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INSTALLATION AND MAINTENANCE INSTRUCTION MANUAL

2" 3,000 # & 5,000 # CWP HN-60 & HFT-108

**ADJUSTABLE CHOKE
AND
POSITIVE CHOKE ASSEMBLIES**

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I. OPERATION

Your HN-60 choke uses the needle and seat principle to provide fully adjustable flow. Varying the size of the calibrated orifice is achieved by rotating the hand wheel to obtain the desired flow rate, or downstream pressure. The orifice size is read from the indicator, which is calibrated in 64ths of an inch and is in line with a V-notch machined into the top of the bonnet.

The HFT-108 positive choke is a fixed orifice version of the adjustable choke. The flow rate or downstream pressure is controlled by the flow bean orifice size selected. Flow beans are available in proration or standard type beans.

II. INSTALLATION

Install your choke so that the flow is in line with the inlet connection, making at 90 degree turn and then exiting through the outlet orifice. Your choke can be mounted in any orientation without affecting its performance; as long as the flow enters the choke at the inlet and exits through the outlet.

Note: To remove the adjustable choke bonnets (while in the line) with the stem in the full open position, allow a minimum of 7 inches of clearance.

III. MAINTENANCE

Inspect your choke regularly for excessive wear. Parts normally replaced at service intervals are choke seat, stem packing, bonnet o-ring and stem. Be sure to lubricate stem threads, o-ring groove, and the inside diameter of the stem packing.

IV. DISASSEMBLY OF ADJUSTABLE CHOKE

1. With choke in the open position, bleed all pressure from system.
2. Loosen bonnet nut by striking the lugs with a hammer in a counter-clockwise direction.



CAUTION: If an excessive amount of pressure escapes between the bonnet and the bonnet nut, stop disassembly procedure and ensure that the system pressure is off the choke.

3. Unscrew bonnet nut from body. Pull bonnet assembly out of body.
4. Remove bonnet o-ring from o-ring groove in choke body.

Disassemble Bonnet Assembly:

1. Remove hand wheel nut and washer.
2. Remove hand wheel
3. Loosen indicator set screw.
4. Remove indicator from stem.
5. Remove thumb screw.
6. Remove nylon ball from thumb screw hole.
7. Remove bonnet nut.
8. Invert bonnet for easy access to stem packing
9. Remove retaining ring.
10. Remove junk ring.
11. Grasping the bonnet, rotate the stem counter-clockwise until passes through the stem packing.
12. Remove stem packing.

The bonnet assembly is now completely disassembled, make a visual inspection of stem for signs of wear or damage. Required replacement parts are stem packing and bonnet o-ring.

If the flow medium has worn the cone shaped part of the stem, replacement of the stem will be required.

Choke Seat Removal:

Using a bean/seat wrench, remove seat by sliding wrench over the seat hex. Turn wrench counter-clockwise to unscrew seat from body. Normally, the seat can be lifted out of the body with the wrench. Visually inspect seat for excessive wear or damage, replace if necessary.

V. ASSEMBLY OF ADJUSTABLE CHOKE

Choke Seat Installation:

Holding the choke seat hex with the seat wrench, lubricate the choke seat threads and then place the seat in the choke body. With the seat wrench gripping the seat hex, turn the wrench clockwise to tighten (75-125 ft. lbs.) to seat into position. Remove the seat wrench.

Lubricate o-ring groove in choke body and place o-ring into groove.

Note: Use of a good anti-seize compound is recommended for stem threads.

Bonnet Assembly:

1. Replace any worn or damaged parts.
2. Lubricate stem threads, place stem into bonnet through packing gland. Turn stem clockwise to thread stem into bonnet.
3. Lubricate the inside diameter of new stem packing. Slide packing down stem into packing gland.

Note: The direction of the “V” type stacked packing is important for proper operation. The “V” shape must be positioned such that the open end of the “V” shape has the internal pressure of the choke acting on it.

4. Slide junk ring down stem into packing gland.
5. Slide the retaining ring down stem, put retaining ring into bonnet groove to hold the stem packing and junk ring in place.
6. Install bonnet wing nut on bonnet.
7. Drop the nylon ball into thumb screw hole and install thumb screw.
8. Install indicator on stem. *See indicator adjustment instructions for proper calibration on (Page 6).
9. Install hand wheel, followed by stem washer and nut.

Note: Bonnet assembly is ready to be installed on the body. Before installing bonnet check the following items:

- i. Choke seat is in the body.
- ii. Body o-ring groove (for bonnet o-ring) is lubricated and o-ring has been installed.
- iii. Stem packing and junk ring are in place with retaining ring inside groove.
- iv. Stem is in the full open position.



