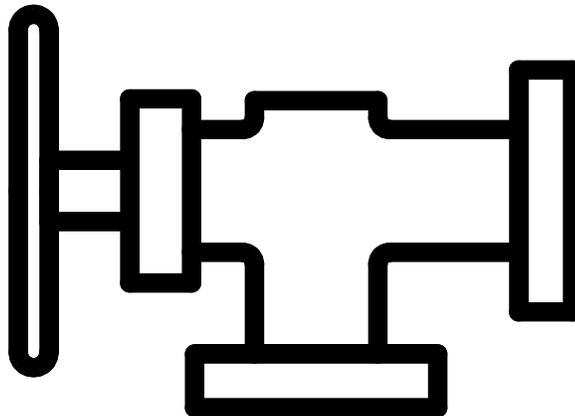


# MAINTENANCE AND OPERATION MANUAL

## TYPE 'H2' ADJUSTABLE CHOKE



I. General Description and Specifications '--'

- A. Description H2
- B. Available Size and Configuration
  - 1) Positive
  - 2) Adjustable

II. Routine Maintenance

- A. Preparation
- B. Preventative Maintenance
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  - 2) Bonnet Nut
  - 3) Blanking Plug / Bonnet

III. Adjustable Choke

- A. Assembly
- B. Disassembly

IV. Positive Choke

- A. Assembly
- B. Disassembly

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V. Assembly Drawings

## I. General Description and Specifications.

### A. Description: H2 Chokes

The Type H2 Choke is a field proven and economical means of controlling moderate pressure in less severe service applications. The chokes feature interchangeable components that give the operator various options when arranging choke assemblies. By utilizing the body and changing beans, seats, and bonnet parts, it is possible to assemble either a positive or adjustable choke.

The Type H2 Choke is available in various end connections ranging in size from 2-1/16 through 4

1/8" and working pressures from 3,000 psi to 15,000 psi. The complete line includes both adjustable and positive chokes.

- **Type H2 ADJUSTABLE CHOKE** has an externally controlled variable orifice with an indicator showing orifice size.
- **Type H2 POSITIVE CHOKE** has replaceable beans with a fixed orifice diameter.

### B. Available Sizes and Configurations

#### Available Sizes and Pressures

Nominal Size (in.)	Flange Size	Maximum Orifice (in.)	Pressure Range (psi)
2	2" 5/10K	1	3,000-10,000
2	2" 15K/3" 15K	1	15,000
3	3" 5/10K	2	3,000-10,000
4	4" 5K	3	3,000-5,000

## II. Routine Maintenance

### A. Preparation

NOTE: It is not necessary to remove the choke from the tree (or the manifold) to perform the procedures outlined below.

- 1) Close all valves necessary to isolate the choke being serviced from well pressures.
- 2) Place a warning tag on each valve closed in Step 1 above, to prevent the opening of the valves while maintenance is in progress. **B. Preventative Maintenance**

**IMPORTANT:** It is recommended that this maintenance be performed as soon as practical after well cleanup or taking a kick.

- 1) Choke Body
  - a) Ensure that the choke needle is fully retracted.
  - b) Loosen the bleed plug to vent the body cavity .Slowly loosen the bonnet nut.

CAUTION: Never stand in front of the choke when removing the bonnet assembly, always stand to the side. Pressure may be trapped inside the choke.

- c) Once the pressure has been completely bled off, back off the bonnet nut and remove the bonnet assembly.
  - d) Remove the seat assembly.
  - e) Inspect the following critical areas on the choke body:
    - i) The bonnet-to-body seal surface. Ensure that the surface is clean and free from nicks and scratches.
    - ii) The bore of the choke body that surrounds the bonnet. Ensure the bore is clean and free from burrs.
    - iii) The seat threads of the choke body. This area is susceptible to wear and erosion. The threads should be free from burrs and trash. If the threads are worn or eroded, the body should be returned to QOT for repair .
  - f) Clean the choke body OD threads, seat threads and bonnet bore. Apply coat of grease to these areas before re-installation.
- 2) Bonnet Nut
- a) Remove the bonnet nut from the blanking plug/bonnet assembly.
  - b) Visually inspect the bonnet nut OD and hammer lugs for abuse. If any of the lugs are beaten down into the OD of the nut, the nut should be replaced.
  - c) Clean the threads with solvent and wire brush. This area is susceptible to wear and corrosion.
  - d) After inspection, grease threads with heavy grease before re-installation.
- 3) Blanking Plug/Bonnet Assembly
- a) Inspect the bonnet-to-body seal surface on the OD of the blanking plug/bonnet body. Ensure that the surface is free from burrs or nicks.
  - b) Inspect the O-ring/bonnet gasket and groove in the bonnet each time the bonnet is removed from the choke body. Remove any nicks or burrs with a fine emery cloth.
  - c) Apply a light coat of grease or heavy oil to seal surface of choke body and on O-ring/bonnet gasket before re-installation.

