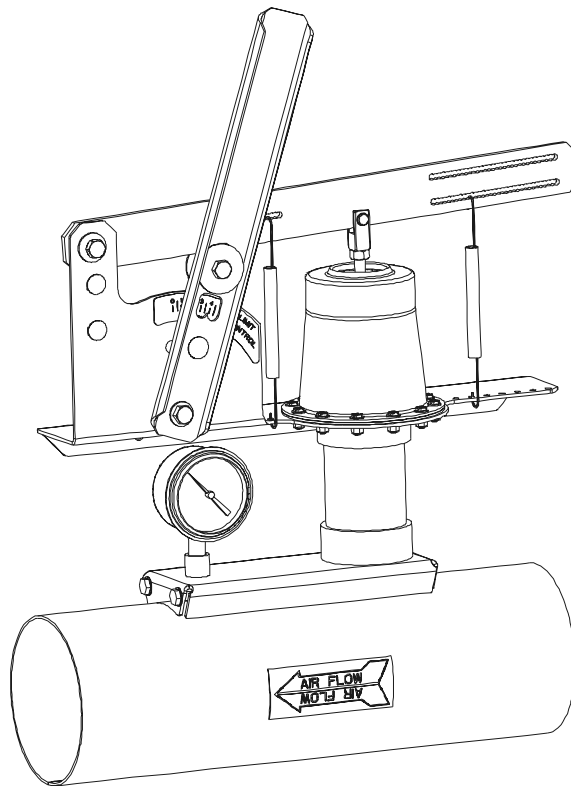


OWNER'S MANUAL

Installation Instructions for VCV-260 Series Velocity Compensator Valve Assemblies



MODELS
VCV-260-4
VCV-260-5
VCV-260-6

PNEG-1284



Date: 12-6-04

THE GSI GROUP

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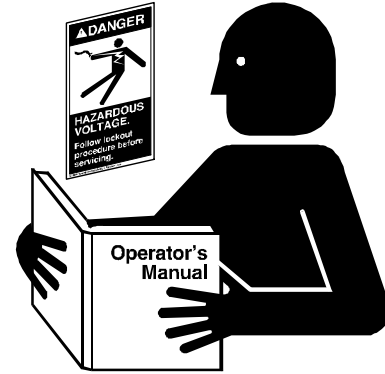
FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual and on your machine safety signs. Keep signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from the manufacturer.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction. Keep children and other unqualified personnel out of the working area at ALL times

Keep your machinery in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

If you do not understand any part of this manual and need assistance, contact your dealer.



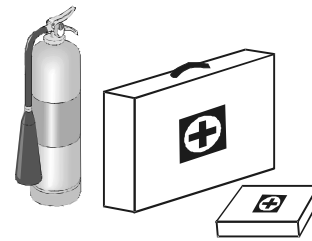
Read and Understand Manual.

PREPARE FOR EMERGENCIES

Be prepared if fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



Keep Emergency Equipment Accessible.

WEAR PROTECTIVE CLOTHING

Wear close fitting clothing and safety equipment appropriate to the job.

Safety glasses should be worn at all times to protect eyes from debris.

Wear gloves to protect your hands from sharp edges on plastic or steel parts.

A respirator may be needed to prevent breathing potentially toxic fumes and dust.

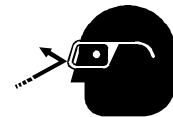
Wear hard hat and steel toe boots to help protect your head and toes from falling debris.

Remove all jewelry.

Tuck in any loose or dangling shoe strings.

Long hair should be tied up and back.

Eye Protection



Gloves



Steel Toe Boots



Respirator



Hard Hat



GENERAL INFORMATION

VC Valves offer operator control, not previously available, for pneumatic grain handling systems. When properly installed and adjusted, they automatically operate to --

- continuously monitor the air pressure within the air line and the grain conveying line.
- instantly detect line pressure changes caused by variations to conveying line length, density of grain being conveyed, and system loading rates, etc.
- automatically react to line pressure change to either close or bleed-off excess conveying air according to system demand.
- give an additional dimension of automatic control to grain conveying and discharge velocities.
- give extended wear life for conveying hose, lines, cyclones, etc.
- help maintain grain quality.

The VC valve is designed with adjustable features to make allowances for a full line of blower sizes, air bypass rates, and response time. The valve may be installed in either horizontal or vertical lines. The unit will operate in any position; however, whenever possible, operate with the feeder tube in the UP position.

When used in conjunction with a pneumatic conveying system, the velocity compensator valves may be located in both the air line (between the blower and airlock) and the grain conveying line.

