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## **INSTALLATION AND MAINTENANCE INSTRUCTION MANUAL**

**TYPE HH2I NOM 4”  
5M CWP**

**ADJUSTABLE CHOKE  
AND  
POSITIVE CHOKE ASSEMBLIES**

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## I. OPERATION

Your HH2 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. This choke may also be converted to a positive, or fixed orifice choke. The orifice size is read from the indicator, which is calibrated in the 64ths of an inch and is in line with a V-notch machined into the top of the bonnet.

The 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 a 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.

## 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.

### **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 balls from thumb screw hole.
7. Remove bonnet nut.
8. Invert bonnet for easy access to stem packing.
9. Remove retaining ring.
10. Remove upper junk ring.
11. Grasping the bonnet, rotate the stem counter-clockwise until stem passes through the stem packing.
12. Remove stem packing.
13. Remove lower junk ring.
14. Remove bonnet o-ring .

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.

Replacement of the stem may be required if the flow medium has altered or worn the cone shaped point of the stem.

### **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. Always replace seat gasket.

## V. ASSEMBLY OF ADJUSTABLE CHOKE

### **Choke Seat Installation:**

Make sure choke seat has a new seat gasket before installing choke seat in body.

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 (75-100 ft. lbs.) to seat into position. Remove the seat wrench. Remove seat wrench and store for future use.

**Note: Use of a good anti-seize compound is recommended for seat threads**

### **Bonnet Assembly:**

1. Replace any worn or damaged parts.
2. Apply lubricant to stem packing gland and bonnet o-ring groove.
3. Slide packing back-up ring to bottom of the packing gland.
4. Grease inside diameter of new stem packing and slide 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.**

5. Slide retaining ring down stem into packing gland.
6. Place upper junk ring on stop of stem packing.
7. Place the retaining ring into groove of packing gland.
8. Lubricate stem threads, slide stem through stem packing and turn stem clockwise to screw stem into bonnet

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

9. Install bonnet nut on bonnet.
10. Drop two nylon balls into thumb screw hole and install thumb screw.
11. Install indicator on stem. \*See indicator adjustment instructions for proper calibrations on (Page 6).
12. Slide bonnet o-ring into lubricated o-ring groove.

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

- i. Choke seat and gasket are installed in body.
- ii. Body bonnet entry end (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.**

13. Carefully slide stem and bonnet into body. Screw bonnet nut onto body and lock in place by striking the nut on the lugs with a hammer.

## **VI. POSITIVE CHOKE**

The positive choke H2 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 with a blanking cap & nut.

## **VII. DISASSEMBLY OF POSITIVE CHOKE**

1. Bleed all pressure for system in which choke is located.
2. Loosen bleed plug with wrench.
3. Loosen wing nut by striking the lugs of the nut with a hammer in a counter clockwise direction.



**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.**

4. Unscrew wing nut from body, remove blanking cap, wing nut, and o-ring.
5. Refer to the 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 3), for the choke seat installation procedure.
2. Lubricate o-ring groove of blanking cap, then install o-ring.

**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.
5. Tighten bleed plug with wrench.

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.

**Note:** The set screw access hole, as shown on the diagram on (Page 7), is not applicable to HH2 chokes.

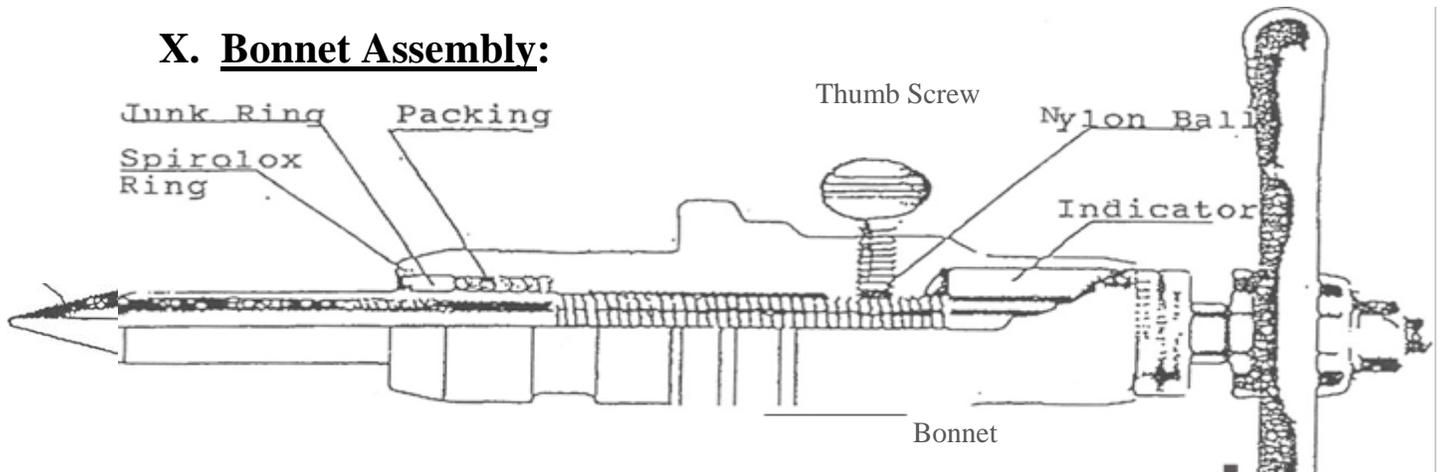
2. Rotate hand wheel until indicator set screw is visible in the  $\frac{3}{4}$  inch hole, or at the top of the bonnet.
3. Loosen set screw to allow the indicator to move independently of the stem.
4. Turn hand wheel in the closed direction until stem is seated in the seat.