### III. Type H2 Adjustable (3,000 PSI -10,000 PSI WP)

#### A. Assembly

- 1) Preparation
  - a) Prior to assembly, all components should be thoroughly cleaned of all chips and lubricants. This includes all threads, holes, grooves and vents.
  - b) Visually inspect all parts for damage after cleaning, but before assembly.
- 2) Bonnet Assembly
  - a) Lightly grease the O-ring groove and packing bore of the bonnet body. Heavily grease the threads in the bonnet body.
  - b) Lightly grease the O-ring and install in groove of bonnet body.

- c) Place bonnet body on flat surface with packing bore up. Lubricate the J-Packing and junk rings with light grease or heavy oil. Install the metal junk ring, back-up ring, (part of packing set,) J-Packing, support ring, and retainer ring.

### 3) Needle Installation

- a). Lubricate the needle threads with heavy grease. Grease the sealing surface with light grease or heavy oil. Place the bonnet body on its side and slowly slide the needle thread end first, through the packing end of the bonnet body. Engage the threads of the needle with the threads of the bonnet body. Temporarily install handwheel on needle and install needle in bonnet body by rotating handwheel counter-clockwise. After installation, remove the handwheel.
- b) Slide the indicator over the handwheel end of the needle. Install setscrew in the indicator hand tight.
- c) Lubricate the threads of the bonnet nut with heavy grease. Slide bonnet nut over bonnet body until it bottoms out against the bonnet flange.
- d) Rotate bonnet body until the needle locking screw hole faces up. Insert the plug into the hole. Grease and install the needle locking screw into the tapped hole hand tight.
- e) Install the handwheel, hex bolt or nut, and washer to needle.

### 4) Seat Installation

- a) Lubricate the seat threads in the choke body with heavy grease.
- b) Inspect the new seats.
- c) Ensure the gasket is clean and flat against the shoulder of the seat.
- d) Center the gasket on the seat by bending down the lugs on the gasket.
- e) Apply a light coat of grease to the seat threads and gasket.
- f) Install the new seat using the appropriate wrench and torque to 500 ft-Ibs.

NOTE: The needle should be backed well into the bonnet assembly before installing the bonnet assembly on the choke body to be sure that it does not damage the seat during installation.

- g) Lubricate the bonnet seal surface of the choke body with light grease and the bonnet nut threads with a heavy grease.
- h) Install bonnet assembly in choke body. Make up bonnet nut hand tight. Using a hammer, tighten the bonnet nut completely.

### 5) Calibrating the Choke

- a) After the bonnet nut is tight, run the needle in against the seat, align the zero setting on the indicator with notch on the bonnet body and tighten the indicator set screw. Do not tighten the bonnet to needle set screw until the choke is positioned at the desired setting.

## III. Type H2 Adjustable (15,000 PSI WP)

### A. Assembly

#### 1) Preparation

- a) Prior to assembly, all components should be thoroughly cleaned of all chips and lubricants. This includes all threads, holes, grooves and vents.
  - b) Visually inspect all parts for damage after cleaning, but before assembly.
- 2) Bonnet Assembly
- a) Lightly grease the O-ring groove and packing bore of the bonnet body. Heavily grease the threads in the bonnet body.
  - b) Lightly grease the O-ring and install in groove of bonnet body.
  - c) Place bonnet body on flat surface with packing bore up. Lubricate the J-Packing and junk rings with light grease or heavy oil. Install the metal junk ring, back-up ring (part of packing set), J-Packing, support ring and retainer ring.
- 3) Needle Installation
- a) Lubricate the needle threads with heavy grease. Grease the sealing surface with light grease or heavy oil. Place the bonnet body on its side and slowly slide the needle thread end first, through the packing end of the bonnet body. Engage the threads of the needle with the threads of the bonnet body. Temporarily install handwheel on the needle and install the needle in the bonnet body by rotating the handwheel counter-clockwise. After installation, remove the handwheel.
  - b) Slide the indicator over the handwheel end of the needle. Install set screw in the indicator hand tight.
  - c) Lubricate the threads of the bonnet but with heavy grease. Slide bonnet nut V over bonnet body until it bottoms out against the bonnet flange.
  - d) Rotate bonnet body until the needle locking screw hole faces up. Insert the plug into the hole. Grease and install the needle locking screw in the tapped hole hand tight.
  - e) Install the handwheel, hex bolt or nut, and washer to needle.
- 4) Seat Installation
- a) Lubricate the seat threads in the choke body with heavy grease.
  - b) Inspect the new seats.
  - c) Ensure the gasket is clean and flat against the shoulder of the seat.
  - d) Center the gasket on the sat by bending down the lugs on the gasket.
  - e) Apply a light coat of grease to the seat threads and gasket.
  - f) Install the new seat using the appropriate wrench and torque to 500 ft-lbs.

