



HOUSTON OILFIELD EQUIPMENT

9669 Port Erroll Road

Houston, TX 77095

Ph: (281) 200-1400

Fax: (713) 466-3189

Website: www.hoeinc.com ~ Sales: Sales@hoeinc.com

INSTALLATION AND MAINTENANCE INSTRUCTION MANUAL

TYPE H2 NOM 3”

ADJUSTABLE CHOKE WITH EXTERNAL CAGE & SLEEVE TRIM

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	Drawing PN: 30250891523 for Reference Only	

I. OPERATION

Your H2 choke uses the cage and sleeve 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 the 64ths of an inch and is in line with a V-notch machined into the top of the bonnet.

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. 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 packing (14), bonnet o-ring (10), packing retaining ring (12), stem o-ring (7), back-up ring (6), junk ring lower (13), retaining ring for split sleeves (8). Be sure to lubricate stem threads, o-ring groove, and the stem packing inside the diameter. Inspect seat cage (2), control sleeve (5) and replace if excessive wear is evident.

Note: Refer to assembly drawing for bill of materials and numerical call-out designations.

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 bonnet.

Disassemble Bonnet Assembly:

1. Remove hex nut, flat washer, and hand wheel.
2. Loosen indicator set screw and remove indicator from stem
3. Remove thumb screw and nylon ball from bonnet.
4. Slide hammer nut off bonnet.
5. Securing the bonnet, rotate stem counter-clockwise so it passes thru the packing and becomes separated from the bonnet. * **Tip:** Use hand wheel to turn stem.
6. Invert bonnet, remove packing retaining ring, junk rink and packing.
7. Remove retaining ring and split sleeve segments from lower portion of stem where it attaches to control sleeve.
8. Separate stem from control sleeve.
9. Remove o-ring and back-up ring from stem.

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 seat cage and control sleeve may be required if the flow medium has caused excessive wear.

Choke Seat Removal:

Using a bean/seat wrench, remove seat by sliding wrench over the seat cage. 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 cage for excessive wear or damage, replace if necessary.

V. ASSEMBLY OF ADJUSTABLE CHOKE

Choke Seat Installation:

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

Note: Inspect seat gasket and replace if flattened or deformed.

Bonnet Assembly:

1. Replace any worn or damaged parts.
2. Assemble control sleeve to stem and install o-ring, back-up ring, split segments and retaining ring.
3. Lubricate stem threads, place stem in bonnet through packing gland. Turn stem clockwise to thread stem into bonnet. ***Tip:** May use hand wheel to assist once stem clears top of bonnet.
4. Lubricate the inside diameter of new stem packing and packing gland. Slide packing down stem into packing gland. Lubricate o-ring groove and install o-ring on bonnet.

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. When using “J” or “U” type packing the rounded end of packing should be facing the pressure end. The back-up ring is installed first with the “J” or “U” type packing to follow.

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

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

- i. Choke seat cage is in body and properly tightened.
- ii. 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 in groove.
- iv. Stem is in the full open position.



CAUTION: Damage to the control sleeve and seat cage, or both may result if the stem is not in the open position while hammering the bonnet nut tightly into position.

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

VI. 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 Indicator Detail Diagram, (Page 6), is not applicable to HH2 chokes.