**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.

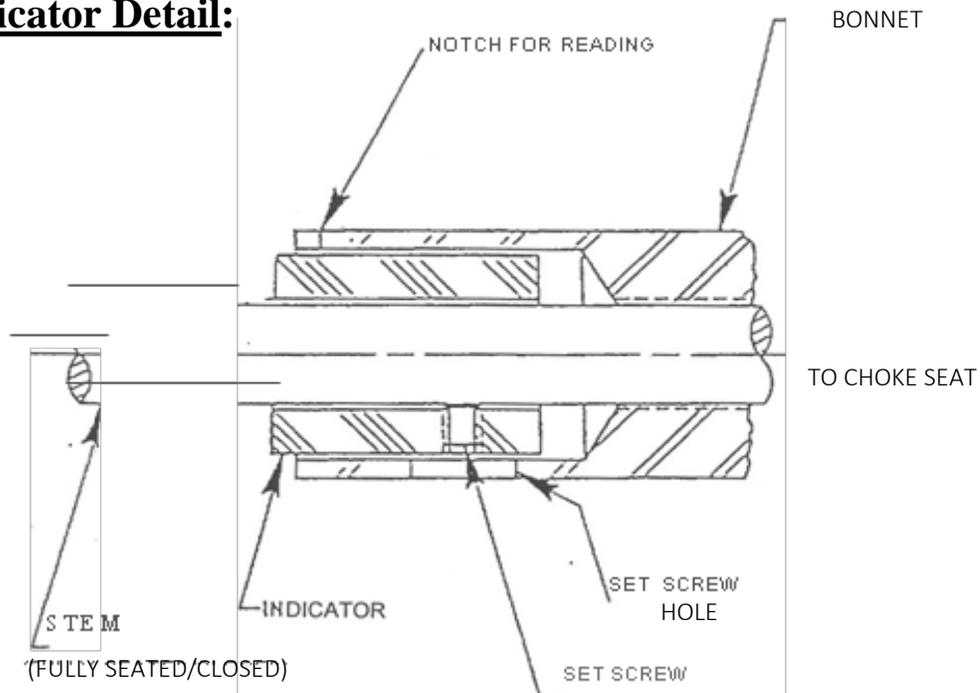
5. With the stem seated in the choke seat, make indicator adjustment. Using an Allen wrench, as required, in the set screw, move the indicator so the zero (0) reading is lined up with the notch. Tighten set screw.
6. The indicator should be set to the proper corresponding orifice size. To check, rotate 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:** Indicator must match the seat size, (i.e.  $\frac{3}{4}$  inch indicator with  $\frac{3}{4}$  inch seat, 1 inch indicator with 1 inch seat).

