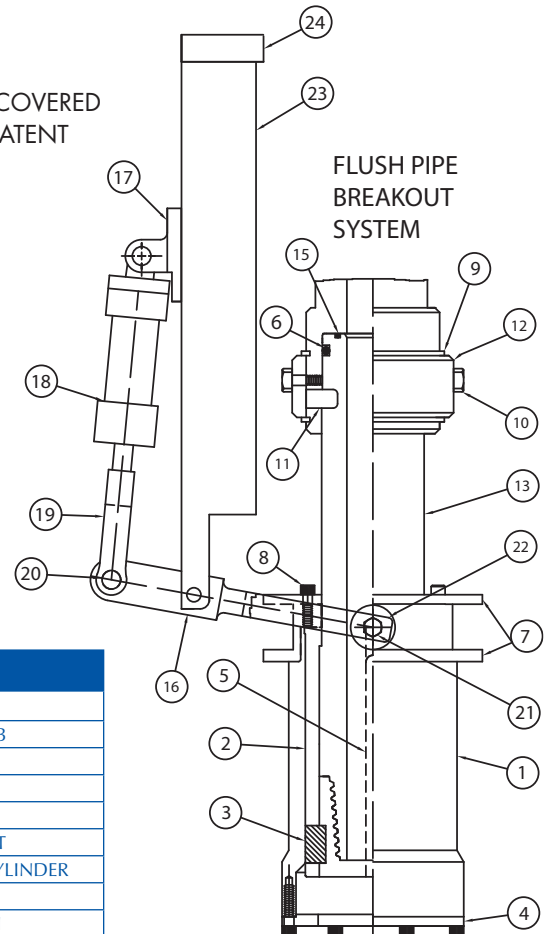
PART LIST FOR AUTO BREAKOUT SYSTEM			
ITEM	PART NO.	QTY	DESCRIPTION
1	200-016	1	MOUNTING CLAMP
2	700-2000-1	1	ARM
3	114-724	1	PIVOT BRACKET
4	700-10	1	CYLINDER
4A	700-10A	1	PIVOT MOUNT BRACKET
4B	700-724	1	RETAINING PIN
5	700-6	1	CLEVIS
6	700-A-23A	1	AUTO B.O. SUB
7	700-A-3	2	BEARING RETAINER BOLT
8	700-9	2	BEARING
9	700-A-2	1	CAP ASSEMBLY
10	700-A-4	1	BARREL ASSEMBLY
11	200-016A	1	BARREL SUPPORT RING
12	700-A-5	1	SHIFT YOKE

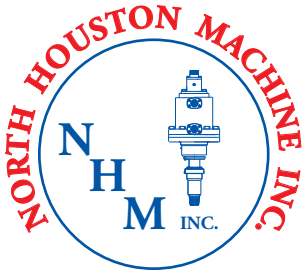
AUTOMATIC BREAKOUT COVERED BY N.H.M., INC. U.S.A. PATENT NO. 54,409,324.

AUTOMATIC FLUSH PIPE BREAKOUT SYSTEM

THE UNIT CAN BE EITHER HYDRAULIC OR AIR-OPERATED. NORMALLY THE UNIT IS OPERATED BY THE BACKUP PRESSURE OF THE HYDRAULIC RETURN LINE.

PART LIST FOR AUTO BREAKOUT SYSTEM							
ITEM	PART NO.	QTY	DESCRIPTION	ITEM	PART NO.	QTY	DESCRIPTION
1	117-704A	1	OUTER BARREL	13	117-723	1	BREAKOUT SUB
2	117-704B	1	INNER SLEEVE	14	117-001	1	STEM
3	117-706	1	BREAK OUT KEYS	15	117-225	1	O-RING SEAL
4	117-705	1	END CAP	16	700-A-5	1	YOKE
5		1	KEYS	17	114-724A	1	PIVOT BRACKET
6	117-332	1	O-RING	18	700-10	1	HYDRAULIC CYLINDER
7	700-A-2	1	CAP ASSEMBLY	19	700-6	1	CLEVIS
8	SHCS4-8	16	S.H.C.S. SCREW	20	700-724	2	RETAINING PIN
9	117-362	2	SNAP RING	21	700-A-3	2	BEARING RETAINER BOLT
10	HHCS4-6	2	HHCS CAP SCREW	22	700-9	1	BEARING
11	117-706	2	DRIVE KEY	23	700-3500	1	ARM
12	117-001R	2	RETAINER RING	24	117-045	1	MOUNTING BRACKET





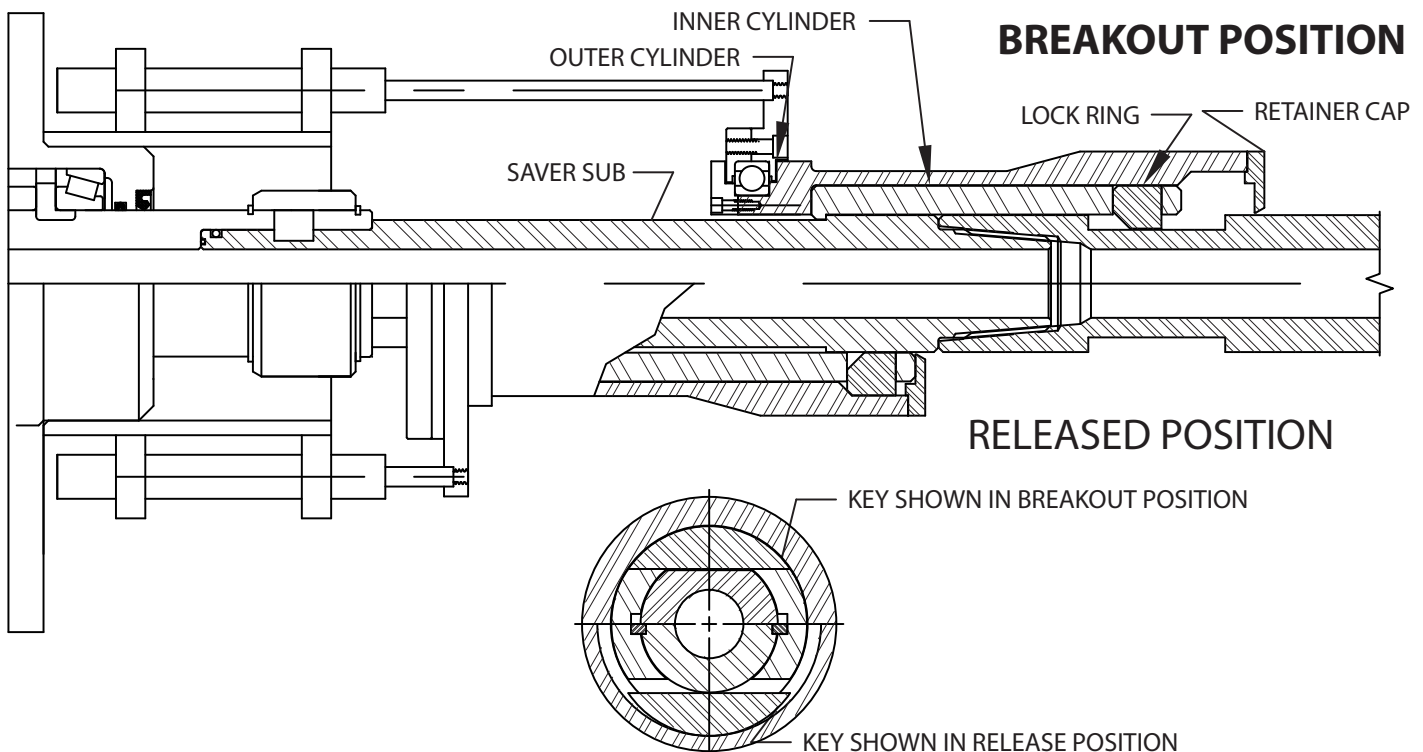
AUTOMATIC BREAK OUT UNIT FOR FLUSH DRILL PIPE

OPERATING INSTRUCTIONS

The North Houston Machine Automatic Break Out for Flush Drill Pipe is used when the desired depth has been reached in the drilling of a well to provide a backup when breaking out the drill pipe without the use of wrenches.

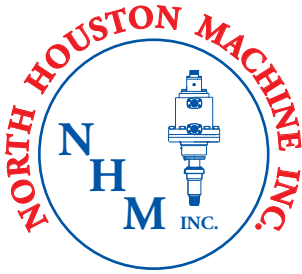
The Automatic Break Out (ABO) Unit operates in the following sequence:

1. Once the desired depth has been reached, pick up and set the slips on the first joint.
2. Break out this connection, but do not spin fully out of the connection.
3. Activate the ABO Unit allowing the Backoff Barrel to lower.
4. Begin slow rotation to the right; this will allow the Lock Ring to align with the flats and the Backoff Barrel will drop.
5. Pull up to the next joint, set the slips, and break and spin out first joint.
6. Lower the drill pipe to the stand or floor, release the ABO Unit, and spin out the first joint.
7. Lower head to make up the next joint.
8. Spin into this connection, but do not torque up connection.
9. Activate the ABO Unit and repeat Steps 2–9.



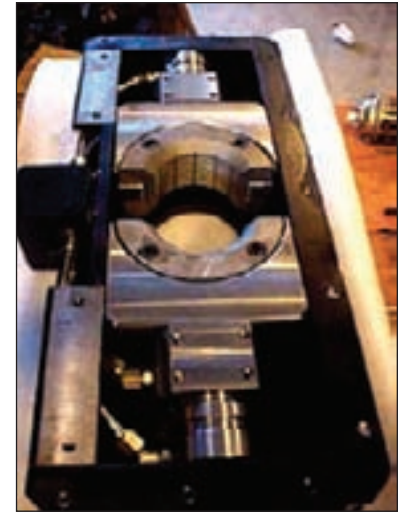
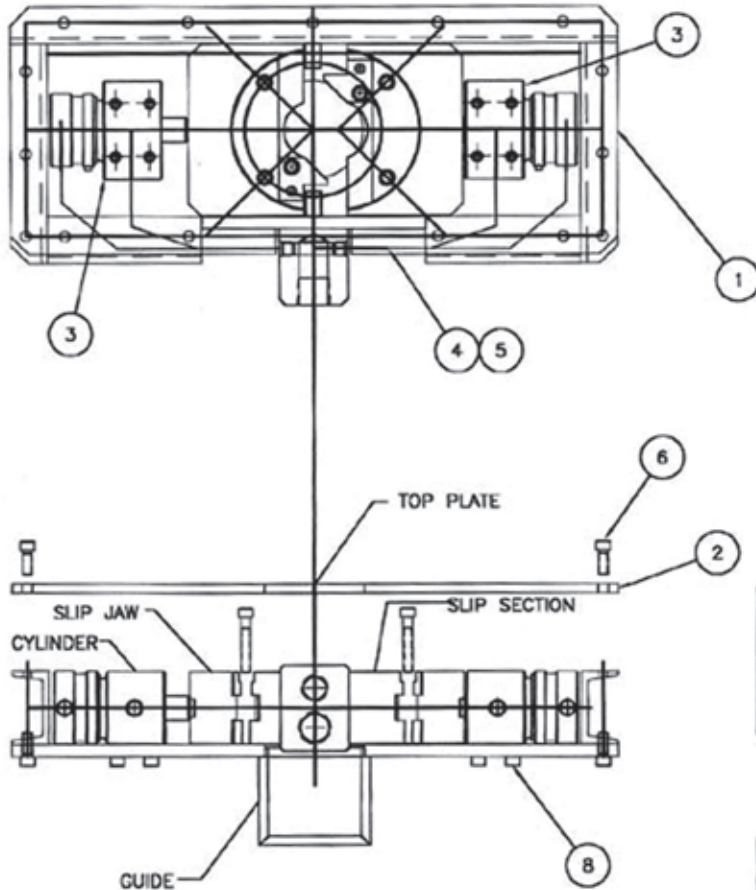
NOTE: WEDGELock CONNECTIONS COVERED BY N.H.M., INC. US AND FOREIGN PATENT NUMBERS AS LISTED BELOW:

5,409,324	5,588,772
187552	P94100AU



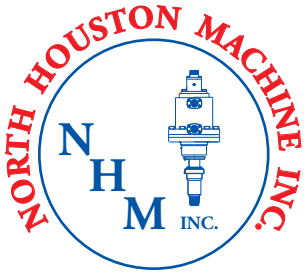
AUTO SLIPS

NORTH HOUSTON MACHINE, INC. DEVELOPS AN AUTOMATIC SLIP FOR HOLDING ANY SIZE PIPE UP TO 4" AND DOWN TO 3/4"



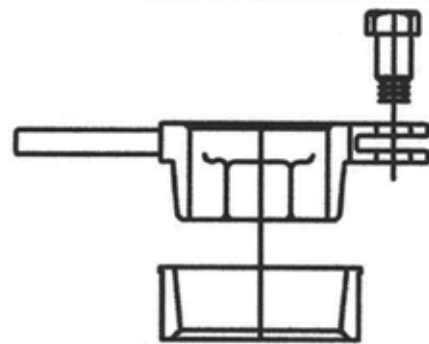
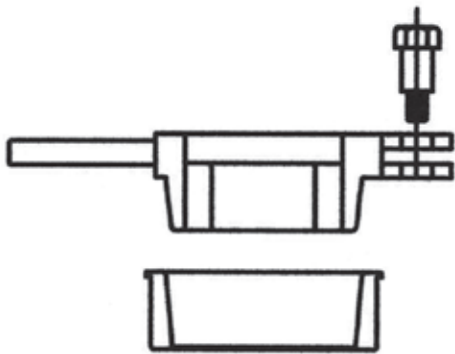
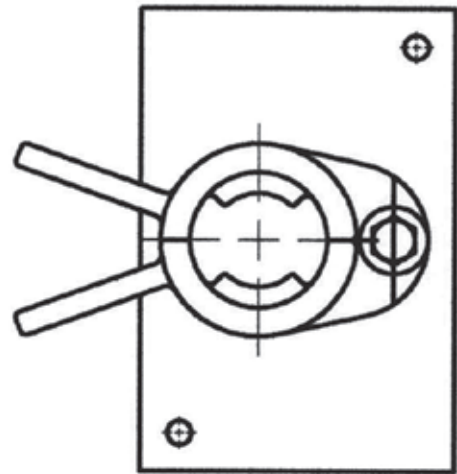
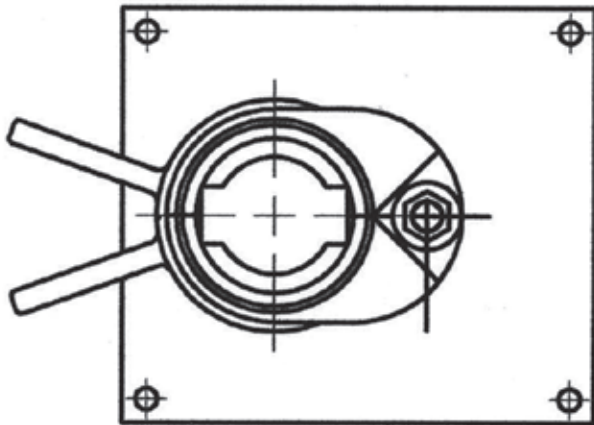
PARTS LIST FOR AUTOSLIP BASE

ITEM	DESCRIPTION	QTY	PART NUMBER
1	SLIP CASE ASSEMBLY	1	704-300
2	TOP PLATE	1	704-305
3	HYDRAULIC CYLINDER	2	704-200
4	HYDRAULIC LINE – EXTEND	2	704-311
5	HYDRAULIC LINE – RETRACT	2	704-312
6	SOCKET HEAD CAPSCREW – 3/8–24NF X 1.00 LONG	30	
7	SLIP JAW CARRIER	2	704-101
8	SOCKET HEAD CAPSCREW – 3/8–15NC X 2.25 LONG	4	
9	SLIPS FOR 3–1/2" AUGER	2	704-103
10	SLIPS FOR 2–3/8" PIPE	2	704-102
11	2–3/8 GUIDE PLATE	2	704-104
12	SOCKET HEAD CAPSCREW – 3/8–15NC X 1.00	2	
13	3/8" ROLL PIN X 3/4" LONG	2	



SLIPS FOR BREAKOUT FOR LUGGED DRILL PIPE OR CASING

LOCKING TYPE SLIPS USED FOR AUTOMATIC BREAKOUT ON PIPE WITH LUGS



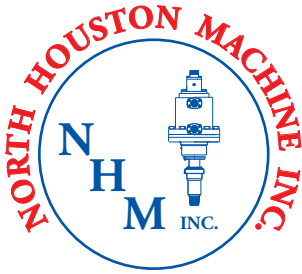
3" CASING SLIPS WITH BREAKOUT FLATS FOR LUGS

1-1/2" AND 2" PIPE SLIPS WITH BREAKOUT FLATS FOR LUGS



SIDE INLET

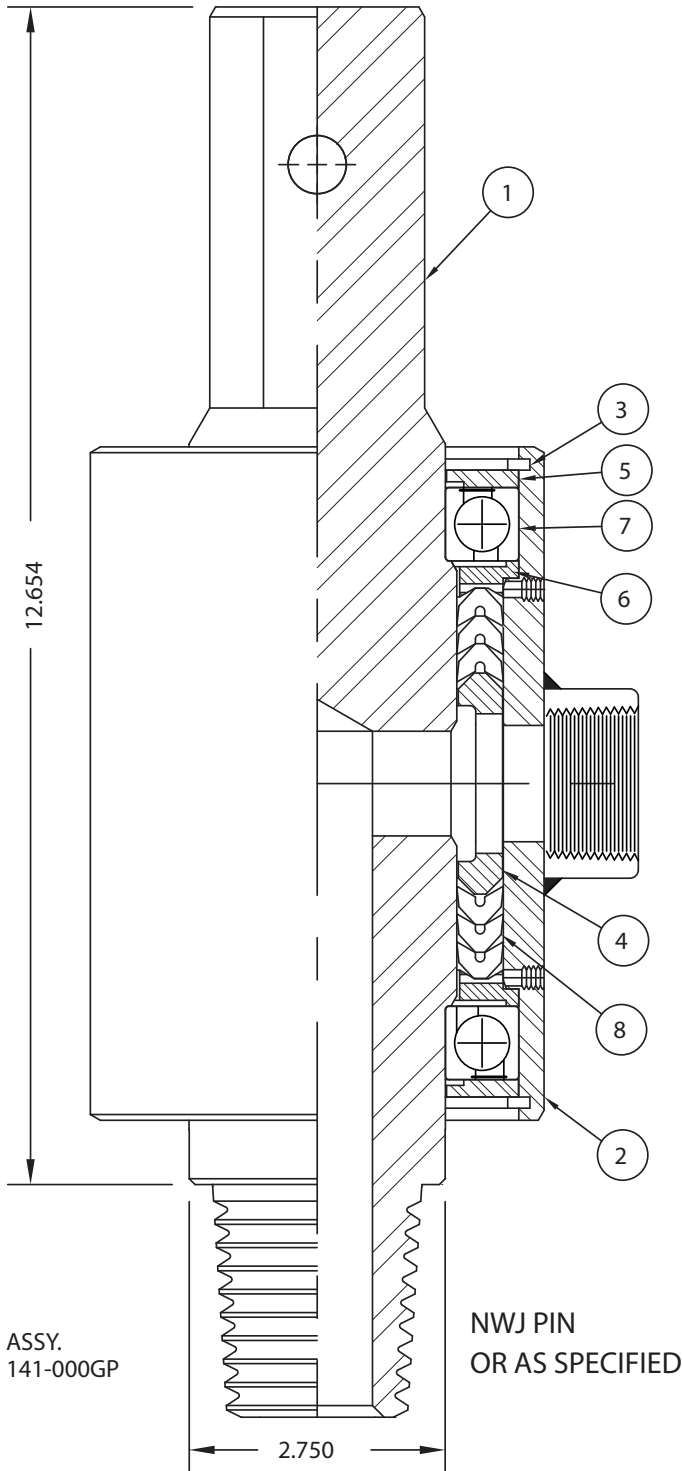




MODEL 250 INLINE SWIVEL

SIMPLIFIED DESIGN TO REDUCE COST AND HAS AN IMPROVED DESIGN SIDE INLET SWIVEL

LIGHTWEIGHT INLINE SWIVEL WITH BEARINGS AT EITHER END FOR ALIGNMENT



DESIGNED FOR:

- WATER OR MUD DRILLING
- AIR DRILLING
- AUGER DRILLING
- HEAT PUMP DRILLING
- SOIL SAMPLING
- MONITOR WELL DRILLING
- SHOT HOLES
- TEST HOLES
- WATER WELLS

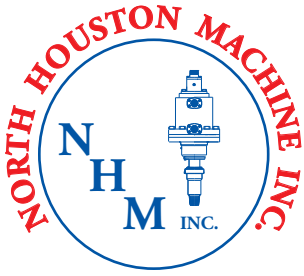
SPECIFICATIONS

- NW ROD BOX CONNECTION
- 2 OR 1-5/8 HEX TOP
- 1-3/8 WATERCOURSE
- 1-1/4 NPT INLET

PART LIST FOR 250-IL			
ITEM	PART NO.	QTY	DESCRIPTION
1	141-001	1	SPINDLE
2	141-002	1	SWIVEL HOUSING
3	141-433	2	SNAP RING
4	141-004	1	FLOW TUBE
5	141-005	2	SEAL BACKUP RING
6	141-006	1	PACKING BACKUP RING
7	141-6014	2	BEARING
8	141-020	6	PACKING RING

WEIGHT 40 LBS

ALL PARTS MADE IN U.S.A.



MODEL 300 INLINE SWIVEL WITH SIDE INLET

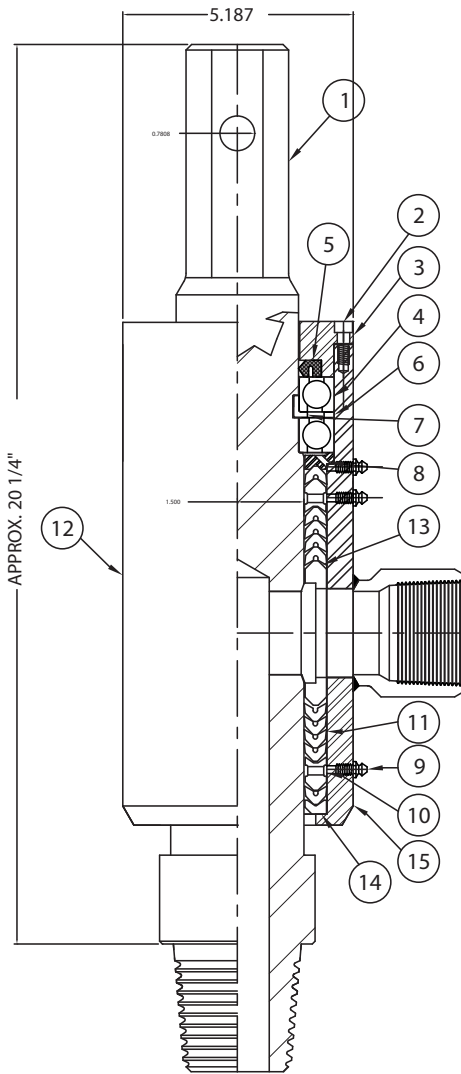
THE 300 INLINE SWIVEL IS A SIMPLIFIED DESIGN THAT HAS ELIMINATED SHAFT RUNOUT, EXTENDING THE PACKING LIFE AND MAKING REPACKING EASIER WITH THE ADVANTAGES OF LESS DOWN TIME AND A LOWER COST.

DESIGNED FOR:

- AUGER DRILLING
- HEAT PUMP DRILLING
- SOIL SAMPLING
- MONITOR WELL DRILLING
- SHOT HOLES
- TEST HOLES
- WATER WELLS

2" NPT
1-1/2 WATER, AIR, AND MUD

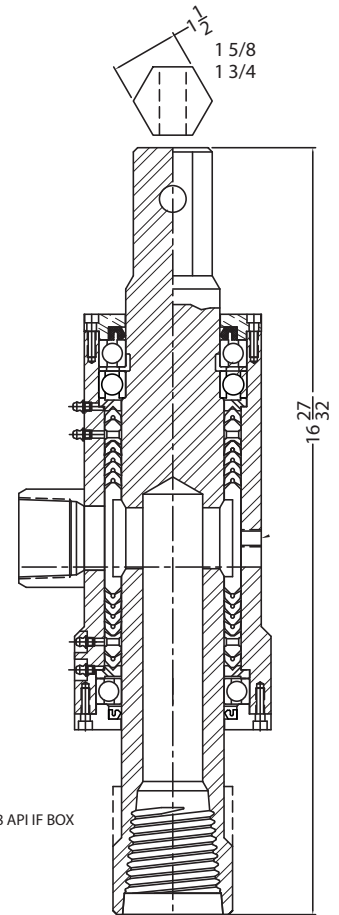
DRILLING HIGH PRESSURE
CHEVRON PACKING



APPROX. 20 1/4"

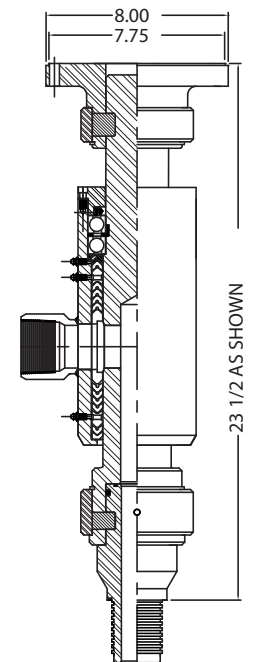
NOTE:

WEDGELOCK CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND PATENT PENDING



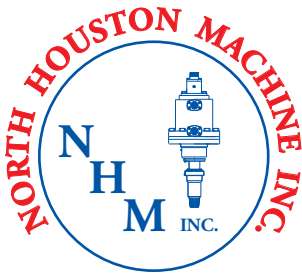
2-3/8 API IF BOX

DOUBLE BEARING TYPE



2-3/4 WEDGELOCK X
ANY TOOL JOINT CONNECTION

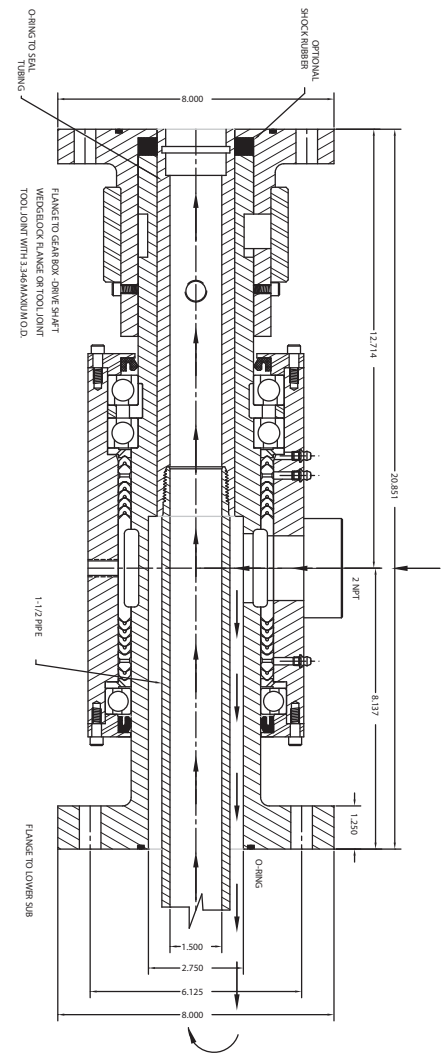
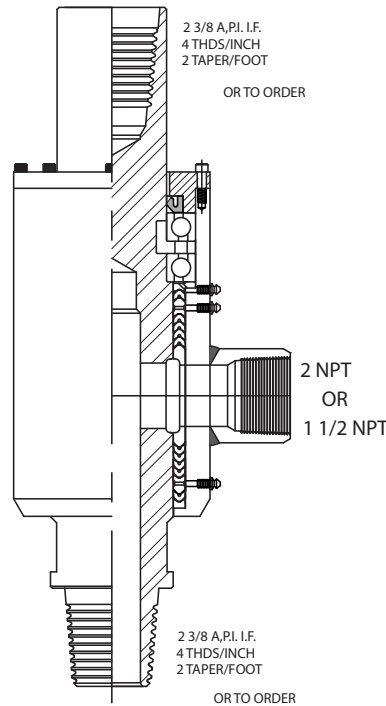
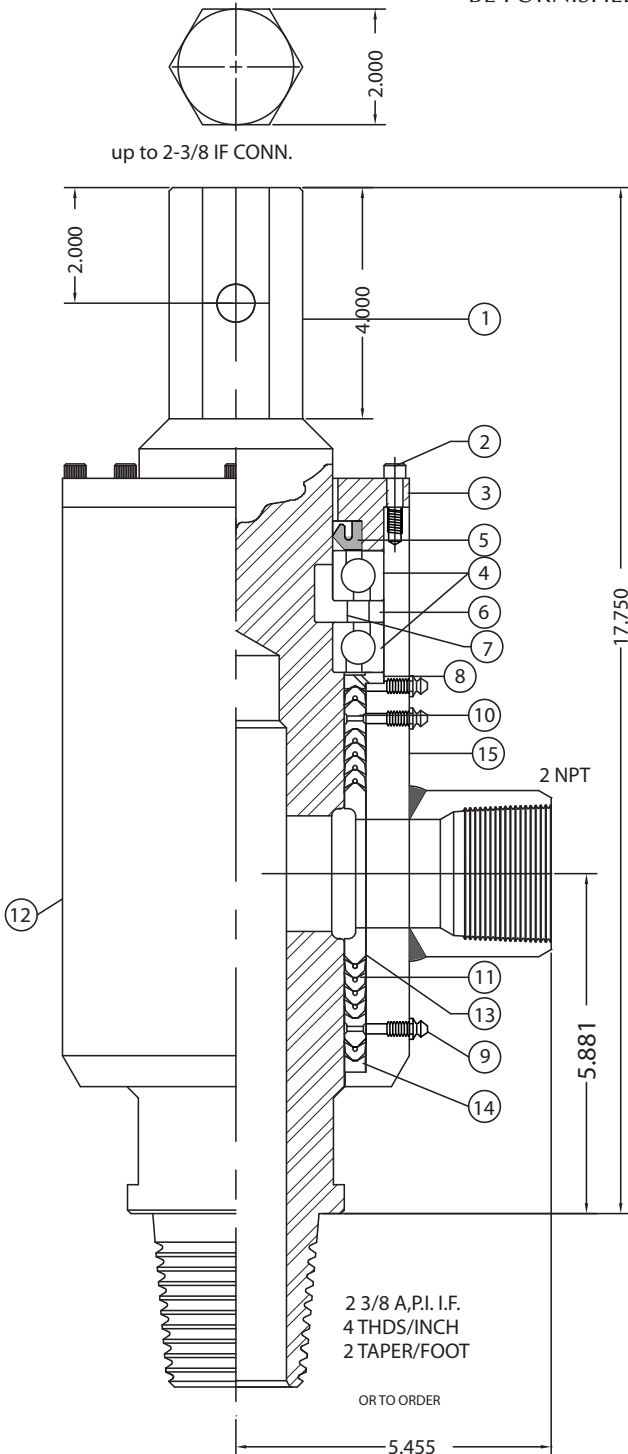
PART LIST FOR 300-IL			
ITEM	PART NO.	QTY	DESCRIPTION
1	112-001	1	SPINDLE
2	112-002	6	CAP SCREW
3	112-003	1	RETAINER CAP
4	112-004	2	BEARING
5	112-005	1	GREASE SEAL
6	112-006	1	BEARING SPACER
7	112-007	1	BEARING RETAINER
8	112-008	1	BACKUP RING
9	112-009	2	GREASE FITTING
10	112-010	2	GREASE RING
11	112-011	10	PACKING RING
12	112-012	1	FLOW TUBE RETAINER
13	112-013	1	FLOW TUBE
14	112-014	1	LOWER ALIGNMENT RING
15	112-015	1	SWIVEL HOUSING



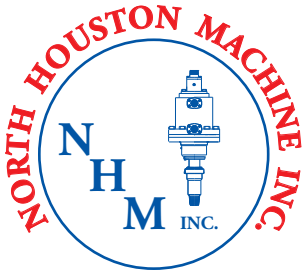
MARK IV-SI SIDE INLET

THIS IS A MEDIUM-SIZE SIDE INLET SWIVEL FOR WHICH IT IS NOT NECESSARY TO HAVE VERY LARGE SWIVELS WITH SMALL THREADS.

UPPER CONNECTIONS ARE LIMITED IN SIZES NO LARGER THAN 2 3/8 API IF. ANY SMALLER THREAD OR HEX CAN BE FURNISHED.



MARK 4-SI SIDE INLET			
ITEM	PART NO.	QTY	DESCRIPTION
1	128-001C	1	SPINDLE
2	128-002C	6	1/4-20NC CAP SCREW
3	128-003C	1	END CAP
4	128-004C	2	6017 SKG BEARING
5	128-005C	1	NATIONAL OIL SEAL 228520
6	128-006C	1	SPACER RING
7	128-007C	1	BEARING RETAINER
8	128-008C	1	BACKUP RING
9	1/4-28GF	2	GREASE FITTING
10	128-010C	2	GREASE RING
11	128-020	10	PACKING SET
12	128-012C	1	RETAINER BOLT
13	128-013C	1	FLOW TUBE
14	128-014C	1	PACKING ADAPTER
15	128-015C	1	SWIVEL HOUSING



MARK V SIDE INLET SWIVEL

SIMPLIFIED DESIGN—ONE PIECE OUTER HOUSING TO ELIMINATE MISALIGNMENT, EXTENDING THE PACKING AND STEM LIFE.

DESCRIPTIVE DESIGN:

THE MARK V-SI SWIVELS WERE DESIGNED FOR APPLICATIONS ON TOP HEAD DRIVE RIGS TO MOUNT BELOW THE HYDRAULIC ASSEMBLY, PREVENTING FLUID CONTAMINATION OF THE HYDRAULIC FLUID CAUSED BY LEAKAGE IN CONVENTIONAL UNITS.

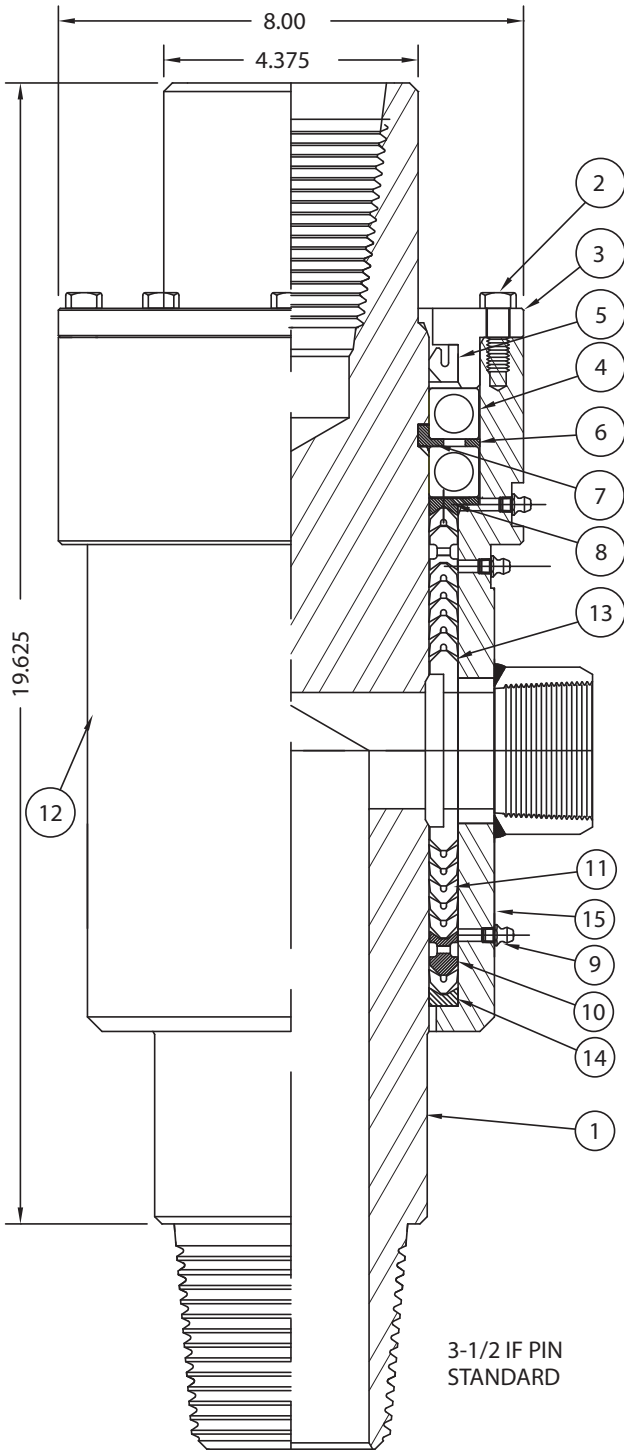
ALL COMPONENTS USED IN THE MANUFACTURE OF THE MARK V-SI SIDE INLET SWIVEL ARE OF HIGH-GRADE ALLOY STEEL WITH INDUCTIONED HARDENED WEAR AREAS TO EXTEND THE LIFE OF THE EXPENSIVE STEM.

THE MAIN FEATURE IS A RIGID MOUNTING OF THE BEARINGS, MOUNTED IN A ONE-PIECE HOUSING, ELIMINATING RUNOUT, THUS EXTENDING THE PACKING AND STEM LIFE.

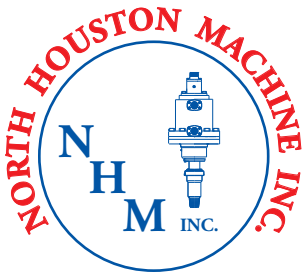
THE STRENGTH OF THE UNIT IS BASED UPON THE SIZE OF THE TOOL JOINT USED ON THE STEM, AS IT IS A ONE-PIECE DESIGN, AND OF HIGH-STRENGTH ALLOY STEEL.

SPECIFICATIONS

- SHOULDER-TO-SHOULDER LENGTH21"
- STANDARD TOP CONNECTION 3-1/2" API REG
- STANDARD LOWER CONNECTION 3-1/2" API IF
- STANDARD INLET CONNECTION2" NPT
- OPTIONAL INLET CONNECTION3" NPT



PART LIST FOR 300-IL			
ITEM	PART NO.	QTY	DESCRIPTION
1	112-001	1	SPINDLE
2	112-002	6	CAP SCREW
3	112-003	1	RETAINER CAP
4	112-004	2	BEARING
5	112-005	1	GREASE SEAL
6	112-006	1	BEARING SPACER
7	112-007	1	BEARING RETAINER
8	112-008	1	BACKUP RING
9	112-009	2	GREASE FITTING
10	112-010	2	GREASE RING
11	112-011	10	PACKING RING
12	112-012	1	FLOW TUBE RETAINER
13	112-013	1	FLOW TUBE
14	112-014	1	LOWER ALIGNMENT RING
15	112-015	1	SWIVEL HOUSING



MK-V FOR HORIZONTAL OPERATION

DOUBLE BEARING FOR HORIZONTAL OPERATION

THIS UNIT IS EQUIPPED WITH A LOWER BEARING THAT ALLOWS THE DRILLER TO DRILL HORIZONTALLY WITHOUT WEARING OUT THE BOTTOM PACKING.

SIMPLIFIED DESIGN – ONE-PIECE OUTER HOUSING TO ELIMINATE MISALIGNMENT, EXTENDING THE PACKING AND STEM LIFE.

DESCRIPTIVE DESIGN:

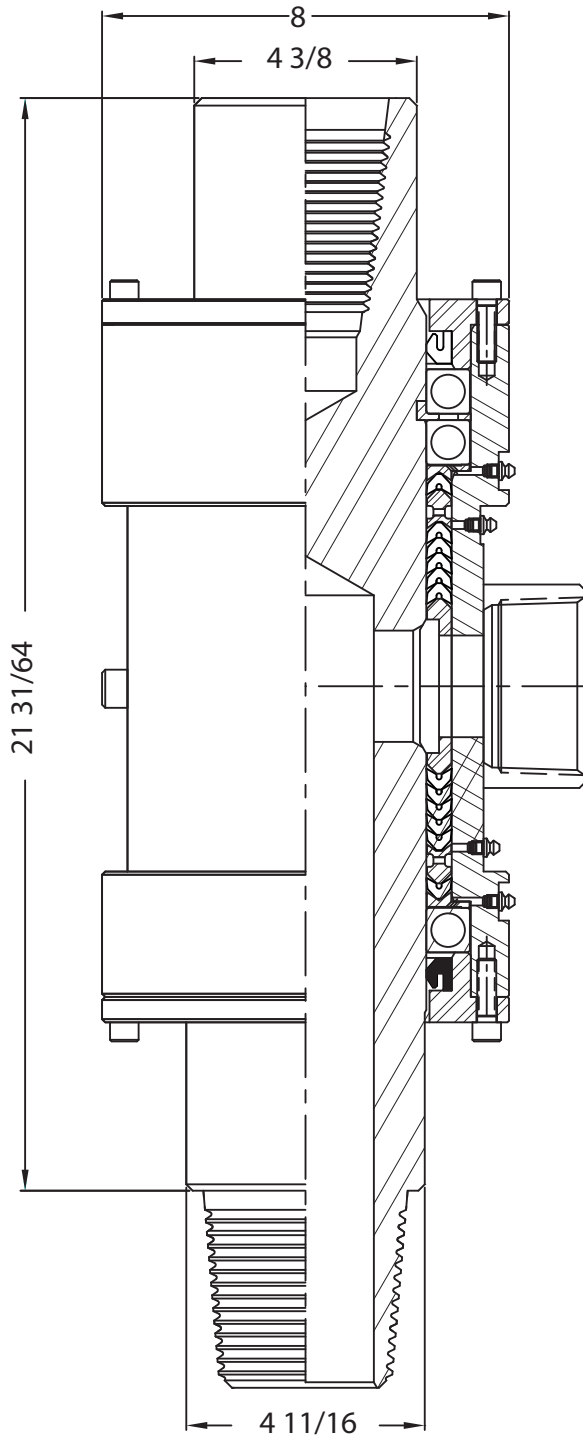
THE MARK V SIDE INLET SWIVELS WERE DESIGNED FOR MOUNTING BELOW THE TOP HEAD DRIVE TO PREVENT FLUID CONTAMINATION IN THE GEAR BOXES.

ALL COMPONENTS USED IN THE MANUFACTURE OF THE MARK V-SI SIDE INLET SWIVEL ARE OF HIGH-GRADE ALLOY STEEL WITH INDUCED HARDENED WEAR AREAS TO EXTEND THE LIFE OF THE EXPENSIVE STEM. THE MAIN FEATURE IS A RIGID MOUNTING OF THE BEARINGS, MOUNTED IN A ONE-PIECE HOUSING, ELIMINATING RUNOUT, THUS EXTENDING THE PACKING AND STEM LIFE. THE STRENGTH OF THE UNIT IS BASED ON THE SIZE OF THE TOOL JOINT USED ON THE STEM AS IT IS A ONE-PIECE DESIGN AND OF HIGH-STRENGTH ALLOY STEEL.

THIS UNIT IS EQUIPPED WITH A LOWER BEARING THAT ALLOWS THE DRILLER TO DRILL HORIZONTALLY.

