



HOUSTON OILFIELD EQUIPMENT

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INSTALLATION AND MAINTENANCE INSTRUCTIONAL MANUAL

**HSI 15,000 # CWP
WITH 2" 1502 UNION ENDS
MAX ORIFICE 1"**

**ADJUSTABLE CHOKE
AND
POSITIVE CHOKE ASSEMBLIES**

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I. OPERATION

Your HSI 1502 union end adjustable choke s 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. Chokes, by design, are not to be used as shut-off valves. 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 HSI 1502 union end choke in positive (or fixed) mode employs a choke bean of the FMC (OCT profile). The beans are available in size range 4/64-64/64. Beans may be changed by using a 1- 3/8 combination bean and seat choke wrench or a 1” hex bar.

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 thumb screw (13) and turn the hand wheel (3) counter-clockwise to disengage the tip of the stem (5) from the seat (9).



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. Loosen wing nut (16) and disconnect the bonnet assembly from the choke tee assembly.

4. Remove the seat (9) from the choke tee assembly using a 1- 3/8 hex socket choke wrench.
5. Remove hand wheel (3) by removing hex nut (16) and flat washer (14).
6. Loosen set screw in the indicator (2) and slide the indicator off of the stem (5).
7. Remove the stem (5) by grasping it by the tapered pressure end and rotating counter-clockwise until threads disengage.
8. Using retaining ring pliers, remove the retaining ring (11). Then remove the packing retainer (8), packing (6), and stem guide (7).
9. **As Needed:** Remove the thumb screw (13) so that the wing nut (16) may be removed if necessary.
10. Degrease and clean all parts.

Inspection and Repair

1. After degreasing parts, visually inspect for wear, corrosion or any other physical damage.
2. Inspect the threads, packing area, shaft and carbide tip of the stem (5) and replace as necessary. The cone of the carbide tip should be smooth and without grooves or cracks.
3. Inspect threads and carbide line of seat (9) and replace as necessary. The entry angle of the carbide liner should be smooth and without grooves or cracks. Look down the orifice for washouts in the mid-section of the liner.
4. Inspect the packing gland of the bonnet (4). Damage to the seal surfaces or excessive pitting is cause for replacement.
5. Inspect the packing retainer (8) and stem guide (7) for damage,
6. Always discard the packing (6) when removed from the bonnet.
7. Replace the wing nut (16) if the lugs are excessively flattened.

V. ASSEMBLY OF ADJUSTABLE CHOKE

Note: It is important that the workstation being used to assemble the choke is clean and free of anything that could possibly contaminate the grease such as metal shavings, dirt, rust, old paint etc. Do not stand or deburr near the workstation. Always use high quality graphite grease or anti-seize thread compound during assembly. Lubricate all parts, especially threads.

1. Inspect sealing surfaces in bonnet packing gland area. Replace bonnet if grooved or or washed out from flow.
2. Apply anti-seize thread compound in the packing gland of the bonnet body (4) and install the following in order:
 - i. Stem guide (7).
 - ii. Packing set (6)

Note: The direction of the “V” of the chevron ring faces outward toward the opening of the 1502 connection toward pressure end.

- iii. Packing retainer (8).
- iv. Retaining ring (11). Use snap-ring pliers to install.

Note: Install packing set (6) with thick back-up ring against the stem guide (7). The thin portion of the packing set will be facing the opening of the 1502 opening toward pressure end.

3. Apply anti-seize thread compound to the threads of the stem (5). Install the end of the stem, opposite the carbide, into the packing and carefully push straight in until the threads of the stem meet and engage the threads of the bonnet. Turn the stem clockwise until the raised ring below the sealing area of the stem bumps against the packing retainer (8). Bonnet may be placed in shop vise for this procedure. You may also install hand wheel to ensure smooth movement.
4. Slide wing nut (16) onto bonnet assembly and thread thumbscrew (13).
5. Slide choke indicator (2) onto the stem (5) with the “0” end facing away from the choke bonnet (4) do not tighten set screw ye.
6. Attach the hand wheel (3), washer (14), and hex nut (12) on the stem (5).
7. Install choke seat in body with 1- 3/8’ hex wrench. Mount the bonnet assembly to the choke body (10) and make up the union properly. Turn the hand wheel (3) clockwise to the fully closed position, until the stem bottoms out firmly against the choke seat.

Note: Do not turn hand wheel with excessive force as damage to carbide stem and seat may occur.

8. Line up the “0” calibration mark of the indicator (2) with the indicator groove on the end of the bonnet and tighten the setscrew in the indicator (2).

Note: Step 8 is required whenever the bonnet assembly has been disengaged from the choke body (10). This will ensure accurate calibration of choke.

9. Grease the bonnet using the grease fitting (19) on the side of the bonnet (4).

10. Back the stem off the choke seat by turning hand wheel counter-clockwise and tighten the thumb screw (15) for transport. Chokes should always be shipped in a partially open position.

VI. DISASSEMBLY OF POSITIVE CHOKE

1. Bleed off any pressure from the choke assembly prior to disassembly.



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.

2. Loosen wing nut (1) on body and remove wing nut and blank cap (6).

3. Using 1- 3/8” combination bean and seat wrench or 1” hex bar remove choke bean (9) from body.

4. Saver sub assembly may now be removed from body for inspection or replacement.

VII. ASSEMBLY OF POSITIVE CHOKE

1. Assemble saver sub assembly (8) to choke body (7).

2. Install choke bean (9) in body with choke wrench 1- 3/8” combination bean and seat or 1” hex bar. It is important that threads on both choke bean and body are coated with a good quality anti-seize thread compound prior to their assembly.