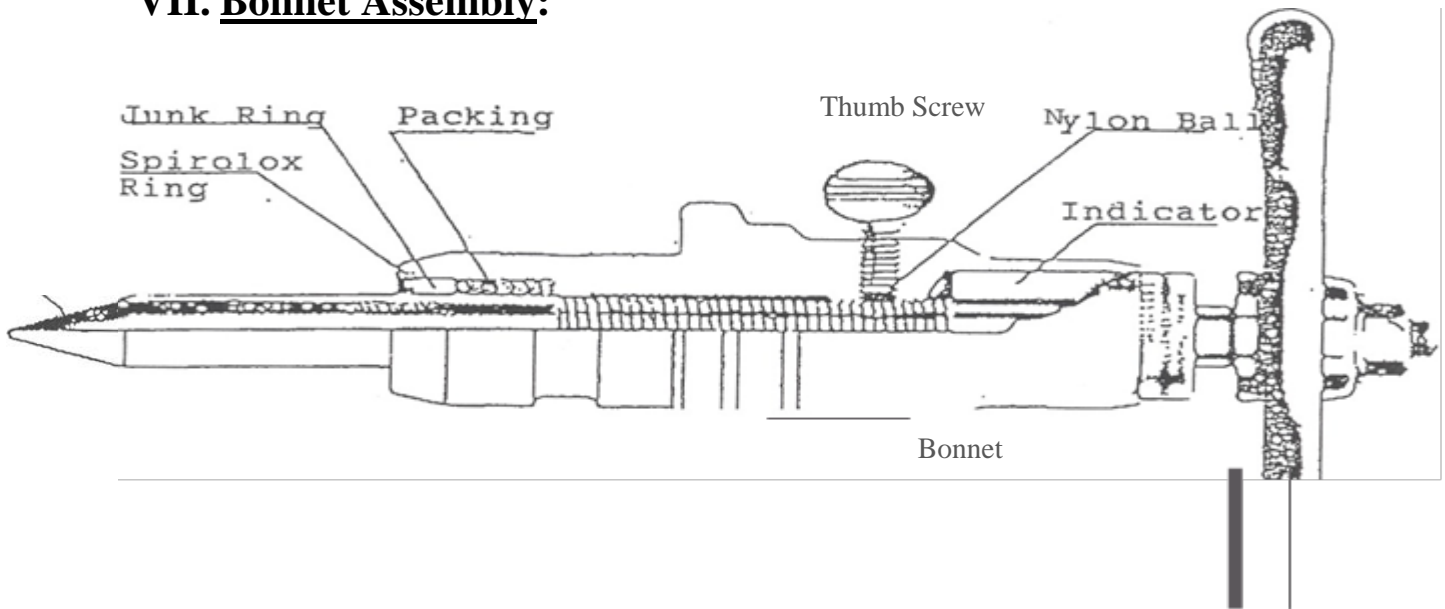
2. Rotate hand wheel until indicator set screw is visible in the $\frac{3}{4}$ inch hole, or at the top of the bonnet.
3. Loosen set screw to allow the indicator to move independently of the stem.
4. Turn hand wheel toward the closed direction until the stem is seated in the seat.



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.

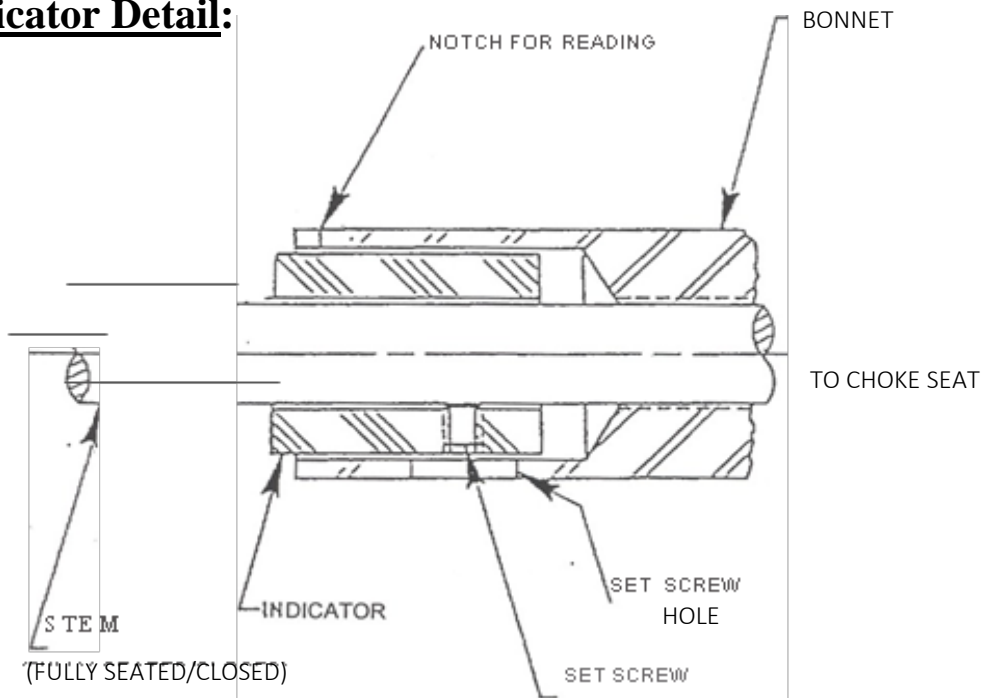
5. With the control sleeve seated on the choke seat cage, make indicator adjustment. Using an Allen wrench in the set screw, move the indicator so the zero (0) reading is lined up with the notch. Tighten set screw.
6. The indicator should be set to the proper corresponding orifice size. To check, rotate 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).