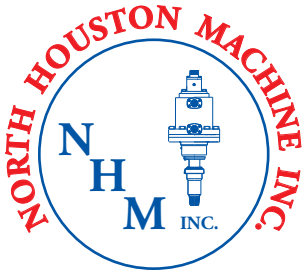
SPECIFICATIONS

SHOULDER-TO-SHOULDER LENGTH	21-1/2"
STANDARD UPPER CONNECTION	3-1/2" API REGULAR
STANDARD LOWER CONNECTION	3-1/2" API IF
STANDARD INLET CONNECTION	3" NPT
OPTIONAL INLET CONNECTION	2" OR 2 1/2" NPT



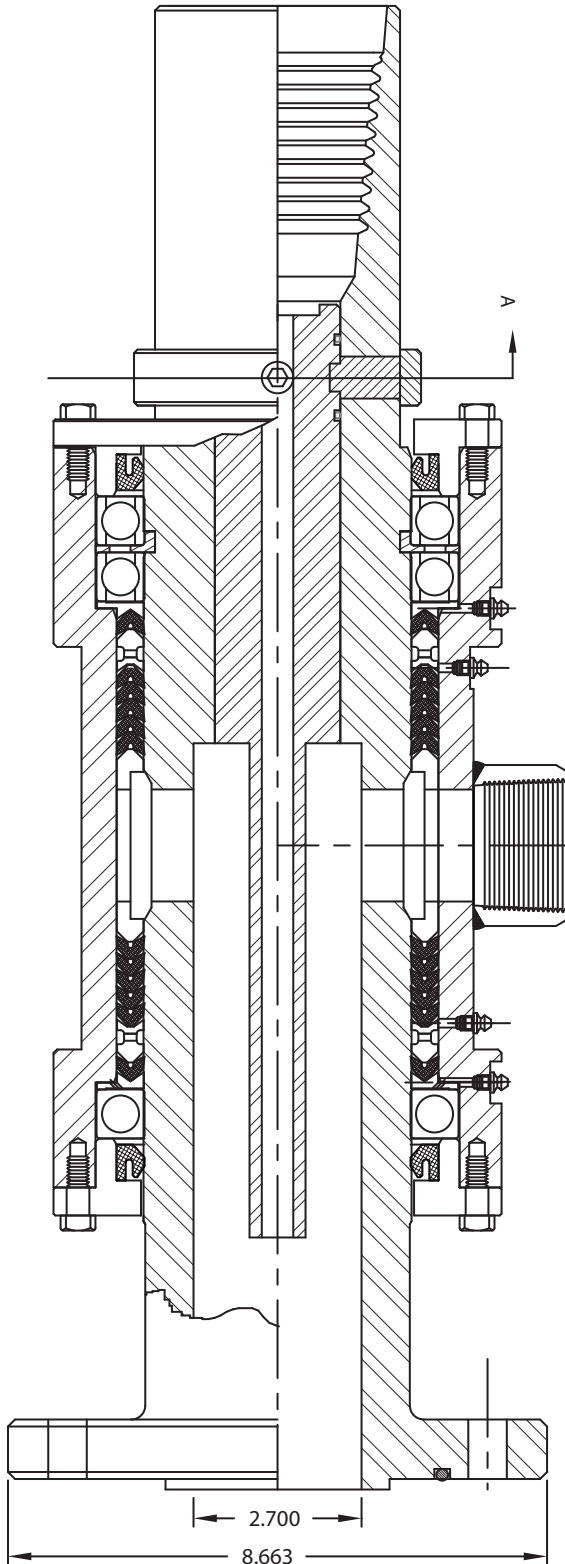
3" OR 4" NPT SIDE INLET

ALL PARTS MADE IN U.S.A.



REVERSE CIRCULATING SIDE INLET MKV-SI SWIVEL WITH INNER TUBE

AVAILABLE IN SIZES TO 8" I.D.



LARGE WATERCOURSE – 2-1/2" DIAMETER
FOR UPPER SECTION

UPPER SECTION

NON ADJUSTABLE CHEVRON PACKING

GREASE LUBRICATED

COMPACT DESIGN – EASILY REPAIRED

ONE-PIECE DESIGN ON THE SWIVEL HOUSING TO ELIMINATE
MISALIGNMENT, EXTENDING THE PACKING AND STEM LIFE.

INNER TUBE CAN BE CUSTOM MADE

SPECIFICATIONS

SHOULDER-TO-SHOULDER LENGTH	20-1/8"
STANDARD UPPER CONNECTION	3-1/2" API REGULAR
STANDARD INLET CONNECTION	2" NPT
OPTIONAL INLET CONNECTION	2" NPT
WEIGHT	189 LBS

AVAILABLE WITH OR WITHOUT INNER TUBE

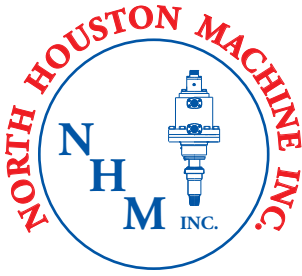
OPTIONAL INNER TUBE SIZE MAY VARY ACCORDING TO
CUSTOMER SPECIFICATIONS

NOTE:

WEDGELOCK CONNECTIONS COVERED BY N.H.M., INC. U.S.
AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND
P94100AU

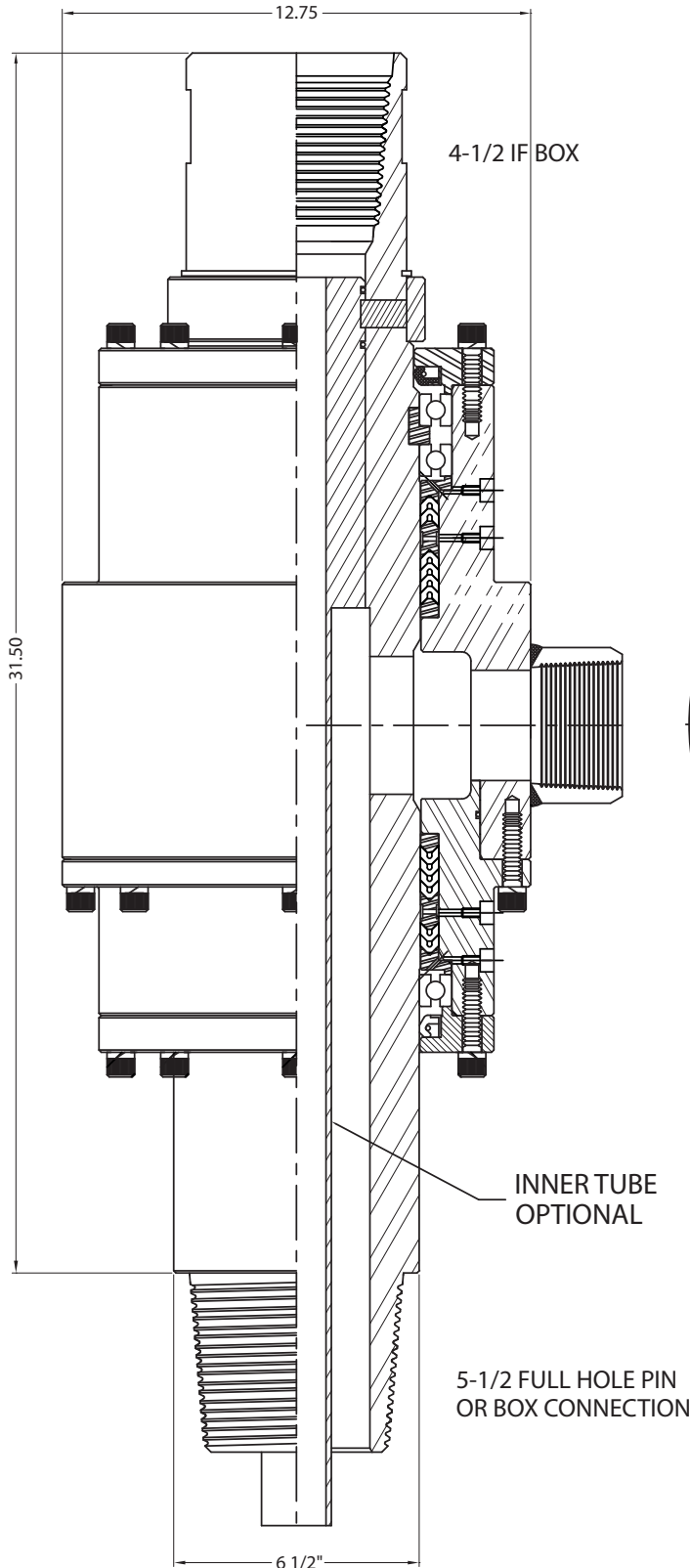
ANY LOWER CONNECTION STANDARD IS 3-1/2" I.F. R.H.

ALL PARTS MADE IN U.S.A.



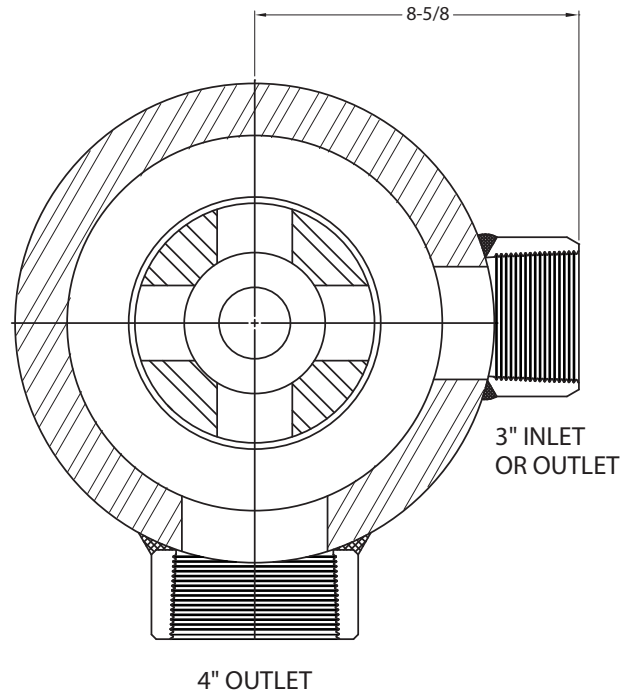
REVERSE CIRCULATING SWIVEL

SIDE INLET MODEL SI-400



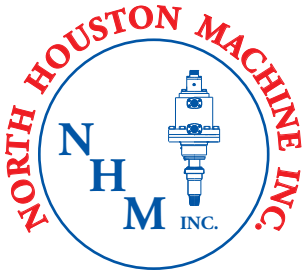
FEATURES IN BRIEF

1. LARGE CIRCULATING CHAMFER TO PREVENT CLOGGING
2. PILOTED FITS TO INSURE ALIGNMENT
3. CUSTOM MANUFACTURED TO MEET CUSTOMER REQUIREMENTS

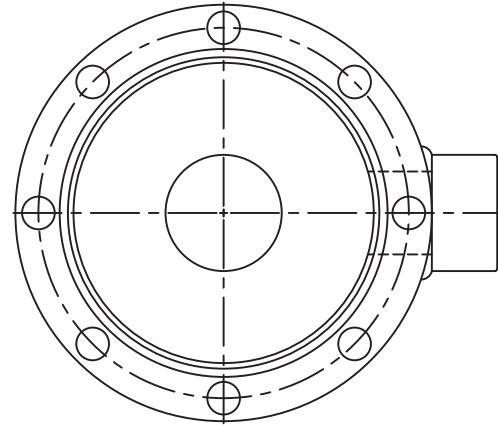
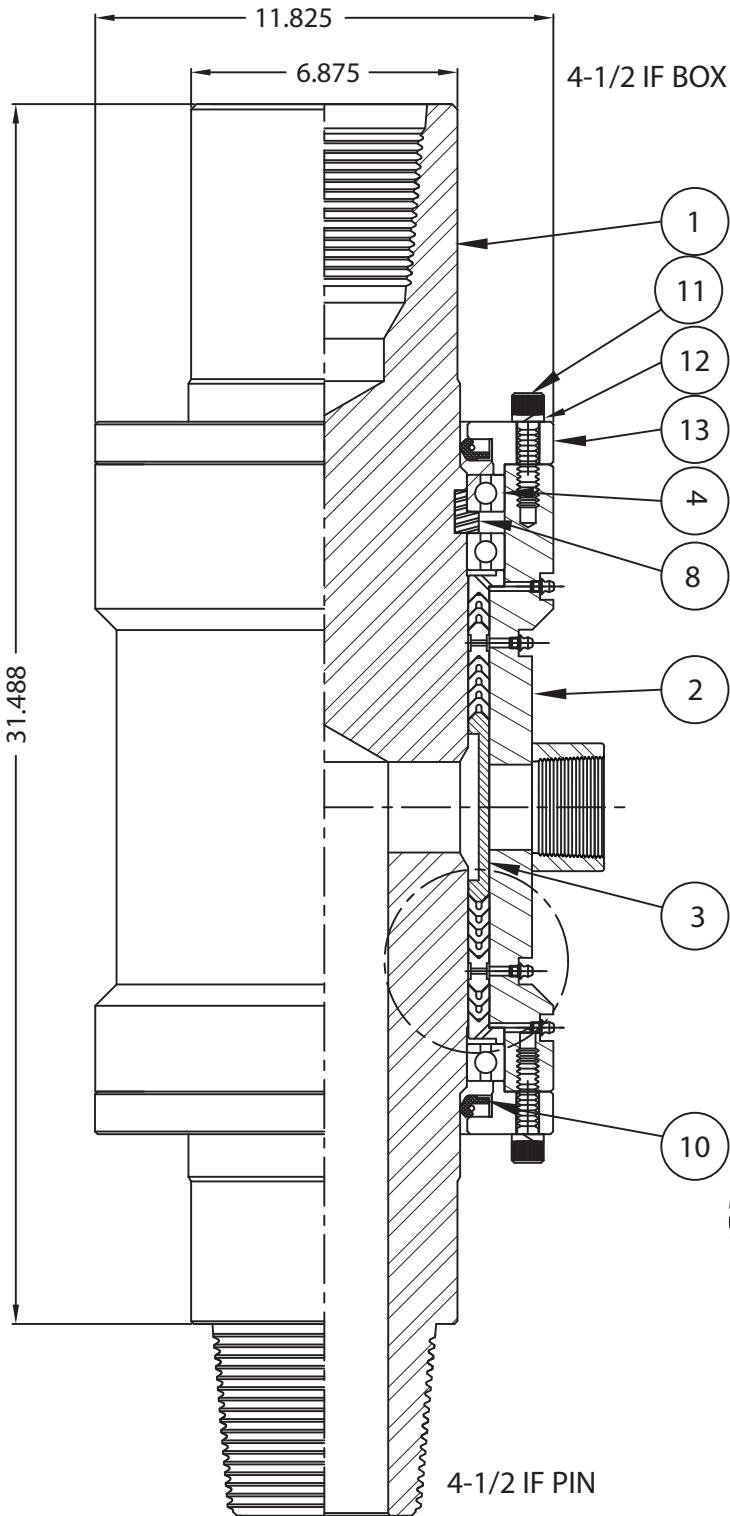


26.56 CU. IN. CIRCULATING SLOTS
 12.6 CU. IN. 4" CIRCULATING HOLE

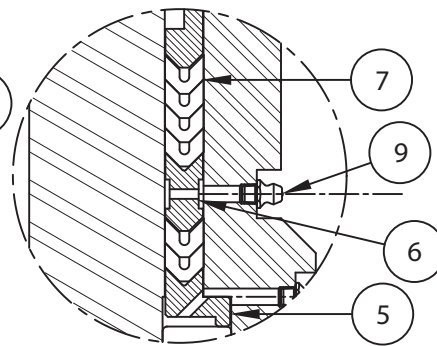
AVAILABLE WITH OR WITHOUT INNER TUBE



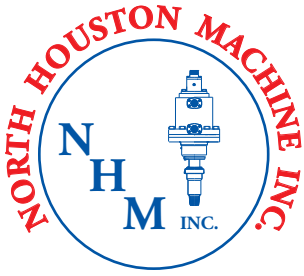
MK-VI SI SWIVEL



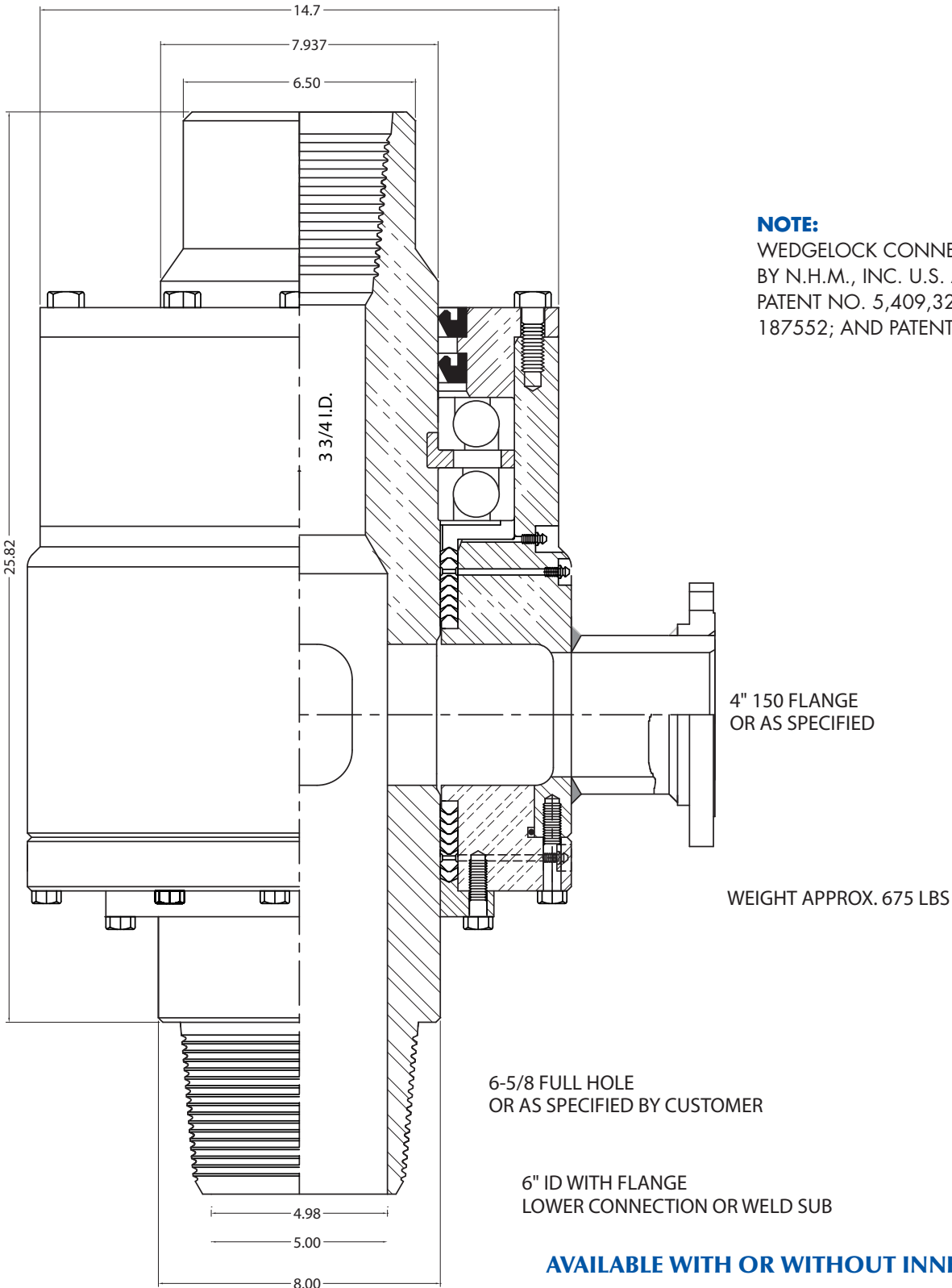
PART LIST FOR MK-6 SWIVEL			
ITEM	PART NO.	QTY	DESCRIPTION
1	600-001	1	SPINDLE
2	600-002	1	BEARING HOUSE
3	600-003	1	FLOW TUBE
4	115-61834	3	BEARING
5	115-005	2	PACKING BACKUP RING
6	115-006	2	GREASE RING
7	115-020	12	PACKING RING
8	115-008	1	BEARING RETAINER
9	105-009	4	GREASE FITTING
10	115-417563	2	GREASE SEAL
11	SHCS8-16	16	CAP SCREW
12	PART NO.	16	LOCKWASHER 1/2"
13	115-002	1	END CAP



Enlarged 2x



REVERSE CIRCULATING SWIVEL MK-600 SWIVEL



NOTE:
WEDGELock CONNECTIONS COVERED
BY N.H.M., INC. U.S. AND FOREIGN
PATENT NO. 5,409,324; 5,588,772;
187552; AND PATENT PENDING

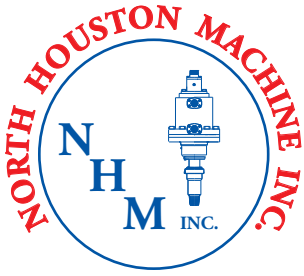
4" 150 FLANGE
OR AS SPECIFIED

WEIGHT APPROX. 675 LBS

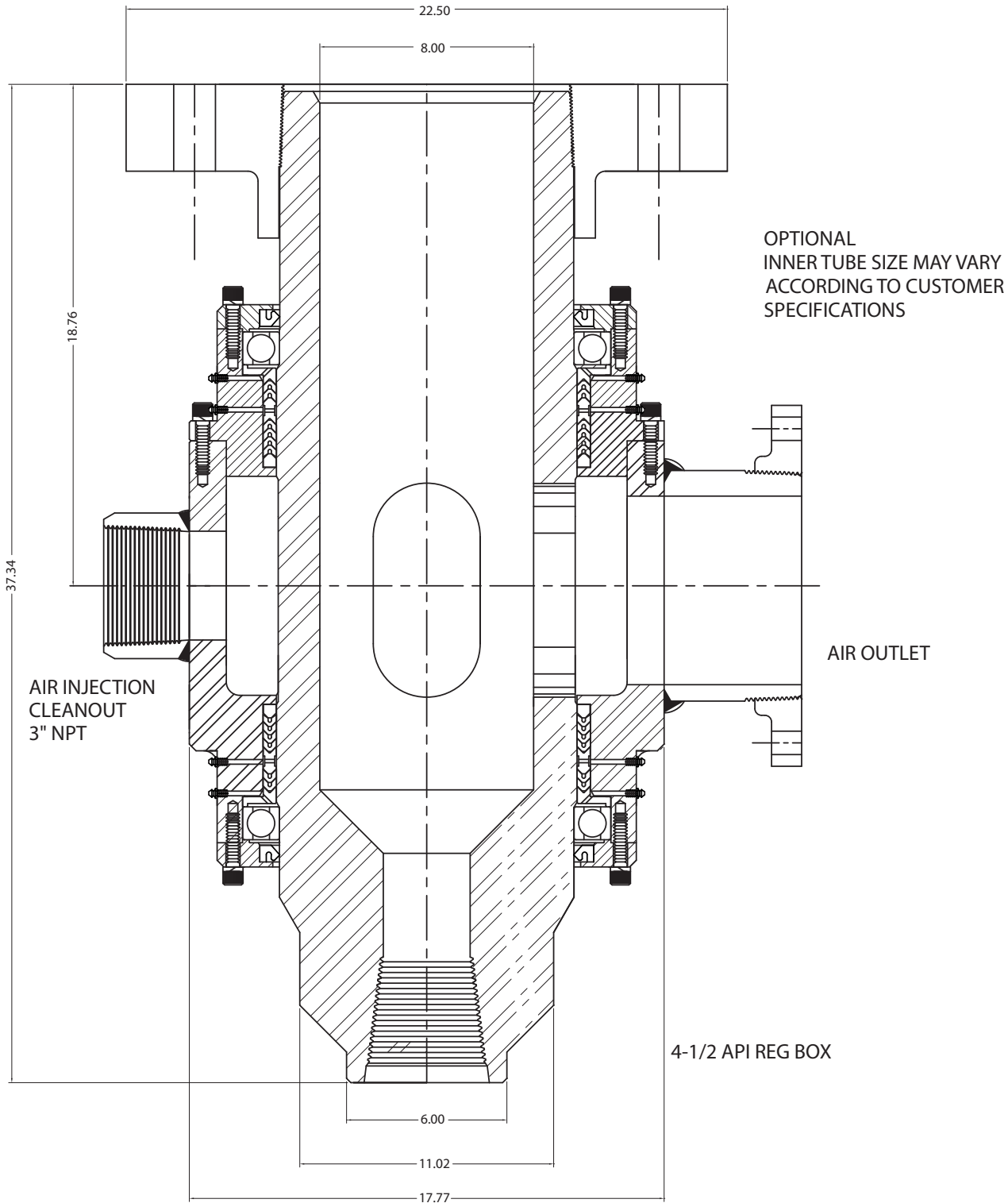
6-5/8 FULL HOLE
OR AS SPECIFIED BY CUSTOMER

6" ID WITH FLANGE
LOWER CONNECTION OR WELD SUB

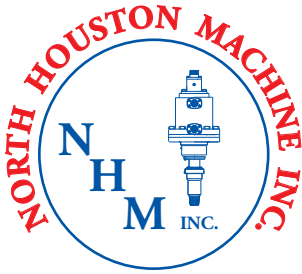
AVAILABLE WITH OR WITHOUT INNER TUBE



REVERSE CIRCULATING SIDE INLET MODEL SI-800



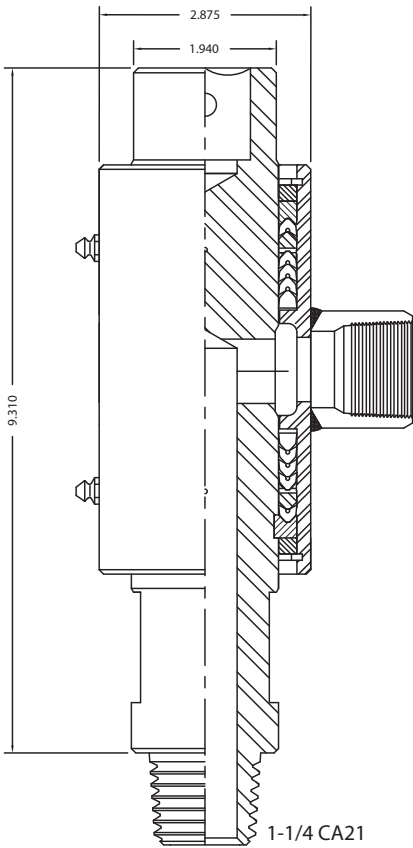
AVAILABLE WITH OR WITHOUT INNER TUBE



ECONOMY SWIVELS

M-30

THE ECONOMY SWIVEL



SIMPLIFIED DESIGN TO REDUCE COST AND HAVE AN IMPROVED DESIGN SIDE INLET SWIVEL.

SHORT AND LIGHTWEIGHT IN DESIGN, THE HOUSING IS 5-1/2 INCHES LONG AND THE ASSEMBLY WEIGHS ONLY 7-3/4 LBS WITH CA21 TOOL JOINTS CONNECTION.

CHEVRON TYPE PACKING

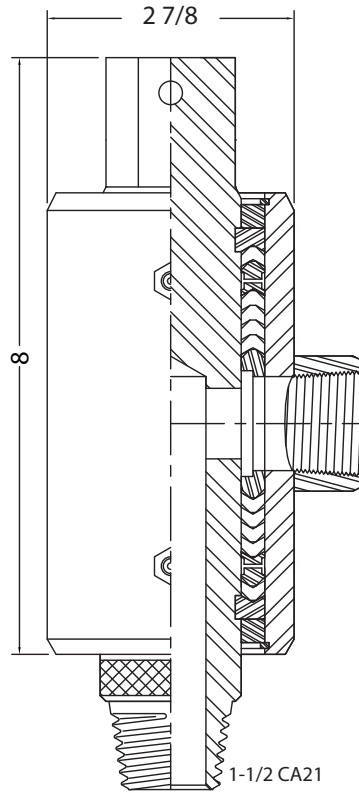
STANDARD WATERCOURSE 1-3/16"

STANDARD WORKING PRESSURE 750 P.S.I.

WEIGHT: 7-3/4 LBS

M-40

THE ECONOMY SWIVEL



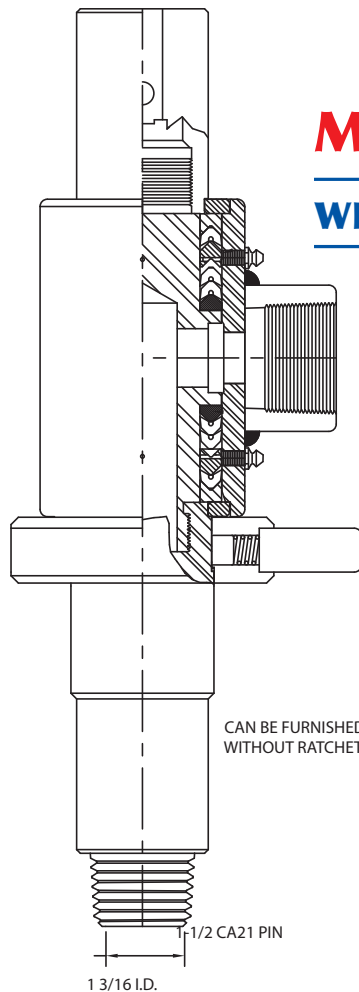
DESIGNED

- AUGER DRILLING
- HEAT PUMP DRILLING
- SOIL SAMPLING
- MONITOR WELL DRILLING
- SHOT HOLES
- TEST HOLES
- WATER WELLS

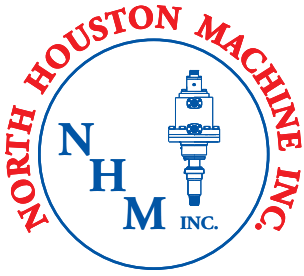
WEIGHT: 12-1/2 LBS

M-50 SWIVEL

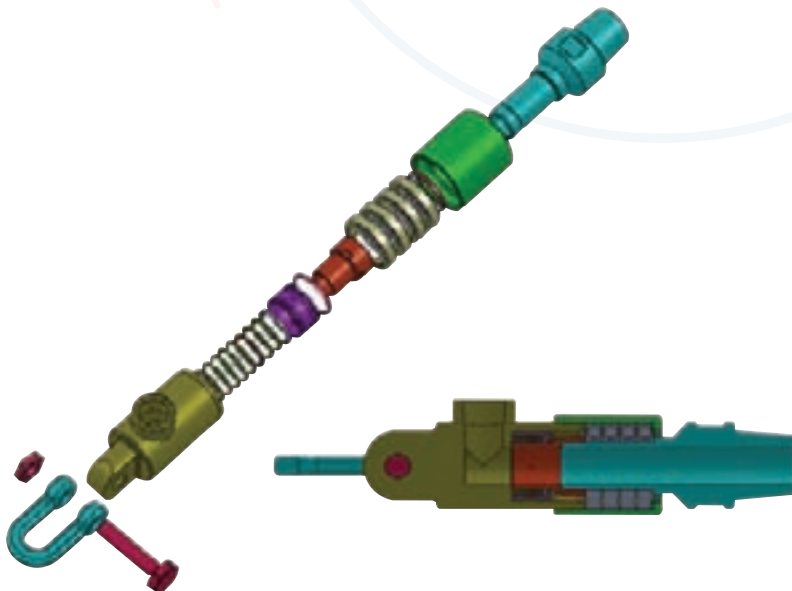
WITH RATCHET BREAKOUT

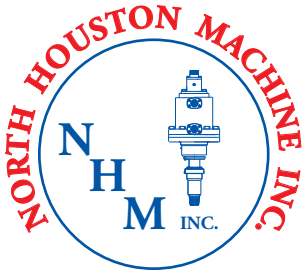


WEIGHT: 27 LBS



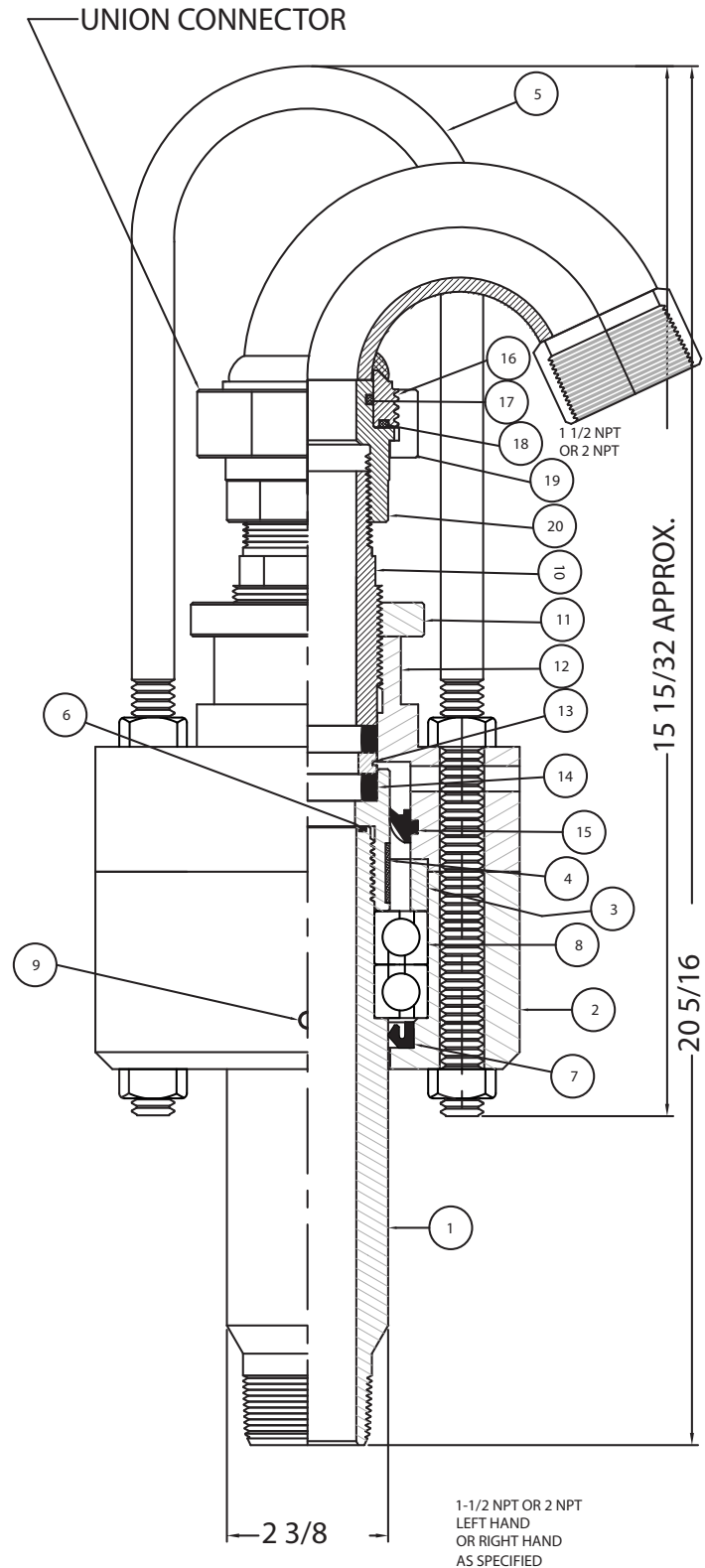
KELLY SWIVELS/ ROTARY HEADS





2J-NHM SWIVEL WITH ADJUSTABLE PACKING

PARTS LIST			
ITEM	PART NO.	QTY	DESCRIPTION
1	220001	1	SPINDLE
2	220002	1	BEARING HOUSING
3	220003	1	SPACER RING
4	220004	2	PACKING NUT
5	220005	1	BAIL
6	220128	1	O-RING 128
7	470565	1	GREASE SEAL
8	2207210	2	BEARING
9	105-009	1	GREASE FITTING
10	124-007	1	WASH PIPE </td
11	124-002	1	ADJUSTING NUT
12	124-003	1	SWIVEL HOUSING
13	2J-04NHM	1	WEAR BUSHING
14	2J-03NHM	2	PACKING RING
15	2J-07NHM	1	HOUSING SEAL
16	220001	1	SPINDLE
17	220223	1	223 O-RING
18	220227	1	227 O-RING
19	220008	1	ADJUSTING RING
20	220009	1	UNION CONNECTOR

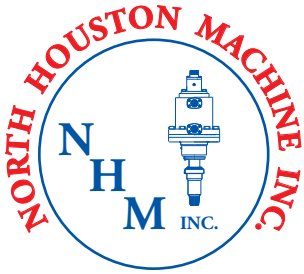


RECOMMENDED WORKING PRESSURE: 425 PSI

2J-NHM IS MADE FOR USE ON LIGHT HYDRAULIC RIGS AND SHOT HOLES IN JUNGLES AND SWAMPS. HOUSEHOLD WATER WELLS, AND ANY SMALL DRILLING RIGS.

THE 2J-NHM SWIVEL USES DUPLEX MOUNTED, ANGULAR CONTACT BEARINGS MOUNTED BACK TO BACK. THE BEARINGS ARE GREASE LUBRICATED FROM THE BOTTOM OF THE SWIVEL AND PUMPED UP THROUGH THE UPPER SEALS.

BEARINGS ARE RATED AT 5,870 LBS. AT 100 R.P.M. FOR 3,000 HOURS FULL LOAD.



MODEL 3J-HP SWIVEL

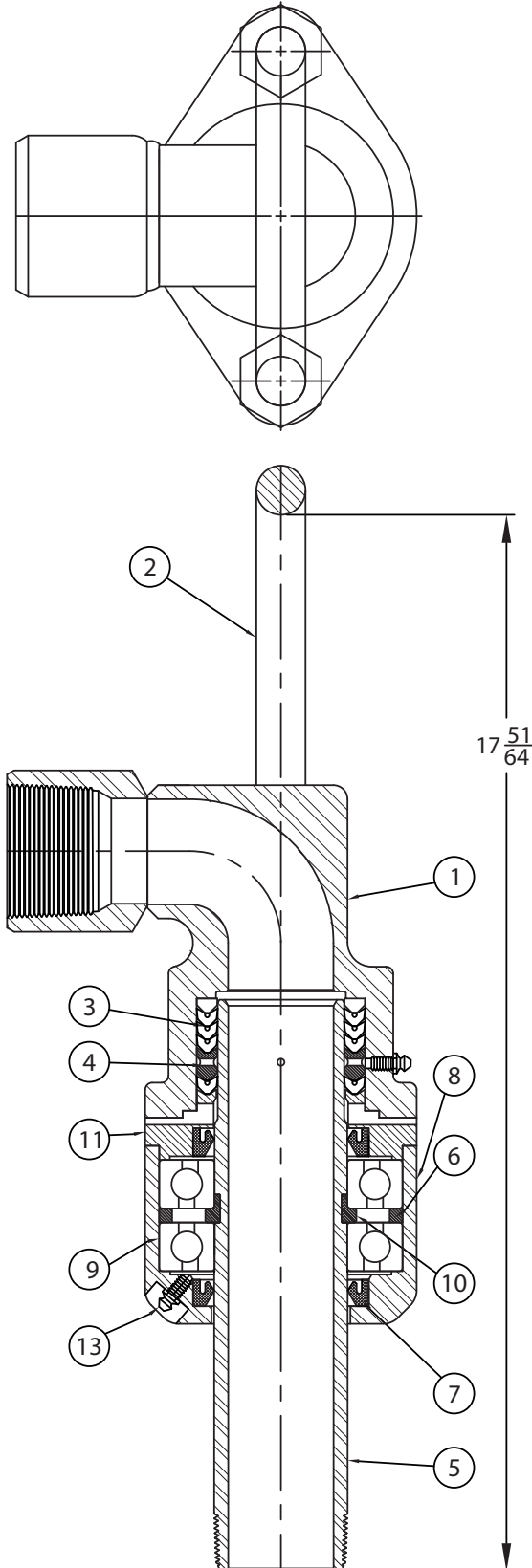
SPECIFICATIONS

CAPACITIES FOR 100 R.P.M. AT 3,000 HOURS

PULLDOWN CAPACITY	PULLBACK CAPACITY	WORKING PRESSURE	DIAMETER WATERCOURSE
8,638 LBS	8,638 LBS	3,000 P.S.I.	1.93

WEIGHT AND DIMENSIONAL DATA

LENGTH INCHES	WEIGHT POUNDS	LOWER CONNECTION	HOSE CONNECTION
13.5"	37 LBS W/BAIL	2" NPT LH OR RH	2 NPT



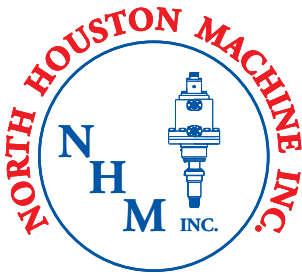
PARTS LIST FOR 3J-HP

ITEM	PART NO.	QTY	DESCRIPTION
1	3JHP-01	1	GOOSENECK
2	3J-02	1	BAIL W/NUT
3	3JHP-03	5	PACKING RING
4	3JHP-04	1	LANTERN RING
5	3JHP-05	1	SPINDLE
6	3J-06	1	BEARING SPACER
7	3JHP-07	1	HOUSING SEAL
8	3J-08	2	BEARING HOUSING
9	3J-09	2	BEARING
10	3J-10	1	BEARING RETAINER
11	3JHP-11	1	PACKING RETAINER
12	3J-02A	2	STUD W/NUTS (NOT SHOWN)
13	105-009	2	GREASE FITTING

SEALS ARE NATIONAL OIL SEALS

STANDARD CONNECTIONS ARE 2 NPT GOOSENECK
AND LOWER CONNECTION

THREAD TO ORDER LEFT
HAND OR RIGHT HAND



MODEL 3J-LP SWIVEL WITH ADJUSTABLE PACKING

SPECIFICATIONS

STANDARD 20XV-04NHM PACKING AND 20XV-05NHM WEAR BUSHING PARALLEL GROUND FOR MAXIMUM LIFE

2-1/2" INSIDE DIAMETER

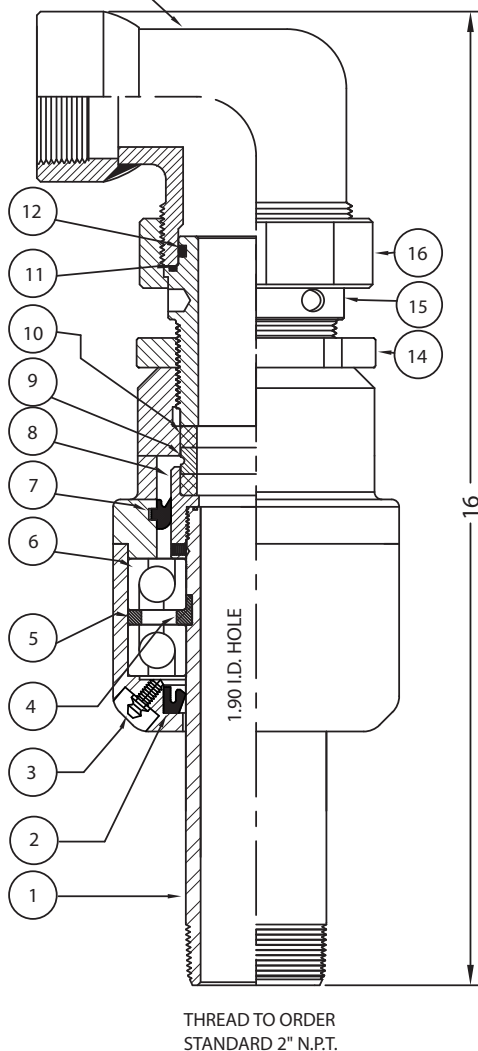
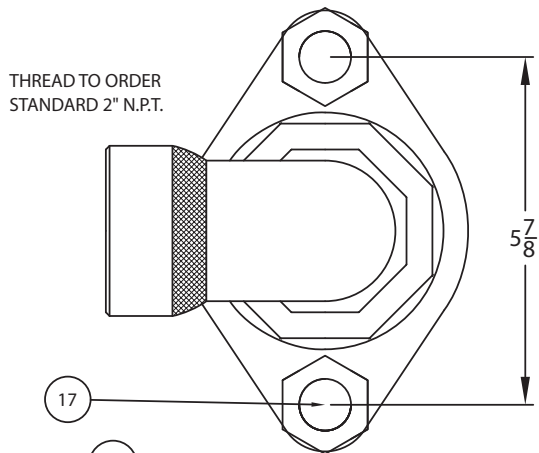
VITON PACKING SEALS AVAILABLE

CAPACITIES FOR 100 R.P.M. AT 3,000 HOURS

PULLDOWN CAPACITY	PULLBACK CAPACITY	WORKING PRESSURE	DIAMETER WATERCOURSE
8,638 LBS	8,638 LBS	375 P.S.I.	1.93

WEIGHT AND DIMENSIONAL DATA

LENGTH INCHES	WEIGHT POUNDS	LOWER CONNECTION	HOSE CONNECTION
13.5"	37 LBS W/BAIL	2" NPT LH OR RH	2 NPT

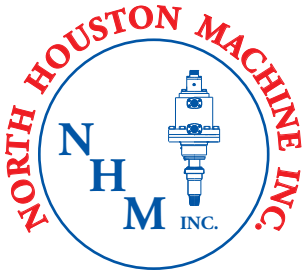


PARTS LIST FOR 3J-LP WITH ADJUSTABLE PACKING

ITEM	PART NO.	QTY	DESCRIPTION
1	136-005G	1	SPINDLE
2	3J-07	1	GREASE SEAL 470565
3	1/4-28GF	1	GREASE FITTING
4	3J-010	1	SPLIT RING
5	3J-06	1	BEARING SPACER
6	3J-09	2	BEARING
7	5EL-07NHM	1	GREASE SEAL
8	3JLP-006	1	SPINDLE NUT
9	5EL-04NHM	1	WEAR BUSHING
10	5EL-03NHM	2	PACKING RING
11	136-147	1	147-O-RING
12	136-229	1	229-O-RING
13	136-210A	1	2"-90 GOOSENECK
14	136	1	LOCK NUT
15	136-210	1	WASH PIPE
16	136-211B	1	UNION NUT
17	3J-002	1	ALL THREAD W/NUTS

BAIL MADE FROM HEAT-TREATED ALLOY STEEL (GRADE B-7)

NOTE: LOW-PRESSURE PACKING INTERCHANGEABLE WITH KING OIL TOOLS 5-EL SWIVEL ASSEMBLY.