CAUTION: Damage to the stem, choke seat or both will result if the stem is not in the open position while hammering the bonnet nut tightly into position.

10. Carefully slide stem and bonnet into body. Thread wing nut onto body, lock bonnet in place by striking bonnet nut on lugs with hammer.

VI. POSITIVE CHOKE

The positive choke is a fixed orifice version of the adjustable choke. Your choke can easily be converted into a positive choke by replacing the choke seat with a choke bean, and the adjustable bonnet assembly with a blanking cap & nut.

VII. DISASSEMBLY OF POSITIVE CHOKE

1. Bleed all pressure from system in which choke is located.
2. Loosen wing nut by striking the lugs of the nut with a hammer.



CAUTION: If an excessive amount of pressure escapes between the blanking cap and wing nut, stop disassembly procedure and ensure that the system pressure is off the choke.

3. Unscrew wing nut from body, remove blanking cap, and wing nut as an assembly.
4. Remove o-ring from o-ring groove in the body and dispose.
5. Refer to Choke Seat Removal section on (Page 3), for the choke seat and bean removal procedure.

VIII. ASSEMBLY OF POSITIVE CHOKE

1. Refer to the Choke Seat Installation section on (Page 4), for seat installation instructions.
2. Lubricate o-ring groove in choke body and place o-ring in groove.

Note: Before placing blanking cap and wing nut assembly in place, check to be sure that the choke bean and o-ring are in the body.

3. Place blanking cap and wing nut assembly on choke body and screw tight.
4. To lock blanking cap in place, strike the lugs of the wing nut with a hammer.

The only part that must be replaced at maintenance intervals or whenever blanking cap is removed is the o-ring. The choke bean may need to be replaced, depending upon the amount of wear or damage.

IX. INSTRUCTIONS FOR SETTING ADJUSTABLE CHOKE INDICATORS

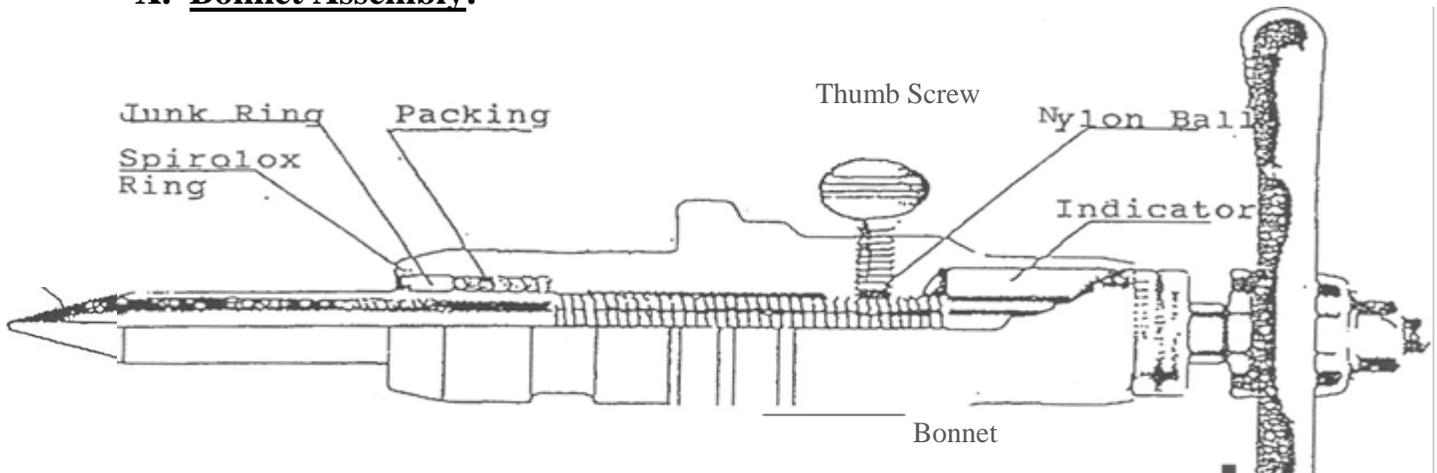
1. The bonnet features a notch for aligning and reading the indicated orifice size. On the side of the bonnet (usually 180 degrees from the notch), there is a $\frac{3}{4}$ inch set screw access hole.
2. Rotate hand wheel until indicator set screw is visible in the $\frac{3}{4}$ inch hole, or at the top of the bonnet.
3. Loosen set screw to allow the indicator to move independently of the stem
4. Turn hand wheel toward the closed direction until the stem is seated in the seat.