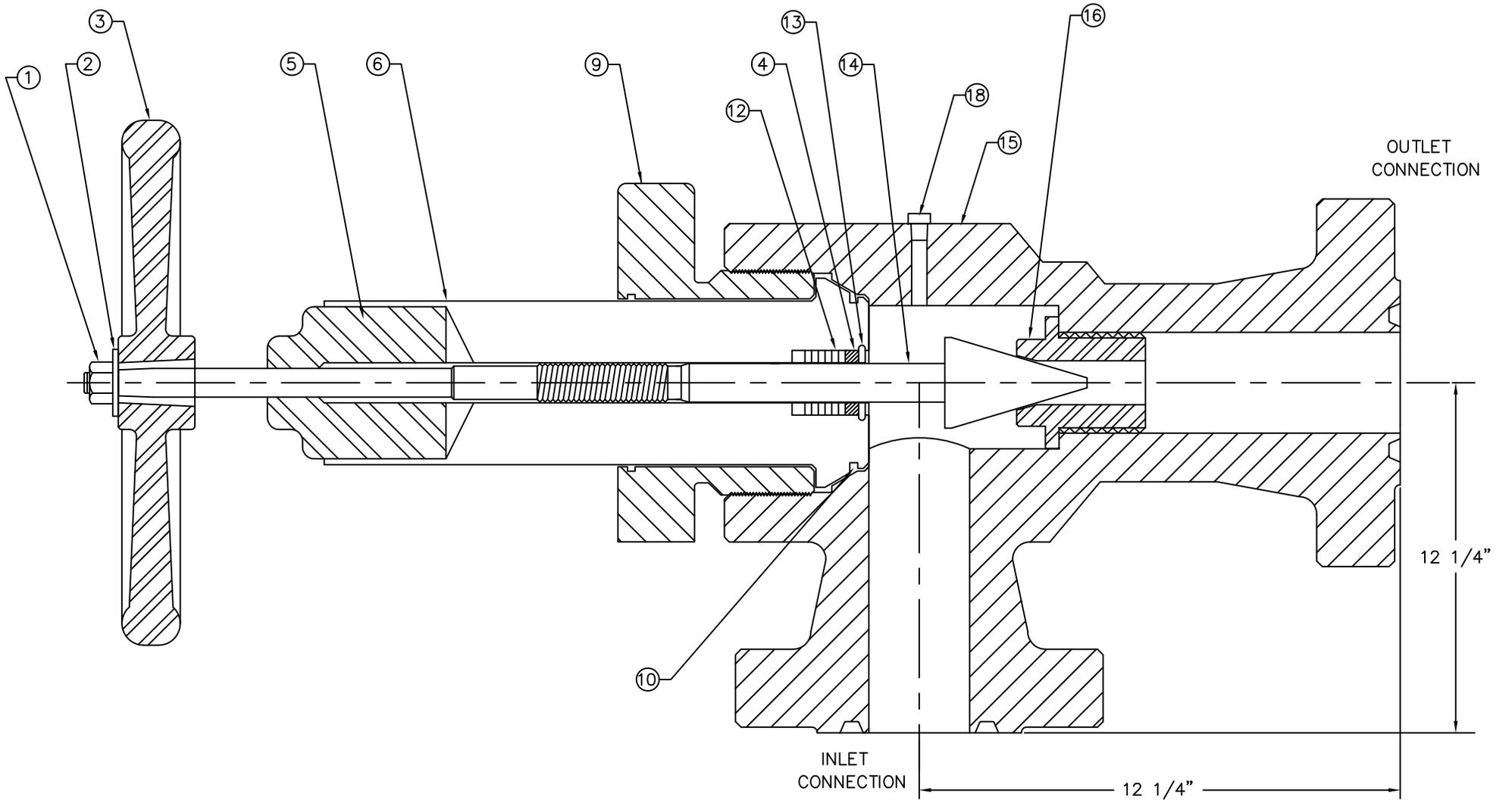
## **XI. RECOMMENDED SPARE PARTS FOR TWO YEARS SERVICE**

<b>Part No.</b>	<b>Description</b>	<b>Quantity</b>
2481	Stem, SSTC 3”	2
2499	Packing H2S	6 Sets
2593	O-ring Viton	6
2480	Seat, SSTC 3”	2
2630	Seat Gasket SS	2
2592	Retaining Ring	6
2645	Choke Wrench	1

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

## **XII. DISCLAIMER**

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PARTS LIST

ITEM	QTY.	NAME OF PART	PART NO.	ITEM	QTY.	NAME OF PART	PART NO.
1	1	HEX NUT	1024	10	1	O-RING VITON	2593
2	1	WASHER	1023	11	-	ITEM DELETED	----
3	1	HANDWHEEL	1521	12	1	SET PACKING H2S	2499
4	1	JUNK RING UPPER	2606	13	1	RETAINING RING	2592
5	1	INDICATOR 3"	2595	14	1	STEM 3" SSTC	2481
6	1	BONNET	2591	15	1	CHOKE BODY 5M 4 1/16	2590
7	-	ITEM DELETED	----	16	1	SEAT W/ GASKET 3" SSTC	2480
8	-	ITEM DELETED	----	17	-	ITEM DELETED	----
9	1	HAMMER NUT 5M	2596	18	1	HEX PLUG 1/2" NPT	1212

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		Chk'd.	OTB	
		Appd.	OTB	
 <b>HOUSTON OILFIELD EQUIPMENT, INC.</b> HOUSTON, TEXAS		HH2 4 1/16" 5M CWP FLANGED ADJUSTABLE CHOKE ASSY NOM. 4" 3" SSTC TRIM		
		SIZE A	DWG. NO. 4025098210	REV. A