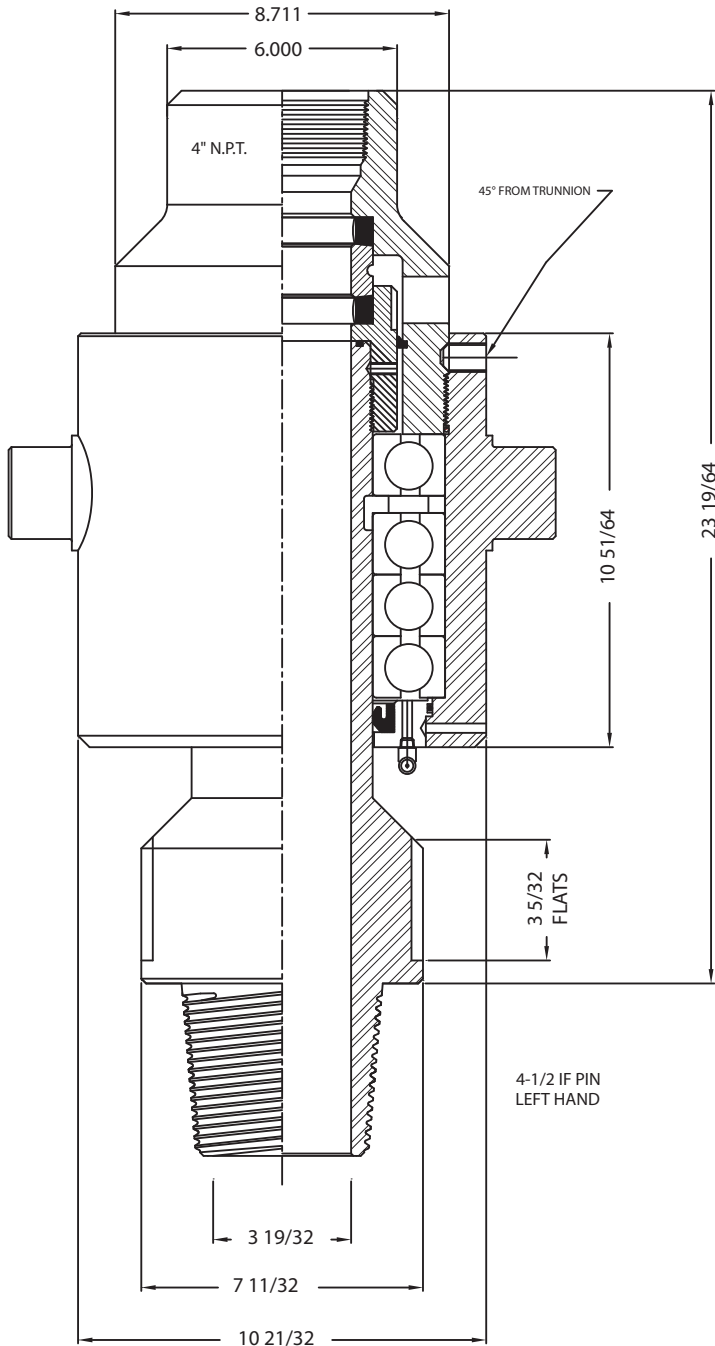


MODEL 3J-HP SWIVEL

SPECIFICATIONS

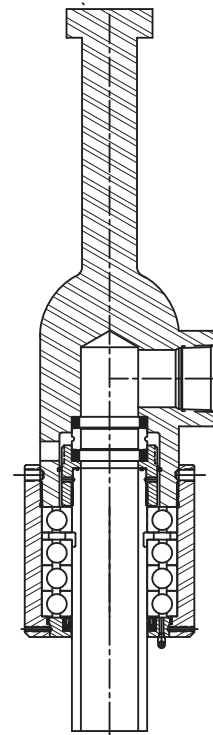
44,000 PULL BACK
 20,365 PULL DOWN
 AT 100 R.P.M. AT 3,000 HOURS

375 P.S.I. WORKING PRESSURE
 3" WATER COURSE
 USES 30 XVNHM PACKING AND WEAR BUSHING

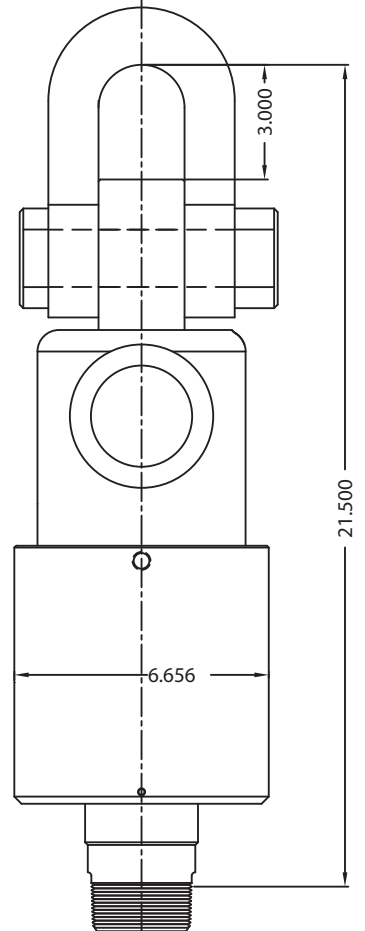


WITH TRUNNION PINS

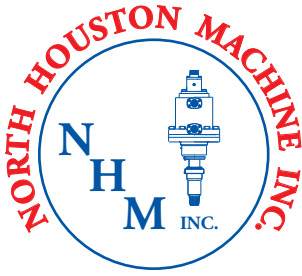
WITH ELEVATOR SHANK



WITH CLEVIS



3" NPT LEFT OR TO ORDER



MODEL 4J-HP SWIVEL

SPECIFICATIONS

STANDARD 108-020 PACKING AND 108-025 WASH PIPE

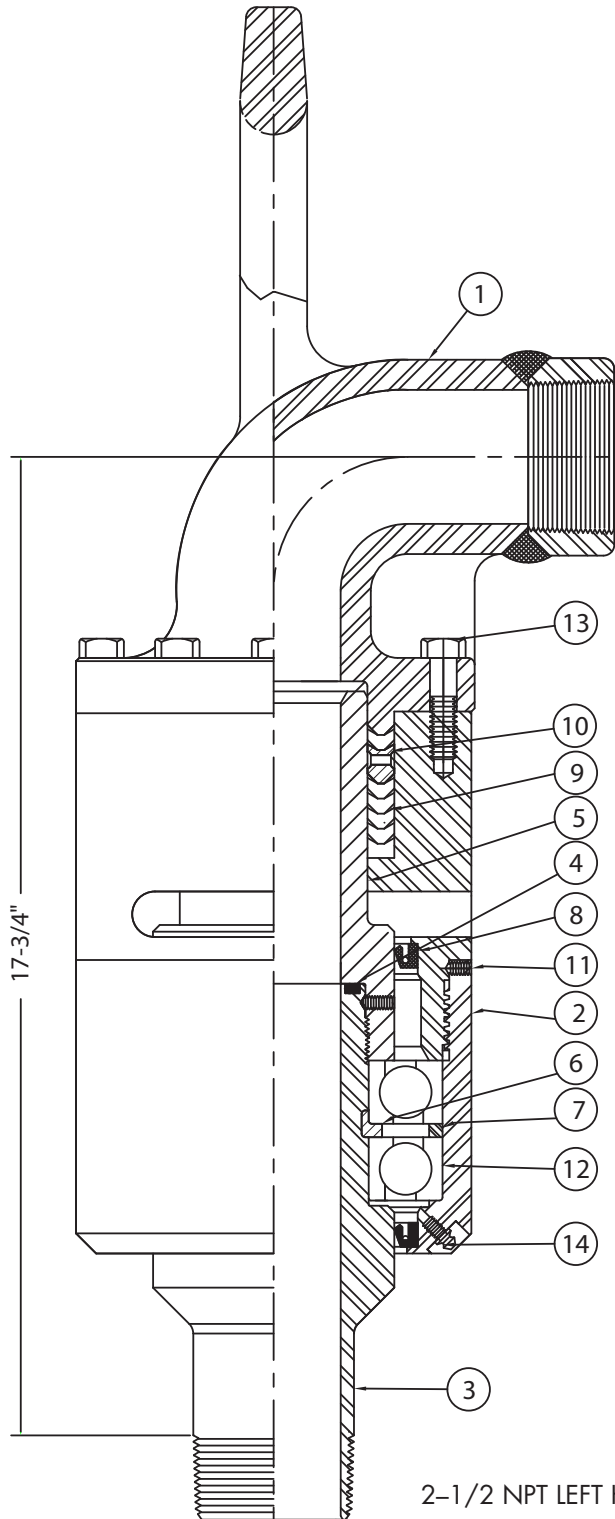
VITON PACKING AND SEALS AVAILABLE

CAPACITIES FOR 100 R.P.M. AT 3,000 HOURS

PULLDOWN CAPACITY	PULLBACK CAPACITY	WORKING PRESSURE	DIAMETER WATERCOURSE
16,000 LBS	16,000 LBS	1,500 P.S.I.	2 1/2

WEIGHT AND DIMENSIONAL DATA

LENGTH INCHES	WEIGHT POUNDS	LOWER CONNECTION	HOSE CONNECTION
22-1/4" S TO S	72 LBS W/BAIL	3-1/2 API IF LH OR RH	2 1/2 OR 3

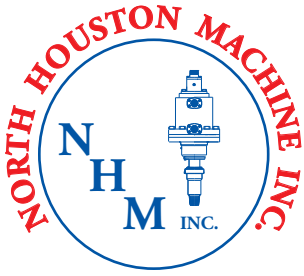


2-1/2 NPT LEFT HAND
OR RIGHT HAND OR
PER ORDER

PARTS LIST FOR MODEL 4J-HP

ITEM	PART NO.	QTY	DESCRIPTION
1	140-004	1	GOOSENECK
2	139-102	1	BEARING HOUSING
3	139-105A	1	LOWER CONNECTION
4	108-334	1	O-RING #334
5	108-025	1	WASH PIPE
6	140-007	1	BEARING RETAINER
7	139-107A	1	BEARING SPACER
8	108-415187	2	GREASE SEAL
9	108-020	5	PACKING RING
10	108-010	1	GREASE RING
11	SETSCREW	4	SET SCREW
12	139-7218	2	BEARING
13	139-113	8	CAP SCREW
14	105-009	2	GREASE FITTING

WEIGHT: 73 LBS



MODEL 4J-LP SWIVEL

SPECIFICATIONS

STANDARD 20XV-04NHM PACKING AND 20XV-05NHM WEAR BUSHING PARALLEL GROUND FOR MAXIMUM LIFE

2-1/2" INSIDE DIAMETER

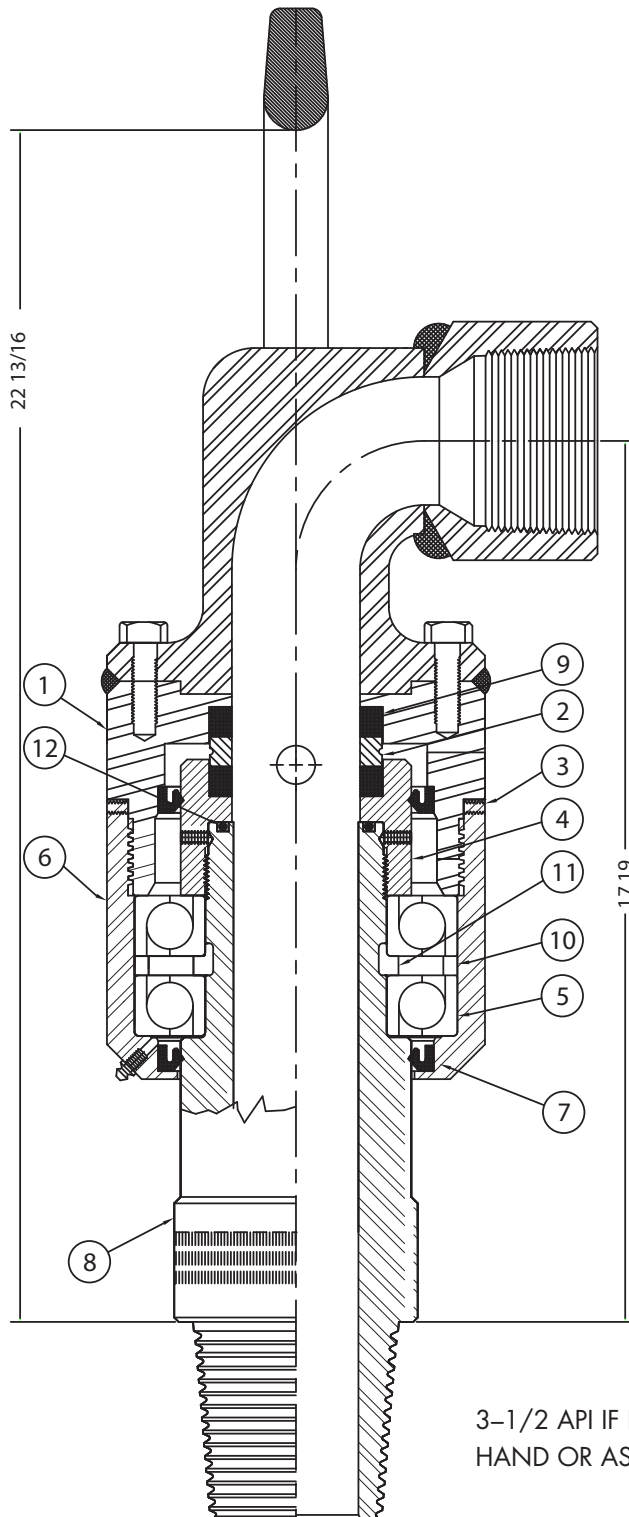
VITON PACKING SEALS AVAILABLE

CAPACITIES FOR 100 R.P.M. AT 3,000 HOURS

PULLDOWN CAPACITY	PULLBACK CAPACITY	WORKING PRESSURE	DIAMETER WATERCOURSE
16,000 LBS	16,000 LBS	375 P.S.I.	2 1/12

WEIGHT AND DIMENSIONAL DATA

LENGTH INCHES	WEIGHT POUNDS	LOWER CONNECTION	HOSE CONNECTION
22-13/16" STO S	73 LBS W/BAIL	3-1/2 API IF LH OR RH	2 1/12 OR 3

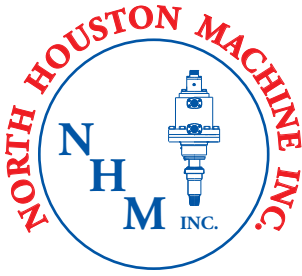


3-1/2 API IF PIN LEFT
HAND OR AS SPECIFIED

PARTS LIST FOR MODEL 4J-LP

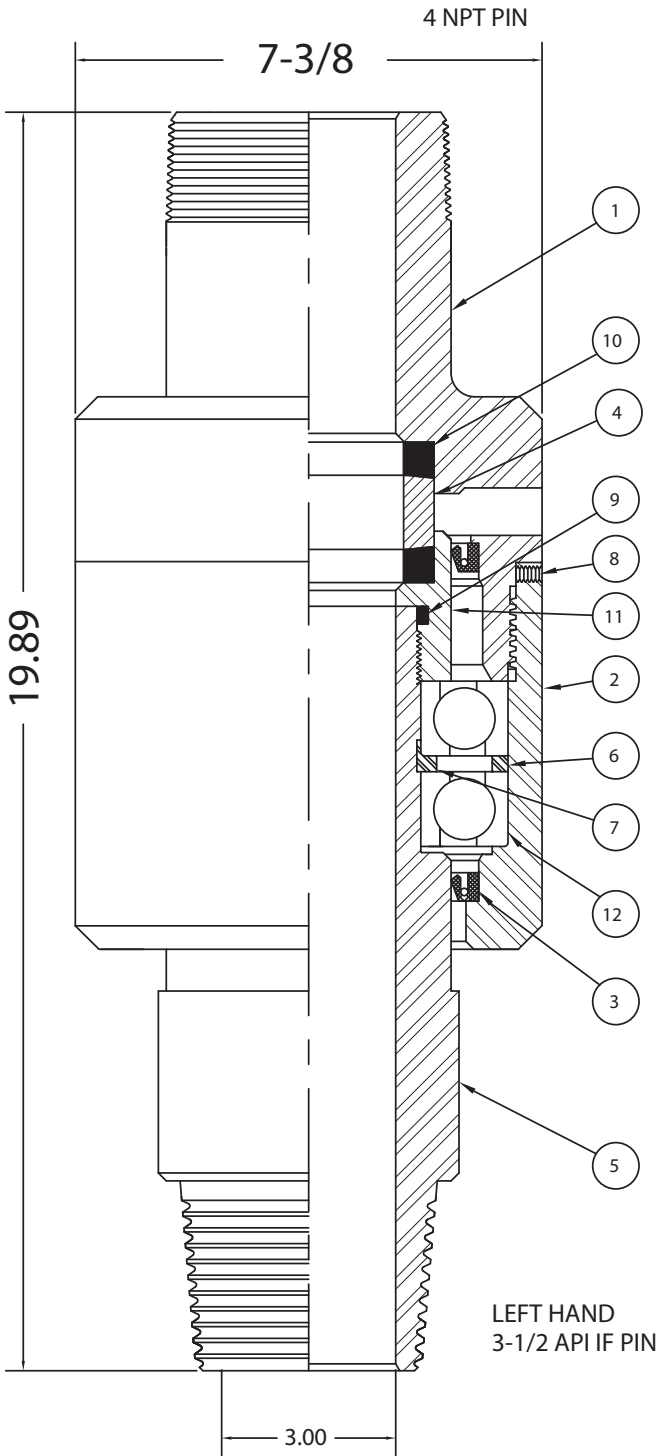
ITEM	PART NO.	QTY	DESCRIPTION
1	141-004A	1	GOOSENECK
2	20XV-06NHM	1	WEAR BUSHING
3	SETSCREW	2	
4	140-006	1	PACKING NUT
5	130-112	2	BEARINGS
6	139-102R	1	BEARING HOUSING
7	139-110	2	GREASE SEAL
8	140-001CR	1	LOWER STEM
9	20XV-05NHM	2	PACKING RING
10	140-007AR	1	BEARING SPACER
11	140-007R	1	BEARING RETAINER
12	140-334	2	O-RING #334

WEIGHT: 73 LBS



MODEL 5J-LP SWIVEL

FOR TOP HEAD DRIVES



THE "J" SERIES OF SWIVELS ARE DESIGNED FOR MAXIMUM BORES FOR LARGE VOLUME OF AIR OR FLUID NEEDED ON TOP HEAD DRIVES.

PRECISION BEARINGS PROVIDE AMPLE THRUST AND LOAD CAPACITY AND ARE GREASE LUBRICATED.

SHOWN 3.0" ID
ALSO AVAILABLE 2, 2-1/2, 3, & 4" ID

WORKING PRESSURE STANDARD: 375 P.S.I.

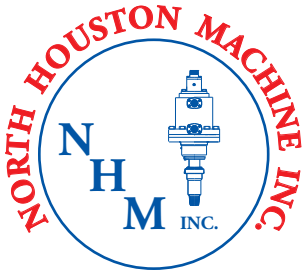
SPECIAL PACKING AND SEALS AVAILABLE

PARTS LIST FOR 5J-LP SWIVEL			
SYM.	PART NO.	NO. REQUIRED	DESCRIPTION
1	139-101B	1 REQUIRED	GOOSENECK
2	139-102	1 REQUIRED	BEARING HOUSING
3	139-110	2 REQUIRED	GREASE SEAL
4	30XV-06NHM	1 REQUIRED	WEAR BUSHING
5	139-105B	1 REQUIRED	LOWER CONNECTION
6	139-107A	1 REQUIRED	BEARING SPACER
7	139-107	1 REQUIRED	BEARING RETAINER
8	SETSCREW	1 REQUIRED	1/4-20 X 3/8 SETSCREW
9	139-341	1 REQUIRED	O-RING PRP-568-341
10	30XV-05NHM	1 REQUIRED	PACKING RINGS
11	139-106	2 REQUIRED	PACKING NUT
12	139-7218	2 REQUIRED	BEARINGS 7218

WEIGHT: 84 LBS

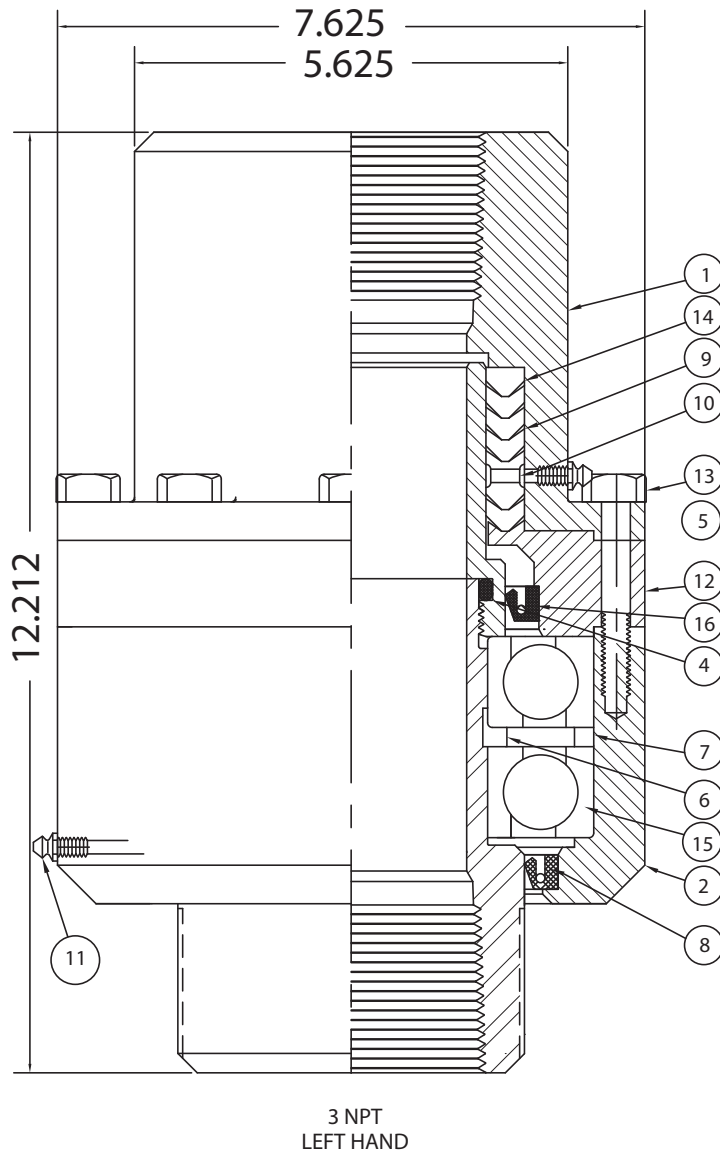
ASSEMBLY 139-100B

ALL PARTS MADE IN U.S.A.



MODEL 5J-HP SWIVEL

FOR TOP HEAD DRIVES



THE "J" SERIES OF SWIVELS ARE DESIGNED FOR MAXIMUM BORES FOR LARGE VOLUME OF AIR OR FLUID NEEDED ON TOP HEAD DRIVES.

PRECISION BEARINGS PROVIDE AMPLE THRUST AND LOAD CAPACITY AND ARE GREASE LUBRICATED.

SHOWN 3.0" ID

ALSO AVAILABLE 2, 2-1/2, 3, & 4" ID

SPEEDS OVER 150 R.P.M. WILL REQUIRE 4JHP-847 PACKING. PRESSURE RATING WITH 847 COMPOUND: 3,000 W.P. SPEEDS MAXIMUM 550 R.P.M.

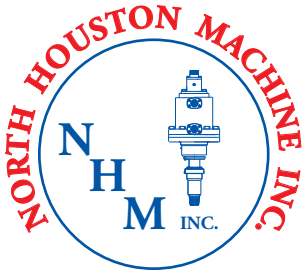
PARTS LIST FOR 5J-HP SWIVEL

ITEM	PART NO.	QTY	DESCRIPTION
1	139-304A	1	UPPER CONNECTION
2	139-203	1	BEARING HOUSING
3	139-302A	1	LOWER CONNECTION
4	139-341	1	O-RING
5	139-201	1	WASHPIPE
6	139-107	1	BEARING RETAINER
7	139-107A	1	BEARING SPACER
8	139-110	1	HOUSING SEAL
9	139-020	4	PACKING RINGS
10	108-010	1	GREASE RING
11	105-009	2	GREASE FITTING
12	139-205	1	ADAPTER PLATE
13		12	3/8-16 BOLTS
14	139-020A	1	MALE ADAPTER
15	139-7218	2	BEARINGS
16	108-011	1	GREASE SEAL

WEIGHT: 94 LBS

ASSEMBLY 139-300A

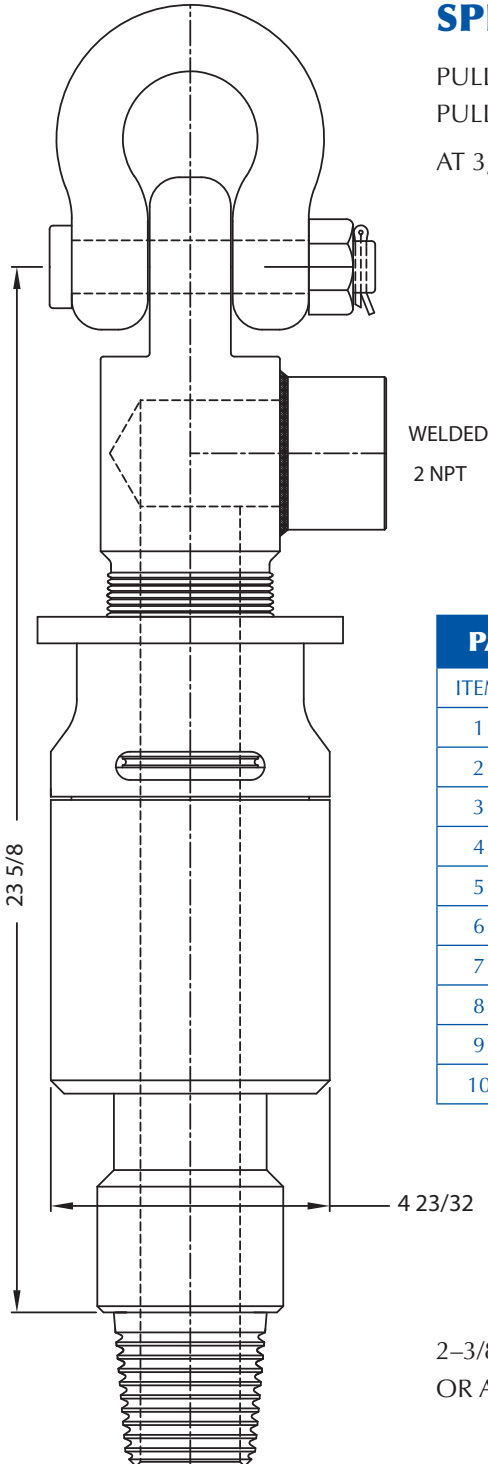
ALL PARTS MADE IN U.S.A.



NHM-10PXV SWIVEL

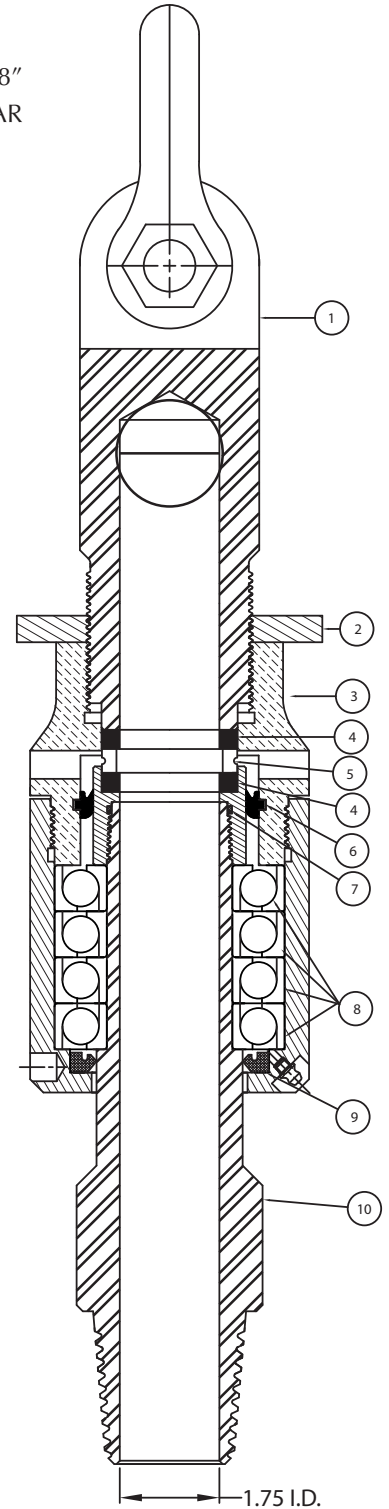
SPECIFICATIONS

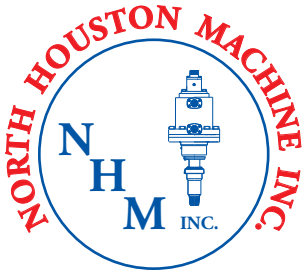
PULLDOWN20-1/8"
 PULLBACK3-1/2 API REGULAR
 AT 3,000 HRS AT 100 RPM FULL LOAD



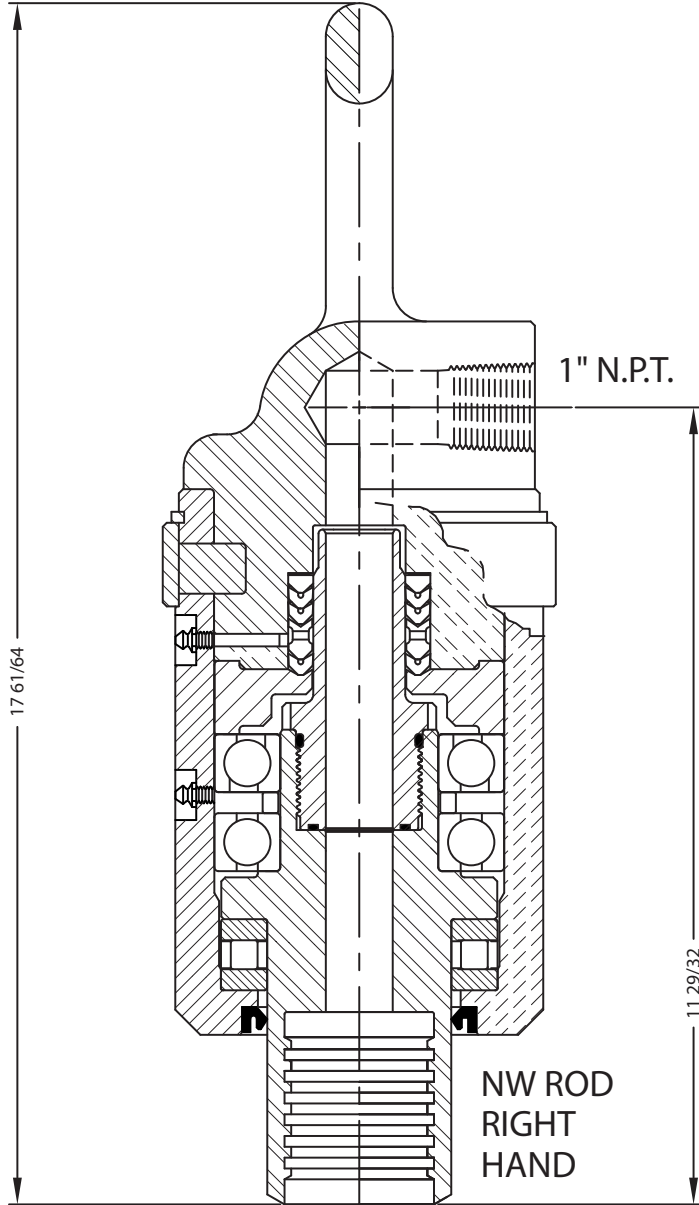
PARTS LIST FOR NHM-10PXV SWIVEL			
ITEM	PART NO.	QTY	DESCRIPTION
1	201001	1	UPPER CONNECTION
2	201005	1	ADJUSTING LOCK NUT
3	201004	1	SWIVEL HOUSING
4	5EL-03NHM	2	PACKING
5	5EL-04NHM	1	WEAR BUSHING
6	5EL-07NHM	1	HOUSING SEAL
7	201228	1	O-RING SEAL
8	3J-09	4	BEARING
9	417316	1	GREASE SEAL
10	201002	1	LOWER CONNECTION

2-3/8 API IF CONNECTION
 OR AS SPECIFIED





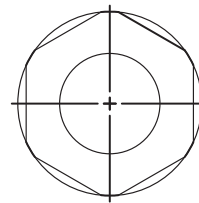
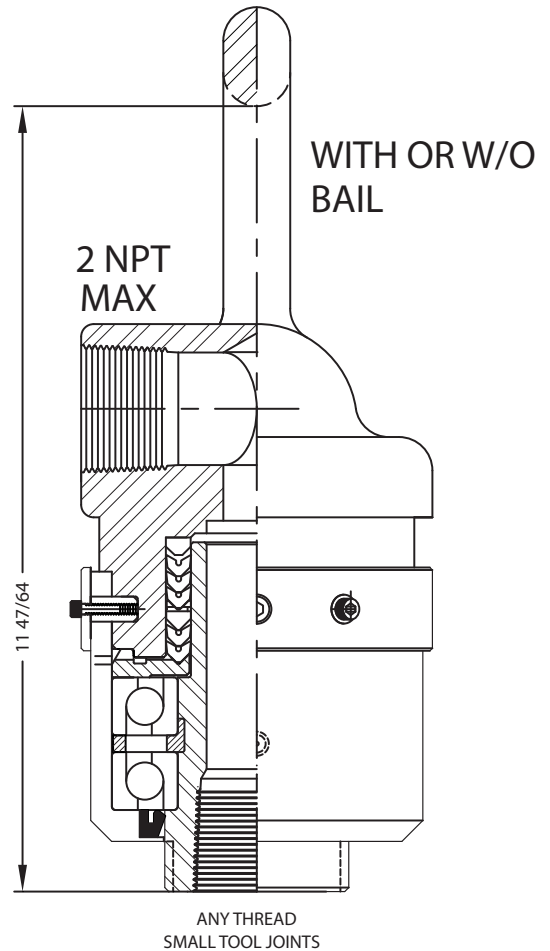
SPECIALTY SWIVELS



THRUST = 119,000 STATIC
32,800 BASIC DYNAMIC

MODEL HSS SWIVEL

HIGH-SPEED SWIVEL
1' NPT TOP X NW ROD BOX LOWER
375 P.S.I. WORKING PRESSURE



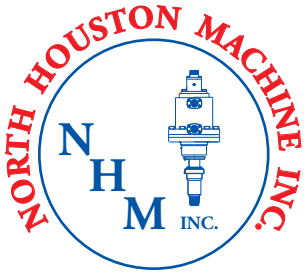
MODEL ST SWIVEL COMPACT DESIGN

3,500 PSI MAX

BEARINGS: 8,638 LBS AT FULL LOAD
100 RPM FOR 3,000 HOURS

NOTE:

WEDGELock CONNECTIONS COVERED BY N.H.M., INC.
U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772;
187552; AND P94100AU



KJ-80

LARGE ID WATER SWIVEL

BEARINGS RATED 80,000 AT 100 R.P.M.

FULL LOAD 3,000 HOURS API

5" INSIDE DIAMETER

KJ-60 AVAILABLE

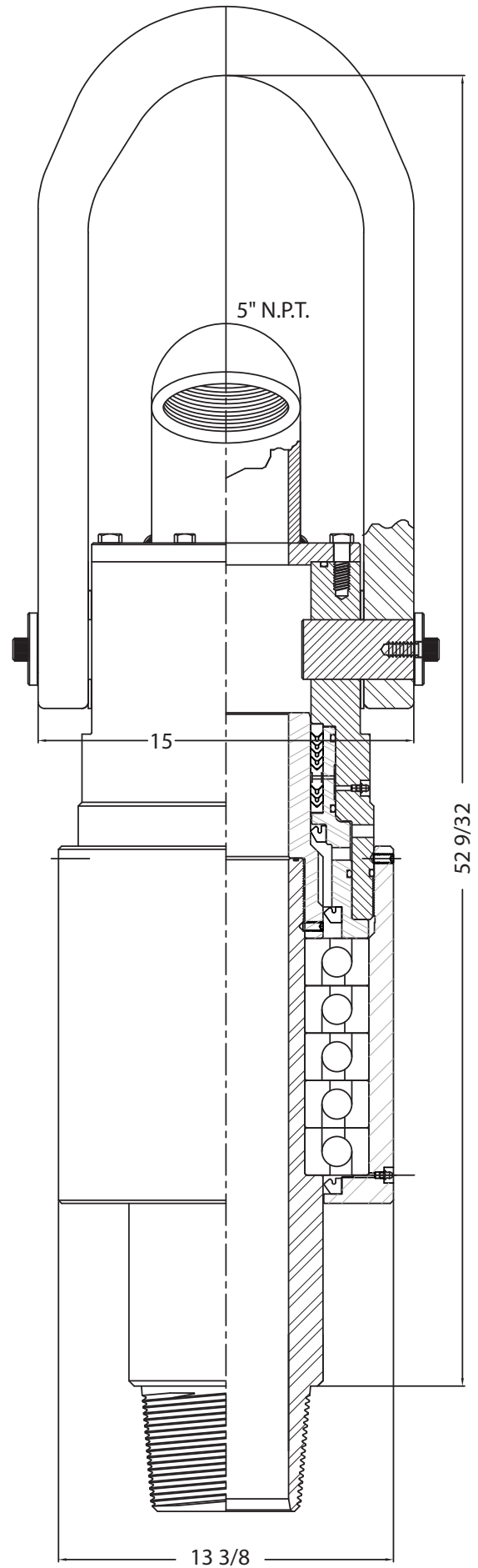
NOT SHOWN

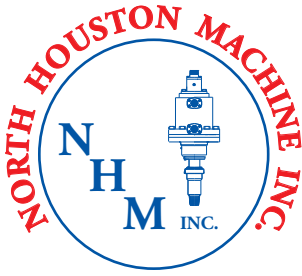
BEARINGS RATED 60,000 AT 100 R.P.M.

HIGH-PRESSURE PACKING HARDENED AND GROUND WASH PIPE

ANY TOOL JOINT

SHOWN 6 5/8" FULL HOLE





MODEL 153-4WD SWIVEL ASSEMBLY

THE 4-WD SWIVEL IS A COMPACT, LARGE WATERCOURSE SWIVEL. BEARINGS ARE ANGULAR CONTACT AND EASILY MAINTAINED AND ARE OF HIGH CAPACITY.

BASED ON 100% LOAD RATING FOR 3,000 HOURS AT 100 R.P.M.

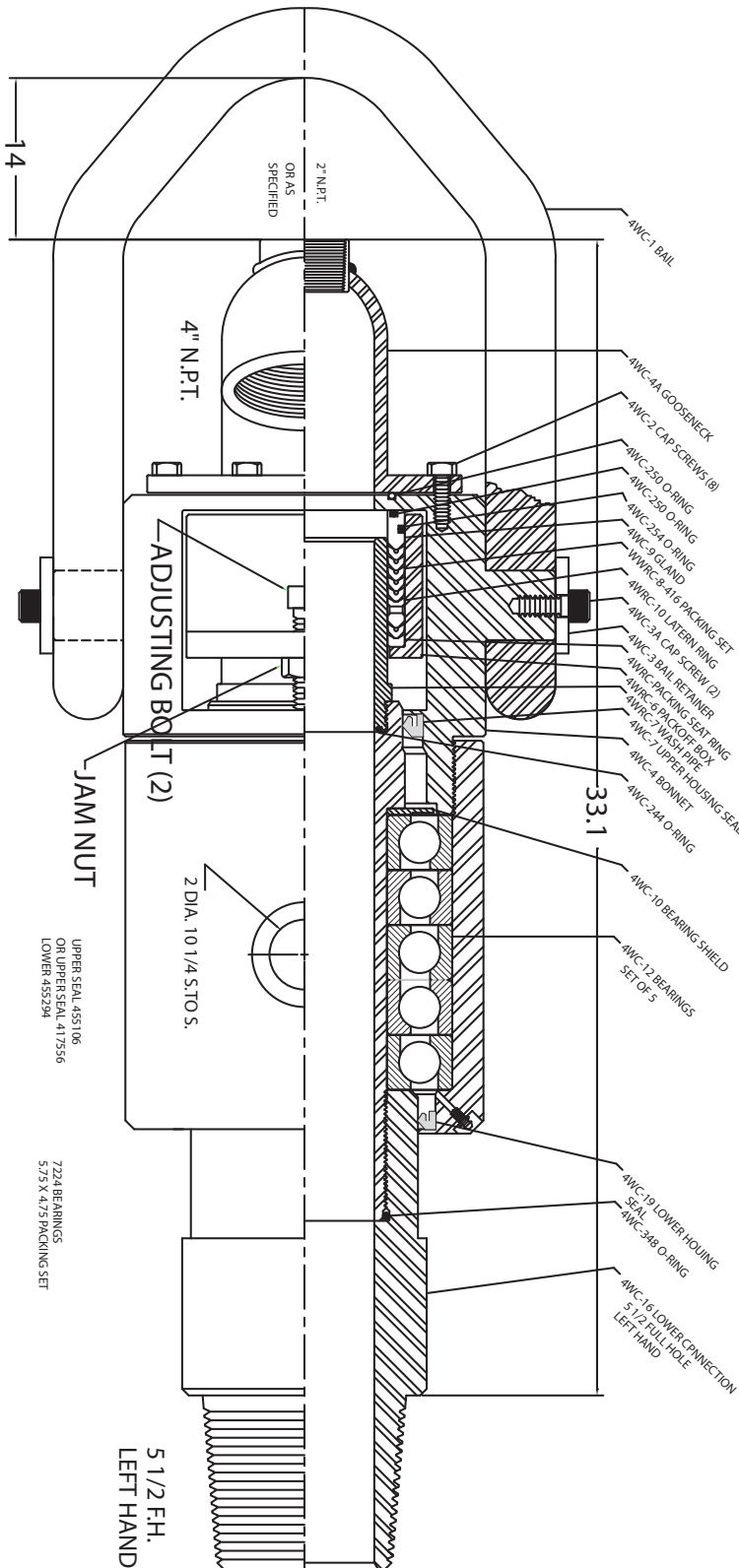
PULLDOWN CAPACITY	PULLBACK CAPACITY	WORKING PRESSURE
23,286 LBS	62,916 LBS	1,500

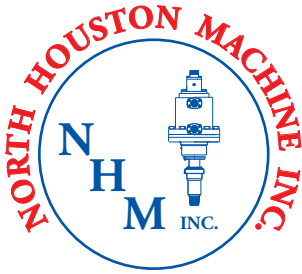
THE PACKING UNIT CONSISTS OF CHEVRON TYPE RINGS AND A HARDENED WASH PIPE. THE PACKING CAN BE REPLACED WITHOUT DISASSEMBLY, OR A REPLACEMENT UNIT CAN BE INSTALLED IN JUST A FEW MINUTES.