NOTE: The needle should be backed well into the bonnet assembly before installing the bonnet assembly on the choke body to be sure that it does not damage the seat during installation.

- g) Lubricate the bonnet seal surface of the choke body with light grease and the bonnet nut threads with heavy grease.
- h) Install bonnet assembly in choke body. Make up bonnet nut hand tight. Using a hammer, tighten the bonnet nut completely.

## 5) Calibrating the Choke

- a) After the bonnet nut is tight, run the needle in against the seat align the zero setting on the indicator with notch on the bonnet body and tighten the indicator set screw. Do not tighten the bonnet to needle set screw until the choke is positioned in the desired setting.

#### **IV. E-H2 POSTIVE CHOKE (3,000 -15,000 PSI WP)**

##### **A. Preparation**

- a) Prior to assembly, all components should be thoroughly cleaned of all chips and lubricants. This includes all threads, holes, grooves and vents.
- b) Visually inspect all parts for damage after cleaning, but before assembly.

##### **B. Flow Bean Replacement**

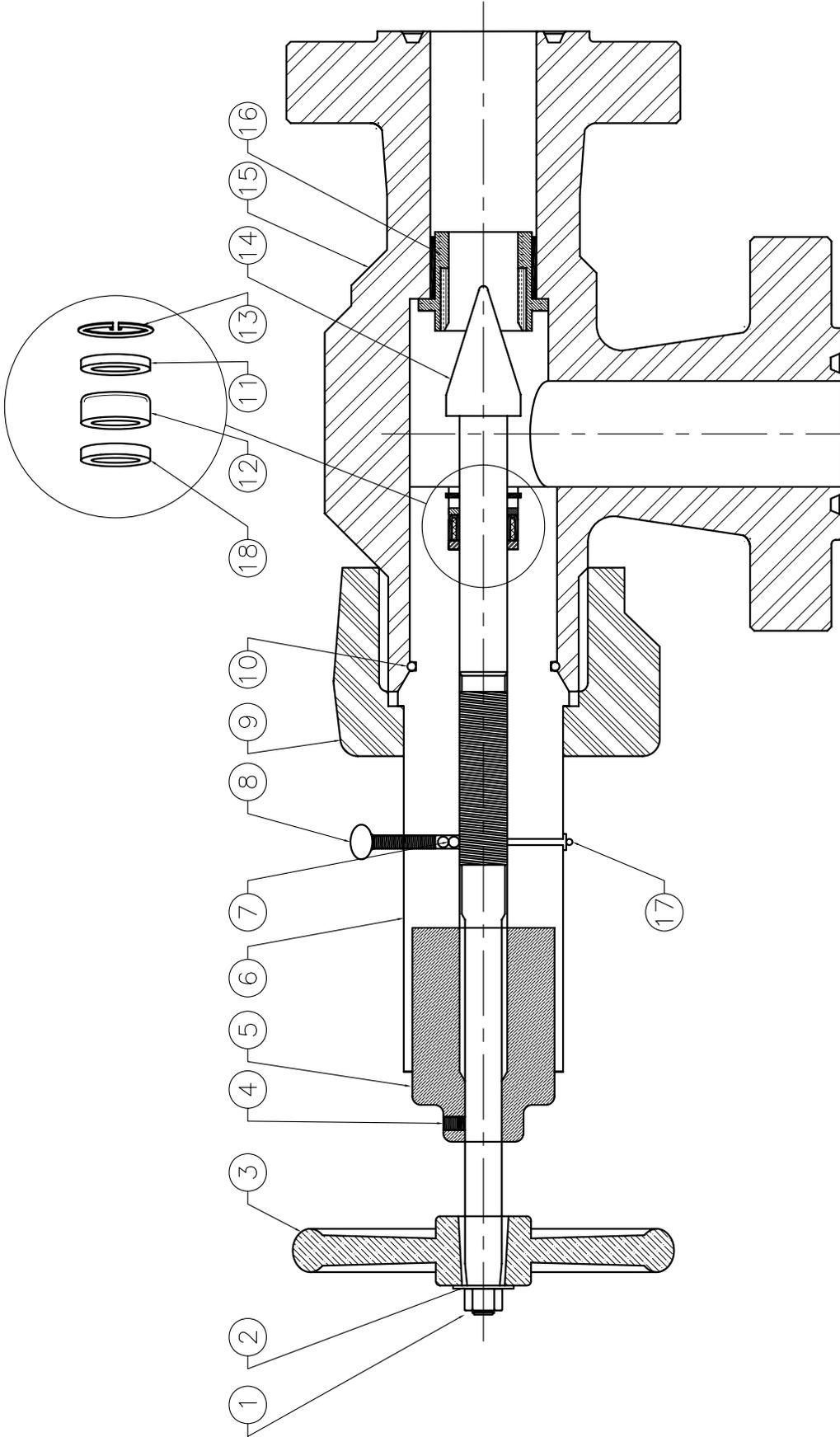
NOTE: The volume of flow through the positive choke will change depending on the size and condition of the flow bean. Replace the flow bean if it is worn or if another size is required.