CAUTION: Chokes with tungsten carbide trim may crack or break if the stem is forced into the seat with excessive force. Chokes by design, are not to be used as shut-off valves.

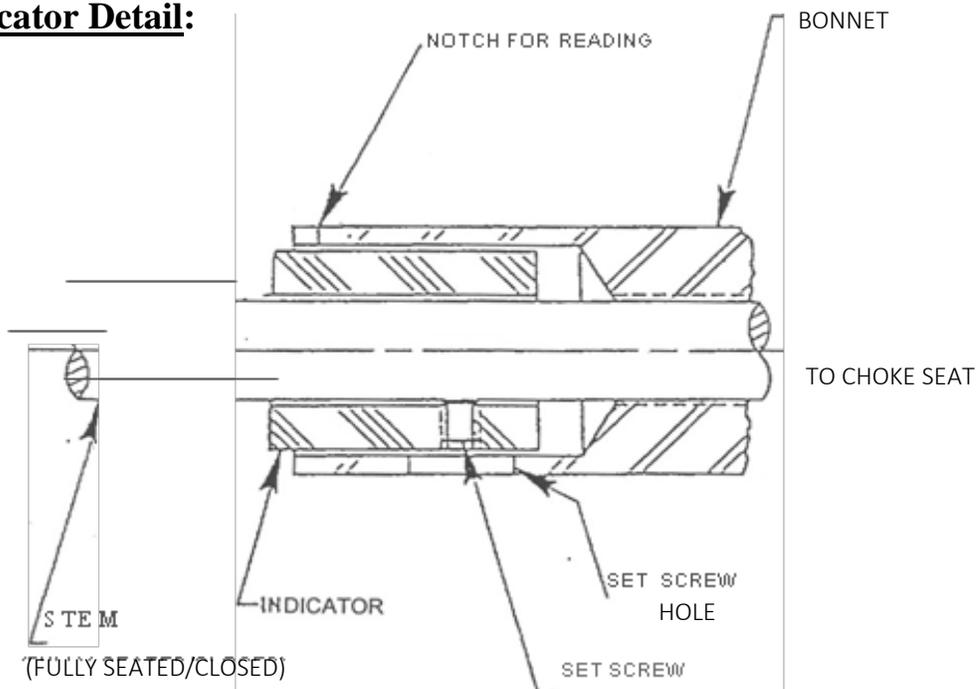
5. With the stem seated in the choke seat, make indicator adjustment. Using a $\frac{5}{32}$ inch Allen wrench in the set screw, move the indicator so the zero (0) reading is lined up with the notch. Tighten set screw.
6. The indicator should be set to the proper corresponding orifice size. To check, rotate hand wheel to the full open position, then back to the seated position. The indicator should read zero (0). If not, readjust by repeating step numbers (2) through (5).

X. Bonnet Assembly:



Note: Apply a generous coating of anti-seize compound to stem threads to prevent galling.

Indicator Detail:



Procedure for Setting Indicator:

With choke in fully closed position align mark (64ths increments) on indicator with notch on bonnet. Tighten set screw. Indicator is now set in proper calibration.

Note: The indicator must match the seat size, (i. e. $\frac{3}{4}$ inch indicator- $\frac{3}{4}$ inch seat).

XI. RECOMMENDED SPARE PARTS FOR TWO YEARS SERVICE

Part No.	Description	Quantity
1018	Stem, Hardened Steel ¾”	2
1028	Stem, Stainless Steel, TC ¾”	2
1019	Stem, Packing	6 Sets
1021	Retaining Ring	6
1040	Bonnet O-Ring	10
1030	Seat, Hardened Steel ¾”	2
1032	Seat, Stainless Steel TC ¾”	2