STANDARD WORKING PRESSURE IS 1,500 P.S.I.

THE LOWER CONNECTION CAN BE EITHER A THREADED OR WELDED CONNECTION, MADE TO THE CUSTOMER SPECIFICATIONS.

ALL MATERIALS INCORPORATED ARE OF ALLOY HEAT-TREATED STEEL. STAINLESS STEEL INSIDE PARTS ARE AVAILABLE ON SPECIAL ORDER.





MODEL MK21-LP SWIVEL & MK21-HP SWIVEL

MK21-HP SWIVEL

CAPACITIES FOR 100 R.P.M. AT 3,000 HOURS

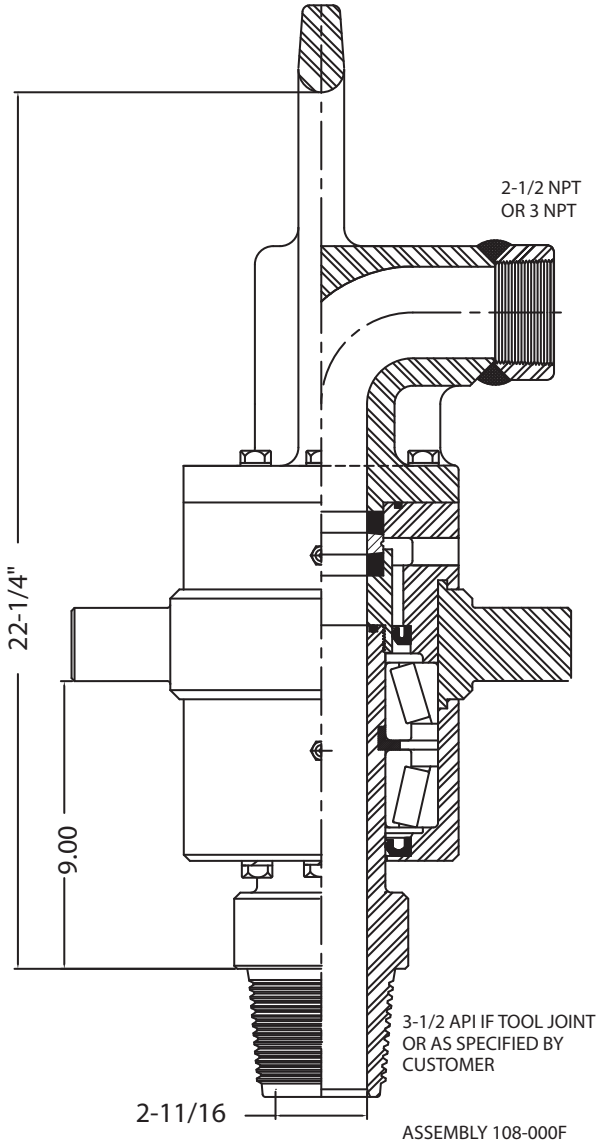
PULLDOWN CAPACITY	PULLBACK CAPACITY	WORKING PRESSURE	DIAMETER WATERCOURSE
23,000 LBS	23,000 LBS	1,500 P.S.I.	2 1/12

CAPACITIES FOR 100 R.P.M. AT 3,000 HOURS

LENGTH INCHES	WEIGHT POUNDS	LOWER CONNECTION	HOSE CONNECTION
22 1/4" S TO S	23,000 LBS	1,500 P.S.I.	2 1/12

SPECIAL PACKING FOR HIGH SPEEDS AND/OR HIGHER TEMPERATURES ARE AVAILABLE UPON REQUEST.

ALLOY STEEL CONSTRUCTION TIMKEN BEARINGS FOR MAXIMUM LIFE.

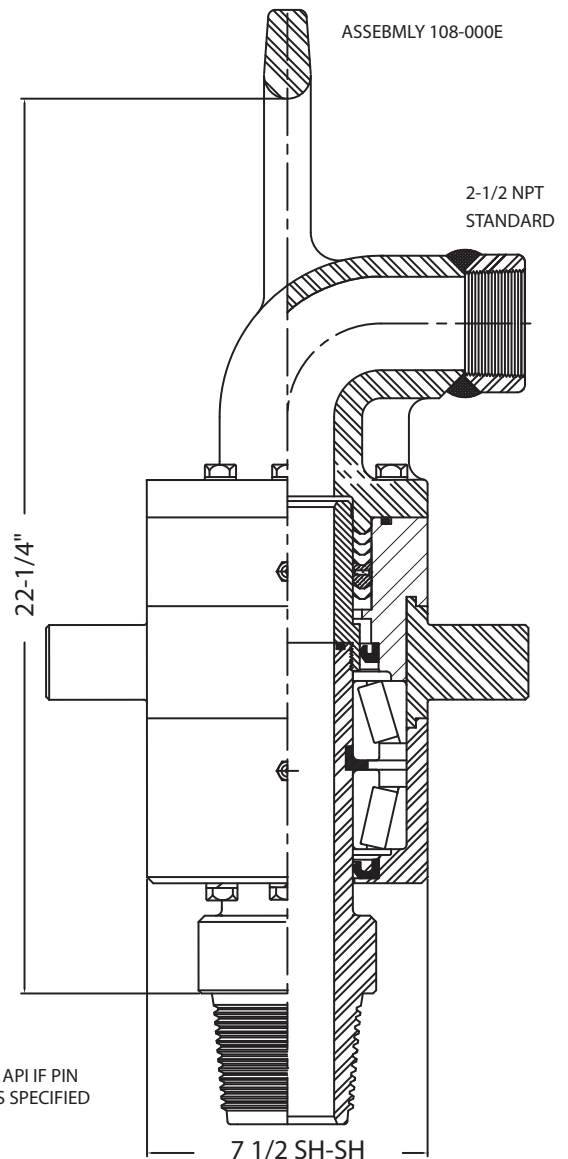


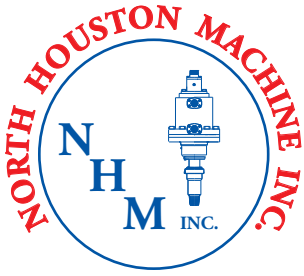
MK21-LP SWIVEL

CAPACITIES FOR 100 R.P.M. AT 3,000 HOURS

PULLDOWN CAPACITY	PULLDOWN CAPACITY	WORKING PRESSURE	DIAMETER WATERCOURSE
23,000 LBS	23,000 LBS	1,500 P.S.I.	2 1/12

SPECIAL PACKING FOR HIGH SPEEDS AND/OR HIGHER TEMPERATURES ARE AVAILABLE UPON REQUEST.





MODEL MK21 SWIVEL

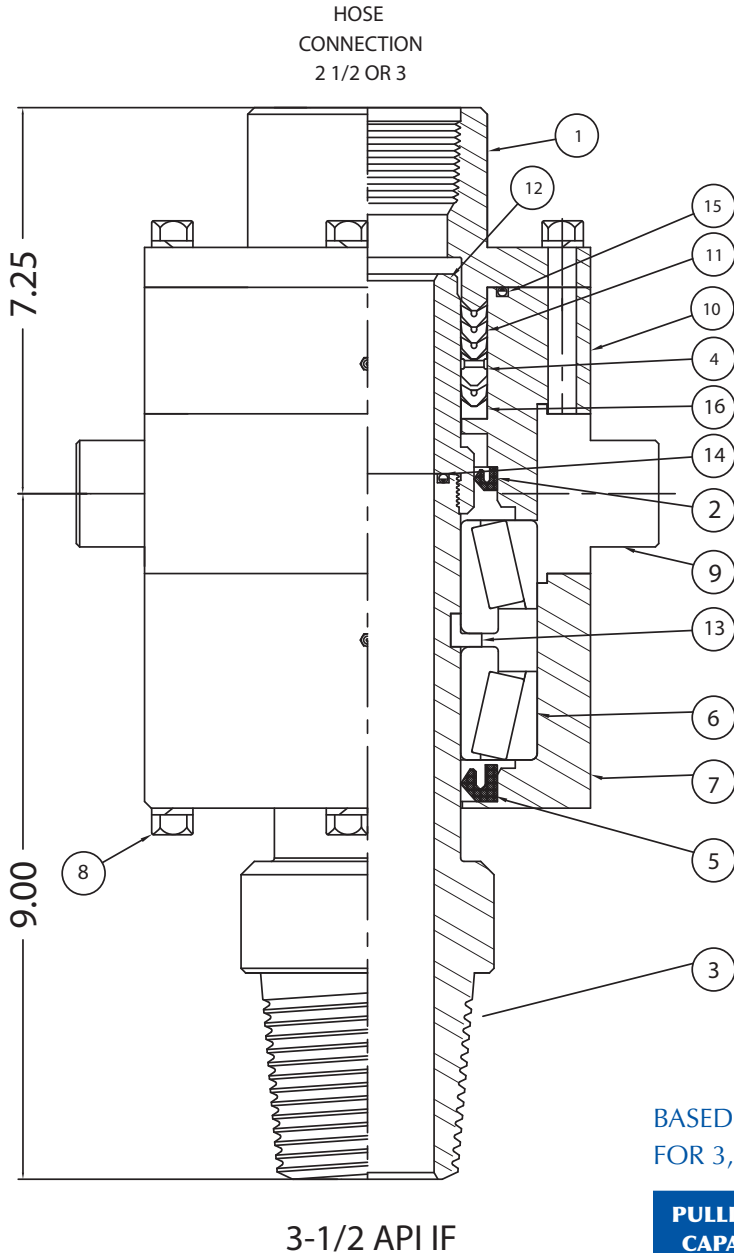
DESIGNED FOR TH-60 AND TH-55 RIGS

SPECIAL PACKING FOR HIGH SPEEDS AND/OR HIGH PRESSURES AVAILABLE UPON REQUEST.

CONSTRUCTED OF ALLOY STEEL FOR MAXIMUM STRENGTH AND DURABILITY.

DESIGNED FOR EASY FIELD REPAIR.

TIMKEN BEARINGS FOR MAXIMUM LIFE.



MK21 PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	108-004	PACKING ADAPTER	1
2	108-007	UPPER GREASE SEAL	1
3	108-008	SPINDLE	1
4	108-010	GREASE RING	1
5	108-011	LOWER GREASE SEAL	1
6	108-012	TIMKEN BEARING	2
7	108-014	BEARING HOUSING	1
8	HHCS8-56	CAP SCREW	20
9	108-015	TRUNNION RING	1
10	108-018	PACKOFF BOX	1
11	108-020-847	PACKING RING	4
12	108-025	WASH PIPE	1
13	108-08A	BEARING RETAINER	1
14	108-334	O-RING SEAL	1
15	108-352	O-RING SEAL	1
16	108-020A	FEMALE PACKING ADAPTER	1

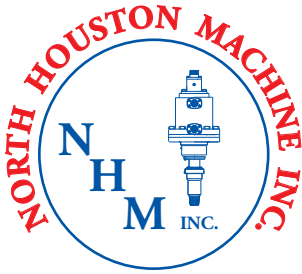
BASED ON 100% LOAD RATING
FOR 3,000 HOURS L10 AT 100 R.P.M.

PULLDOWN CAPACITY	PULLBACK CAPACITY	WORKING PRESSURE	STATIC CAPACITY
23,000 LBS	23,000 LBS	3,000 P.S.I.	137,000 LBS

WEIGHT AND DIMENSIONAL DATA

LENGTH INCHES	WEIGHT POUNDS	DIAMETER WATERCOURSE	LOWER CONNECTION
16.25"	165 LBS	2-1/2"	3-1/2 API IF

ASSEMBLY 108-000B



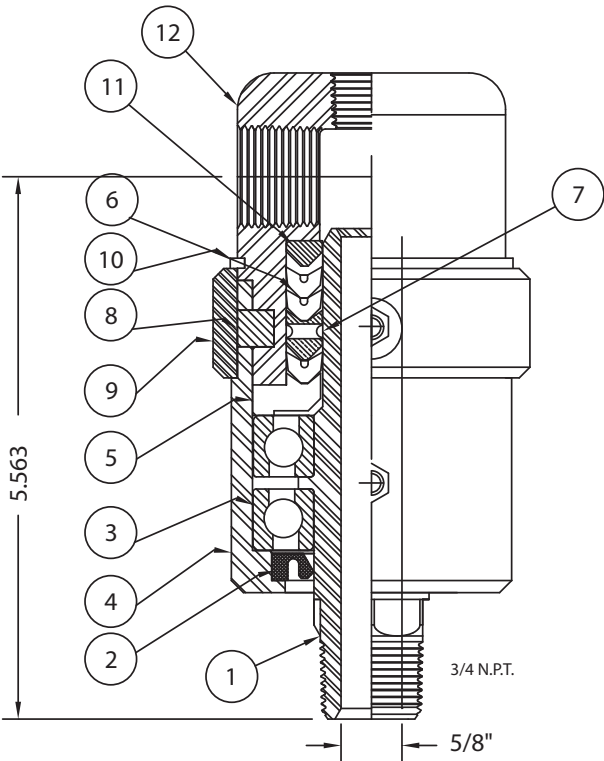
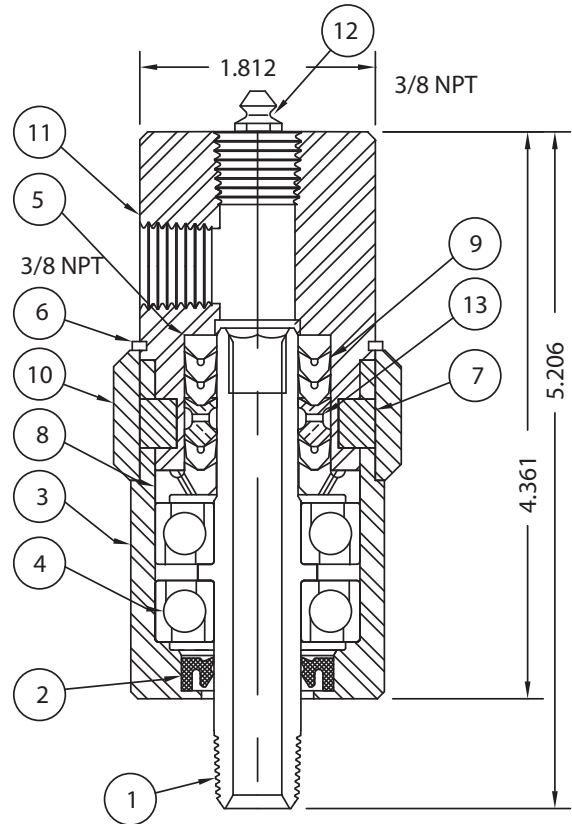
MODEL "TD" SWIVELS TD-1 AND TD-2 SERIES

TD-1 ROTATING HEAD 1,500 P.S.I.

TD-1 PARTS			
ITEM.	PART NO.	QTY	DESCRIPTION
1	910-601	1	STEM
2	910-481481	1	GREASE SEAL
3	910-602	1	BEARING HOUSING
4	910-7203	2	BEARING
5	910-020A	1	MALE ADAPTER
6	910-181	2	SNAP RING
7	910-607	1	WEDGELOCK KEY
8	910-604	1	BACKUP RING
9	910-020-417	5	PACKING RING
10	910-606	1	RETAINER RING
11	910-603	1	GOOSENECK
12	MKV-009	1	GREASE FITTING
13	910-605	1	LANTERN RING

WEIGHT: 16 LBS

LUBRICATED WITH ALCO EP 73+ RECOMMENDED

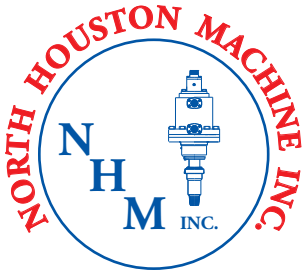


TD-2 PARTS			
SYM.	DESCRIPTION	PART NO.	NO. REQ'D
1	STEM	111-001R	1 UNIT
2	GREASE SEAL	111-223035	1 REQ'D
3	BEARING	111-7206	2 REQ'D
4	BEARING HOUSING	111-003	1 UNIT
5	BACKUP RING	111-005	1 UNIT
6	PACKING RING	111-020	3 SET
7	GREASE RING	111-006	1 UNIT
8	WEDGELOCK KEY	111-007	2 REQ'D
9	RETAINER RING	111-008	1 UNIT
10	SNAP RING	111-275	1 REQ'D
11	MALE ADAPTER	111-020A	1 UNIT
12	GOOSENECK	111-002	1 UNIT

WEIGHT: 8 LBS

NOTE: WEDGELOCK CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND PATENT PENDING

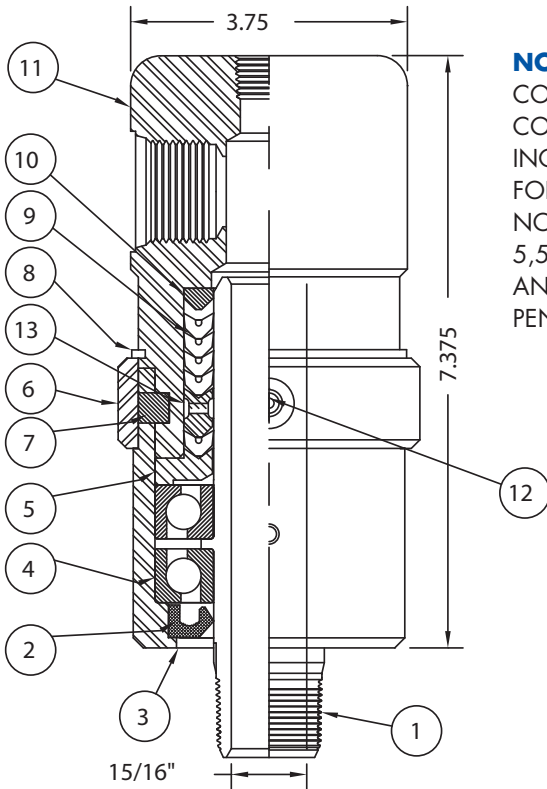
WATER SWIVELS FOR ROTARY HEADS FOR HIGH PRESSURES 1,150 TO 6,000 P.S.I. LUBRICATED PACKING AND BEARINGS FOR LONGER LIFE AND DEPENDABILITY



MODEL "TD" SWIVELS

TD-4 AND TD-12 SERIES

TD-4 ROTARY HEAD SWIVEL



NOTE: WEDGELock CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND PATENT PENDING

TD-4 PARTS			
ITEM	PART NO.	QTY	DESCRIPTION
1	910-601	1	STEM
2	910-481481	1	GREASE SEAL
3	910-602	1	BEARING HOUSING
4	910-7203	2	BEARING
5	910-020A	1	BACKUP RING
6	910-181	2	BEARING RETAINER
7	910-607	1	KEY
8	910-604	1	SNAP RING
9	910-020-417	5	PACKING RING
10	910-606	1	PACKING ADAPTER
11	910-603	1	GOOSENECK
12	MKV-009	6	GREASE FITTIN
13	910-605	1	GREASE RING

WEIGHT: 16 LBS

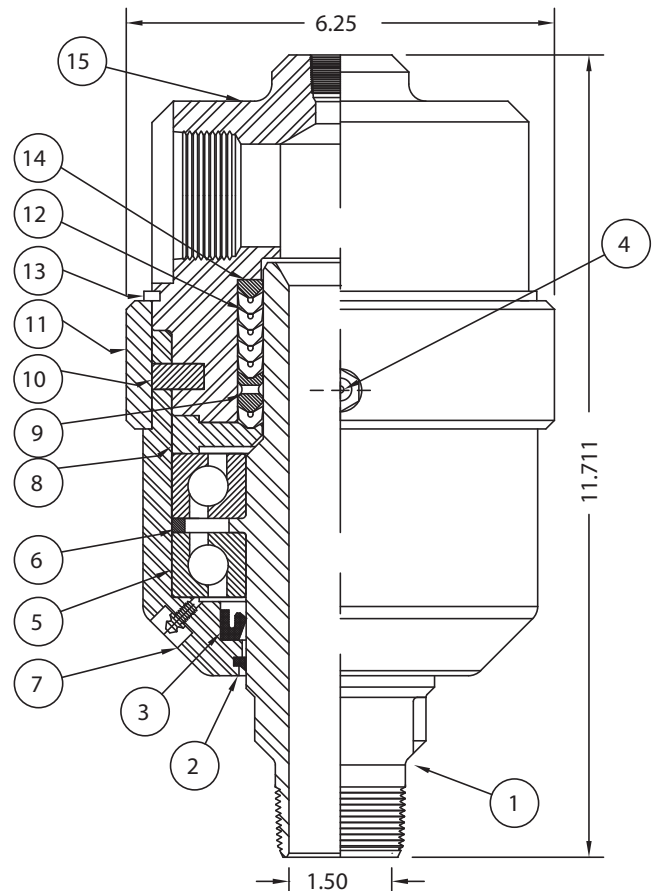
LUBRICATED WITH ALCO EP 73+ RECOMMENDED

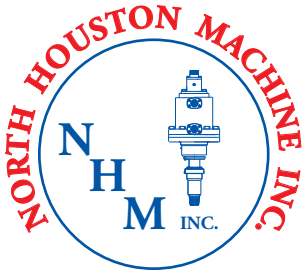
NORTH HOUSTON MACHINE INC. • KELLY SWIVELS/ROTARY HEADS

TD-12 PARTS			
ITEM	PART NO.	QTY	DESCRIPTION
1	151B-001	1	STEM
2	940-27	1	ROD WIPER
3	151-416664	1	GREASE SEAL
4	105-009	2	GREASE FITTING
5	151B-7214	1	BEARING
6	151C-007	2	BEARING SPACER
7	151C-002	1	BEARING HOUSING
8	151C-006	1	BACKUP RING
9	3JHP-04	1	GREASE RING
10	151C-004	1	KEY
11	151C-005	1	RETAINER RING
12	151B-020	6	PACKING RING
13	151C-550	1	SNAP RING
14	151-020A	1	PACKING ADAPTER
15	151B-003	1	UPPER CONNECTION

WEIGHT: 55 LBS

TD-12 ROTARY HEAD





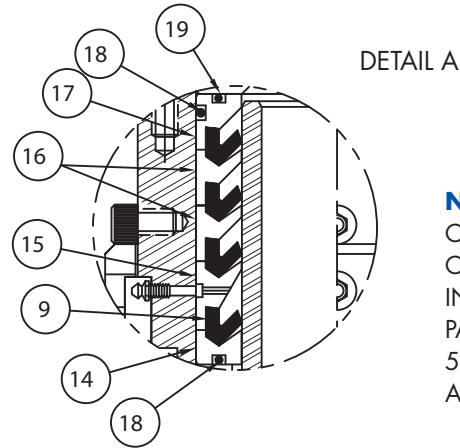
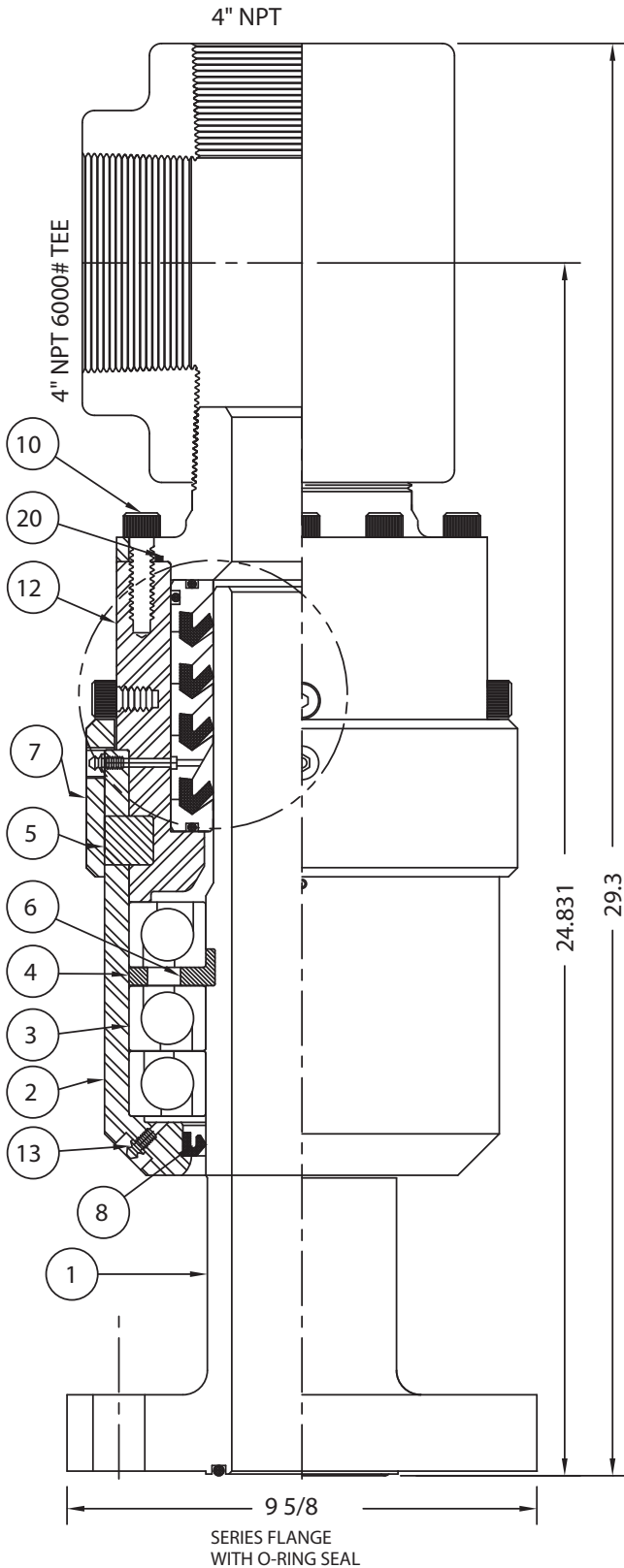
MODEL "TD" SWIVELS

TD-25 HP SERIES

HIGH PRESSURE SERIES

WATER SWIVELS FOR ROTARY HEADS FOR HIGH PRESSURES 1,150 TO 6,000 P.S.I.

LUBRICATED PACKING AND BEARINGS FOR LONGER LIFE AND DEPENDABILITY

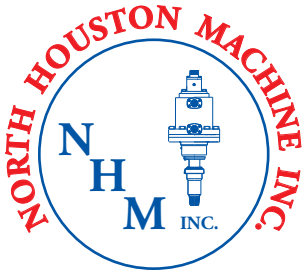


NOTE: WEDGELock CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND PATENT PENDING

4" NPT X 5,000 P.S.I. W.P.

TD-25 ROTARY HEAD			
ITEM	PART NO.	QTY	DESCRIPTION
1	152-105	1	STEM
2	152-102	1	BEARING HOUSING
3	152-7220	3	BEARING
4	152-005B	1	BEARING SPACER
5	152-006A	3	DRIVE KEY
6	152-005A	1	BEARING RETAINER
7	152-006B	1	RETAINER RING
8	152-455186	1	GREASE SEAL
9	TD25-020-417	4	PACKING RING
10	SHCS8-12	8	CAP SCREW
11	SHCS8-4	4	CAP SCREW
12	152-103	1	GOOSENECK
13	105-009	2	GREASE FITTING
14	10MB-9D	1	UPPER RING
15	10MB-9C	1	GREASE RING
16	10MB-9B	2	SEC. & THIRD RING
17	10MB-9A	1	BOTTOM RING
18	152-347	2	O-RING
19	152-353	1	O-RING
20	152-252	1	O-RING

WEIGHT: 405 LBS



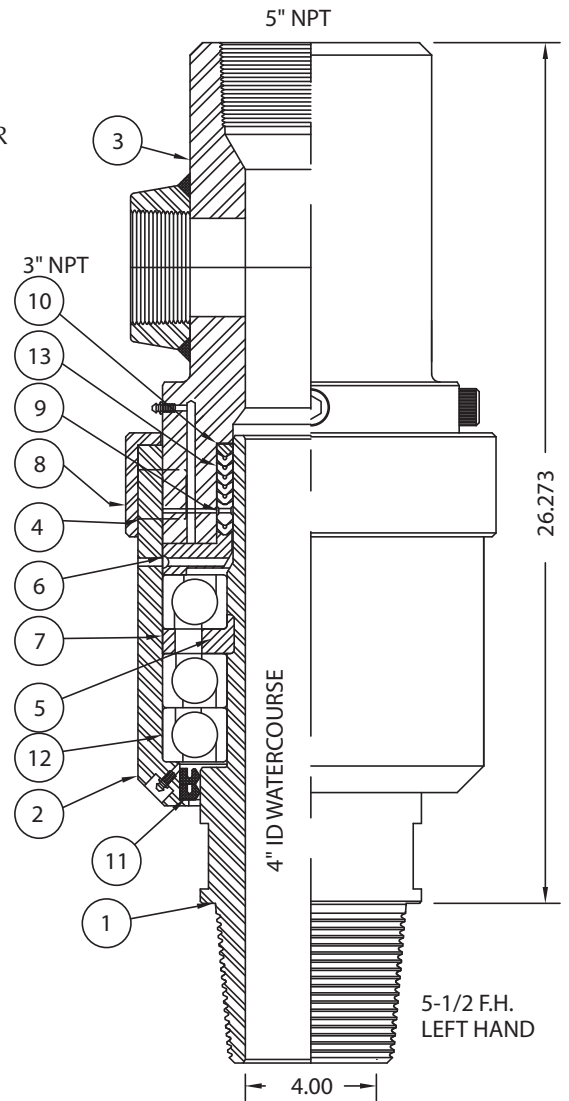
MODEL "TD" SWIVELS

TD-24 AND TD-32 SERIES

WATER SWIVELS FOR ROTARY HEADS FOR HIGH PRESSURES 1,150 TO 6,000 P.S.I.

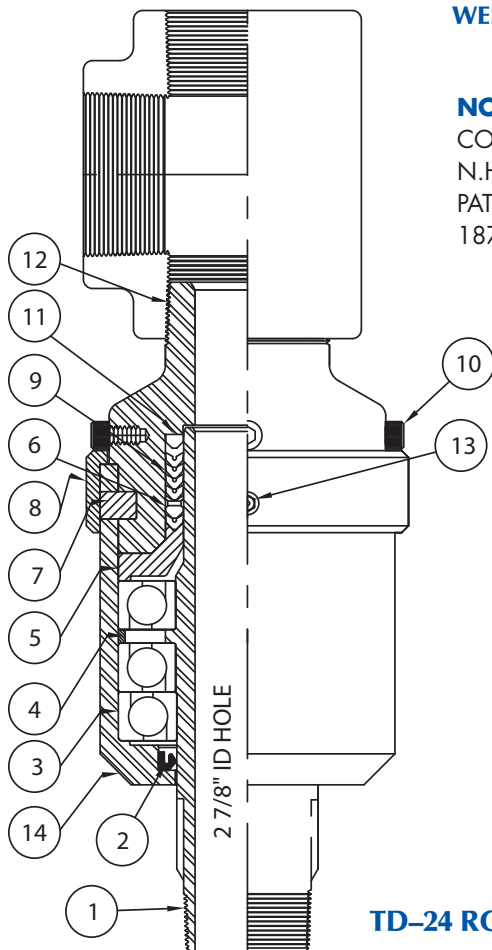
LUBRICATED PACKING AND BEARINGS FOR LONGER LIFE AND DEPENDABILITY

TD-24 ROTARY HEAD			
ITEM	PART NO.	QTY	DESCRIPTION
1	152-001	1	STEM
2	152-455186	1	GREASE SEAL
3	152-7220	3	BEARING
4	152-005B	1	BEARING SPACER
5	152-004	1	BACKUP RING
6	108-010	2	GREASE RING
7	152-005A	3	KEY
8	152-005	1	RETAINER RING
9	152-020	5	PACKING RING
10		4	CAP SCREW
11	152-020A	1	PACKING ADAPTER
12	152-003	1	GOOSENECK
13	105-009	2	GREASE FITTING
14	152-002	1	BEARING HOUSING



WEIGHT: 391 LBS

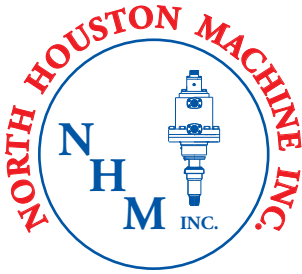
NOTE: WEDGELock CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND PATENT PENDING



TD-24 ROTARY HEAD

HEAVY DUTY TD-32 ROTARY HEAD			
ITEM	PART NO.	QTY	DESCRIPTION
1	151B-001	1	STEM
2	940-27	1	ROD WIPER
3	151-416664	1	GREASE SEAL
4	105-009	2	GREASE FITTING
5	151B-7214	1	BEARING
6	151C-007	2	BEARING SPACER
7	151C-002	1	BEARING HOUSING
8	151C-006	1	BACKUP RING
9	3JHP-04	1	GREASE RING
10	151C-004	1	KEY
11	151C-005	1	RETAINER RING
12	151B-020	6	PACKING RING
13	151C-550	1	SNAP RING

152-400C ROTATING HEAD
4" I.D. WATERCOURSE



MODEL "TD" FLUID SWIVELS

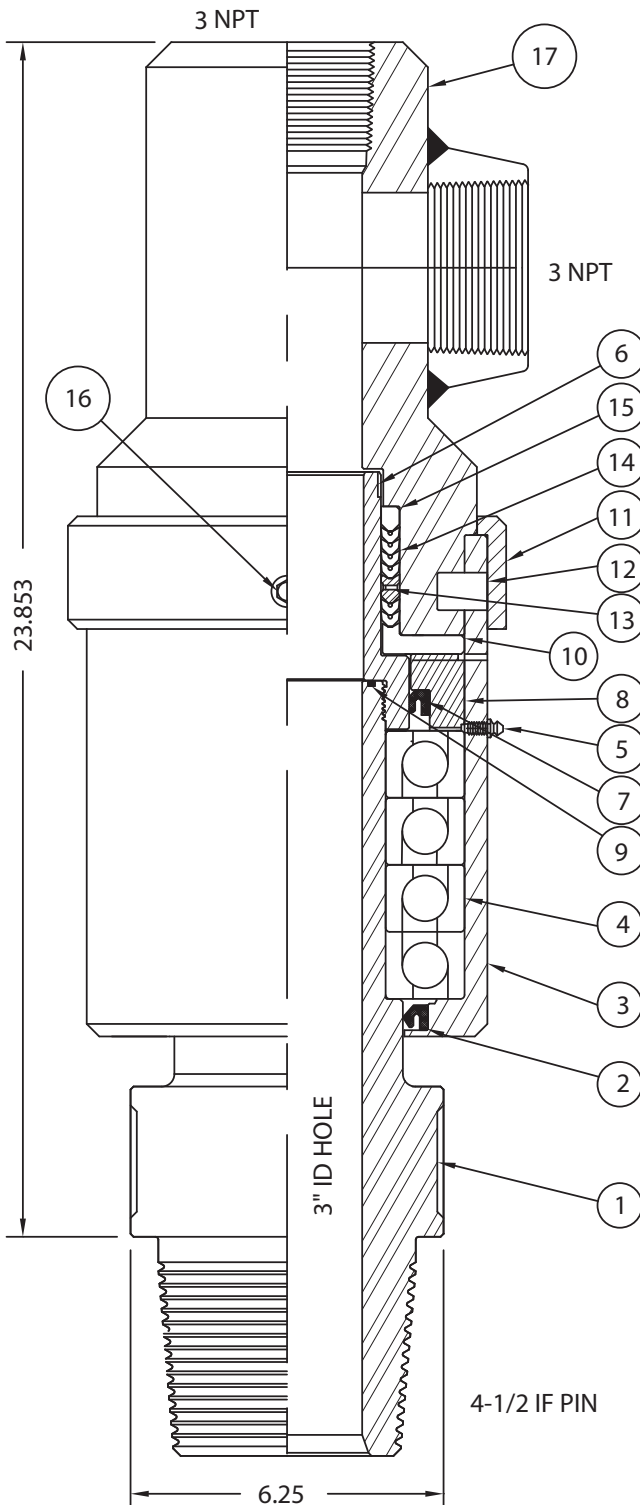
TD-27 CIRCULATING SWIVELS

CAPACITIES FOR 100 R.P.M. AT 3,000 HOURS

PULLDOWN CAPACITY	PULLBACK CAPACITY	WORKING PRESSURE	DIAMETER WATERCOURSE
20,356 LBS	43,776 LBS	3.00 P.S.I.	3.00

WEIGHT AND DIMENSIONAL DATA

LENGTH INCHES	WEIGHT POUNDS	LOWER CONNECTION	HOSE CONNECTION
23.853"	330 LBS	4-1/2 IF PIN	3 NPT

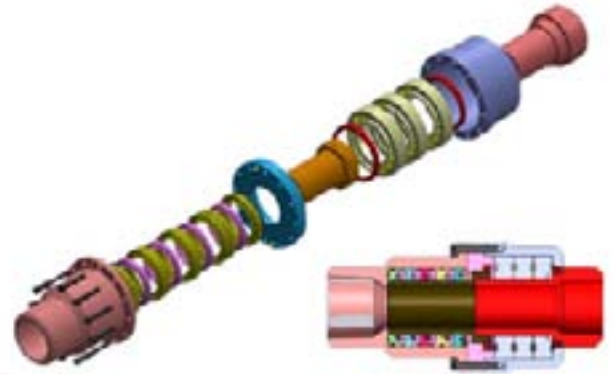


PARTS FOR TD-27

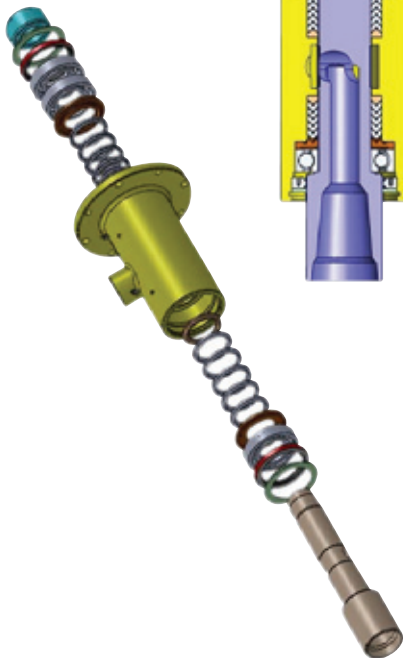
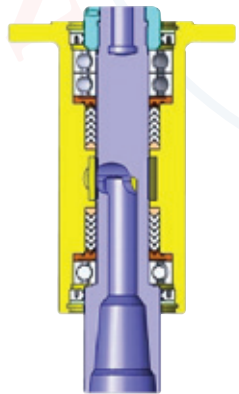
ITEM	PART NO.	QTY	DESCRIPTION
1	155-001	1	STEM
2	155-416167	1	GREASE SEAL
3	155-003	1	BEARING HOUSING
4	152-7220	4	BEARING
5	105-009	2	GREASE FITTING
6	155-008	1	WASH PIPE
7	155-416156	1	GREASE SEAL
8	155-006	1	SEAL RETAINER
9	155-236	1	O-RING
10	155-007	1	BACKUP RING
11	155-009	1	OUTER RING
12	152-005A	3	RETAINING KEY
13	128-010C	1	GREASE RING
14	128-020	6	PACKING RING
15	155-004	1	MALE ADAPTER
16		3	CAP SCREW
17	155-002	1	UPPER CONNECTION

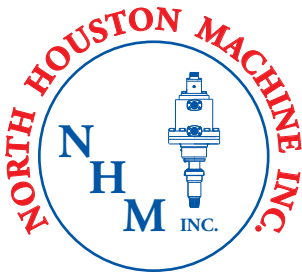
WEIGHT: 330 LBS

NOTE: WEDGELOCK CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND PATENT PENDING



TOP HEAD DRIVES



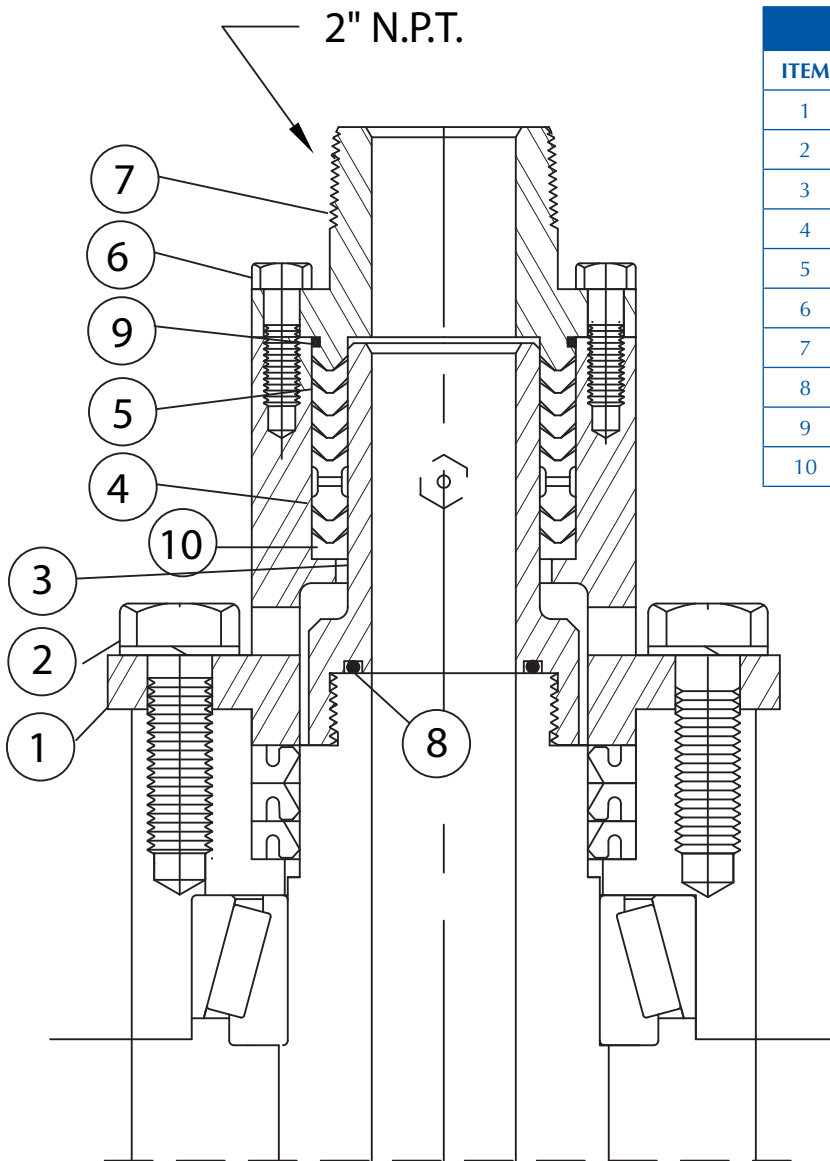


NORTH HOUSTON MACHINE, INC. CUSTOM DESIGN

CUSTOM DESIGNED PACKING ASSEMBLIES MADE TO FIT YOUR TOP HEAD DRIVE OR SWIVEL.