VII. 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).

VIII. RECOMMENDED SPARE PARTS FOR TWO YEARS SERVICE

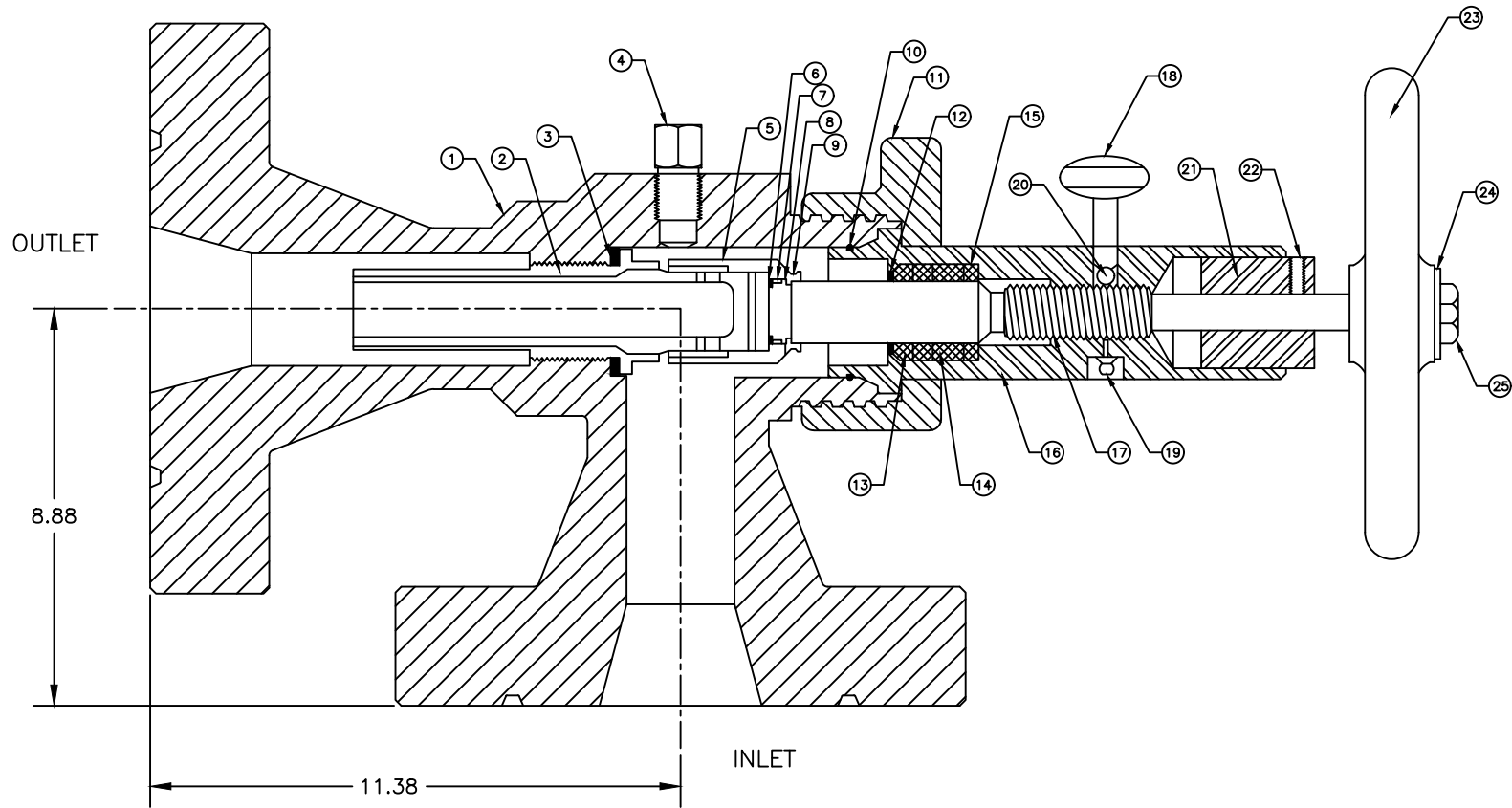
Part No.	Description	Quantity
4814	Stem, SSTC	2
4815	Seat Cage, SSTC 2" Orifice	2
1505	Packing, STD, Viton/TFE	6 Sets
1528	O-ring, Viton	6
4813	Control Sleeve, SSTC	2
4827	Retaining Ring for Split Bushings	2
1481	Junk Ring, Lower	2
1464	Seat Gasket, SS	6
1614	Junk Ring, Upper	2
1484	Retaining Ring for Packing	6
4826	Stem O-ring, Viton	2
4826 BU	Stem Back-Up Ring, Viton	2