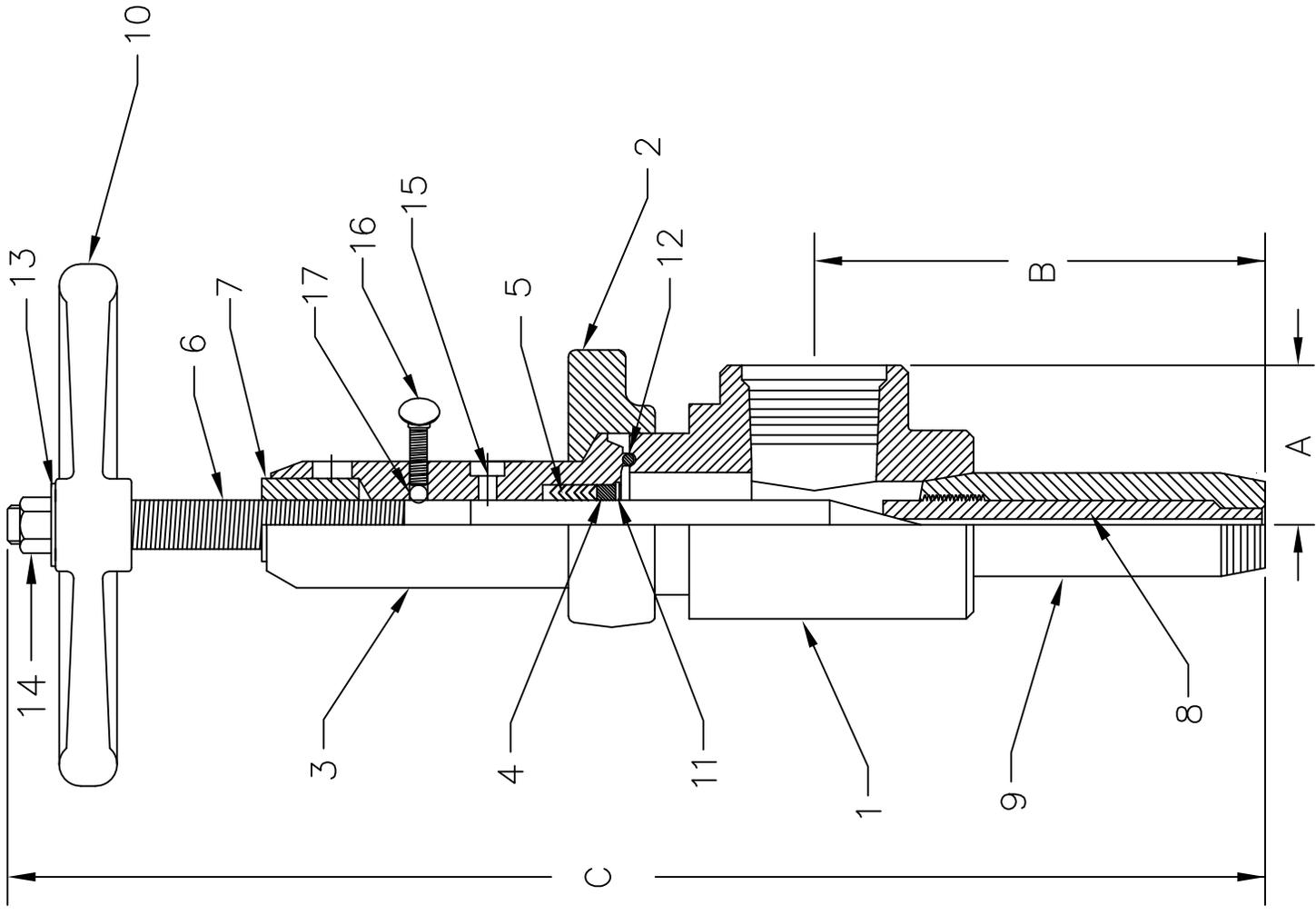
Note: When in severe and critical service, with highly abrasive flow medium, above items will require more frequent inspection and replacement.

XII. DISCLAIMER

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ITEM	PART NO.	DESCRIPTION	QTY.
1	1052	CHOKE BODY	1
2	1034	WINGNUT	1
3	1045	BONNET	1
4	1020	JUNK RING	1
5	1019	PACKING SET	1
6	1028	STEM SSTC 3/4"	1
7	1009	INDICATOR	1
8	1032	SEAT SSTC 3/4"	1

ITEM	PART NO.	DESCRIPTION	QTY.
9	1041	CAGE NIPPLE	1
10	1044	HANDWHEEL	1
11	1590	RETAINING RING	1
12	1040	O-RING	1
13	1023	WASHER 5/8	1
14	1024	HEX NUT 5/8	1
15	1013	GREASE FITTING	1
16	1003	THUMB SCREW	1
17	1004	NYLON BALL	1



DIMENSIONS	
"A"	= 2.75"
"B"	= 9.00"
"C"	= 23.20"

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HOUSTON OILFIELD EQUIPMENT, INC.
HOUSTON, TEXAS

2" - 3M/5M LP x LP
HN-60 ADJUSTABLE CHOKE
TRIM 3/4 SSTC

Drawn	MPW	STANDARD TOLERANCES
Chk'd.	OTB	.X = ±.06 FRACTION = 1/32
App'd.	OTB	.XX = ±.02 ANGLE = ±1/2°
		.XXX = ±.003 FINISH = 125

DATE	10/97
REV.	A
DWG. NO.	200500021
SIZE	A