CONVERSION UNIT – LOW PRESSURE – TO HIGH PRESSURE WITH REMOVABLE HARDENED WASHPIPE AND CHEVRON PACKING.

FOR GECO, ARDCO, LAVACO, MINICO, TRANS-QUIP, N.H.M, INC.

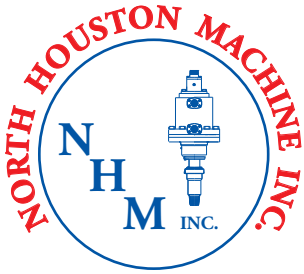


PARTS LIST			
ITEM	PART NO.	QTY	DESCRIPTION
1	804-3001	1	PACKOFF BOX
2	804-3002	2	CAP SCREWS
3	804-3003	1	WASHPIPE
4	804-3004	1	GREASE RING
5	804-3005	5	PACKING SET
6	804-3006	4	CAP SCREWS
7	804-3007	1	PACKING GLAND
8	804-3223	4	O-RING SEAL
9	804-3230	1	O-RING SEAL
10	804-3005A	1	PACKING ADAPTER

CAN BE INTERCHANGED WITH MOST GEOPHYSICAL TOP HEAD DRIVES.

REMOVE THE TOP SECTION AND ADD THE HIGH-PRESSURE ASSEMBLY, GREASE, AND THEN YOU ARE READY TO DRILL.

PRESSURE RATING 1500 P.S.I. WITH STANDARD PACKING. HIGH TEMPERATURE AND HIGHER PRESSURE PACKING COMPOUNDS ARE AVAILABLE.

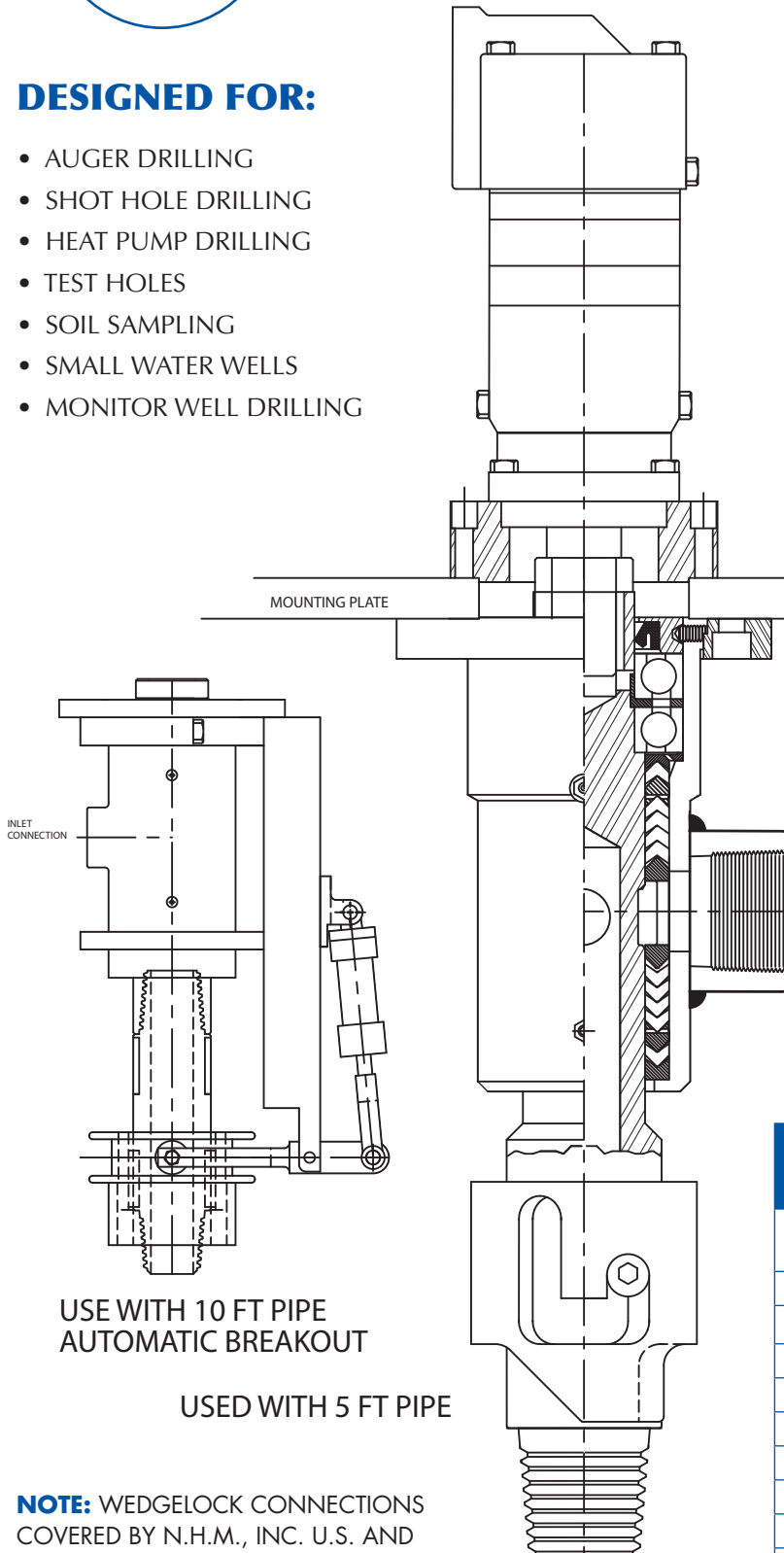


MARK I-II-III

THE ECONOMY TOP HEAD DRIVE SWIVEL

DESIGNED FOR:

- AUGER DRILLING
- SHOT HOLE DRILLING
- HEAT PUMP DRILLING
- TEST HOLES
- SOIL SAMPLING
- SMALL WATER WELLS
- MONITOR WELL DRILLING



USE WITH 10 FT PIPE
AUTOMATIC BREAKOUT

USED WITH 5 FT PIPE

NOTE: WEDGELock CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND P94100AU.

SIMPLIFIED DESIGN TO ADAPT TO SMALL HYDRAULIC RIGS OFFERS AN ECONOMICAL WAY TO INSTALL A TOP HEAD DRIVE

MARK I ROTARY HEAD DATA:

PULLDOWN CAPACITY 4,800 LBS
 PULLBACK CAPACITY 4,800 LBS
 WATERCOURSE STANDARD 1-3/16" I.D.
 WORKING PRESSURE 750 P.S.I.

MARK II ROTARY HEAD DATA:

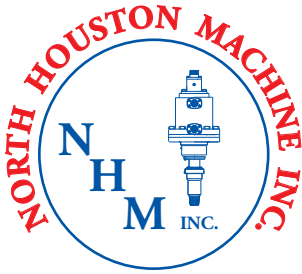
PULLDOWN CAPACITY 5,700 LBS
 PULLBACK CAPACITY 5,700 LBS
 WATERCOURSE STANDARD 1-3/16" I.D.
 WORKING PRESSURE 750 P.S.I.

MARK III ROTARY HEAD DATA:

PULLDOWN CAPACITY 5,700 LBS
 PULLBACK CAPACITY 9,513 LBS
 WATERCOURSE STANDARD 1-3/16" I.D.
 WORKING PRESSURE 750 P.S.I.

SPECIFICATIONS FOR CHAR-LYNN 2000 SERIES MOTOR

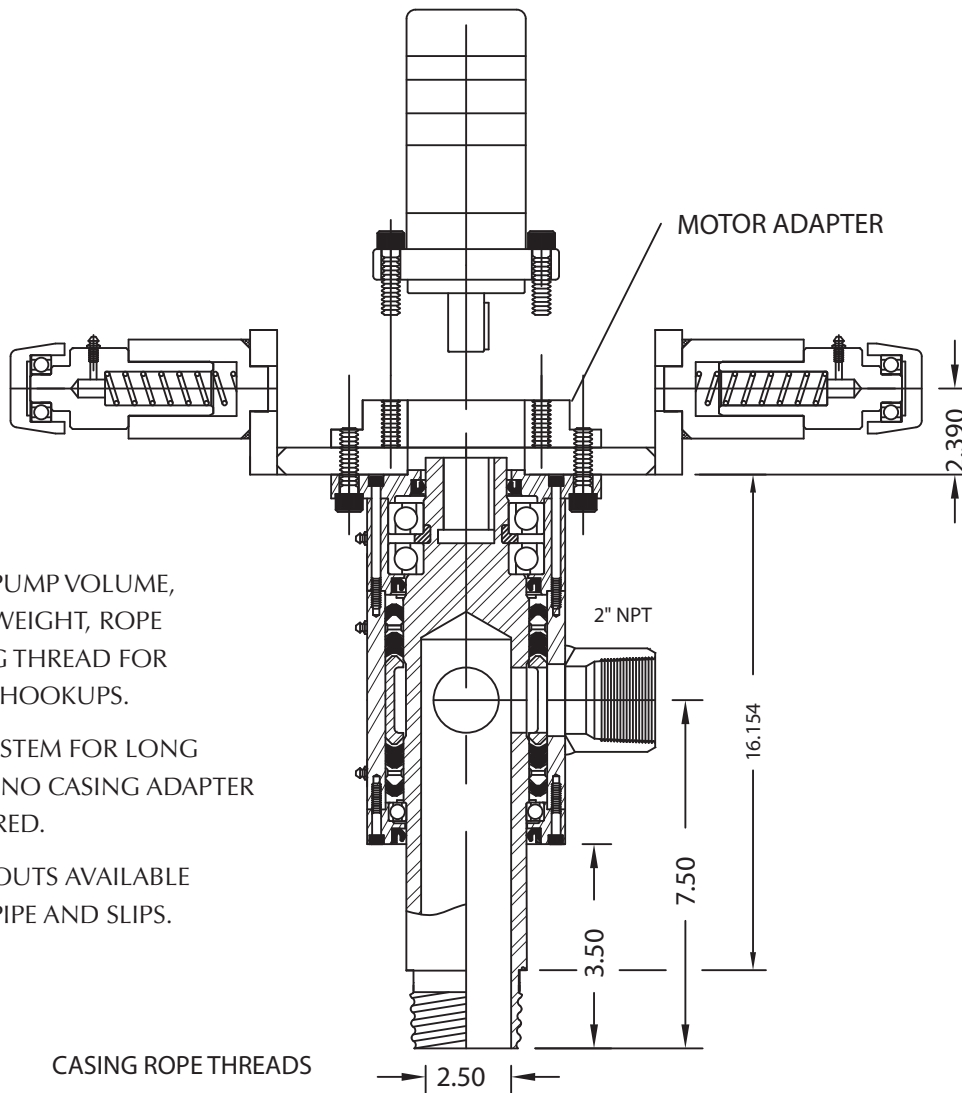
MOTOR SIZE	MAX G.P.M.	G.P.M. 100 R.P.M.	CONTINUOUS P.S.I.	TORQUE LB. FT.
4.9 CU. IN.	20	2.1	3,000 P.S.I.	172 LB. FT.
6.2 CU. IN.	20	2.7	3,000 P.S.I.	219 LB. FT.
8.0 CU. IN.	20	3.5	3,000 P.S.I.	285 LB. FT.
9.6 CU. IN.	20	4.2	3,000 P.S.I.	337 LB. FT.
11.9 CU. IN.	20	5.2	3,000 P.S.I.	398 LB. FT.
14.9 CU. IN.	20	6.5	3,000 P.S.I.	488 LB. FT.
18.6 CU. IN.	20	8.1	3,000 P.S.I.	563 LB. FT.
24.0 CU. IN.	20	10.4	2,250 P.S.I.	570 LB. FT.
29.8 CU. IN.	20	12.9	1,750 P.S.I.	623 LB. FT.



MODEL "CD" ROTARY HEAD

CHAR-LYNN 2000 HYDRAULIC MOTOR DATA				
CU. IN. DISPLACEMENT	TORQUE LB. FT.	PRESSURE P.S.I.	MAXIMUM R.P.M.	G.P.M. 100 R.P.M.
6.2 CU. IN.	212	3,000	662	2.7 G.P.M.
8.0 CU. IN.	273	3,000	524	3.5 G.P.M.
9.6 CU. IN.	337	2,500	246	4.2 G.P.M.
11.9 CU. IN.	344	2,500	248	5.2 G.P.M.
18.7 CU. IN.	429	3,000	662	8.1 G.P.M.

HYDRAULIC MOTOR

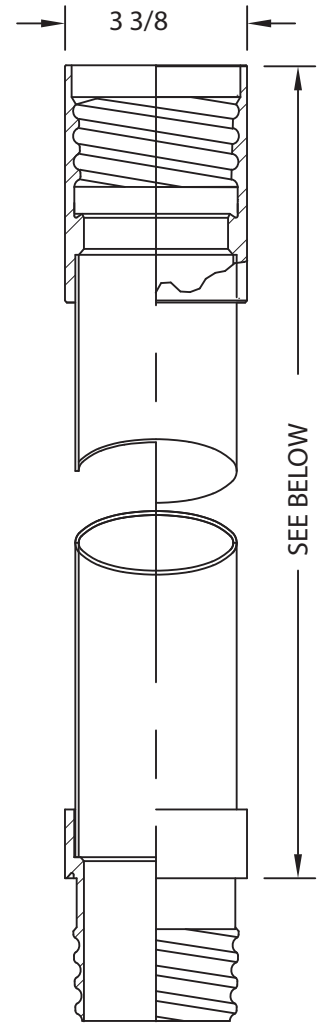


HIGH PUMP VOLUME,
LIGHTWEIGHT, ROPE
CASING THREAD FOR
CLOSE HOOKUPS.

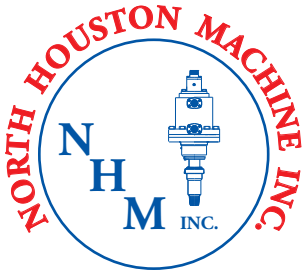
ALLOY STEM FOR LONG
WEAR. NO CASING ADAPTER
REQUIRED.

BREAKOUTS AVAILABLE
WITH PIPE AND SLIPS.

CASING ROPE THREADS
STANDARD THREADS
ANY CONNECTION

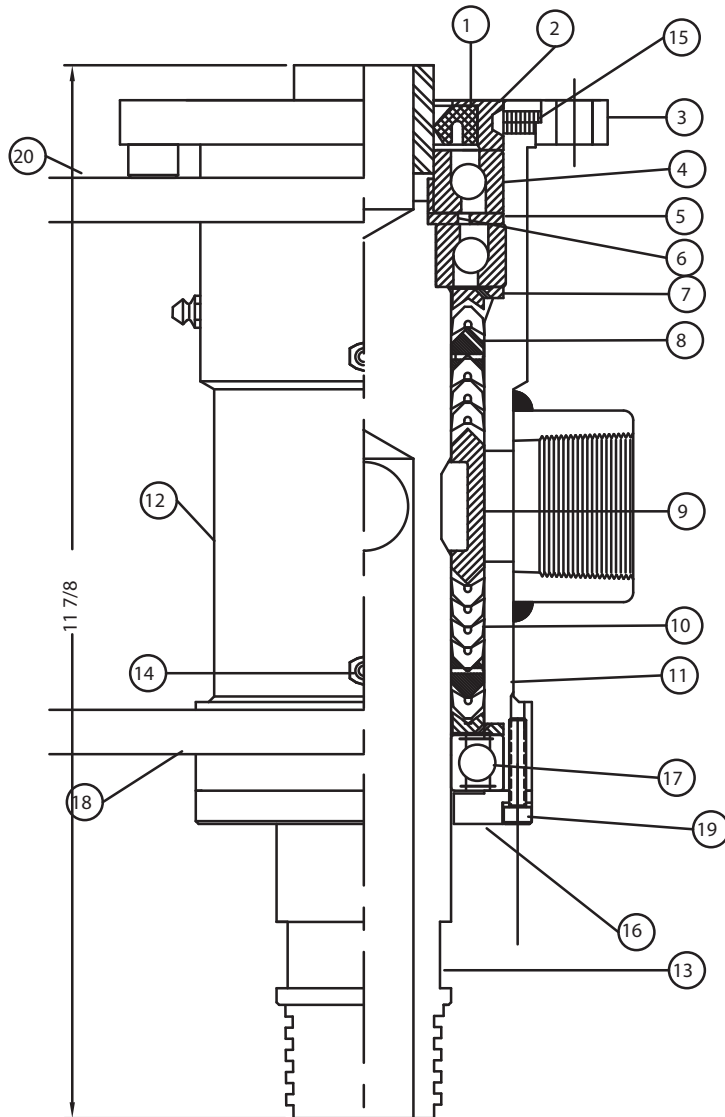


CASING DRILL PIPE
5 FT.--23 LBS (.120 WALL)
10 FT.--42 LBS (.120 WALL)



MARK I

THE ECONOMY TOP HEAD DOUBLE-BEARING DRIVE SWIVEL



SIMPLIFIED DESIGN TO ADAPT TO A SMALL HYDRAULIC RIG OFFERS AN ECONOMICAL WAY TO INSTALL A TOP HEAD DRIVE.

THIS UNIT ALSO FOR WISE DRILLING USED WITH 792-528 SUB.

ALL PARTS MADE IN U.S.A.

THE MARK I, II, AND III ARE ECONOMIC SWIVELS USED AS A TOP HEAD DRIVE MOUNTED TO A PLATE ON THE RIG PULLBACK ASSEMBLY. THE ROTARY HEAD INCORPORATES A HIGH-TORQUE, LOW-SPEED, HYDRAULIC MOTOR SUCH AS A CHAR-LYNN 2000 SERIES.

THE MARK I & MARK II HAVE TWO BEARINGS, ONE FOR PULLBACK AND ONE FOR PULLDOWN, WHILE THE MARK III HAS THREE BEARINGS, TWO FOR PULLBACK AND ONE FOR PULLDOWN.

NORMAL WORKING PRESSURE FOR THE ROTARY HEADS IS 750 P.S.I., HOWEVER, SHOULD HIGHER PRESSURES OR HIGH SPEEDS BE REQUIRED, THERE ARE OTHER PACKING COMPOUNDS THAT ARE AVAILABLE WHICH CAN INCREASE THE PRESSURE RATING OR PROTECT FROM HIGH TEMPERATURES DUE TO INCREASED ROTATING SPEEDS.

CAPACITIES FOR 100 R.P.M. AT 3,000 HOURS

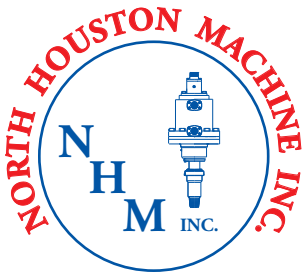
PULLDOWN CAPACITY	PULLBACK CAPACITY	WORKING PRESSURE	DIAMETER WATERCOURSE
4,800 LBS	4,800 LBS	750 P.S.I.	1-3/16"

WEIGHT AND DIMENSIONAL DATA

LENGTH INCHES	WEIGHT POUNDS	LOWER CONNECTION	HOSE CONNECTION
9-1/8"	18-1/2 LBS	1-1/2 CA21	1_1/4 NPT

PART LIST FOR MK-I

ITEM	DESCRIPTION	PART NO.	QTY	DWG. NO.
1	GREASE SEAL	101-009	1	101-000
2	SEAL RETAINER	101-011	1	101-011
3	FLANGE	101-002	1	101-002
4	7208 BEARING	101-7208	2	101-000
5	BEARING SPACER	101-004	1	101-004
6	BEARING RETAINER	101-003	1	101-003
7	PACKING BACKUP RING	101-006	2	101-006
8	LANTERN RING	103-015	2	103-015
9	FLOW TUBE	101-012	1	101-012
10	PACKING	101-020	9	101-000
11	SWIVEL HOUSING	101L-008	1	101L-008
12	FLOW TUBE RETAINER BOLT		1	101L-000
13	STEM	101-001W	1	101L-001
14	GREASE FITTING	101-013	3	101-000
15	SET SCREW	101-010	1	101-000
16	BEARING CAP	101L-016	1	101L-016
17	BEARING	101-6010	1	101-000K
18	LOWER ADAPTER RING	101L-018	1	101L-018
19	CAP SCREW	101L-019	6	101L-019
20	UPPER ADAPTER RING	101L-020	1	101L-020
21	ADAPTER SUPPORT ARM	101L-021	2	101L-021



MARK II

THE ECONOMY TOP HEAD DRIVE SWIVEL

THE MARK I, II, AND III ARE ECONOMIC SWIVELS USED AS A TOP HEAD DRIVE MOUNTED TO A PLATE ON THE RIG PULLBACK ASSEMBLY. THE ROTARY HEAD INCORPORATES A HIGH-TORQUE, LOW-SPEED, HYDRAULIC MOTOR SUCH AS A CHAR-LYNN 2000 SERIES.

THE MARK I & MARK II HAVE TWO BEARINGS, ONE FOR PULLBACK AND ONE FOR PULLDOWN, WHILE THE MARK III HAS THREE BEARINGS, TWO FOR PULLBACK AND ONE FOR PULLDOWN.

NORMAL WORKING PRESSURE FOR THE ROTARY HEADS IS 750 P.S.I., HOWEVER, SHOULD HIGHER PRESSURES OR HIGH SPEEDS BE REQUIRED, THERE ARE OTHER PACKING COMPOUNDS THAT ARE AVAILABLE THAT CAN INCREASE THE PRESSURE RATING OR PROTECT FROM HIGH TEMPERATURES FROM INCREASED ROTATING SPEEDS.

CAPACITIES FOR 100 R.P.M. AT 3,000 HOURS

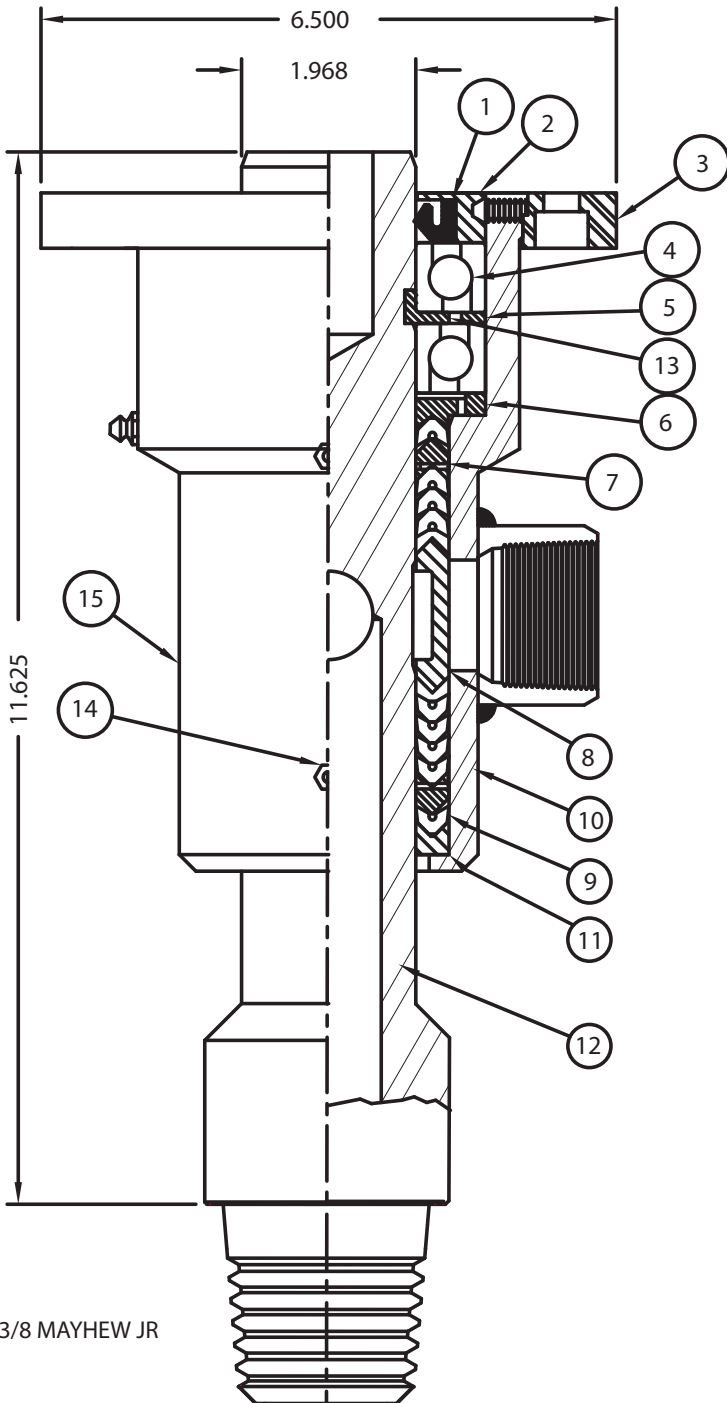
PULLDOWN CAPACITY	PULLBACK CAPACITY	WORKING PRESSURE	DIAMETER WATERCOURSE
5,872 LBS	5,872 LBS	750 P.S.I.	1-3/16"

WEIGHT AND DIMENSIONAL DATA

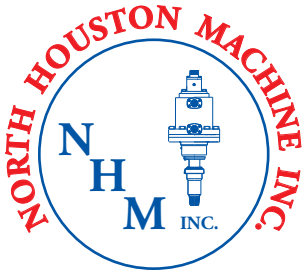
LENGTH INCHES	WEIGHT POUNDS	LOWER CONNECTION	HOSE CONNECTION
11-5/8"	20 LBS	2-3/8 MAYHEW JR.	1-1/4 NPT

PARTS LIST FOR MKII

ITEM	PART NO.	QTY	DESCRIPTION
1	103-009	1	GREASE SEAL 450474
2	103-011	1	GREASE SEAL RET.
3	103-002	1	FLANCE
4	103-005	2	7210 BEARING
5	103-004	1	BEARING SPACER
6	103-006	1	BACKUP RING
7	103-015	2	LANTERN RING
8	101-012	1	FLOW TUBE
9	103-020	9	PACKING RING
10	102-008	1	SWIVEL HOUSING
11	103-014	1	PACKING RETURN RING
12	102-001	1	STEM
13	103-003	1	BEARING RETAINER
14	105-009	1	GREASE FITTING
15	103-012P	1	FLOW TUBE RETURN

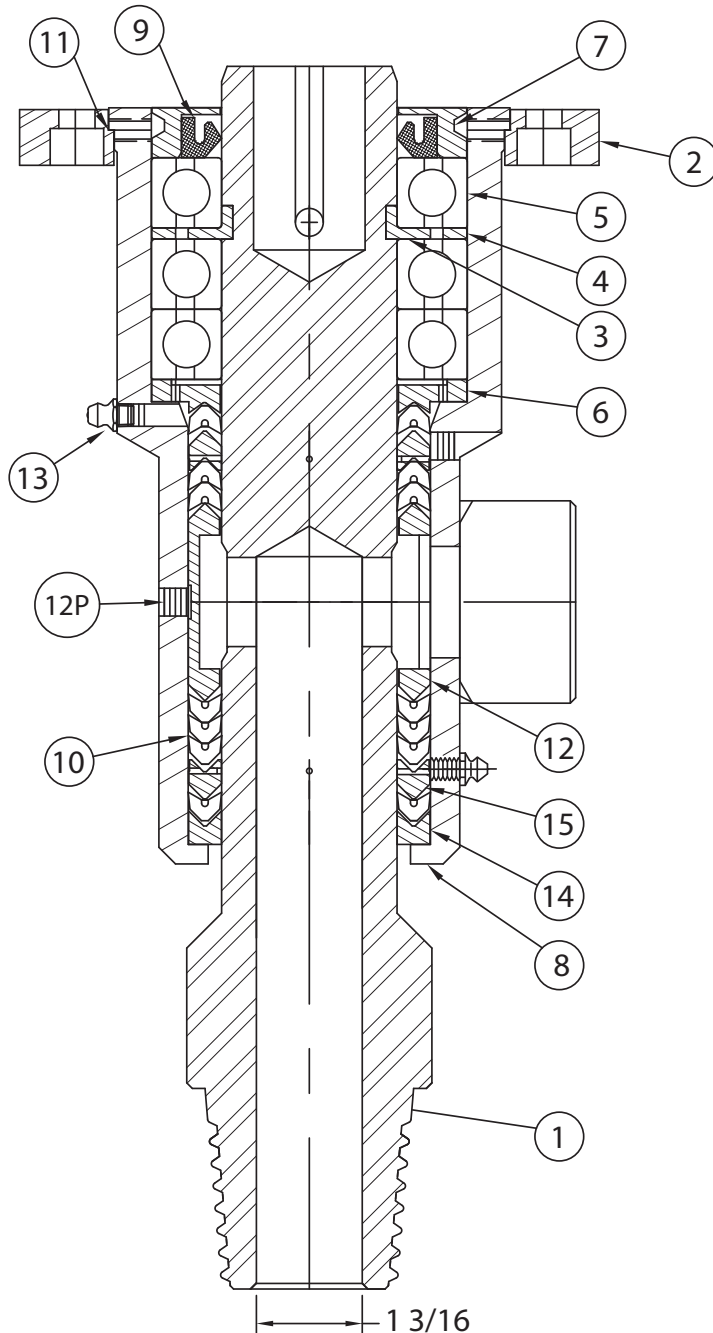


THIS ROTARY HEAD AVAILABLE WITH MANUAL BREAKOUT (LATCH) OR AUTOMATIC BREAKOUT SYSTEM



MARK III

THE ECONOMY TOP HEAD DRIVE SWIVEL



THIS ROTARY HEAD IS AVAILABLE
WITH MANUAL BREAKOUT (LATCH)
OR AUTOMATIC BREAKOUT SYSTEM

THE MARK I, II, AND III ARE ECONOMIC SWIVELS USED AS A TOP HEAD DRIVE MOUNTED TO A PLATE ON THE RIG PULLBACK ASSEMBLY. THE ROTARY HEAD INCORPORATES A HIGH-TORQUE, LOW-SPEED, HYDRAULIC MOTOR SUCH AS A CHAR-LYNN 2000 SERIES.

THE MARK I & MARK II HAVE TWO BEARINGS, ONE FOR PULLBACK AND ONE FOR PULLDOWN, WHILE THE MARK III HAS THREE BEARINGS, TWO FOR PULLBACK AND ONE FOR PULLDOWN.

NORMAL WORKING PRESSURE FOR THE ROTARY HEADS IS 750 P.S.I., HOWEVER, SHOULD HIGHER PRESSURES OR HIGH SPEEDS BE REQUIRED, THERE ARE OTHER PACKING COMPOUNDS THAT ARE AVAILABLE THAT CAN INCREASE THE PRESSURE RATING OR PROTECT FROM HIGH TEMPERATURES FROM INCREASED ROTATING SPEEDS.

CAPACITIES FOR 100 R.P.M. AT 3,000 HOURS

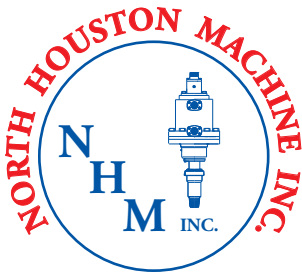
PULLDOWN CAPACITY	PULLBACK CAPACITY	WORKING PRESSURE	DIAMETER WATERCOURSE
5,872 LBS	9,513 LBS	750 P.S.I.	1-3/16"

WEIGHT AND DIMENSIONAL DATA

LENGTH INCHES	WEIGHT POUNDS	LOWER CONNECTION	HOSE CONNECTION
13-7/8"	21-1/2 LBS	2-3/8 MAYHEW JR.	2 NPT

PARTS LIST FOR MK III

ITEM	PART NO.	QTY	DESCRIPTION
1	103-001	1	STEM
2	103-002	1	FLANGE
3	103-003	1	BEARING RET.
4	103-004	1	BEARING SPACER
5	BRG-7210	2	BEARING
6	103-006	1	BACKUP RING
7	103-011	1	SEAL RETAINER
8	103-008	1	SWIVEL HOUSING
9	103-009	1	GREASE SEAL
10	103-020	9	PACKING RING
11	SHSS-4-3	4	SET SCREW
12	103-012	1	FLOW TUBE
12P	103-012P	1	PIPE PLUG
13	105-009	3	GREASE FITTING
14	103-014	1	PACKING ADAPTER MALE
15	103-015	2	LANTERN RING

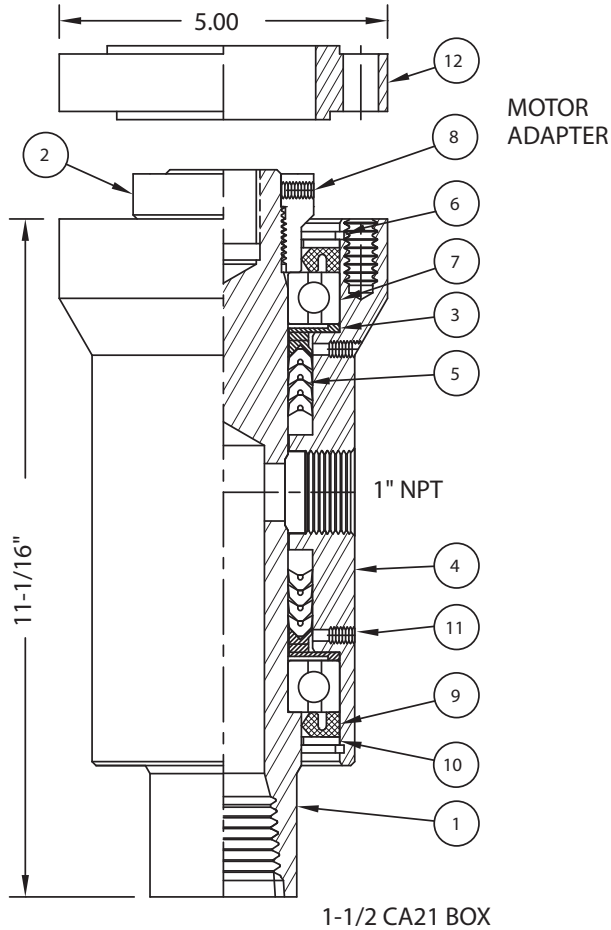


200 SWIVEL

TOP HEAD DRIVE

200 TOP HEAD DRIVE SWIVEL

SMALL, DURABLE AND LIGHTWEIGHT, USED ON SMALL RIGS, SUCH AS THE DR-200 SERIES RIGS.



PARTS LIST FOR 200 SERIES			
ITEM	PART NO.	QTY	DESCRIPTION
1	200-001	1	STEM
2	200-002	1	BEARING NUT
3	200-003	2	BACKUP RING
4	200-004	1	HOUSING
5	200-005	4	PACKING RING
6	200-006	2	SNAP RING
7	200-007	2	BEARING
8	200-008	2	SET SCREW
9	200-009	2	GREASE SEAL
10	200-023	2	WASHER
11	105-009	2	GREASE FITTING
12	200-DR2	1	MOTOR ADAPTER

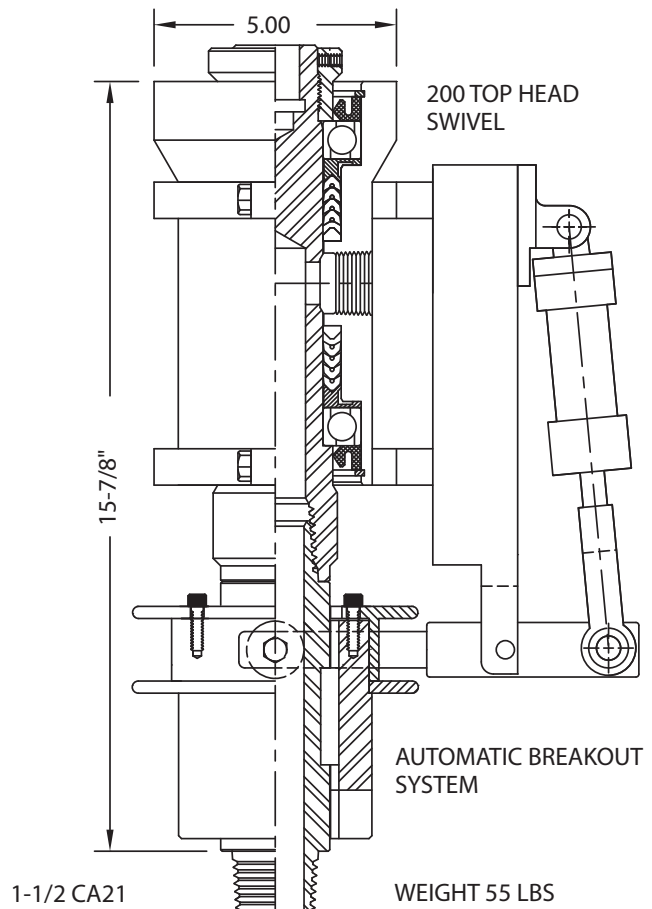
200 TOP HEAD DRIVE SWIVEL WITH AUTOMATIC BREAKOUT SYSTEM

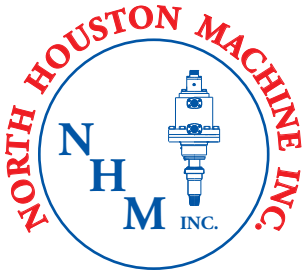
A NEW LIGHTWEIGHT TOP HEAD DRIVE TO REPLACE A COMBINATION OF HYDRAULIC MOTORS AND GEARING.

CAPACITIES FOR 100 R.P.M. AT 3,000 HOURS

PULLDOWN CAPACITY	PULLBACK CAPACITY	WORKING PRESSURE	DIAMETER WATERCOURSE
5,872 LBS	5,872 LBS	750 P.S.I.	1-1/4"

NOTE: WEDGELock CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND P94100AU.





2000 SWIVEL

TOP HEAD DRIVE

A NEW LIGHTWEIGHT TOP HEAD DRIVE TO REPLACE A COMBINATION OF HYDRAULIC MOTORS AND GEARINGS.

DESIGNED FOR:

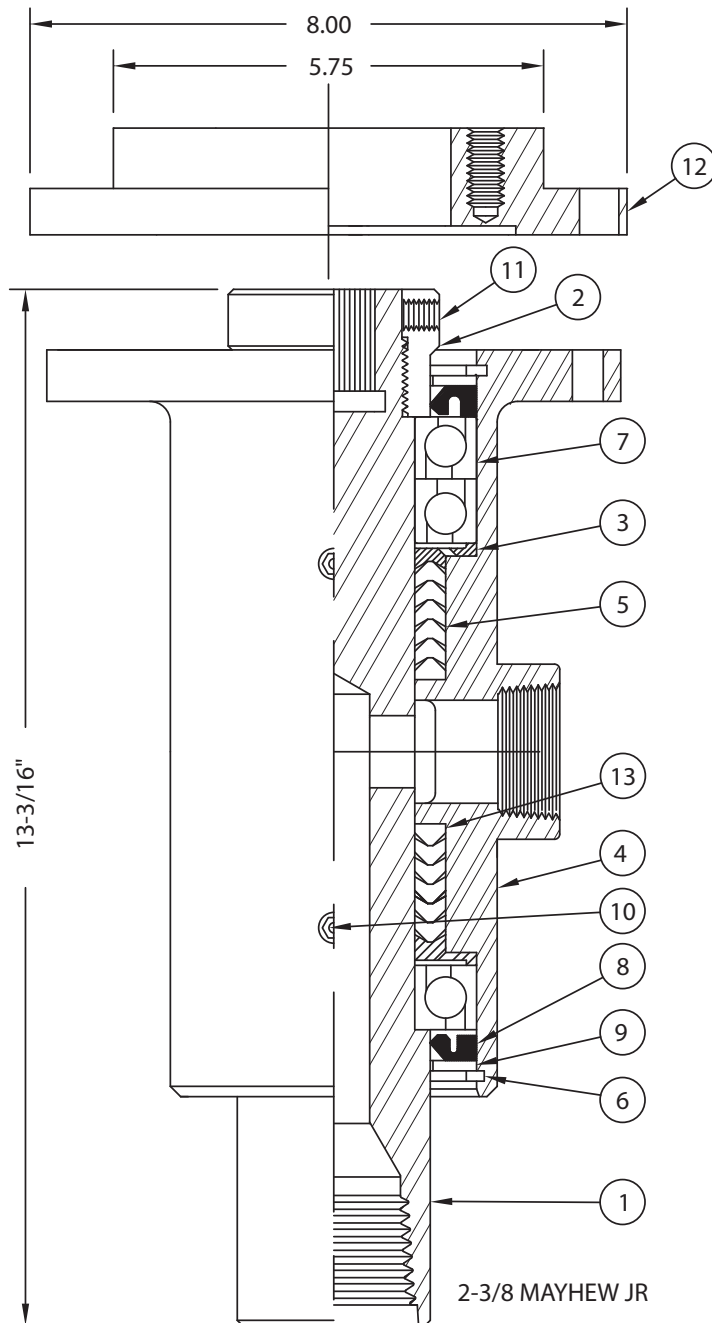
- AUGER DRILLING
- SHOT HOLE DRILLING
- HEAT PUMP DRILLING
- TEST HOLES
- SOIL SAMPLING
- SMALL WATER WELLS
- MONITOR WELL DRILLING

CAPACITIES FOR 100 R.P.M. AT 3,000 HOURS

PULLDOWN CAPACITY	PULLBACK CAPACITY	WORKING PRESSURE	DIAMETER WATERCOURSE
5,870 LBS	6,700 LBS	750 P.S.I.	1-1/4"

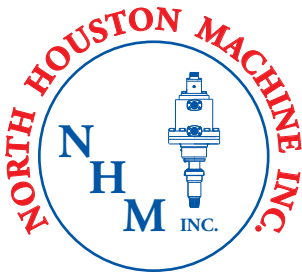
WEIGHT AND DIMENSIONAL DATA

LENGTH INCHES	WEIGHT POUNDS	LOWER CONNECTION	HOSE CONNECTION
13-3/16"	45 LBS	2-3/8 MAYHEW JR.	1-1/2 NPT



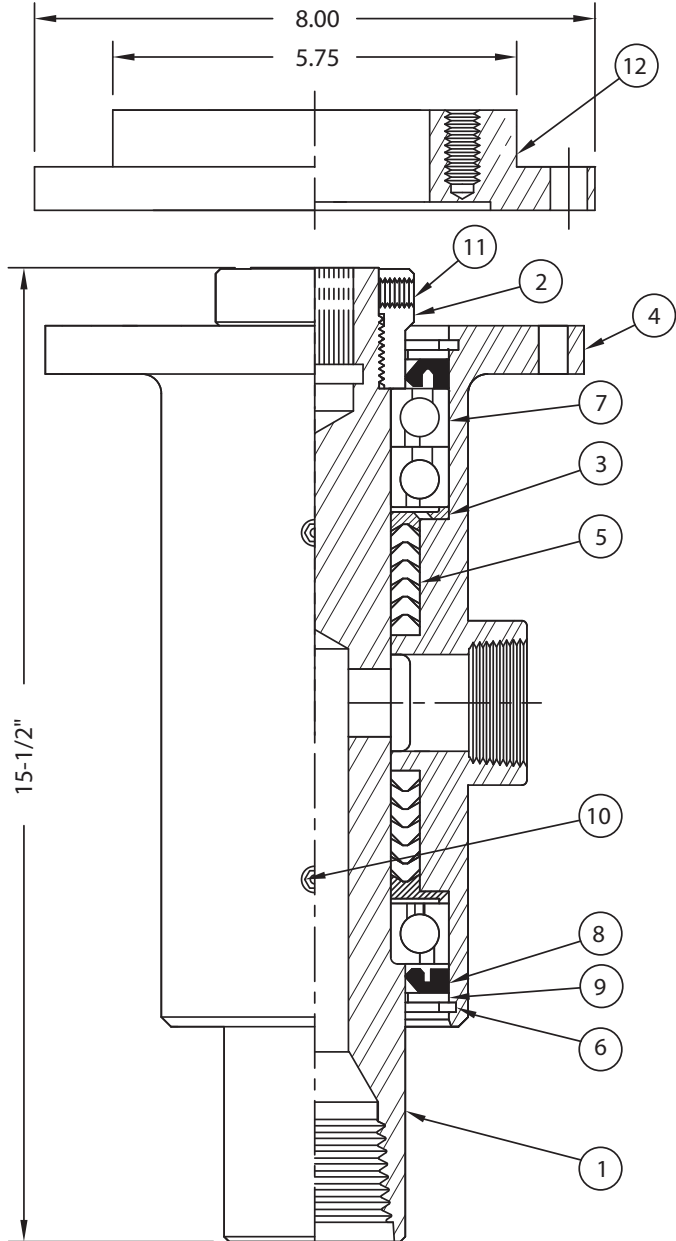
THIS TOP HEAD AVAILABLE WITH MANUAL BREAKOUT (LATCH) OR AUTOMATIC BREAKOUT SYSTEM.