###### **Parts Required:**

1. Flow bean, appropriate size and material.
  2. Flow bean gasket.
- a) Using a hammer, loosen the bonnet nut.
  - b) Remove the blanking plug assembly. The pipe plug, retainer ring, blanking plug and O-ring will come out in the bonnet nut as an assembly.
  - c) Remove the blanking plug O-ring.
  - d) Inspect the O-ring for damage. Replace if necessary.
  - e) Remove the flow bean using the appropriate wrench.

##### **C. Flow Bean Installation**

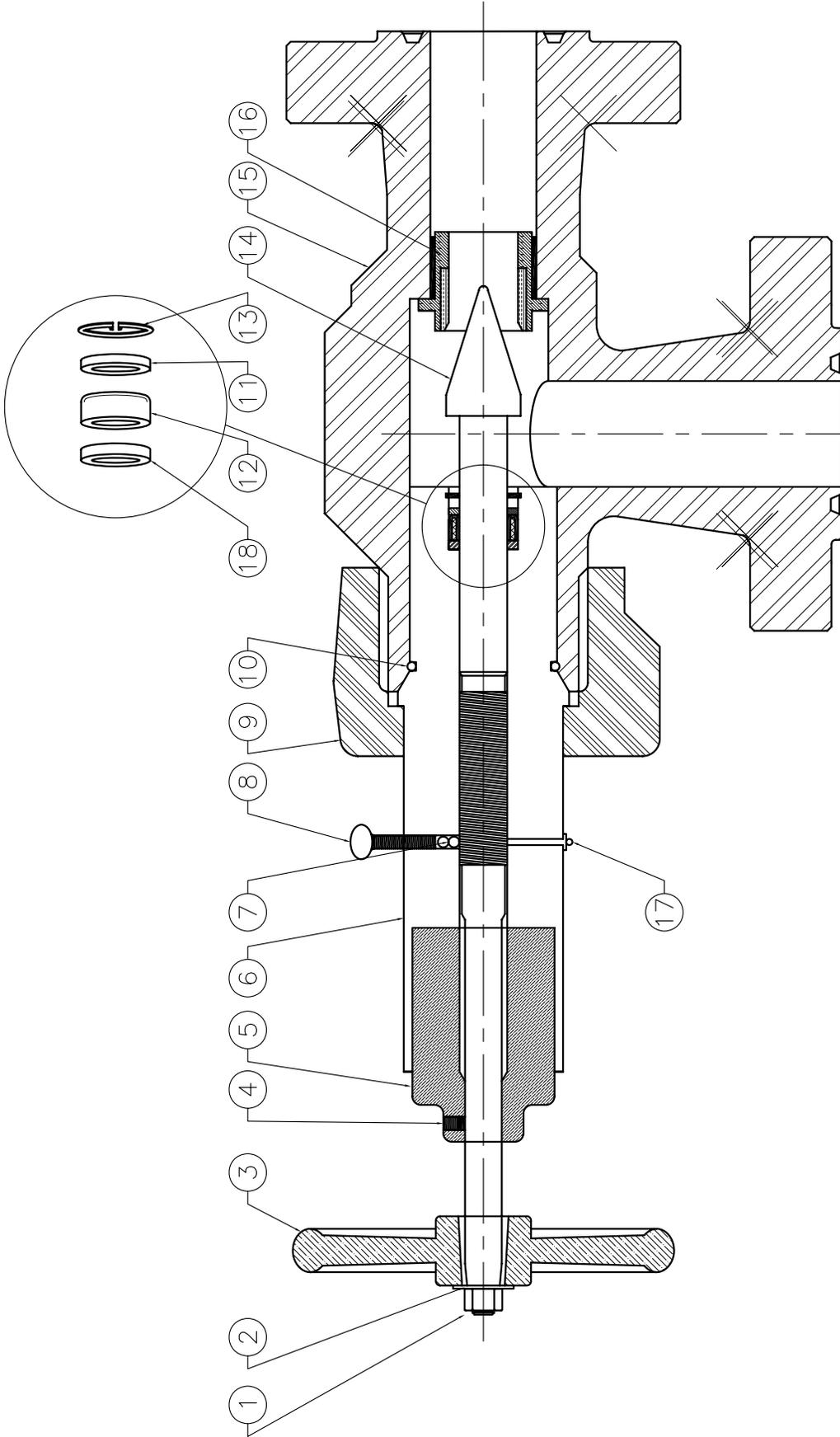
- a) Inspect the new flow bean.
- b) Ensure that the gasket is clean and flat against the shoulder of the flow bean.
- c) Center the gasket on the flow bean by bending down the lugs on the gasket.
- D) Apply a light coat of grease to the flow bean threads and gasket.
- e) Install the new flow bean using the appropriate wrench and torque to 500 ft-lbs.
- f) Install the O-ring onto the blanking plug.
- g) Inspect the body and bonnet nut threads.
- h) Apply a light coat of grease to the seal area, the external threads of the choke body and the threads of the bonnet nut.
- i) Install the blanking plug assembly onto the choke.
- j) Using a hammer, tighten the bonnet nut completely.