3. Install new 2” 1502 union seal in body (7) and coat 2” 1502 threads with anti-seize compound.

4. Place blank cap (6) and wing nut (1) on body and tighten by turning clockwise until tight. Strike hammer lugs on wing nut with a hammer to ensure wing nut is tight.

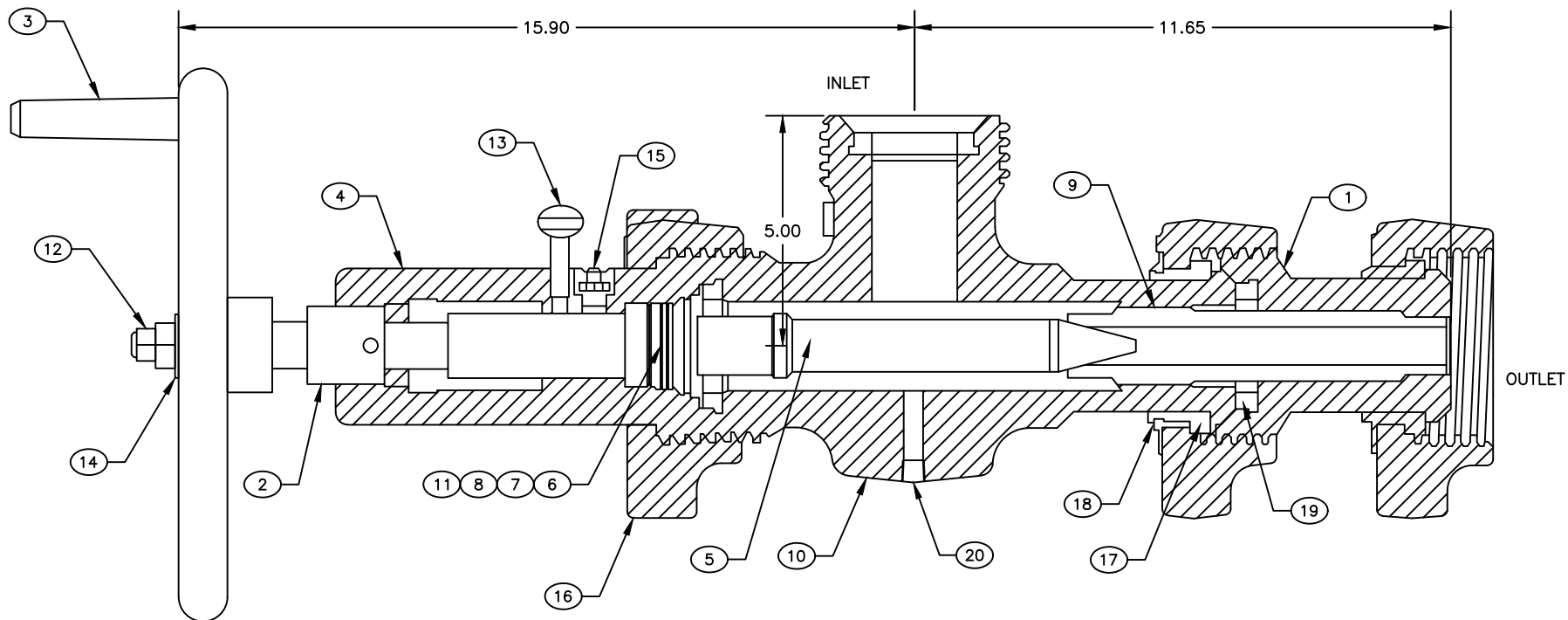
VIII. RECOMMENDED SPARE PARTS FOR ONE YEAR SERVICE

Part No.	Description	Quantity
1764	Stem, SSTC	2
1092	Seat, SSTC ¾”	2
1778	Packing Set	4
2489	Saver Sub	1
1939	Stem, Guide	4
1928	Packing Retainer	4
1484	Retaining Ring	4
2505	Thumb Screw with Nylon Tip	4
2490	Seal 1502	6
2419	Nut Segment Set	1
2420	Spiral Retainer for Nut Segment Set	2
1906	Indicator ¾” PVC	2

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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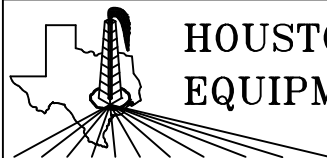


PARTS LIST

ECN: DATE:

ITEM	QTY.	NAME OF PART	PART NO.	ITEM	QTY.	NAME OF PART	PART NO.
1	1	CHOKE SAVER SUB	2489	11	1	RETAINING RING	1484
2	1	INDICATOR 3/4" PVC	1906	12	1	HEX NUT 5/8"	1024
3	1	HANDWHEEL	2439	13	1	THUMB SCREW W/ NYLON TIP	2505
4	1	BONNET FIG. 1502	2417	14	1	FLAT WASHER	1023
5	1	STEM, 15M SSTC	1764	15	1	GREASE FITTING	1013
6	1	PACKING SET	1778	16	3	WING NUT 1502	2390
7	1	STEM GUIDE	1939	17	2	NUT SEGMENT SET 2" 1502	2419
8	1	PACKING RETAINER	1938	18	2	SPIRAL RETAINER 2" 1502	2420
9	1	SEAT, 3/4" SSTC FL OCT	1092	19	3	SEAL 1502	2490
10	1	BODY, 2" 1502 FS X MS	2392	20	1	AUTOCLAVE FITTING SS	1579

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**HOUSTON OILFIELD
EQUIPMENT, INC.**

HOUSTON, TEXAS

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

ADJ. CHOKE ASSY HSI 15M
CWP W/ 1502 FS INLET &
SAVER SUB & TRIM
3/4" SSTC FL SEAT

SIZE	DWG.	201366296031	REV.
A	NO.		A

5/17
DATE