PART LIST FOR 2000 SERIES			
ITEM	PART NO.	QTY	DESCRIPTION
1	2000-001	1	STEM
2	2000-002	1	BEARING NUT
3	2000-003	2	BACKUP RING
4	2000-004	1	HOUSING
5	2000-005	10	PACKING RING
6	2000-006	2	SNAP RING
7	2000-007	2	BEARING
8	2000-009	2	GREASE SEAL
9	2000-023	2	WASHER
10	MKV-009	2	GREASE FITTING
11	2000-008	2	SET SCREW
12	114-024	1	MOTOR ADAPTER
13	114-020	2	PACKING ADAPTER-MALE-BRASS



3000 SWIVEL

TOP HEAD DRIVE



A NEW LIGHTWEIGHT TOP HEAD DRIVE TO REPLACE A COMBINATION OF HYDRAULIC MOTORS AND GEARINGS.

THIS IS A LARGER SERIES THAN THE 2,000 SWIVEL WITH A WATERCOURSE UP TO 2 INCHES. FOR A LARGE SHAFT HYDRAULIC MOTOR.

BASED ON 100% LOAD RATING
FOR 3,000 HRS. L10 AT 100 R.P.M.

PULLDOWN CAPACITY	PULLBACK CAPACITY	WORKING PRESSURE	DIAMETER WATERCOURSE
10,780 LBS	17,465 LBS	750 P.S.I.	2.0"

WEIGHT AND DIMENSIONAL DATA

LENGTH INCHES	WEIGHT POUNDS	LOWER CONNECTION	HOSE CONNECTION
15-1/2"	87 LBS	2-3/8 MAYHEW JR.	2 NPT

PART LIST FOR 3000 SERIES			
ITEM	PART NO.	QTY	DESCRIPTION
1	3000-001	1	STEM
2	3000-002	1	BEARING NUT
3	3000-003	2	BACKUP RING
4	3000-004	1	HOUSING
5	3000-005	4	PACKING RING
6	3000-006	2	SNAP RING
7	3000-007	2	BEARING
8	3000-009	2	GREASE SEAL
9	3000-023	2	WASHER
10	2000-008A	2	GREASE FITTING
11	2000-008	2	SET SCREW
12	114-024	1	MOTOR ADAPTER

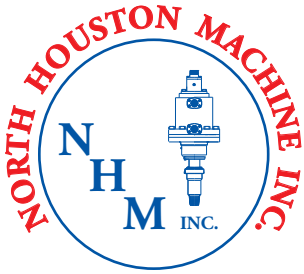
THIS TOP HEAD AVAILABLE WITH MANUAL BREAKOUT (LATCH) OR AUTOMATIC BREAKOUT SYSTEM.

FOR LARGER HYDRAULIC MOTORS SUCH AS THE CHAR-LYNN 6,000 SERIES, OR CALZONI OR S.A.I. 400 SERIES.

ALL PARTS MADE IN U.S.A.

HYDRAULIC MOTOR DATA CHAR-LYNN 6000 SERIES				
SIZE CU. IN.	MAXIMUM GPM	GPM FOR 100 R.P.M.	PRESSURE CONTINUOUS	TORQUE FT LBS
6.2 CU. IN.	212	3,000	662	2.7 G.P.M.
8.0 CU. IN.	273	3,000	524	3.5 G.P.M.
9.6 CU. IN.	337	2,500	246	4.2 G.P.M.

CHAR-LYNN MOTORS AVAILABLE IN 11.9, 15.0, 19.0, 23.9, 30.0, 38.0, AND 60.0 CU. IN./REV.



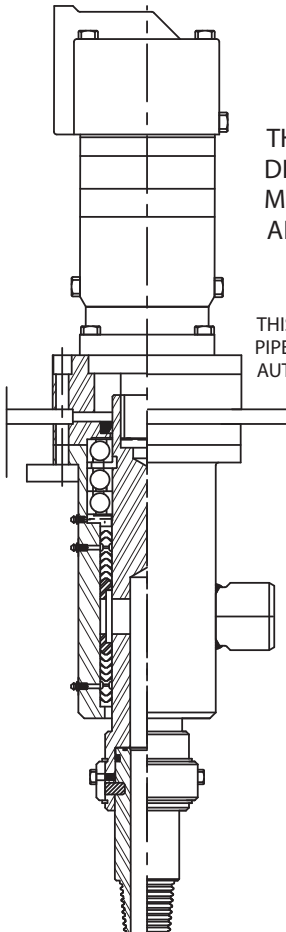
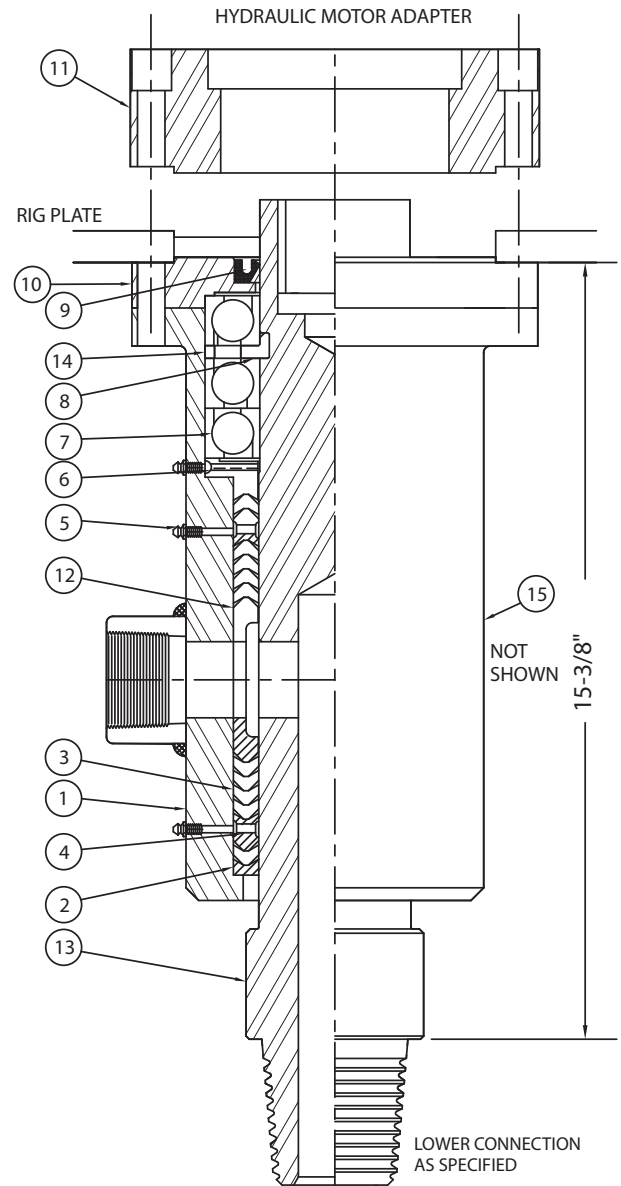
3500 SWIVEL

TOP HEAD DRIVE

BASED ON 100% LOAD RATING
FOR 3,000 HRS L10 AT 100 R.P.M.

PULLDOWN CAPACITY	PULLBACK CAPACITY	WORKING PRESSURE	DIAMETER WATERCOURSE
10,981 LBS	17,789 LBS	1,500 P.S.I.	2.0"

PART LIST FOR 3500 SERIES			
ITEM	PART NO.	QTY	DESCRIPTION
1	117-004	1	SWIVEL HOUSING
2	117-014	1	PACKING ALIGNMENT RING
3	300-011	10	PACKING SET
4	300-010	2	LANTERN RING
5	300-009	3	GREASE FITTING
6	117-008	1	BACKUP RING
7	117-7215	3	BEARING
8	117-007	1	BEARING RETAINER
9	117-005	1	GREASE SEAL
10	117-010	1	BEARING CAP
11	117-724	1	MOTOR ADAPTER 10,000 SERIES
12	300-013	1	FLOW TUBE
13	117-001	1	STEM
14	117-006	1	BEARING SPACER
15	300-013R	1	FLOW TUBE RETAINER



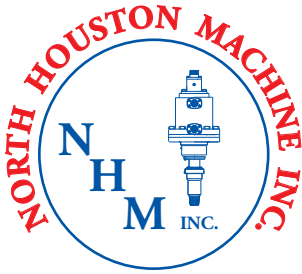
CAN BE FURNISHED WITH INLETS UP TO 3" NPT

THIS ROTARY HEAD PRIMARILY DESIGNED FOR HYDRAULIC MOTORS WITH LARGE SHAFTS AND HIGH TORQUES.

THIS UNIT CAN BE FURNISHED WITH A FLUSH PIPE BREAKOUT UNIT AS SHOWN OR A UPSET AUTOMATIC BREAKOUT FOR LUGGED PIPE.

ALL PARTS MADE IN U.S.A.

CHAR-LYNN 10,000 SERIES HYDRAULIC MOTORS				
MOTOR SIZE	FLOW MAX	REQ'D HYD AT 100 R.P.M.	CONTINUOUS PRESSURE	TORQUE FT LBS.
21.0 CU. IN.	45 G.P.M.	9.1 G.P.M.	3,000 P.S.I.	768 FT LBS
29.3 CU. IN.	45 G.P.M.	12.7 G.P.M.	3,000 P.S.I.	1,088 FT LBS
40.6 CU. IN.	45 G.P.M.	17.6 G.P.M.	3,000 P.S.I.	1,538 FT LBS
57.4 CU. IN.	45 G.P.M.	24.9 G.P.M.	3,000 P.S.I.	1,993 FT LBS



MODEL 4000 HYDRAULIC TOP HEAD DRIVE

WITH AUTOMATIC BREAKOUT SYSTEM

STATIC BEARING PACKAGE: 395,000 LBS
 DYNAMIC BEARING PACKAGE
 AT 100 R.P.M. FOR 3,000 HOURS 133,129 LBS
 BEARING PACKAGES RATED AT 100 R.P.M.
 3,000 HR L10 LOADED 100%

SPECIFICATIONS

SPINDLE STANDARD CONNECTION	CAREY INTERNATIONAL
SPINDLE STANDARD BORE	1-1/2"
HOSE CONNECTION	1-1/2" NPT
WORKING PRESSURE AIR OR FLUID	0 TO 375 P.S.I.
STANDARD PACKING TYPE	SEAL W/WEAR BUSHING
HYDRAULIC MOTOR	VANE CROSSING VANE TYPE

WEIGHT AND DIMENSIONAL DATA

MODEL	SIZE CU. IN.	PRESSURE CONTINUOUS	MAXIMUM R.P.M.	TORQUE CONTINUOUS	G.P.M. FOR 100 R.P.M.
4000-16	16	3,000 P.S.I.	0 TO 1,200 R.P.M.	604 FT LBS	7.0 GPM
4000-20	20	3,000 P.S.I.	0 TO 1,200 R.P.M.	756 FT LBS	8.7 GPM
4000-26	26	3,000 P.S.I.	0 TO 1,200 R.P.M.	982 FT LBS	11.3 GPM
4000-32	32	3,000 P.S.I.	0 TO 1,200 R.P.M.	1,209 FT LBS	13.9 GPM
4000-37	37	3,000 P.S.I.	0 TO 600 R.P.M.	1,398 FT LBS	16.1 GPM

AUTOMATIC BREAKOUT SHOWN IS FOR 1-1/2 CA21 CONNECTIONS – END PIN IS REVERSIBLE

AUTOMATIC BREAKOUT AVAILABLE FOR FLUSH OR LUG TYPE DRILL PIPE.

OPTIONAL PACKING:

HIGH-PRESSURE OPERATION: 3,000 P.S.I.

PACKING TYPE: MULTI-VEE TYPE

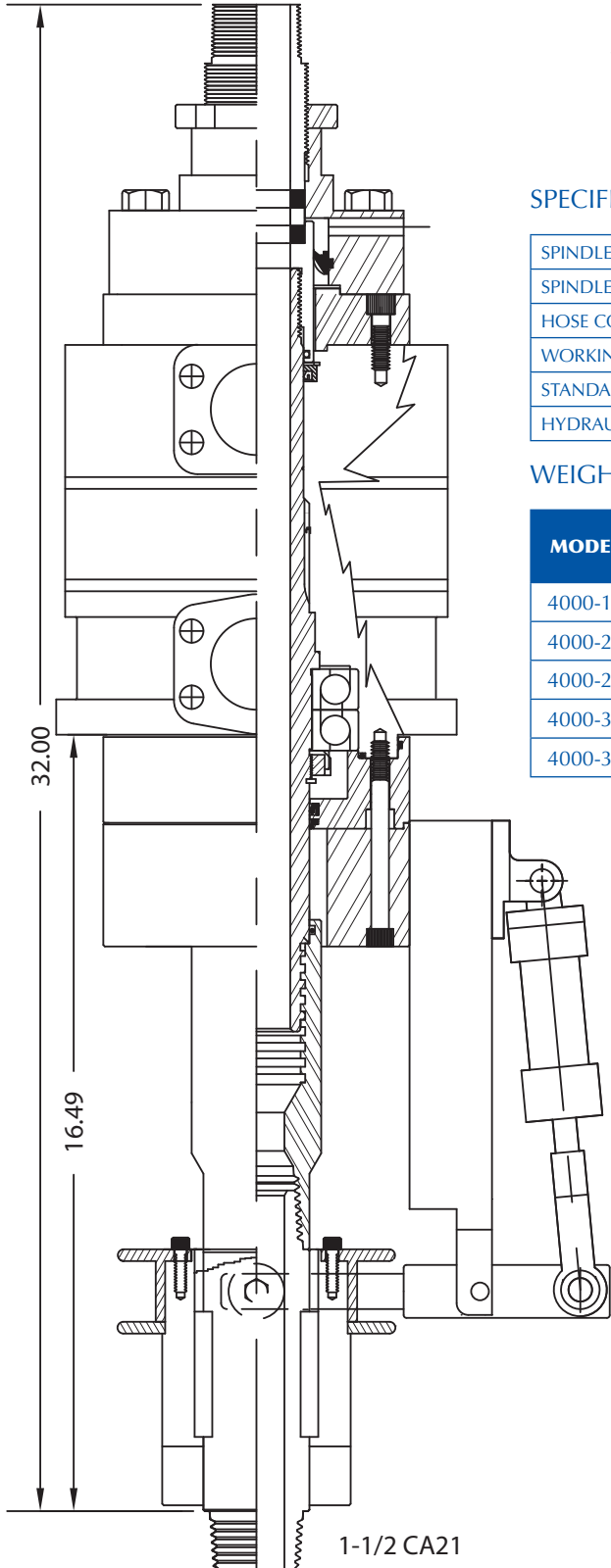
SPEED: 0 TO 1,200 R.P.M.

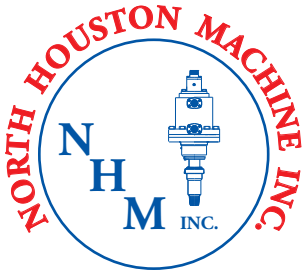
THE PACKING TYPE DEPENDS ON THE SPEED 600 R.P.M. ON HYDRAULIC MOTOR WITH STANDARD PACKING RINGS.

OTHER BEARING PACKAGES AVAILABLE FOR YOUR APPLICATION.

4000 SERIES SWIVEL WITH RINEER 37 SERIES MOTOR IS STANDARD.

NOTE: WEDGELock CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND P94100AU.





5000 TOP HEAD DRIVE 53-125 SINGLE- OR DOUBLE-STACKED

DUAL SPEED MOTORS

SPECIFICATIONS

DYNAMIC BEARING CAPACITY 60,000 @ 100 R.P.M.
 3,000 HRS. FULL LOAD
 SPINDLE BORE 2 1/8 – 2 3/4 INCHES
 HOSE CONNECTION 2 1/2 OR 3" N.P.T.
 WORKING PRESSURE, MUD OR AIR 150 TO 3,000 P.S.I.
 PACKING TYPE VEE TYPE WITH HARDENED
 REPLACEABLE WASHPIPE

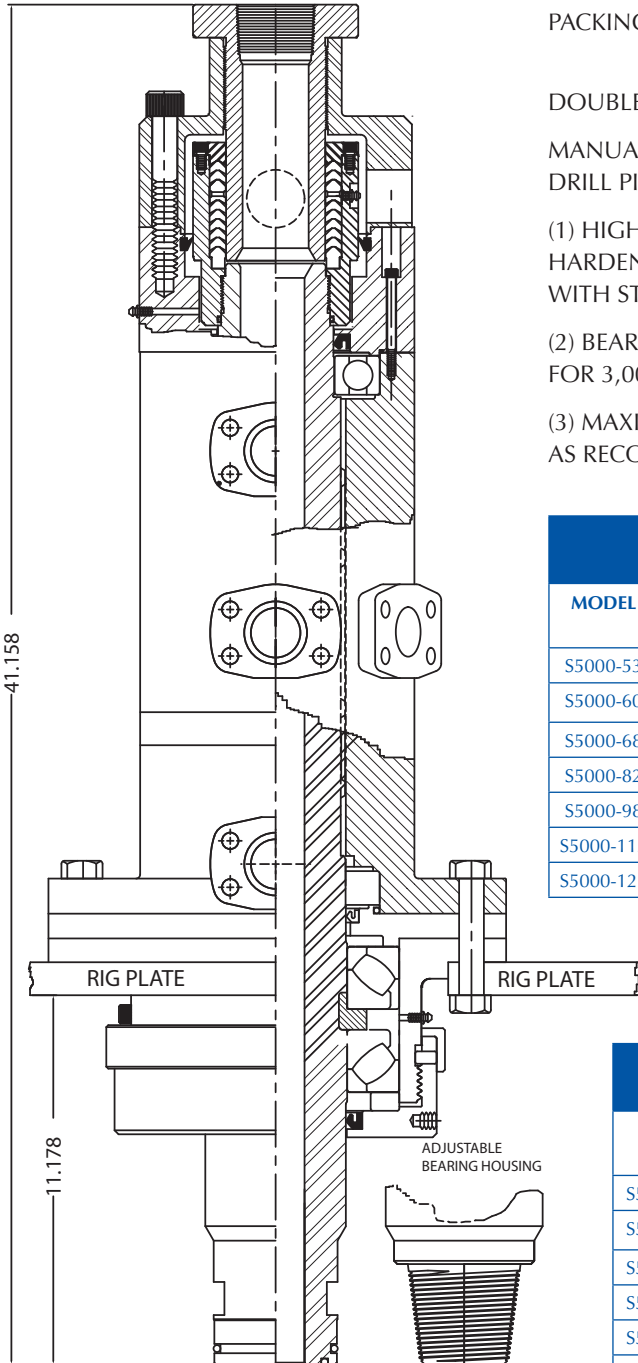
DOUBLE STACK, DUAL SPEED AVAILABLE

MANUAL OR AUTOMATIC BREAKOUTS AVAILABLE FOR FLUSH OR LUG TYPE
 DRILL PIPE.

(1) HIGH-PRESSURE OPERATION 3,000 P.S.I. MULTI-VEE PACKING WITH
 HARDEN AND GROUND WASH PIPE. RECOMMENDED MAXIMUM SPEEDS
 WITH STANDARD PACKING 250 R.P.M.

(2) BEARING PACKAGES AVAILABLE FOR LOADS TO 60,000 LBS AT 100 R.P.M.
 FOR 3,000 HOURS CONTINUOUS.

(3) MAXIMUM INTERNAL DIAMETER OF STEM 3,000 AT LOWER TORQUES OR
 AS RECOMMENDED FOR THE TOOL JOINT.



HYDRAULIC MOTOR DATA SERIES CIRCUIT

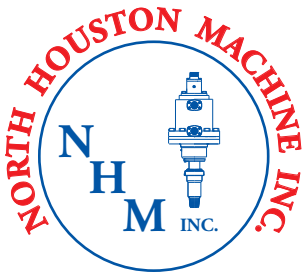
MODEL	CU. INCH DISPLACEMENT	HYD. FLUID REQ'D FOR 140 R.P.M.	CONTINUOUS P.S.I.	MAX R.P.M.	TORQUE CONTINUOUS
S5000-53	53	32 G.P.M.	3,000	250	1,878 FT LBS
S5000-60	60	36 G.P.M.	3,000	300	2,090 FT LBS
S5000-68	68	41 G.P.M.	3,000	300	2,368 FT LBS
S5000-82	82	50 G.P.M.	3,000	300	2,884 FT LBS
S5000-98	98	59 G.P.M.	3,000	300	3,446 FT LBS
S5000-113	113	68.5 G.P.M.	3,000	300	4,012 FT LBS
S5000-125	125	75.8 G.P.M.	3,000	300	4,486 FT LBS

ALL PARTS MADE IN U.S.A.

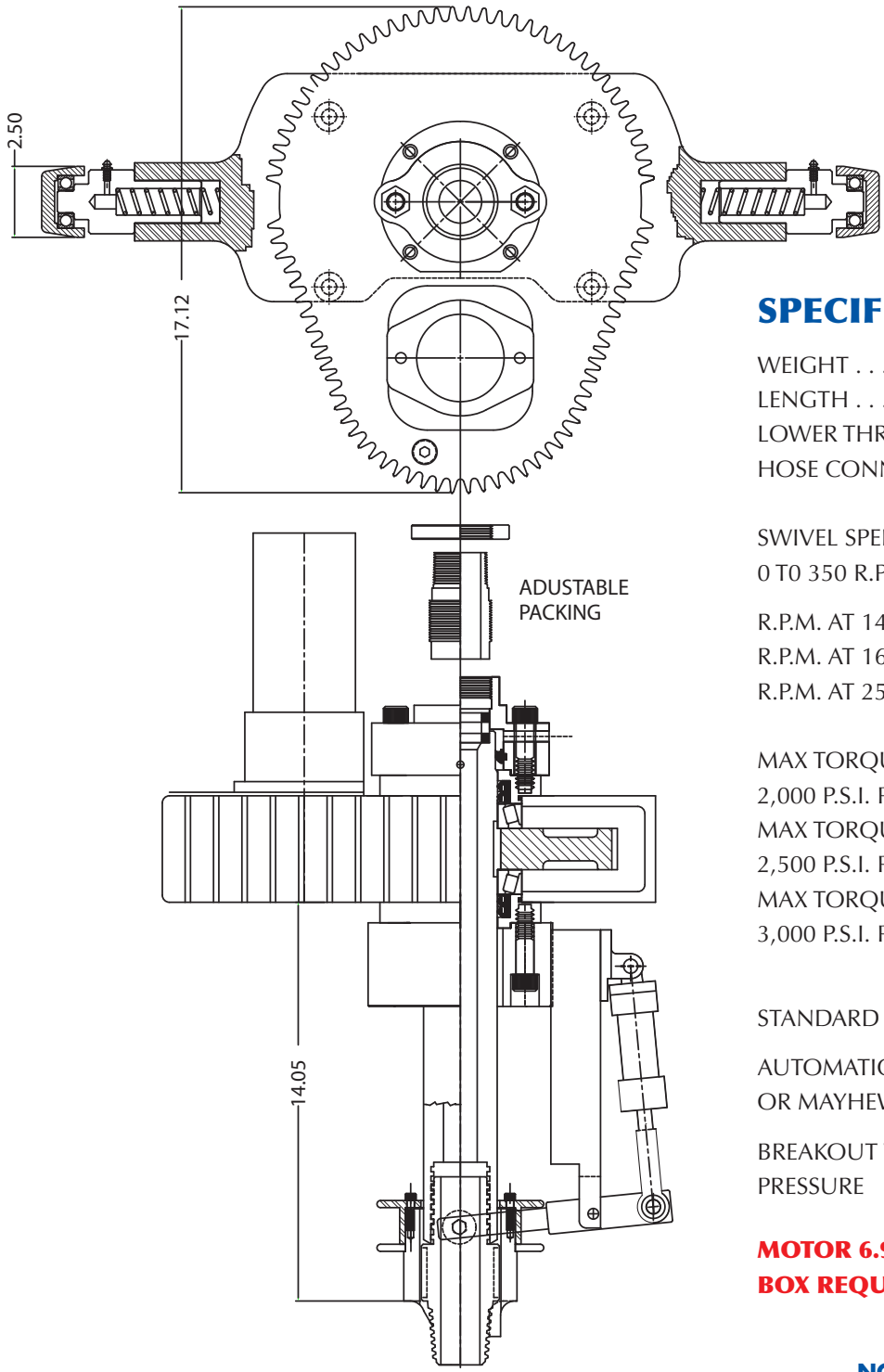
HYDRAULIC MOTOR DATA PARALLEL CIRCUIT

MODEL	CU. INCH DISPLACEMENT	PRESSURE CONTINUOUS	CONTINUOUS R.P.M.	TORQUE CONTINUOUS
S5000-120-PC	120	3,000	150	4,308 FT LBS
S5000-136-PC	136	3,000	150	4,882 FT LBS
S5000-164-PC	164	3,000	150	5,948 FT LBS
S5000-196-PC	196	3,000	150	7,106 FT LBS
S5000-226-PC	226	3,000	150	82,740 FT LBS
S5000-250-PC	250	3,000	150	9,250 FT LBS

WEDGELOCK OR
 ANY TOOL JOINT



MODEL 1500NHM



SMALL CAREY INT'L X 2 3/8 MAY JR PIN

SPECIFICATIONS

WEIGHT 21-1/2 LBS
 LENGTH 3-1/2 API REGULAR
 LOWER THREAD 3-1/2 API IF
 HOSE CONNECTION 3" NPT

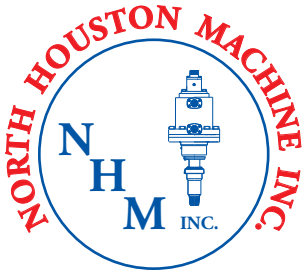
SWIVEL SPEED DEPENDING ON HYDRAULIC G.P.M.
 0 TO 350 R.P.M. AVAILABLE TORQUE TO 1,500 FT. LB.
 R.P.M. AT 14.4 G.P.M. 0-91.5
 R.P.M. AT 16 G.P.M. 0-101.6
 R.P.M. AT 25 G.P.M. 0-159

MAX TORQUE AT
 2,000 P.S.I. PRESSURE 965 FT. LB.
 MAX TORQUE AT
 2,500 P.S.I. PRESSURE 1,206 FT. LB.
 MAX TORQUE AT
 3,000 P.S.I. PRESSURE 1,450 FT. LB.

STANDARD GEAR RATIO 5.27:1 SINGLE REDUCTION
 AUTOMATIC BREAKOUT AVAILABLE FOR 1-1/2 CA21
 OR MAYHEW JR CONNECTIONS
 BREAKOUT WORKS FROM THE HYDRAULIC BACK
 PRESSURE

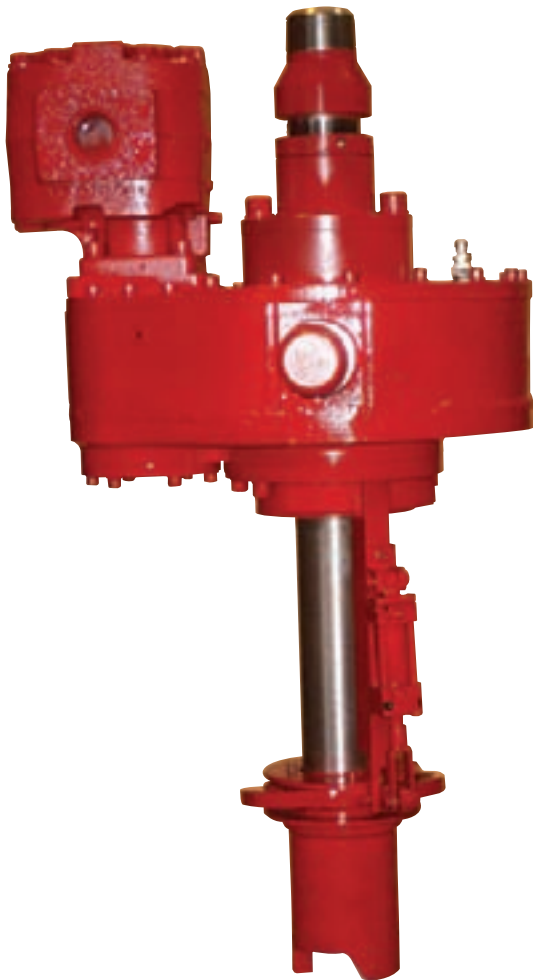
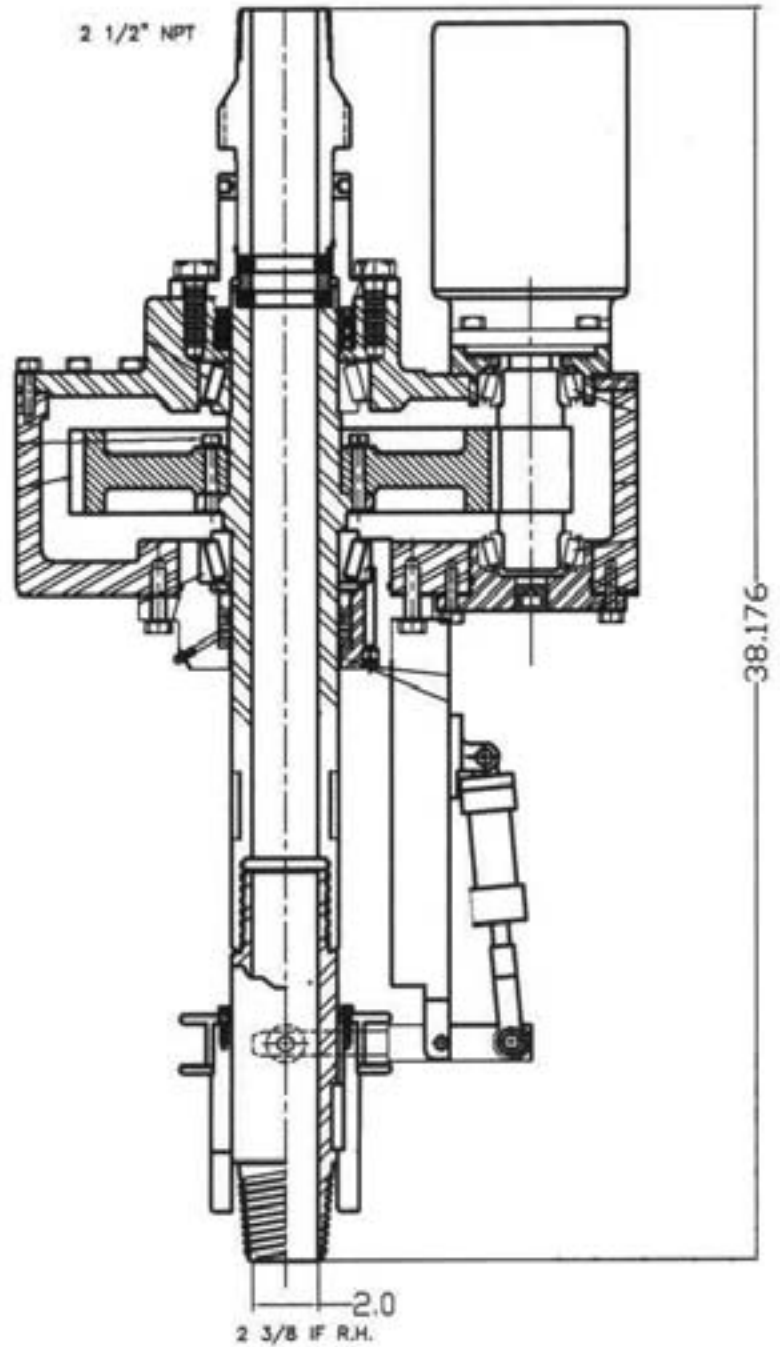
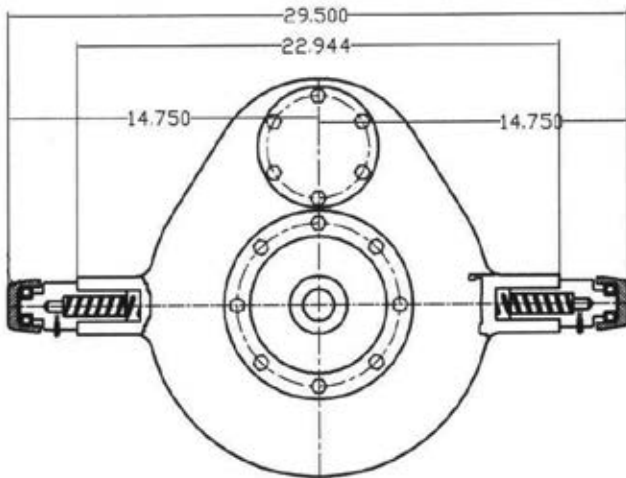
**MOTOR 6.9 CU. IN. HYDRAULIC MOTOR GEAR
 BOX REQUIRES 90 LBS WEIGHT GEAR OIL.**

NOTE: WEDGELock CONNECTIONS
 COVERED BY N.H.M., INC. U.S. AND
 FOREIGN PATENT NO. 5,409,324; 5,588,772;
 187552; AND PATENT PENDING.

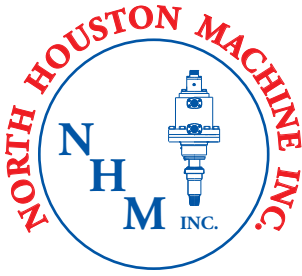


2500 TOP HEAD DRIVE

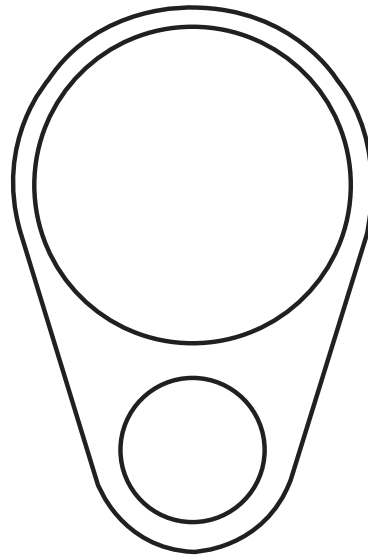
WITH AUTOMATIC BREAKOUT SYSTEM



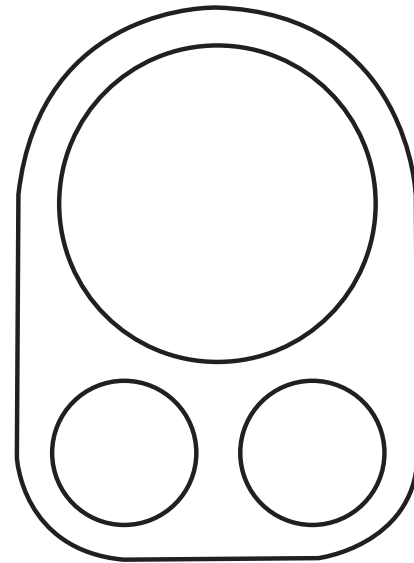
NOTE: AUTOMATIC BREAKOUT COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 54049324.



TOP HEAD DRIVES/POWER SWIVELS



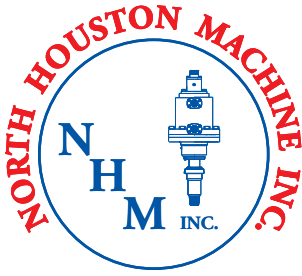
STYLE A
SINGLE MOTOR



STYLE B
DUAL MOTOR

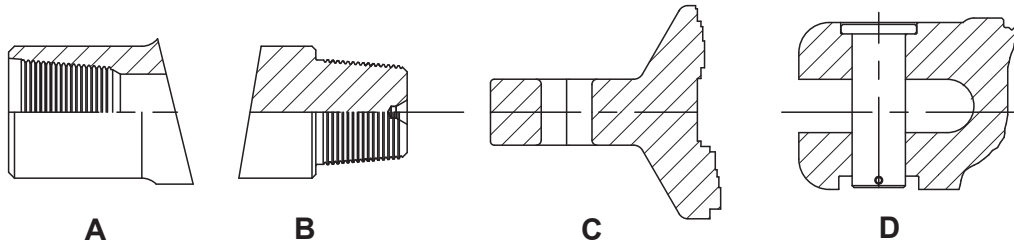
STYLE A – SINGLE MOTOR				
MODEL	TORQUE @ 2500	RATIO	SIZE CU. IN.	GPM/RPM 150 RPM
1500	698 FT LBS	5.267	4.0	13.7
1500	1118 FT LBS	5.267	6.4	21.9
2500	1963 FT LBS	5.92	10.0	38.4
2500	2355 FT LBS	5.92	12.0	46.1

STYLE B – DUAL MOTOR				
MODEL	TORQUE @ 2500	RATIO	SIZE CU. IN.	GPM/RPM 150 RPM
2500	3926 FT LBS	5.92	10	77
2500	4711 FT LBS	5.92	12	92
800	4871 FT LBS	5.1	12 x 2	79.4
800	8117 FT LBS	5.1	20 x 2	133.0
800	10553 FT LBS	5.1	26 x 2	172.2
800	15710 FT LBS	5.1	37 x 2	176 @ 75RPM



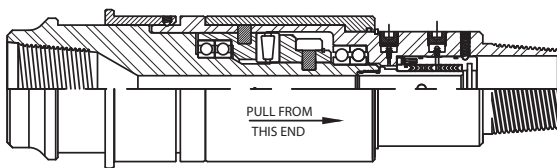
PULL SWIVEL CHART

NORTH HOUSTON MACHINE, INC.

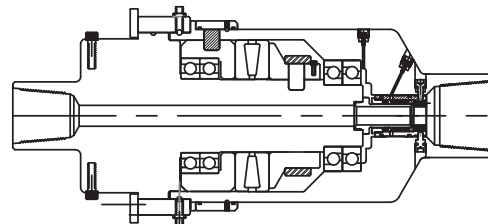


PART NO. ASSEMBLY NO.	MODEL NO.	TOP	BOTTOM	SWIVEL O.D.	SWIVEL I.D.	BEARING RATING 2,000 HRS-10 RPM	BEARING STATIC CAPACITY
30K-T200 180-000D	30K-T	A	B	5 1/2	0	69,932 LBS	227,000 LBS
180-MLS-VSR 180-MLS-VSR	30K-ST	A	D	6 3/4	0	72,975 LBS	206,000 LBS
185K-T311 185-2000C	94K-T	A	B	8	0	131,616 LBS	398,000 LBS
185K-LFT-T311 185-1000LOCK	94K-T	A	B	8	1 1/2	131,616 LBS	398,000 LBS
183-000A-T441 183-000T	120K-TFT	A	B	11 1/2	2"	242,243 LBS	516,000 LBS
120K-T441 184-3000	120K-T	A	C	11 1/2	0	242,243 LBS	516,000 LBS
245K-T511 245K-T	245K-T	C	C	11 1/2	0	286,072 LBS	588,000 LBS
245K-T511 183-T511-LK	245K-TL	A	B	14 7/8	0	286,072 LBS	588,000 LBS
500K-T711-S 184-2000L-2R-S	500K-TLS	A	B	20 1/2	0	669,312 LBS	1,040,000 LBS
500K-T711-S 184-2000L-2R-S	500K-T	D	D	18.16	0	669,312 LBS	1,040,000 LBS
700K-T711 184-2500-S	700K-T	A	A	18.19	2	669,312 LBS	1,040,000 LBS
700K-T811 184-2000M-2R	700K-T	C	B	21 1/4	0	853,485 LBS	1,830,000 LBS
825K-T911 184-2000N-2R	825K-T	C	B	23 1/2	0	1,148,247 LBS	2,060,000 LBS
1000K-T921 184-2000P-2R	1000K-t	C	B	26 1/2	0	1,626,611 LBS	2,740,000 LBS

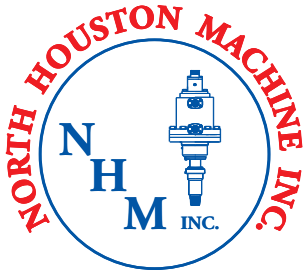
BASED ON 2,000 HRS L10 BEARING LIFE



MODEL NO. 185K-LFT-T311
FLOW THROUGH MODEL



MODEL NO. T-711-LS
ROTATION LOCK TYPE



5K-PS & 20K-PS PULL SWIVELS

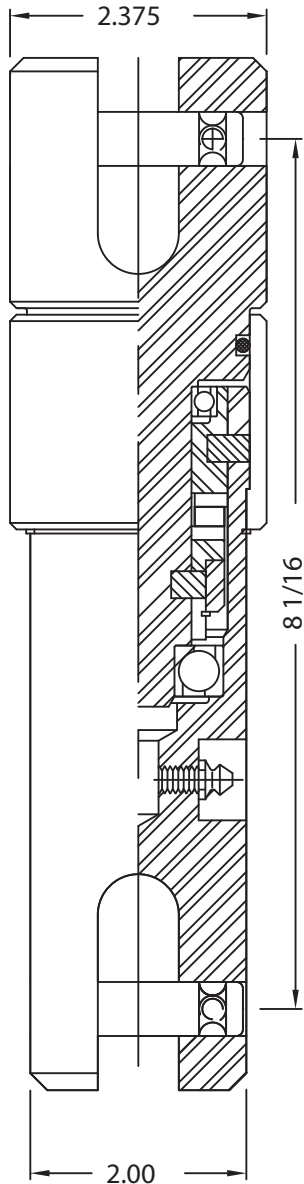
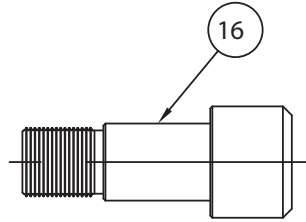
20K-PS PULL SWIVEL

STRAIGHT ROLLER THRUST BEARING
ACTUAL BEARING LOADING & LIFE.