BILL OF MATERIALS

ITEM QTY	DESCRIPTION	PART NO.	ITEM QTY	DESCRIPTION	PART NO.
1 1	HEX NUT	1024	10 1	O-RING, VITON	1528
2 1	WASHER	1023	11 1	JUNK RING	21317-69
3 1	HANDWHEEL	1521	12 1	U-PACKING	22176-08
4 1	SET SCREW	1535	13 1	RETAINING RING, SS	1750
5 1	INDICATOR, 2"	1483	14 1	STEM, 2", SSSC	1427
6 1	BONNET	1510	15 1	CHOKE BODY, 10M, 3-1/16"	1517
7 2	NYLON BALL	1004	16 1	SEAT, W/GASKET, 2" SSSC	1429
8 1	THUMB SCREW	1529	17 1	GREASE FITTING	----
9 1	HAMMER NUT	1512	18 1	RING, BACK-UP	241-717

<b>MATERIAL</b> WITH U-PACKING	<b>DATE</b> 12-15-06	<b>DR. BY</b> TE	<b>APPR. BY</b> <i>DJ</i>	<b>REF. NO.</b>  	<b>PART NO.</b> 130-6096-09
	<b>ALL DIMENSIONS</b> IN INCHES				
<b>UNLESS NOTED:</b> X.X .50C X.XX .40S X.XXX .30S BREAK CORNERS .030 MAX. RAD. .062 FRACTIONAL .31/32		THIS DOCUMENT IS THE CONFIDENTIAL PROPERTY OF QUALITY OIL TOOLS, INC. AND IS SUBMITTED FOR RESTRICTED USE ONLY. NO PART OR INFORMATION HEREIN IS TO BE REPRODUCED OR USED IN ANY MANNER WITHOUT WRITTEN CONSENT OF THE OWNER.			
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6 1	BONNET	2324	15 1	CHOKE BODY, 15M, 3-1/16"	1801
7 2	NYLON BALL	1004	16 1	SEAT, W/GASKET, 2" SSSC	1429
8 1	THUMB SCREW	1529	17 1	GREASE FITTING	----
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<b>MATERIAL</b> WITH U-PACKING	<b>DATE</b> 12-15-06	<b>DR. BY</b> TE	JENNINGS, LA	<b>DESCRIPTION</b> ASSEMBLY SCHEMATIC 3-1/16" 15M TYPE H2 ADJUSTABLE CHOKE
	<b>APPR. BY</b> DJ			
<b>ALL DIMENSIONS</b> IN INCHES	<b>UNLESS NOTED:</b> X.X .50C X.XX .40S X.XXX .30S BREAK CORNERS .030 MAX. RAD. .062 FRACTIONAL .31/32		<b>PART NO.</b> 130-7023-09	

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