The VC valve in the air line (when properly adjusted) will automatically move to its fully closed position IMMEDIATELY PRIOR to full load condition and will not permit any air to bleed-off. However, as system loading decreases, the VC valve will automatically sense the drop in line pressure and respond to bleed-off excess conveying air compatible to the amount of grain being conveyed.

The VC valve in the grain line will be located near the discharge end. In any pneumatic system, this is where the air expands rapidly and conveying velocities reach their maximum speed. When conveying grain, the VC Valve (when properly adjusted) will operate automatically, AT ALL TIMES, to bleed-off the excess air and decelerate the grain before it reaches the discharge point.

VALVE INSTALLATION - IN AIR LINE

1. Cut as required, and remove a section of the air line located between the blower and the airlock.
2. Position the valve junction tube with arrow pointing in direction of airflow and connect the tube into the air line, using suitable couplers; tighten securely.
3. Carefully install the velocity compensator valve assembly onto the threaded connection pipe and tighten.

VALVE ADJUSTMENT - IN AIR LINE

When the velocity compensator valve is properly adjusted it will continuously monitor and automatically compensate, by line pressure, to maintain relatively constant conveying velocities under varying conditions.

The following information will assist in adjusting and fine tuning the assembly.

NOTE: The operating characteristics will vary with each pneumatic system, depending upon blower size, horsepower, speed, etc.

1. DETERMINE SYSTEM OPERATING LIMITS - Loosen the wing nut (on the back side) and move the control limit lever backward to fully close the compensator valve then start and slowly load the system until the blower motor reaches its normal rated full load amperage, as indicated on the ammeter. Note and record the air line pressure gauge reading when the motor reaches its rated amperage.
2. REDUCE LOAD SLIGHTLY - Decrease the feeding rate to reduce the system load until the line pressure drops approximately 1 psi below the reading observed in step #1.
3. MAKE PRELIMINARY LEVER AND SPRING ADJUSTMENTS - With the spring next to the limit control lever removed, and the other spring positioned near the valve body (minimum tension), loosen the wing nut and move the limit control lever to approximately the 1-1/2 mark on the scale. Retighten wing nut.

NOTE: With these settings, the valve will normally remain closed until the spring tension is increased, as described below.

Gradually relocate spring outward from valve body to provide increased tension until slight air leakage occurs past the valve. Systems with operating pressures above 6 psi will normally require the use of both springs.

VALVE ADJUSTMENT - IN AIR LINE (CONT.)

4. CHECK VALVE OPERATION - Further reduce the system load and observe the valve action. As the load is reduced, the valve should sense the drop in line pressure and continue opening to bleed-off excess air.

Increase load slowly and observe valve action. The valve should respond to the pressure increase and start closing. VALVE MUST BE COMPLETELY CLOSED PRIOR TO FULL SYSTEM OPERATING LIMITS, AS ESTABLISHED WITHIN STEP #1. If valve will not fully close, reduce spring tension slightly and recheck valve action. Once the mechanism has been properly adjusted, the valve should operate automatically from fully closed and open to the point as determined by the setting on the limit control lever and line pressure changes.

5. SET CONTROL LIMIT LEVER - Refer to the CONTROL LIMIT LEVER ADJUSTMENT CHART shown within the illustration, and adjust lever to the suggested trial setting.

NOTE: If the control limit lever is opened too far, the valve response will be less sensitive and the system may tend to surge. If these conditions occur, close control limit lever slightly and recheck operation.

If valve bounces, or has a sluggish action, check the actuator lever snubber adjustment. Refer to "NOTE" within illustration for procedure.

FLOW BAFFLE

The flow baffles are located within the lower end of the valve body, as shown in the illustration. The baffles are adjustable and act to regulate the amount of air bypass.

The baffle adjustment controls the valve sensitivity. If they are opened too far, it will act to deaden valve response time, and operation may become slow and erratic. If baffles are closed too much, the setting will not permit enough air to escape. See FLOW BAFFLE ADJUSTMENT CHART within illustration for suggested settings.

VALVE INSTALLATION - IN MATERIAL CONVEYING LINE

1. Cut, as required, and remove a section of material handling line, approximately two-thirds the distance from the airlock to the discharge, but not closer than fifty feet (approx.) from the discharge end.
2. Position the valve junction tube with the arrow pointing in direction of airflow, then connect the tube into the line, using suitable couplers; tighten securely.
3. Carefully install the velocity compensator valve assembly onto the threaded connection pipe and tighten.

VALVE ADJUSTMENT - IN MATERIAL CONVEYING LINE

Velocity compensator valves installed in the material conveying line require a much different adjusting procedure than when installed in the air line.