RATED AT 100 R.P.M. AT 3,000 HOURS
L10 LIFE. (TORRINGTON)

90,500 LBS STATIC 20K PS

5K-PS PULL SWIVEL



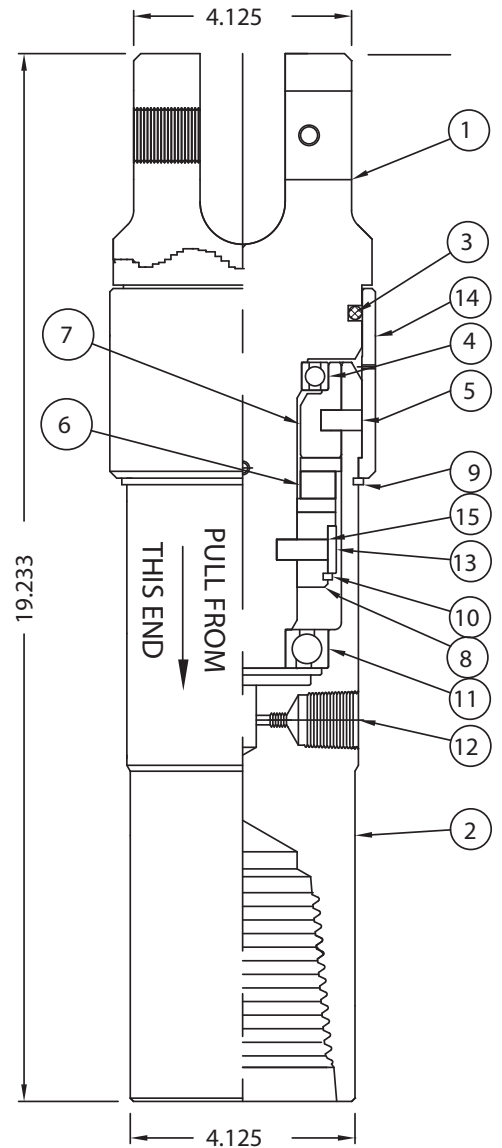
STATIC LOAD - 15,600
DYNAMIC LOAD - 5,620

PARTS FOR 20K-PS			
ITEM	PART NO.	QTY	DESCRIPTION
1	181-001	1	UPPER CONNECTION
2	181-002	1	LOWER CONNECTION
3	25003875	1	POLYPAK SEAL
4	181-6911	1	BEARING
5	181-05R	2	RETAINER KEY
6	NTHA3258	1	BEARING
7	181-003A	1	UPPER RETAINER
8	181-003B	1	LOWER RETAINER
9	181-425	1	SNAP RING
10	181-312	1	SNAP RING
11	181-7208	1	BEARING
12	181-2GF	1	GREASE FITTING
13	181-004B	1	LOWER RETAINER RING
14	181-004A	1	OUTER RETAINER RING
15	151-005B	2	LOWER KEY
16	180-004	1	STUD

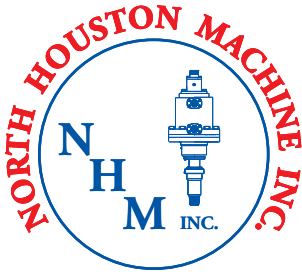
WEIGHT: 58 LBS

PULL SWIVELS DESIGNED
WITH A PATENTED LOCKING
MECHANISM FOR ULTIMATE
STRENGTH.

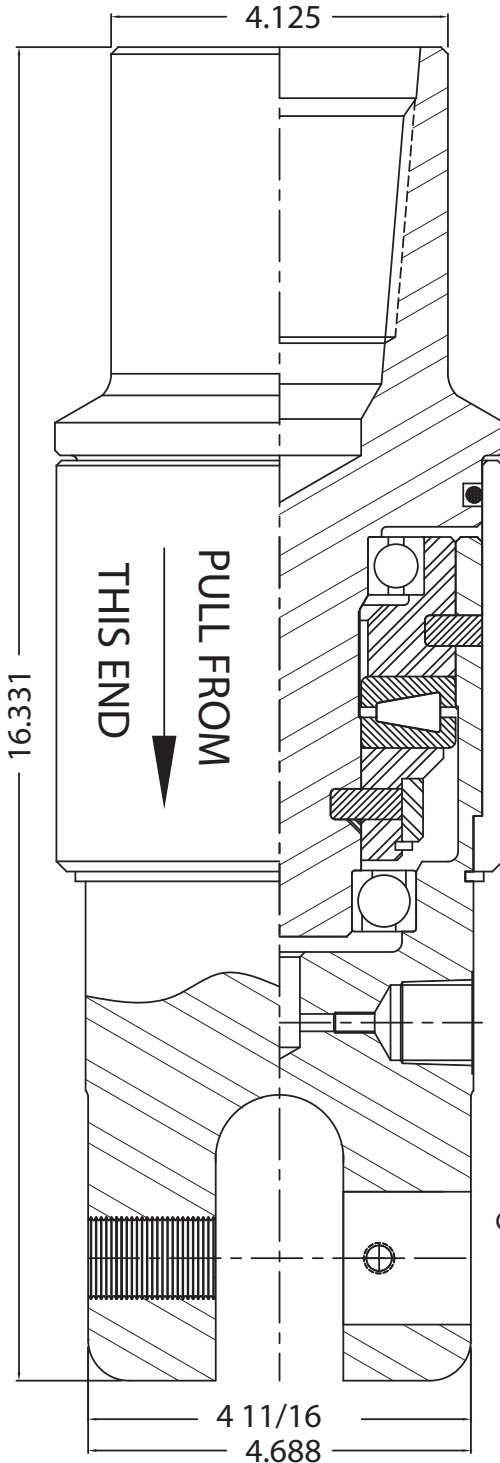
NOTE: WEDGELOCK
CONNECTIONS COVERED BY
N.H.M., INC. U.S. AND FOREIGN
PATENT NO. 5,409,324; 5,588,772;
187552; AND PATENT PENDING.



**VARIOUS O.D. AND BEARING CAPACITIES
CAN BE FURNISHED ON REQUEST**



30K-PS PULL SWIVEL



ASSY. 180-MLS2

CLEVIS

2-7/8 IF BOX

FULL APEX THRUST BEARING FOR ACTUAL BEARING LOADING & LIFE.

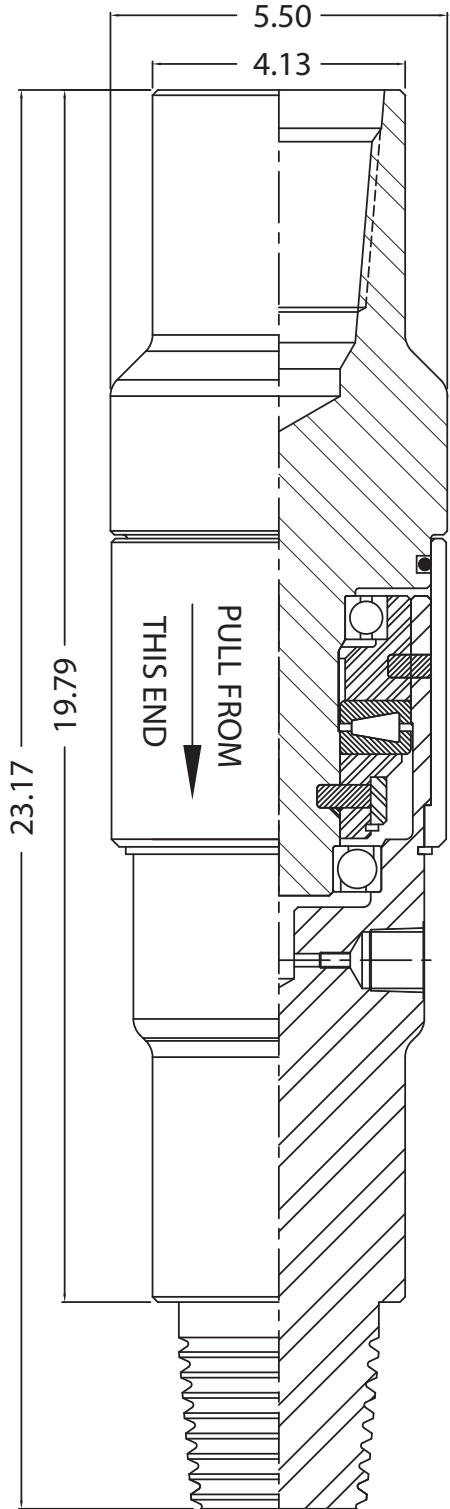
SPECIFICATIONS

181,000 LBS STATIC LOAD RATED AT 100 R.P.M.

NOTE: WEDGELOCK CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND PATENT PENDING.

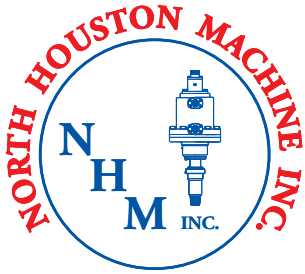
PULL SWIVEL DESIGNED WITH A PATENTED LOCKING MECHANISM FOR ULTIMATE STRENGTH.

2-7/8 IF PIN



ASSY. 180-MLS

VARIOUS O.D. AND BEARING CAPACITIES CAN BE FURNISHED ON REQUEST



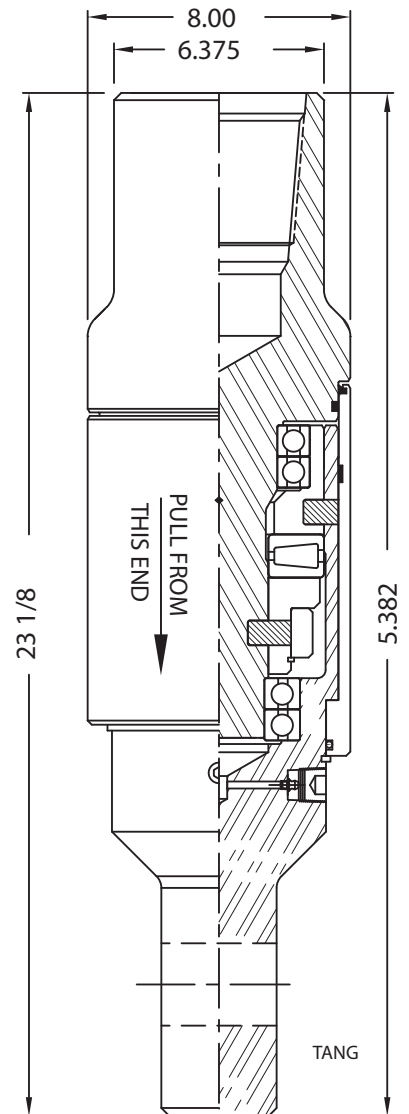
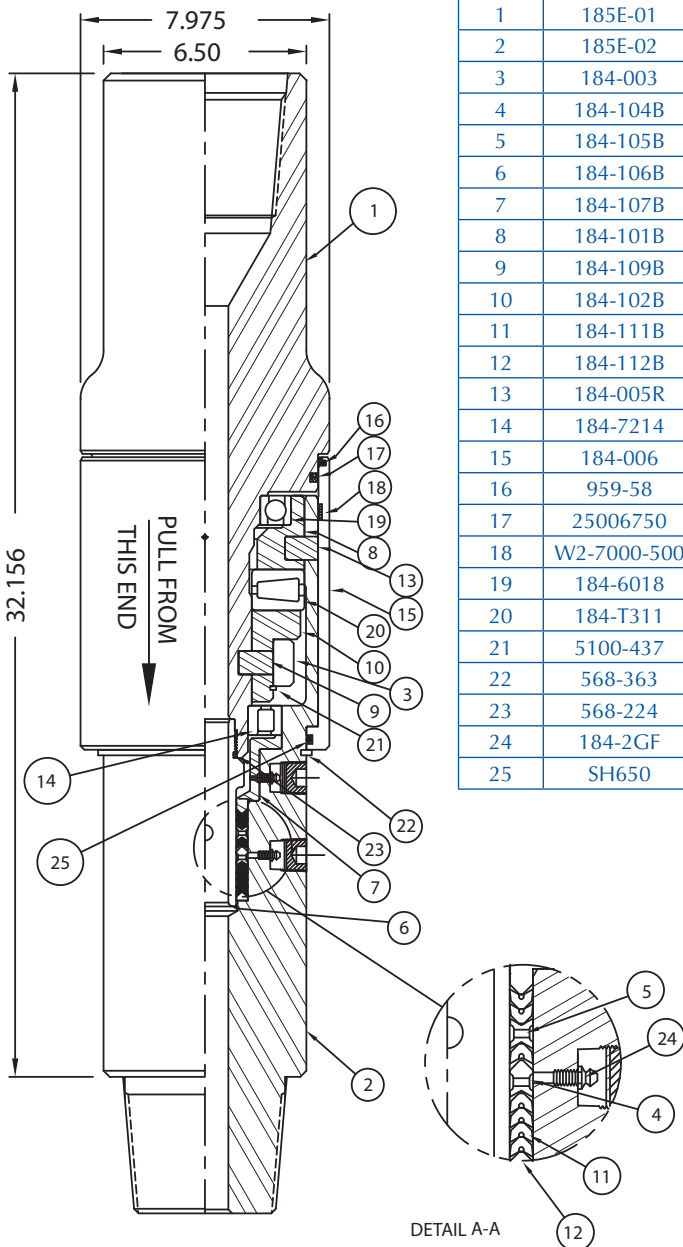
8.0" O.D. PULL SWIVEL CIRCULATION

LOAD RATING AT 3,000 HOURS:

STATIC LOAD 395,000 LBS
 AT 100 R.P.M. 133,129 LBS
 1-1/2 ID WATEROURSE

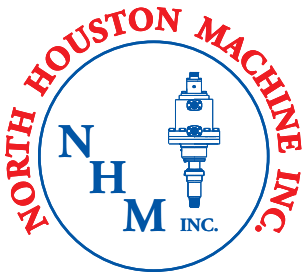
PARTS FOR 8.0" PULL SWIVEL

ITEM.	PART NO.	QTY	DESCRIPTION
1	185E-01	1	LOWER CONNECTION
2	185E-02	1	UPPER CONNECTION
3	184-003	1	LOWER RETAINER RING
4	184-104B	1	GREASE RING
5	184-105B	1	V-GREASE RING
6	184-106B	1	WASH PIPE </td
7	184-107B	1	PACKING BACKUP RING
8	184-101B	1	UPPER BEARING RETAINER
9	184-109B	2	LOWER RETAINER KEYS
10	184-102B	1	LOWER BEARING RETAINER
11	184-111B	7	PACKING RING
12	184-112B	1	PACKING ADAPTER
13	184-005R	2	UPPER RETAINER RING
14	184-7214	1	BEARING
15	184-006	1	OUTER RETAINER RING
16	959-58	1	ROD WIPER
17	25006750	1	POLYPAK SEAL
18	W2-7000-500	1	WEAR RING
19	184-6018	1	BEARING
20	184-T311	1	TIMKEN BEARING
21	5100-437	1	SNAP RING
22	568-363	1	O-RING SEAL
23	568-224	1	O-RING SEAL
24	184-2GF	2	GREASE FITTING
25	SH650	1	SNAP RING



FLOW-THRU TYPE
 ASSY. 185E-00

NOTE:
 WEDGELock CONNECTIONS COVERED
 BY N.H.M., INC. U.S. AND FOREIGN
 PATENT NO. 5,409,324; 5,588,772;
 187552; AND PATENT PENDING.



500K-PS PULL SWIVEL

PARTS FOR 500K-PS PULL SWIVEL			
ITEM	PART NO.	QTY	DESCRIPTION
1	184-2001	1 REQ'D	LOWER CONNECTION
2	184-2002	1 REQ'D	UPPER CONNECTION
3	184-2003	1 REQ'D	UPPER BEARING RETAINER
4	184-2004	1 REQ'D	LOWER BEARING RETAINER
5	184-2005	1 REQ'D	LOWER RETAINER RING
6	184-2006	1 REQ'D	OUTER RETAINER RING
7	184-2007	1 SET (3)	UPPER KEY
8	184-2008	1 SET (3)	LOWER KEY
9	184-T711	1 REQ'D	TIMKEN BEARING T711
10	184-25014250	1 REQ'D	POLPAK SEAL 25014250
11	184-6036	1 REQ'D	BEARING #6036
12	184-386	2 REQ'D	O-RING 386
13	184-7230	1 REQ'D	BEARING #7230
14	3/8-16NC-1DP	6 REQ'D	3/8-16NC CAP SCREW
15	184-6230	1 REQ'D	6230 BEARING

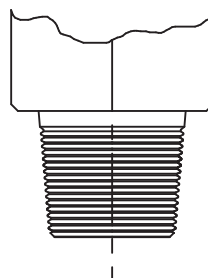
STATIC CAPACITY OF
T711 TIMKEN BEARING
2,010,000 LBS STATIC

CAPACITIES AT 3,000 HOURS FULL LOAD

DYNAMIC CAPACITY	DYNAMIC CAPACITY	UPPER CONNECTION	LOWER CONNECTION
50 R.P.M. 505,733 LBS	25 R.P.M. 622,596 LBS	ANY TOOL JOINT	ANY EYE OR TOOL JOINT

WEIGHT AND DIMENSIONAL DATA

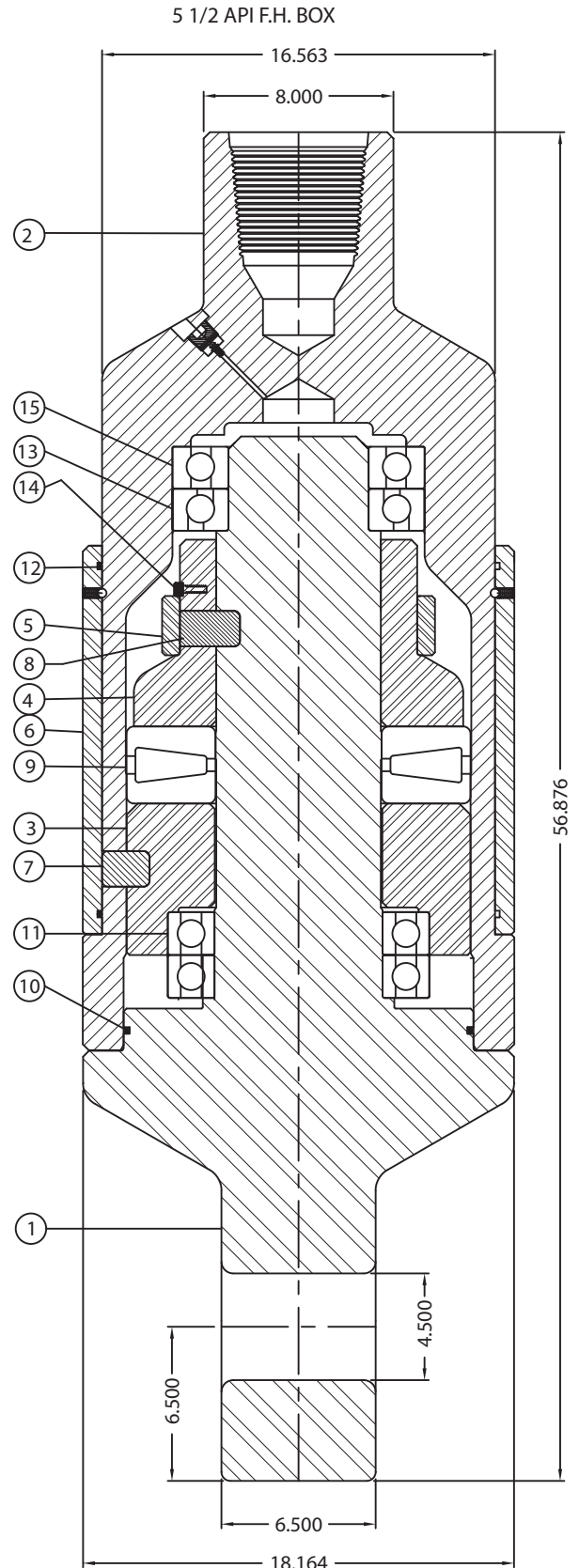
LENGTH INCHES	WEIGHT POUNDS
56 7/8"	1,655 LBS

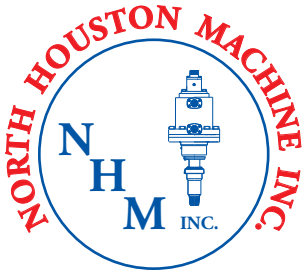


NOTE: WEDGELOCK CONNECTIONS COVERED BY N.H.M., INC. U.S. PATENT NO. 5,409,324 AND 5,588,772 AND PATENT PENDING.

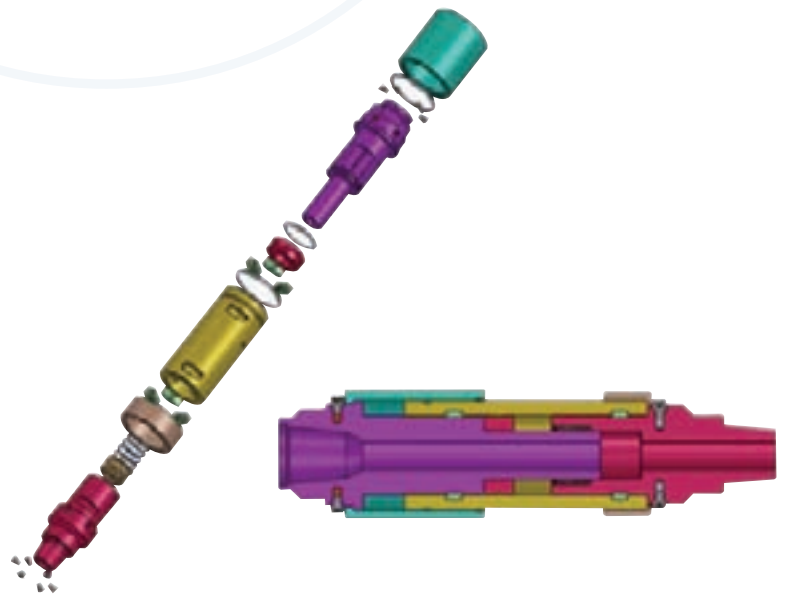
NOTE: WEDGELOCK CONNECTIONS COVERED BY N.H.M., INC. MEXICAN PATENT NO. 187552.

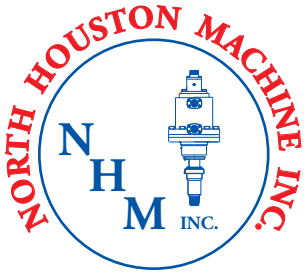
NOTE: WEDGELOCK CONNECTIONS COVERED BY N.H.M., INC. AUSTRALIAN PATENT NO. 678122.





FLOATING CUSHION SUBS

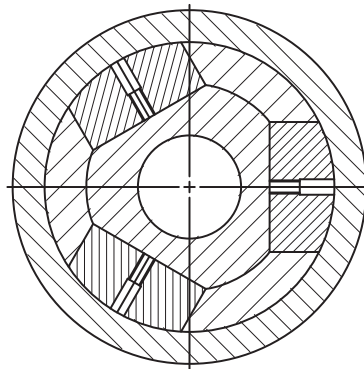




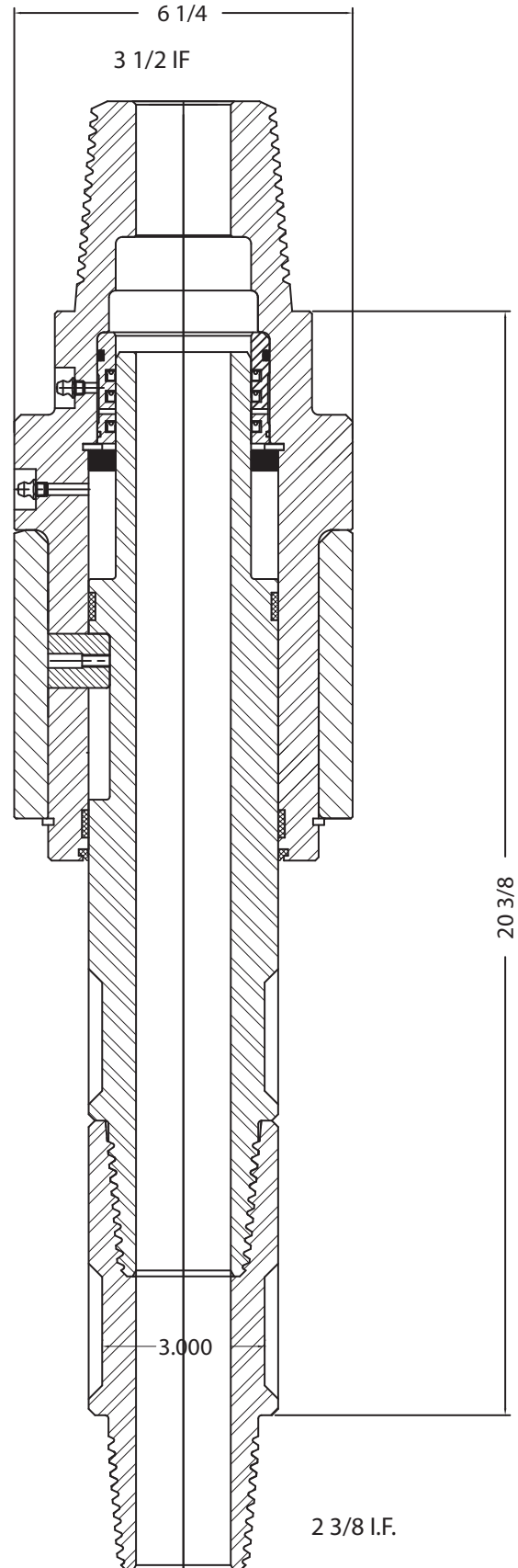
IMPROVED DESIGN FLOATING CUSHION SUB FOR I.R. T-4

SHOWN 2-3/8 IF X
3-1/2 IF PIN X PIN

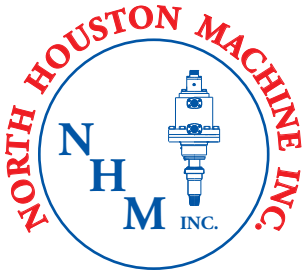
CUSHIONS ON CLOSING
MAY BE RUN UPSIDE DOWN



SECTION A-A



WEDGELOCK CONNECTIONS COVERED
BY N.H.M., INC. U.S. AND FOREIGN
PATENT NO. 5,409,324; 5,588,772;
187552; AND PATENT PENDING.



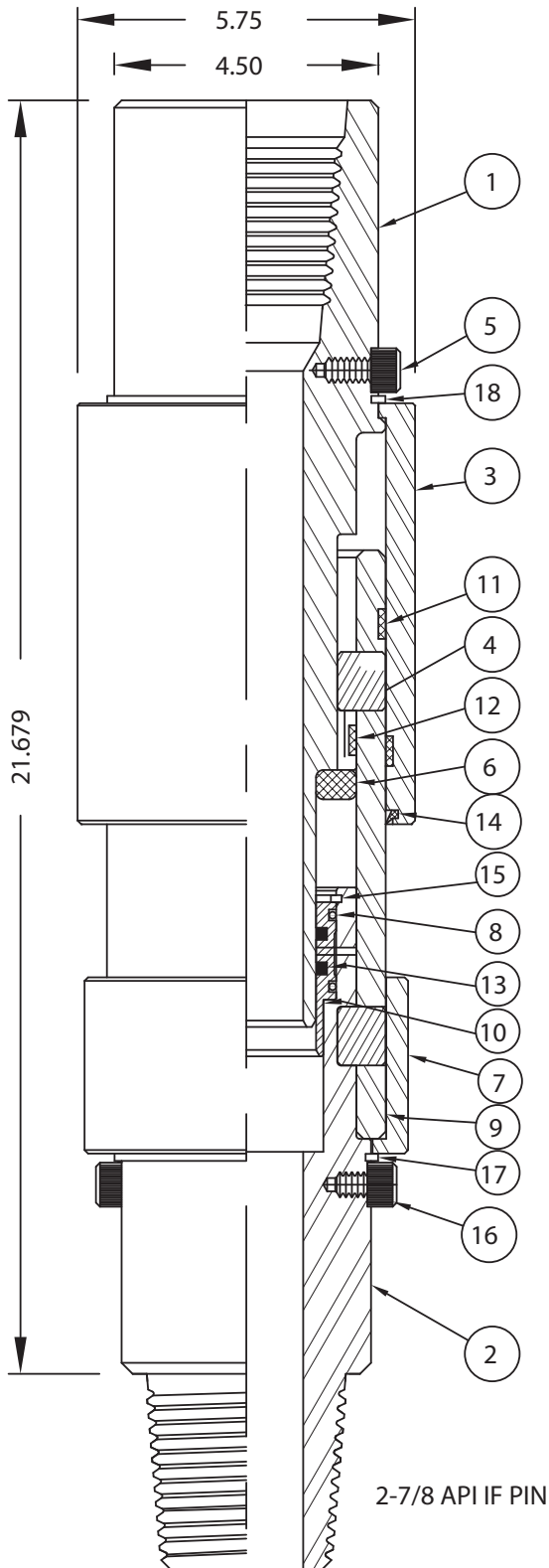
5-3/4 FLOATING CUSHION SUB

NORTH HOUSTON MACHINE, INC.'S FLOATING CUSHION SUB IS DESIGNED FOR TORSIONAL STRENGTHS EQUAL TO OR GREATER THAN THE TOOL JOINTS.

A HIGH-DENSITY URETHANE BUMPER IS USED TO REDUCE SHOCK LOADS INTO THE TOP HEAD DRIVE AND TO PROTECT THREADS WHEN COMING OUT OF THE HOLE.

A PATENTED DESIGN ON THE DRIVE AFFORDS THE HIGHEST STRENGTH FOR THE LOWEST PRICE.

DIFFERENT STROKES AND CONNECTIONS ARE AVAILABLE, AND PRICED ON REQUEST.

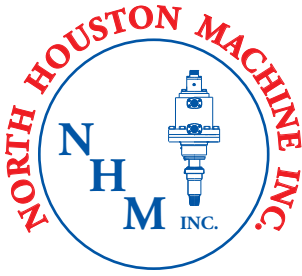


PARTS LIST FOR 5-3/4 OD FLOATING CUSHION SUB

ITEM	PART NO.	QTY	DESCRIPTION
1	0190APA-2-1	1	UPPER CONNECTION
2	0191-57BB-2	1	LOWER CONNECTION
3	0190APA-2-3	1	OUTER SLEEVE
4	0190A-4K	4	DRIVE KEY
5	SHCS-8	6	CAP SCREW
6	0191-57BB-06CR	1	CUSHION RUBBER
7	0190A-7	1	LOWER RET. RING
8	0190A-232	2	O-RING 232
9	0190AP3K	1	INNER SLEEVE
10	0191-57AA-10	1	POLYGLAND
11	W2-500-4750	2	WEAR RING
12	W2-500-3750	1	WEAR RING
13	18702375	2	POLYPAK SEAL
14	940-43	1	ROD WIPER
15	0191-57AA-306	1	SNAP RING
16	SHCS8-6	8	CAP SCREW
17	105-009	2	GREASE FITTING
18	5100-450	1	SNAP RING
19	5100-425	1	SNAP RING

WEIGHT: 90 LBS

NOTE: WEDGELock CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND PATENT PENDING.

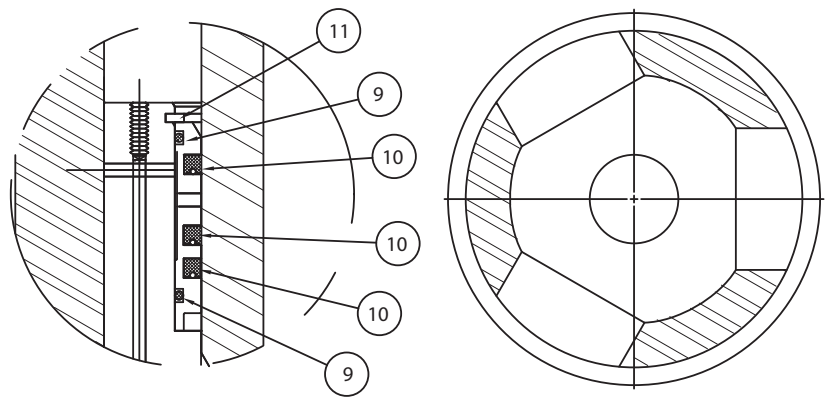
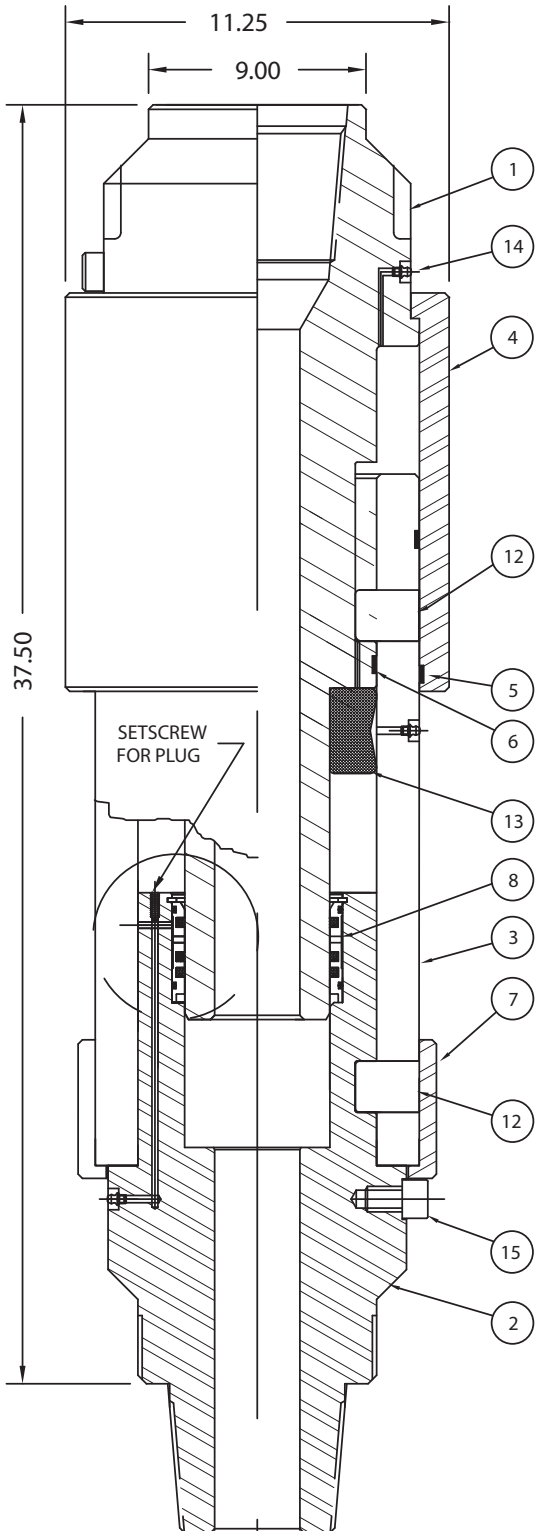


10-1/2 FLOATING CUSHION SUB

NORTH HOUSTON MACHINE, INC.'S FLOATING CUSHION SUB IS EQUAL TO OR GREATER THAN THE TORQUE STRENGTH OF THE TOOL JOINT.

THE TORQUE RESTRAINING MEANS IS A PATENTED CONFIGURATION IN THE UNITED STATES AND MANY FOREIGN COUNTRIES INCLUDING AUSTRALIA.

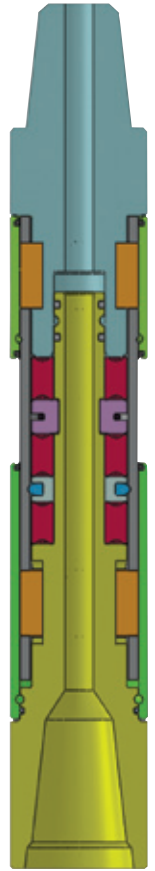
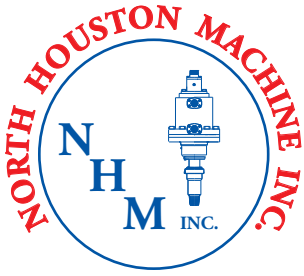
THE STROKE REQUIRED FOR OPENING IS VARIABLE ACCORDING TO CUSTOMER REQUIREMENTS. THE STANDARD OPENING OF THE 10-1/2 FLOATING CUSHION SUB IS 4 INCHES. LONGER STROKES CAN BE MADE ON SPECIAL ORDER, AND PRICES CAN BE QUOTED AS NEEDED.



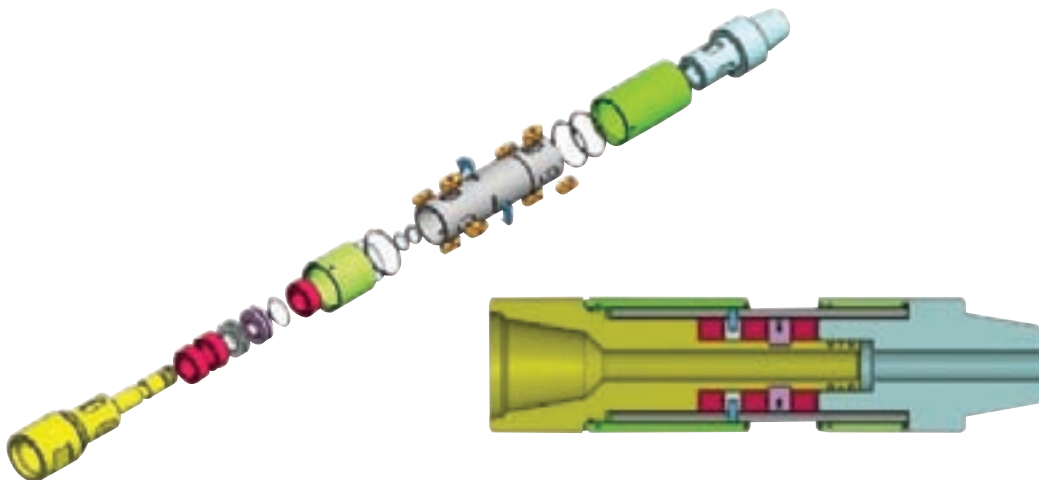
PARTS LIST FOR 10-1/2 FLOATING CUSHION SUB			
ITEM	PART NO.	QTY	DESCRIPTION
1	0190-100B-1	1	UPPER CONNECTION
2	0190-100B-2	1	LOWER CONNECTION
3	0190-100B-3	1	INNER RETAINER SLEEVE
4	0190-100B-4	6	UPPER RETAINER RING
5	W2-9500-500	3	WEAR RING
6	W2-7000-500	1	WEAR RING
7	0190C-7	3	LOWER RETAINER RING
8	0190CG-2BI	1	POLYPAK BUSHING
9	248	1	O-RING
10	25004250	1	POLYPAK SEAL
11	N5000-500	1	SNAP RING
12	019C-4K	3	DRIVE KEY
13	148-006	3	CUSHION RUBBER
14		8	GREASE FITTING
15		119	CAP SCREW

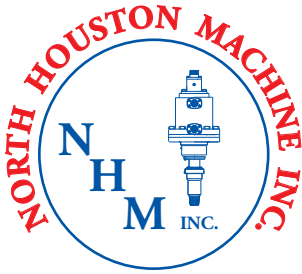
APPROX. WEIGHT: 532 LBS.

NOTE: WEDGELock CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND PATENT PENDING.

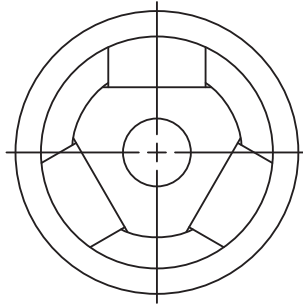
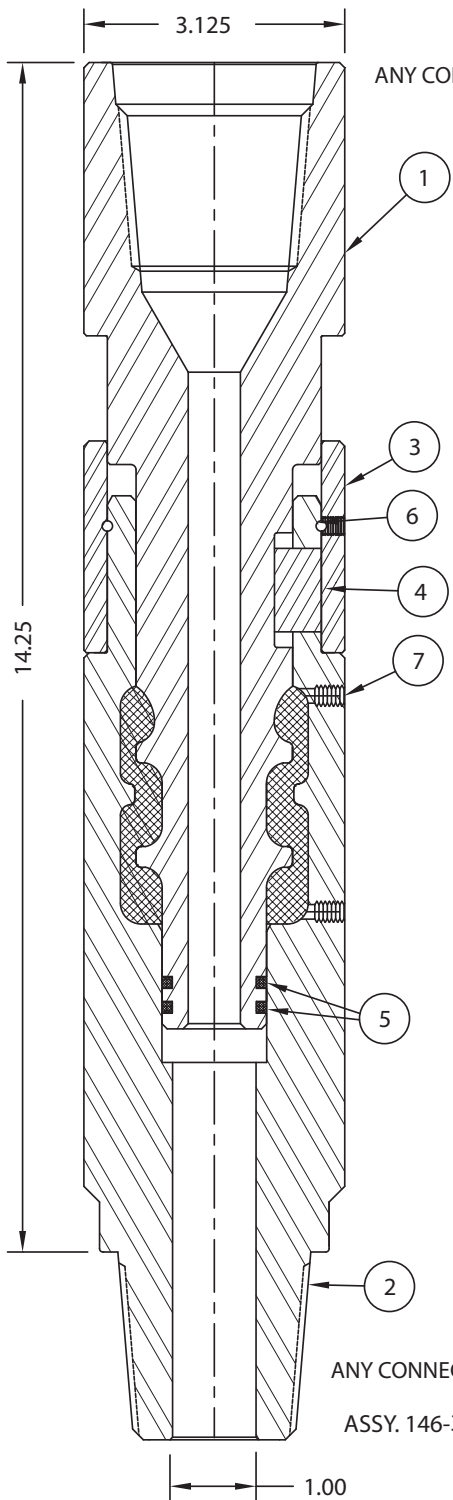


SHOCK SUBS





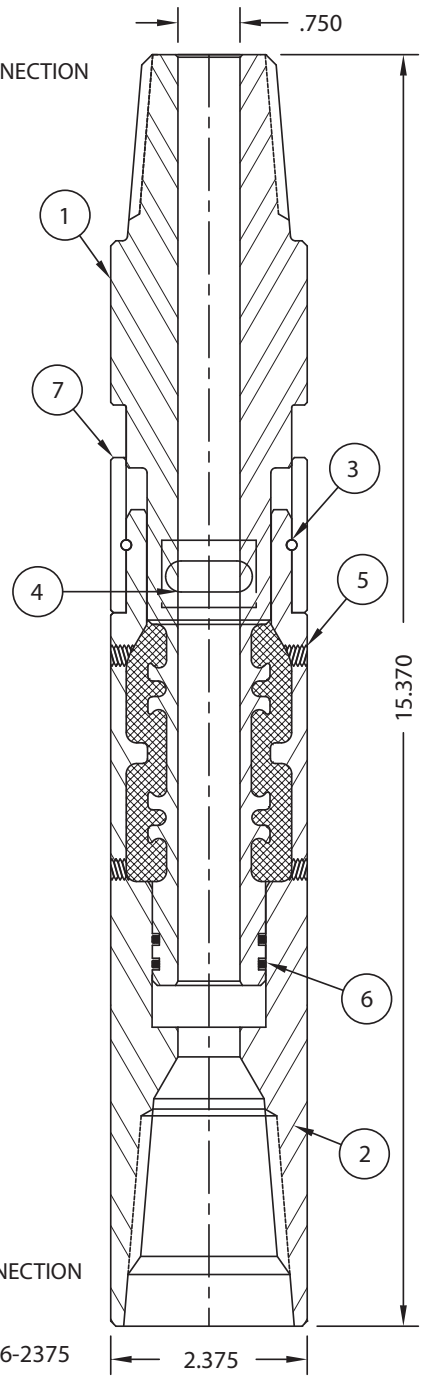
SLIM HOLE SHOCK SUBS

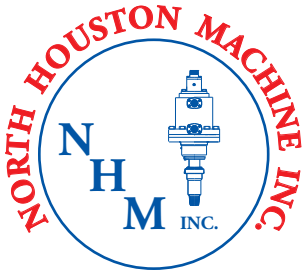


NOTE: WEDGELock CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND P94100AU.