Please contact the factory for other available materials.

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

IX. DISCLAIMER

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PARTS LIST

ITEM	QTY	NAME OF PART	P/N	ITEM	QTY	NAME OF PART	P/N
1	1	BODY 3 1/8 5000psi RTJ AISI 4130 NACE	1516	13	1	JUNK RING, LOWER BRASS ASTM B-16 C36000	1481
2	1	SEAT, CAGE 2" 17-4 PH SS/TUNG CARBIDE ASTM A 564 TYPE 630 H-1150	4815	14	1	PACKING, STEM TFE/VITON	1505
3	1	GASKET, SEAT AISI 316SS	1464	15	1	JUNK RING, UPPER BRASS ASTM B-16 C36000	1614
4	1	HEX PLUG 1/2" NPT FORGED STEEL ASTM A-105	1212	16	1	BONNET, AISI 4130 ALLOY STEEL	4816
5	1	CONTROL SLEEVE, 2" 17-4 PH SS/TUNG CARBIDE ASTM A 564 TYPE 630 H-1150	4813	17	1	STEM AISI 17-4 PH SS ASTM A564 TYPE 630 H-1150	4814
6	1	B.U. RING, STEM TEFLON	4826BU	18	1	THUMB SCREW, CS PLATED	1529
7	1	O-RING, STEM VITON 90 DUROMETER	4826	19	1	GREASE FITTING, ZINC PLATED CS	1013
8	1	RETAINER RING, SPLIT SLEEVES AISI 316SS	4827	20	1	BALL, NYLON	1004
9	1	SPLIT SLEEVE RETAINER, SET OF 2 AISI 316SS	4820	21	1	INDICATOR, 2" ORIFICE	1483CG
10	1	O-RING F/ BONNET, VITON 90 DUROMETER	1528	22	1	SET SCREW, INDICATOR CS	1007
11	1	WING NUT, AISI 4130 ALLOY STEEL	1511	23	1	HANDWHEEL, DUCTILE IRON	1521
12	1	RETAINER RING, PACKING CS	1484	24	1	WASHER, HANDWHEEL CS	1023
				25	1	HEX NUT, HANDWHEEL CS	1024

ECN: DATE:

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Drawn	MPW	STANDARD TOLERANCES	
Chk'd.	OTB	.X = ±.06	FRAC = 1/32
Appd.	OTB	.XX = ±.02	ANGLE = ±1/2°
		.XXX = ±.005	FINISH = 125



**HOUSTON OILFIELD
EQUIPMENT, INC.**

HOUSTON, TEXAS

ADJ CHOKE ASSY HH2C 3 1/8 5000psi
RTJ W/ EXTERNAL SLEEVE CAGE
TRIM 2" SSTC H2S SERVICE
NOM. 3 1/8" BODY NACE SERVICE

SIZE	DWG.	30250891523	REV.
A	NO.		A