PARTS LIST FOR 3.125 SHOCK SUB			
ITEM	PART NO.	QTY	DESCRIPTION
1	0190APA-2-1	1	UPPER CONNECTION
2	0191-57BB-2	1	LOWER CONNECTION
3	0190APA-2-3	1	OUTER SLEEVE
4	0190A-4K	4	DRIVE KEY
5	SHCS-8	6	CAP SCREW
6	0191-57BB-06CR	1	CUSHION RUBBER
7	0190A-7	1	LOWER RET. RING

PARTS LIST FOR 2.375 SHOCK SUB			
ITEM	PART NO.	QTY	DESCRIPTION
1	0190APA-2-1	1	UPPER CONNECTION
2	0191-57BB-2	1	LOWER CONNECTION
3	0190APA-2-3	1	OUTER SLEEVE
4	0190A-4K	4	DRIVE KEY
5	SHCS-8	6	CAP SCREW
6	0191-57BB-06CR	1	CUSHION RUBBER
7	0190A-7	1	LOWER RET. RING





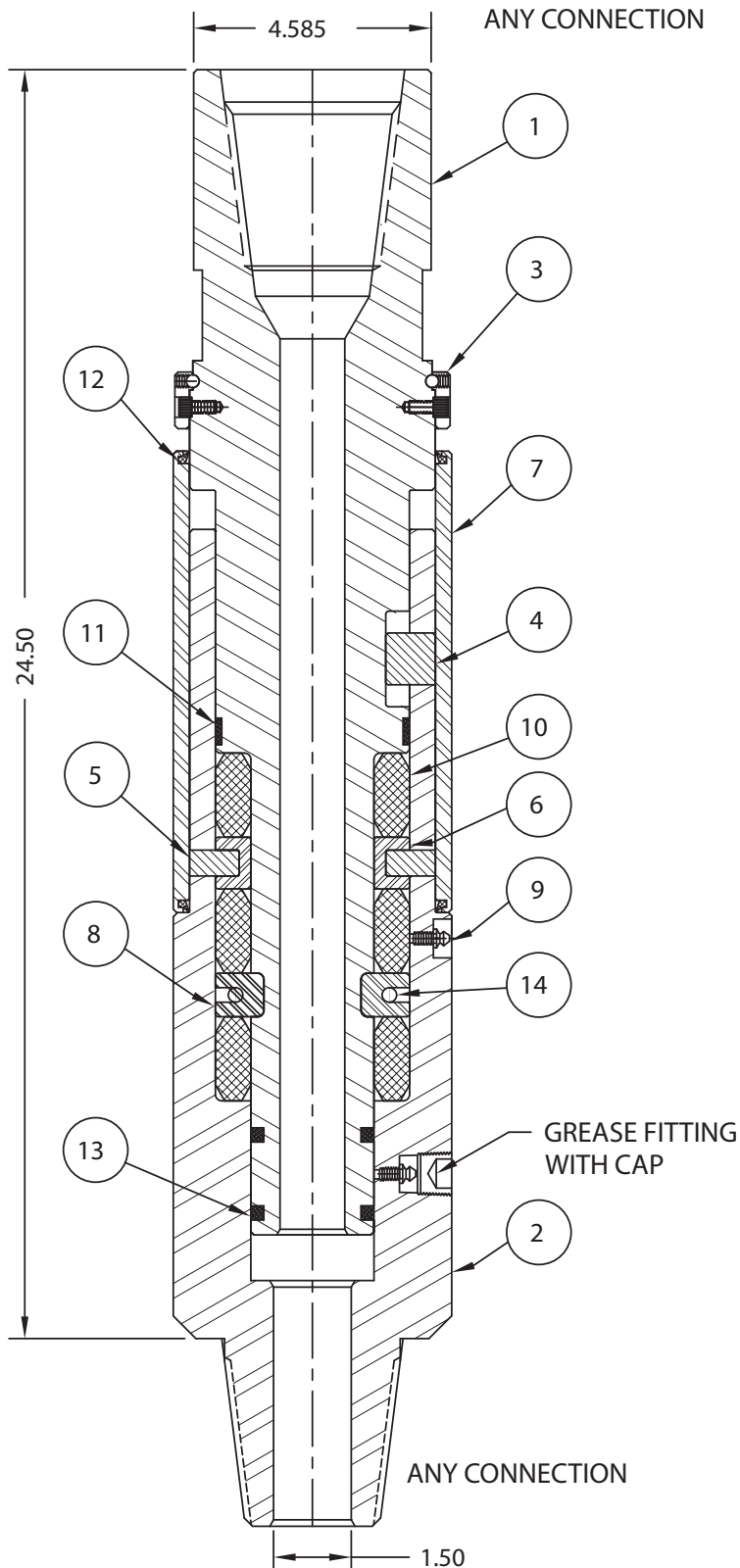
5.375 O.D. SHOCK SUB

NORTH HOUSTON MACHINE, INC.'S SHOCK SUBS HAVE CUSHIONS THAT ARE MADE FROM HIGH DENSITY URETHANE.

TWO UNITS ARE CUSHIONS FOR UPWARD SHOCK AND ONE FOR RECOIL. THIS PREVENTS METAL-TO-METAL CONTACT.

CONNECTIONS AND DIAMETERS ARE MADE IN ABOUT ANY COMBINATION.

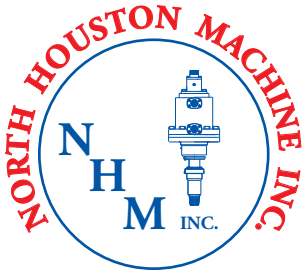
SHOCK SUBS ARE MADE IN SIZES WITH REPLACEABLE SHOCK ELEMENTS AS FOLLOWS: 3.50 O.D., 4.0, 4.50, 5.0, 5.50, 5.75, 6.50, 7.0, 7.50, 8.0, 9.0, AND 10.0 O.D.



PARTS LIST FOR 5.375 OD SHOCK SUB

ITEM	PART NO.	QTY	DESCRIPTION
1	146-537-1	1	UPPER CONNECTION
2	146-537-2	1	LOWER CONNECTION
3	146-537-3	1	UPPER RETAINER RING
4	146-537-4	3	DRIVE KEY
5	146-537-5	2	RETAINER KEY
6	146-537-6	1	FLOATING RING
7	146-537-7	1	LOWER RETAINER RING
8	146-537-8	1	SPLIT RING
9	105-009	2	GREASE FITTING
10	146E-006	3	CUSHION RUBBER
11	W2-4750-500	1	WEAR RING
12	940-43	1	ROD WIPER
13	25001875	2	POLYPAK SEAL
14	344	1	O-RING SEAL

NOTE: WEDGELock CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND P94100AU.



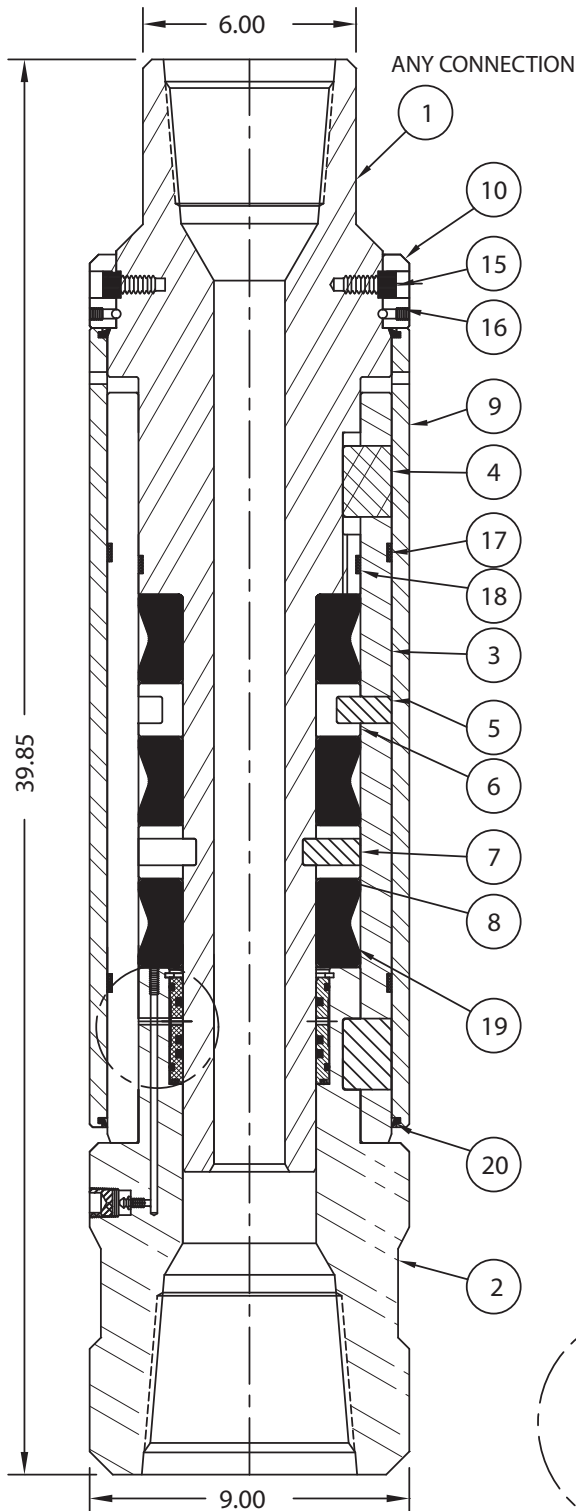
9.0 O.D. SHOCK SUB

NORTH HOUSTON MACHINE, INC.'S SHOCK SUBS HAVE CUSHIONS THAT ARE MADE FROM HIGH-DENSITY URETHANE.

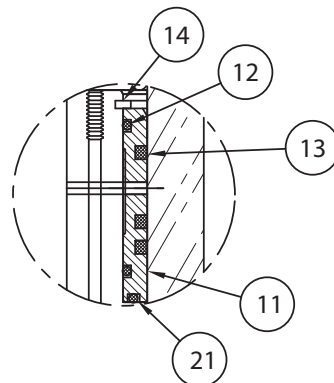
TWO UNITS ARE CUSHIONS FOR UPWARD SHOCK AND ONE FOR RECOIL. THIS PREVENTS METAL-TO-METAL CONTACT.

CONNECTIONS AND DIAMETERS ARE MADE IN ABOUT ANY COMBINATION.

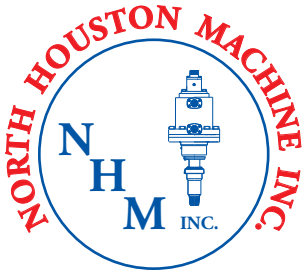
SHOCK SUBS ARE MADE IN SIZES WITH REPLACEABLE SHOCK ELEMENTS AS FOLLOWS: 3.50 O.D., 4.0, 4.50, 5.0, 5.50, 5.75, 6.50, 7.0, 7.50, 8.0, 9.0, AND 10.0 O.D.



PARTS LIST FOR 9.0 O.D. SHOCK SUB			
ITEM	PART NO.	QTY	DESCRIPTION
1	146-900SI-1	1	UPPER CONNECTION
2	146-900-2	1	LOWER CONNECTION
3	0178-3-R	1	INNER SLEEVE
4	0178E-4-R	6	DRIVE KEY
5	0178E-5	3	UPPER RETAINER KEYS
6	0178E-6	1	UPPER FLOATING RING
7	0178E-7	3	LOWER RETAINER KEY
8	0178E-8	1	LOWER SPLIT RING
9	0178E-9	1	OUTER BARREL
10	0178E-10	1	UPPER RETAINER RING
11	146-900-10	1	POLYPAK BUSHING
12	146-244	2	O-RING SEAL
13	18703750	3	POLYPAK SEAL
14	N5000-450	1	SNAP RING
15		8	CAP SCREW
16	SB-.250	1	STEEL BALL W/PIPE PLUG
17	W2-8000-500	2	WEAR RING
18	W2-6250-500	1	WEAR RING
19	0178E-06A	3	CUSHION RUBBER
20	940-61	2	ROD WIPER
21	146-242	1	O-RING SEAL



NOTE: WEDGELock CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND P94100AU.

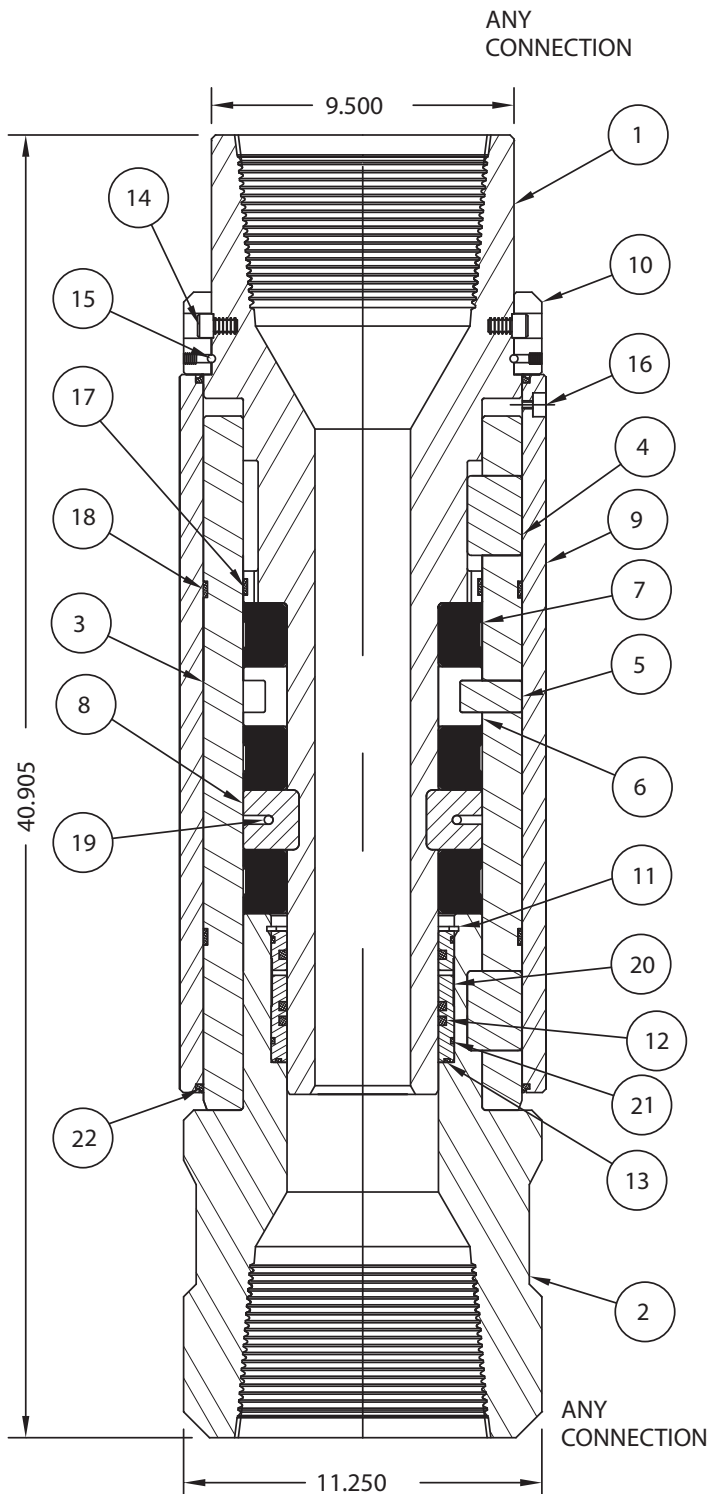


11.25 O.D. SHOCK SUB

NORTH HOUSTON MACHINE, INC.'S SHOCK SUBS HAVE CUSHIONS THAT ARE MADE FROM HIGH-DENSITY URETHANE.

TWO UNITS ARE CUSHIONS FOR UPWARD SHOCK AND ONE FOR RECOIL. THIS PREVENTS METAL-TO-METAL CONTACT.

CONNECTIONS AND DIAMETERS ARE MADE IN ABOUT ANY COMBINATION.

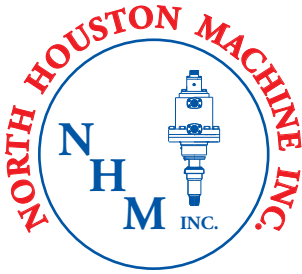


PARTS LIST FOR 11.25 O.D. SHOCK SUB

ITEM	PART NO.	QTY	DESCRIPTION
1	146K-001	1	UPPER CONNECTION
2	146K-002R	1	LOWER CONNECTION
3	146K-003	1	INNER RETAINER SLEEVE
4	146K-004	6	DRIVE KEY
5	146K-005	3	RETAINING KEY
6	146K-006	1	FLOATING RING
7	146K-006CR	3	CUSHION RUBBER
8	146K-008	1	SPLIT RING
9	146K-009	1	OUTER RETAINING SLEEVE
10	146K-010	1	UPPER RETAINING SLEEVE
11	N5000-575	1	SNAP RING
12	25004750	3	POLYPAK SEAL
13	146-251	3	POLYPAK SEAL
14	SHCS8-6	8	CAP SCREW
15	SB-.250	119	STEEL BALL
16	1/8PP	1	PIPE PLUG
17	W2-7500-500	1	WEAR RING
18	W2-10000-500	2	WEAR RING
19	146K-358	1	O-RING SEAL
20	146K-010R	1	POLYPAK BUSHING
21	146-254	2	O-RING SEAL
22	940-65	2	ROD WIPER

APPROX. WEIGHT: 865 LBS

NOTE: WEDGELock CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND P94100AU.

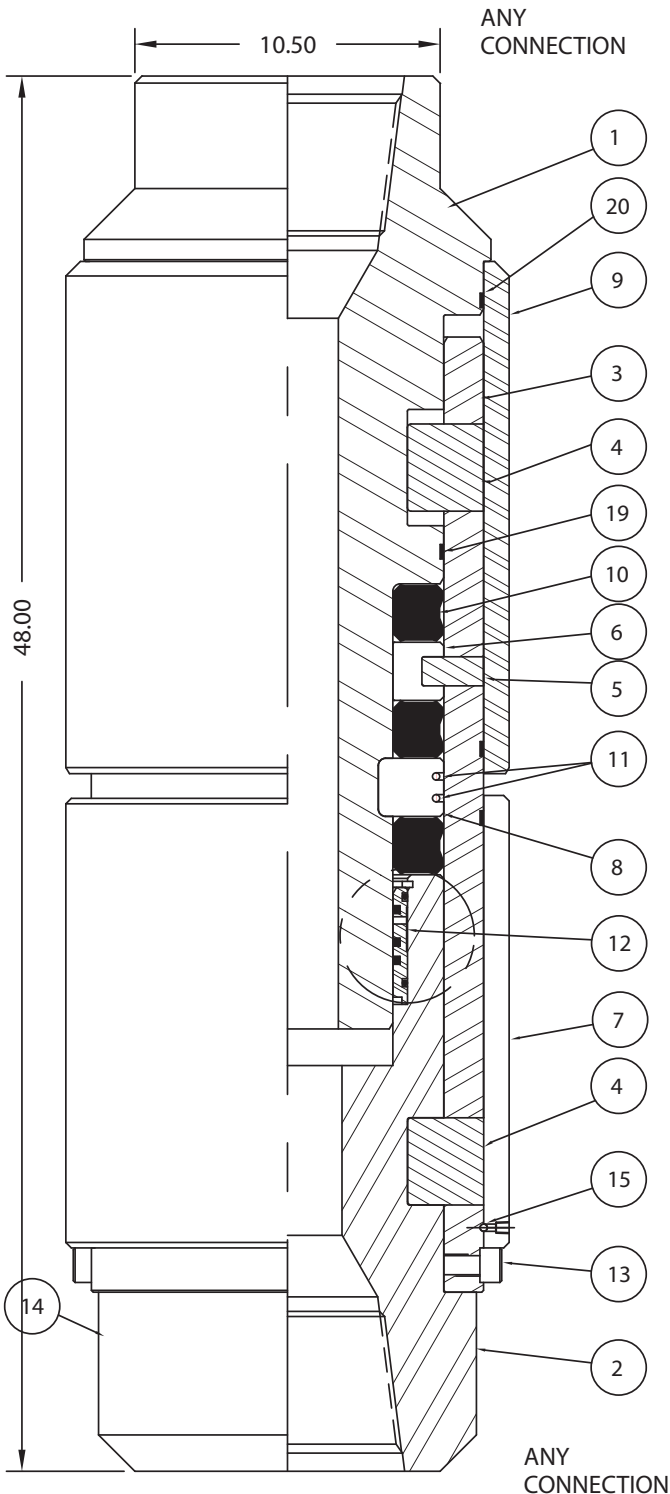


15.250 O.D. SHOCK SUB

NORTH HOUSTON MACHINE, INC.'S SHOCK SUBS HAVE CUSHIONS THAT ARE MADE FROM HIGH DENSITY URETHANE.

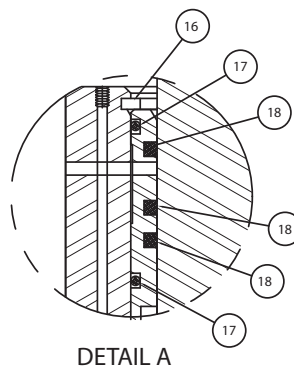
TWO UNITS ARE CUSHIONS FOR UPWARD SHOCK AND ONE FOR RECOIL. THIS PREVENTS METAL-TO-METAL CONTACT.

CONNECTIONS AND DIAMETERS ARE MADE IN ABOUT ANY COMBINATION.

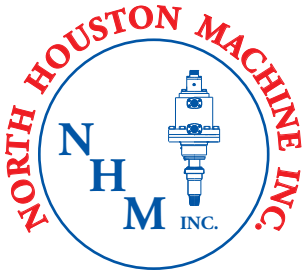


PARTS LIST FOR 15.25 O.D. SHOCK SUB

ITEM	PART NO.	QTY	DESCRIPTION
1	146-15250-1	1	UPPER CONNECTION
2	146-15250-2	1	LOWER CONNECTION
3	146-15250-3	1	INNER SLEEVE
4	146-1525-4	6	DRIVE KEY
5	146-1525-5	3	RETAINER KEY
6	146-1525-6	1	FLOATING RING
7	146-15250-7	1	LOWER RETAINER RING
8	146-1525-8	1	SPLIT RING
9	146-1525-9	1	UPPER RETAINER RING
10	146-1525-10	3	CUSHION RUBBER
11	377	2	O-RING SEAL
12	146-15250-10	1	POLYPAK BUSHING
13	HHCS12-X	8	HEAD CAP SCREW
14	105-009	1	GREASE FITTING
15	SB.250	169	STEEL BALL
16	N5000-825	1	SNAP RING
17	PRP-568-368	2	O-RING SEAL
18	25007250	3	POLYPAK SEAL
19	W2-1075-500	1	WEAR RING
20	W2-1350-500	3	WEAR RING



NOTE: WEDGELock CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND P94100AU.

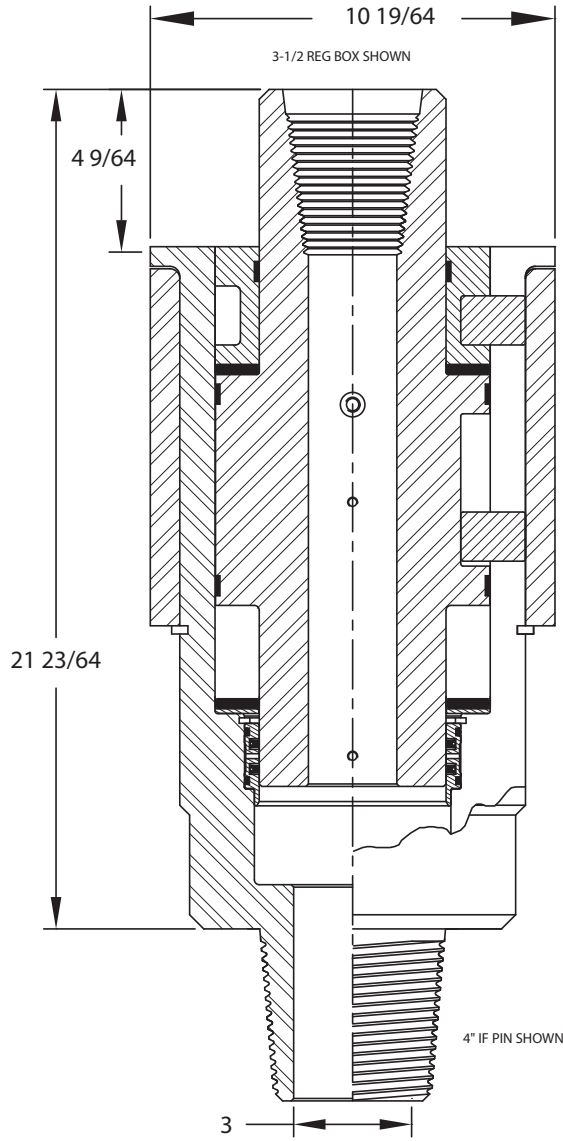


FLOATING SHOCK SUB

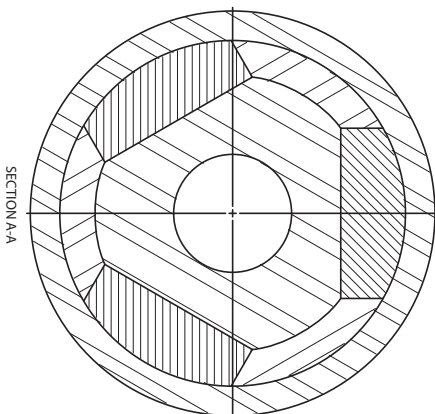
ABOVE GROUND TOOLING

CUSHION IN BOTH DIRECTIONS WITH FREE TRAVEL BETWEEN STOPS

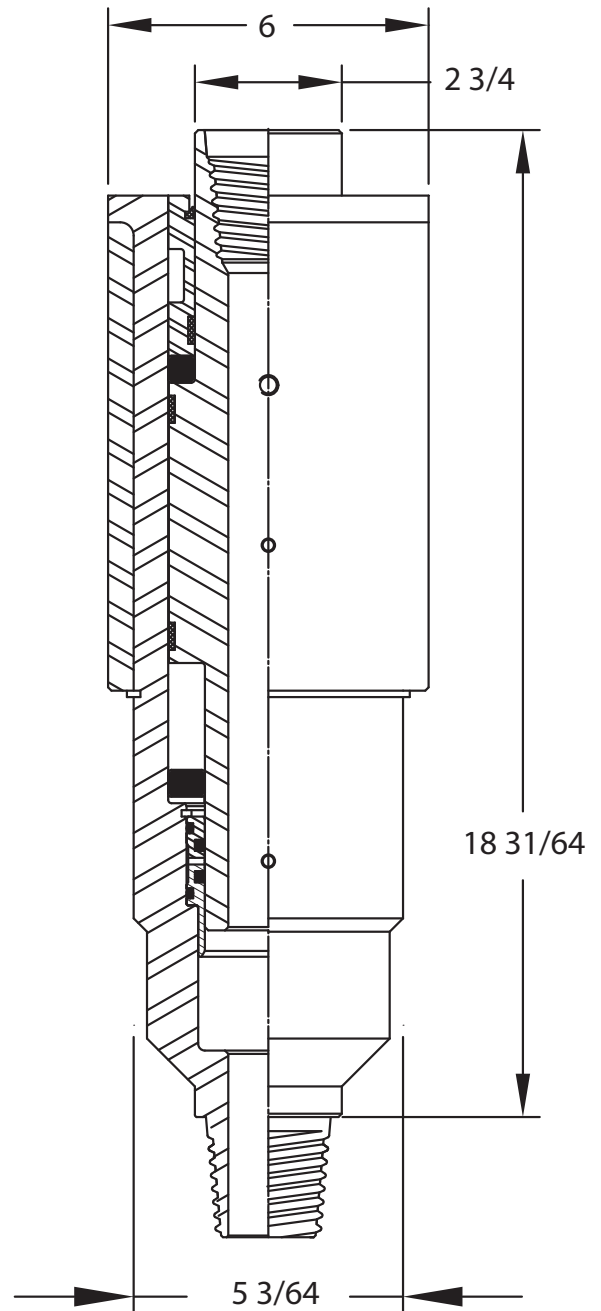
CUSTOM SIZES MANUFACTURED



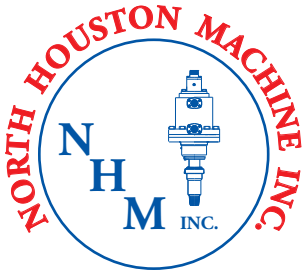
2-3/8 MAYHEW JR BOX
OR ANY TOOL JOINT



2-3/8 MAYHEW JR BOX
OR ANY TOOL JOINT



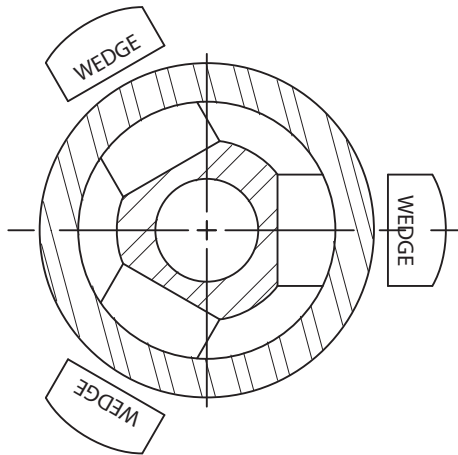
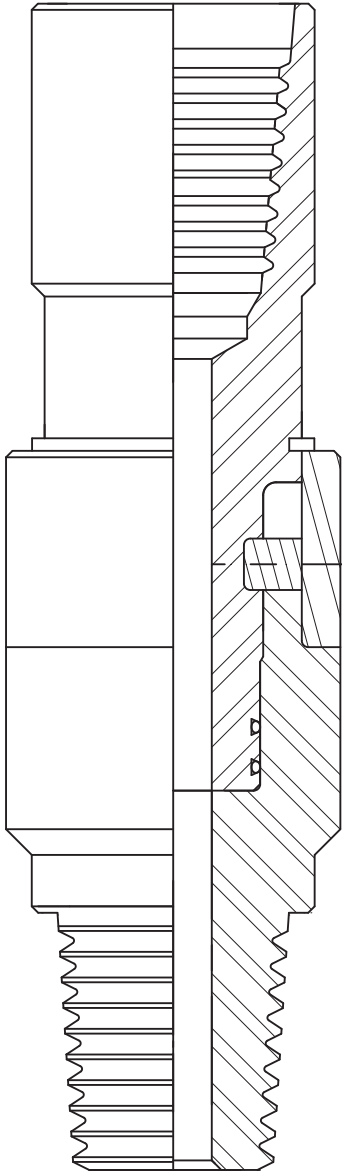
NOTE: WEDGELock CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND PATENT PENDING.



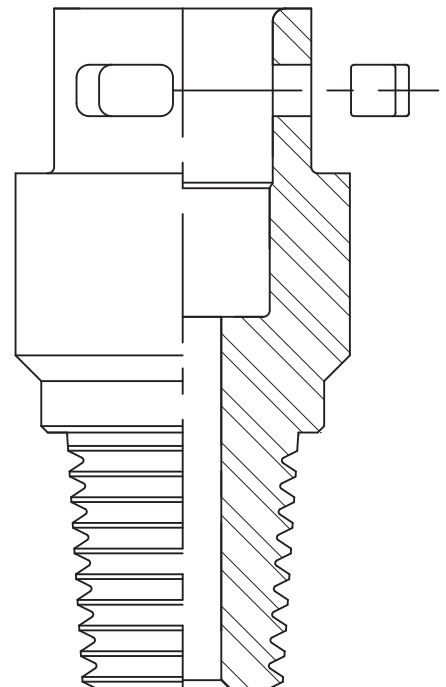
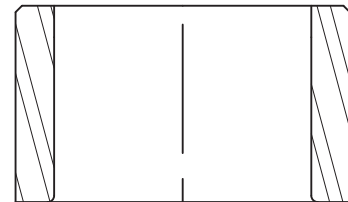
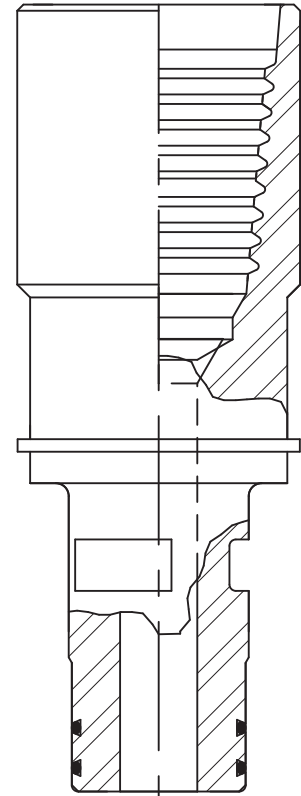
WEDGELOCK CONNECTOR

ADVANTAGES:

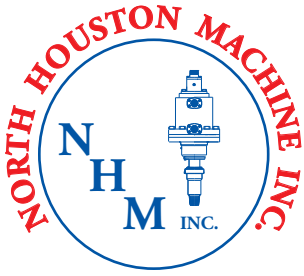
- POSITIVE ROTATION IN EITHER DIRECTION.
- SAFETY. WILL NOT BACK OUT WHEN REVERSING ROTARY HEAD.



- EASE OF DISASSEMBLY AFTER PROLONGED USE.
- CUSTOM DESIGN FOR ANY SIZE CONNECTION AND ANY TORQUE.

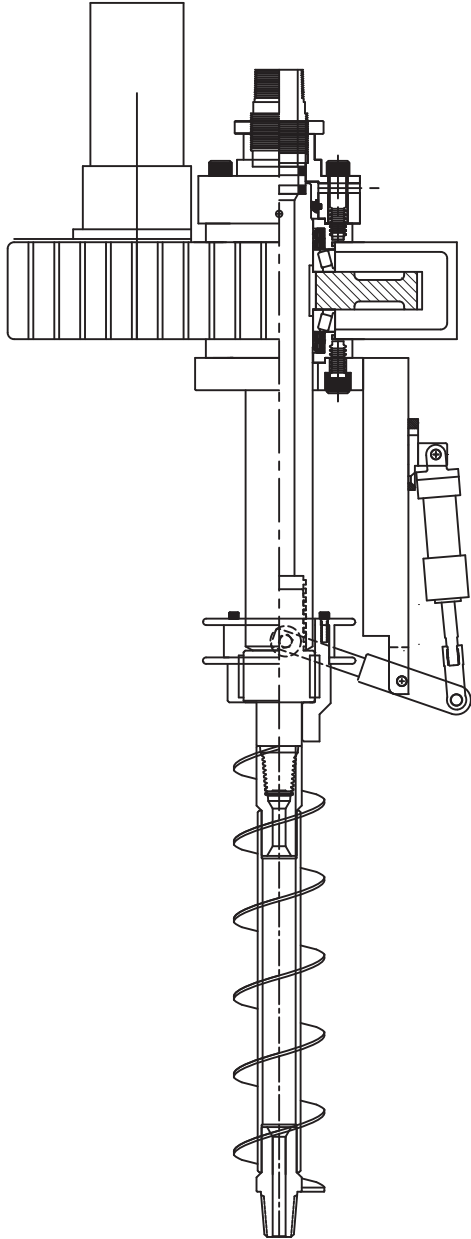


NOTE: WEDGELOCK CONNECTIONS COVERED BY N.H.M., INC. U.S. AND FOREIGN PATENT NO. 5,409,324; 5,588,772; 187552; AND PATENT PENDING.

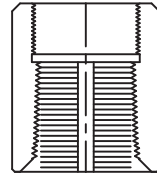
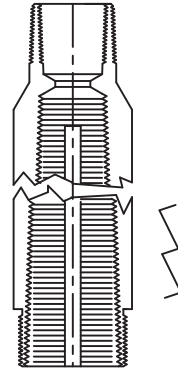


MISCELLANEOUS PRODUCTS

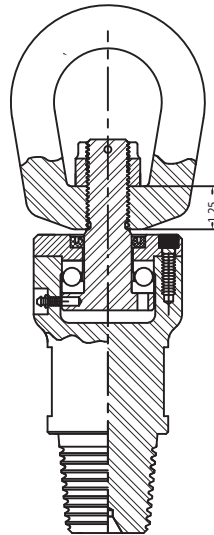
MANUFACTURED BY NORTH HOUSTON MACHINE, INC.



1500 SWIVEL W/AUGER
HOLLOW AUGER
FOR DRILLING

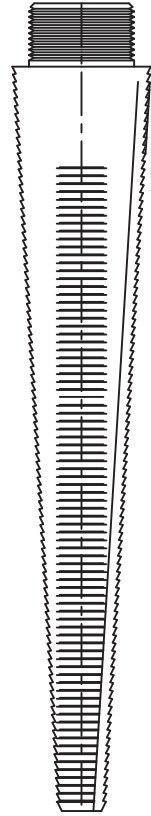


FISHING
BOX TAP WITH
EXTENSION
SKIRT



HOISTING PLUG

**SWING JOINTS, ANY
PRESSURE ANY STYLE**



TAPER TAP
SMALL PIPE

SPECIAL PRODUCTS:

URETHANE MOLDS
RUBBER MOLDS
CUSTOM-MOLDED PARTS
CUSTOM BREAKOUT SYSTEMS
SLIPS AND BOWLS
SPLIT SLIPS

CUSTOM MACHINE WORK
CNC LATHES FOR
PRODUCTION PARTS
HOLLOW & REGULAR AUGERS
SPECIAL ALUMINUM DRILL PIPE

NORTH HOUSTON MACHINE, INC.
MANUFACTURES AND HAS IN STOCK
PACKING SIZES FOR:
1J, 2J, 5EL, 15XV, 20XV, 30XV, AND 50KG

NORTH HOUSTON MACHINE, INC.

SERVICES

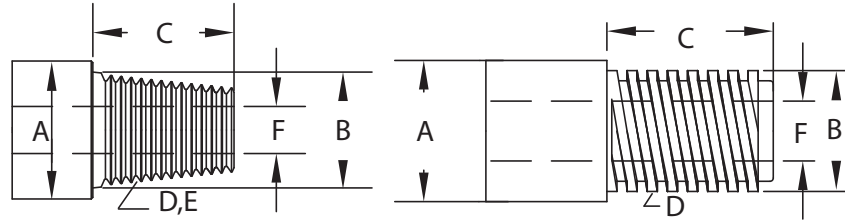


- ★ **Drill Stem from A.P.I. threads, to Dual Tube, and including Custom threads**
- ★ **Fabrication and Welding**
- ★ **Full Service Machine Shop**
- ★ **Parts Department**
- ★ **Technical Assistance**



DRILL ROD THREAD INFORMATION

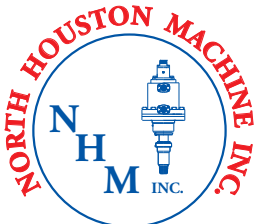
A = OUTSIDE DIAMETER
 B = MAJOR THREAD DIAMETER
 C = LENGTH OF PIN
 D = THREADS PER INCH
 E = TAPER PER FOOT
 F = TOOL JOINT BORE



TOOL JOINTS & CABLE TOOL DRILLING JOINTS

FLUSH JOINT STRAIGHT THREAD

NAME OF TOOL JOINT	ABBREVIATION	A	B	C	D	E	F
2 3/8 API REGULAR	2 3/8 REG	3 1/8	2 5/8	3	5	3	1
2 3/8 API REGULAR (DSI MOD)	2 3/8 REG	3	2 5/8	2 3/8	5	3	1 1/2
2 7/8 API REGULAR	2 7/8 REG	3 3/4	3	3 1/2	5	3	1 1/4
3 1/2 API REGULAR	3 1/2 REG	4 1/2	3 1/2	3 3/4	5	3	1 1/2
4 1/2 API REGULAR	4 1/2 REG	5 1/2	4 5/8	4 1/4	5	3	2 1/4
5 1/2 API REGULAR	5 1/2 REG	6 3/4	5 33/64	4 3/4	4	3	2 3/4
6 5/8 API REGULAR	6 5/8 REG	7 3/4	6	5	4	2	3 1/2
7 5/8 API REGULAR	7 5/8 REG	8 7/8	7	5 1/4	4	3	4
2 3/8 API INTERNAL FLUSH LH, RH	2 3/8 IF (LH OR RH)	3 1/2	2 7/8	3	4	2	1 3/4
2 7/8 API INTERNAL FLUSH LH, RH	2 7/8 IF (LH OR RH)	4 1/2	3 25/64	3 1/2	4	2	2 1/8
3 1/2 API INTERNAL FLUSH LH, RH	3 1/2 IF (LH OR RH)	4 3/4	4 1/64	4	4	2	2 11/16
4 API INTERNAL FLUSH	4 IF	5 3/4	4 53/64	4 1/2	4	2	3 1/4
4 1/2 API INTERNAL FLUSH	4 1/2 IF	6 1/8	5 1/4	4 1/2	4	2	3 3/4
2 3/8 MAYHEW JUNIOR	MAYHEW JUNIOR	2 3/4	2 21/64	2 1/4	4	2	1 1/2
2 3/8 MAYHEW REGULAR	MAYHEW REGULAR	3 1/4	2 35/64	3	4	1 1/2	1 5/8
2 3/8 JOY FULL HOLE	2 3/8 JOY FH	3 1/8	2 35/64	3	4	1 1/2	1 5/8
2 3/8 FAILING EXPLORATION	2 3/8 FEDP	2 31/32	2 1/2	2 3/4	4	2	1 1/2
2 7/8 FAILING EXPLORATION	2 7/8 FEDP	3 3/4	3 1/8	3 1/4	4	2	1 7/8
3 1/2 API FULL HOLE	3 1/2 FH	4 5/8	4	3 3/4	5	3	2 1/8
4 API FULL HOLE	4 FH	5 1/4	4 9/32	4 1/2	4	2	2 13/16
4 1/2 API FULL HOLE	4 1/2 FH	5 3/4	4 51/64	4	5	3	3
FLUSH JOINT STRAIGHT THREAD	ABBREVIATION	A	B	C	D	E	F
M-50	M-50	2	1 3/4	1 5/16	4	NO	1 3/16
E-ROD	E-ROD	1 5/16	1	1 1/2	3	NO	7/16
EW-ROD	EW-ROD	1 3/8	1 1/16	1 9/16	3	NO	7/16
A-ROD	A-ROD	1 5/8	1 17/64	1 3/4	3	NO	9/16
AW-ROD	AW-ROD	1 3/4	1 3/8	1 3/4	3	NO	5/8
B-ROD	B-ROD	1 29/32	1 13/32	2 7/8	3	NO	5/8
BW-ROD	BW-ROD	2 1/8	1 11/16	2 1/4	3	NO	3/4
N-ROD	4 THREAD N-ROD	2 1/8	1 7/8	2 3/8	4	NO	1
N-ROD FAILING TYPE	3 THREAD N-ROD	2 3/8	1 7/8	2 3/4	3	NO	1 1/8
NW-ROD	NW-ROD	2 5/8	2 7/32	2 3/4	3	NO	1 3/8
SPECIAL CONNECTIONS MFG. BY NORTH HOUSTON MACHINE	ABBREVIATION	A	B	C	D	E	F
CA21-3/4	CA21-3/4	1 5/16	1 1/8	1 1/4	6	1 1/2	7/16
CA21-1	CA21-1	1 11/16	1 23/64	1 1/4	6	1 1/2	5/8
CA21-1 1/4	CA21-1 1/4	1 29/32	1 33/64	1 1/4	6	1 1/2	7/8
CA21-1 1/2	CA21-1 1/2	2 1/4	1 25/32	1 1/4	6	1 1/2	1 3/16
2 INTERNAL FLUSH	2 IF	2 3/4	2	2	4	2	1 3/16
NW-J	NWJ	2 5/8	2 1/4	2 1/2	4	2	1 3/16
2 HEAVY DUTY FAILING	2 HDF	2 1/4	1 11/16	1 3/4	4	1 1/2	15/16



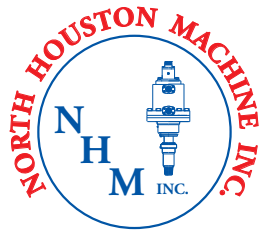
FOR ORDERING:
NORTH HOUSTON MACHINE, INC.
 14202 PINE MEADOW LANE
 TOMBALL, TEXAS 77377

TELEPHONE: 281-351-8108
 281-351-7077
 800-364-6973

FAX: 281-255-3863
EMAIL: nhmi@earthlink.net
SALES: sales@northhoustonmachine.com

EXPERIENCE

PERFORMANCE



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TOMBALL, TEXAS 77377

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