The purpose of placing the VC valve in the material line is the bleed-off excess air as it expands, allowing the grain to decelerate instead of accelerating as it reaches the discharge end of the system. This expansion process occurs in all systems, but is more severe when systems are operating at high pressure. In the interest of extending component life and maintaining grain quality, it is always desirable to control grain velocities near the discharge. The amount of air permitted to pass through the VC valve can be varied, thus, controlling discharge velocities.

The following steps should allow for adjustments within a reasonable range; however, final adjustment must be made after observing actual discharge conditions, allowing more air to escape to reduce velocities, or restricting the amount of air permitted through the valve if stalling conditions should occur.

FLOW BAFFLE

The flow baffles are located within the lower end of the valve body, as shown in the illustration. The baffles are adjustable and act to regulate valve sensitivity and air bypass rates. The baffle adjustments for VC valves installed in the material line are quite different from those installed in the air line. See Step #1 below for settings.

1. On 4" and 5" systems, the baffle openings should be somewhere between 5% to 10% open; for 6" systems, adjust these baffles to approximately 15% to 20% open.

NOTE: We are working with the excess air as a result of the expansion process. This volume requires that the baffles be sufficiently closed so that proper valve sensitivity will be maintained.

2. Close the valve completely and remove both springs.
3. Start the conveying process and observe the line pressure reading.
4. Loosen the wing nut and move the limit control lever to the 1-1/2 mark on the scale and retighten nut.

IMPORTANT: This procedure assumes the pneumatic system is operating properly. If the system exhibits symptoms of stalling and plugging before blower motor operates at its rated full load amperage, investigate and correct the problem before proceeding. Check for slipping belts, air systems leaks, or too low of a blower speed for the conveying application. These conditions must be corrected before good performance can be expected.

5. Install one spring at the minimum tension required, to cause the valve to open very lightly against limit control stop.
6. Check actual discharge conditions. If velocities are too high, the control limit lever can be edged further open to let more air escape. If symptoms of stalling occur, reverse the above procedure.

NOTE: As observed in Step #3, operating pressure in this segment of the system is normally very low. Spring tension setting must be the minimum required, so that the valve can respond quickly and close when abnormal conditions occur. If the system tends to surge, close the control limit lever slightly and make sure the actuator snubber setting is not too tight.

SERVICE AND STORAGE

1. When system is operating, occasionally force valve to wide open position for a brief moment to purge dust from valve and junction box. If required, remove two screws from junction collector box and use a wire to release any material that may have become caked.
2. When system is not in use, cover valve to prevent water from entering the line.

Velocity Compensator Valve Settings

INITIAL TRIAL LEVER SETTINGS		
SIZE	AIR LINE	MAT'L LINE
4-INCH	1-1/2 TO 2	1 TO 1-1/2
5-INCH	2 TO 2-1/2	1 TO 1-1/2
6-INCH	2-1/2 TO 3	1 TO 1-1/2

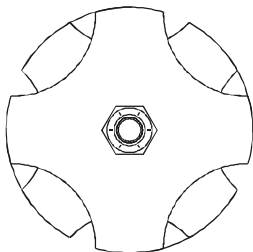
TO ADJUST SNUBBER BOLT
 1. DISCONNECT BOTH SPRINGS
 2. TIGHTEN BOLT UNTIL WEIGHT
 OF LEVER CAUSES VALVE TO
 SLOWLY OPEN

ALIGN VALVE PLUNGER IN BODY BY
 MOVING 401-1711-1 ADJUST PLATE.

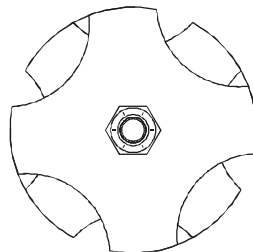
TO ADJUST ROLLER BEARING
 1. SET LIMIT CONTROL LEVER TO "0"
 2. SLIDE BEARING UP UNTIL VALVE
 PLUNGER IS FULLY CLOSED
 3. TIGHTEN BEARING HARDWARE
 4. BE SURE BEARING ROLLS FREELY

Flow Baffle Adjustment Settings

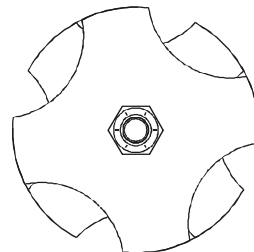
INITIAL TRIAL BAFFLE SETTINGS		
SIZE	AIR LINE	MAT'L LINE
4-INCH	15 TO 20%	5%
5-INCH	20 TO 30%	10%
6-INCH	30 TO 40%	15%



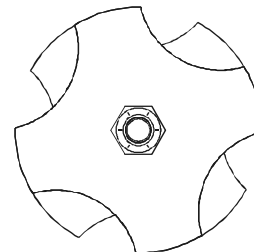
10 - 15 OPEN



20 OPEN



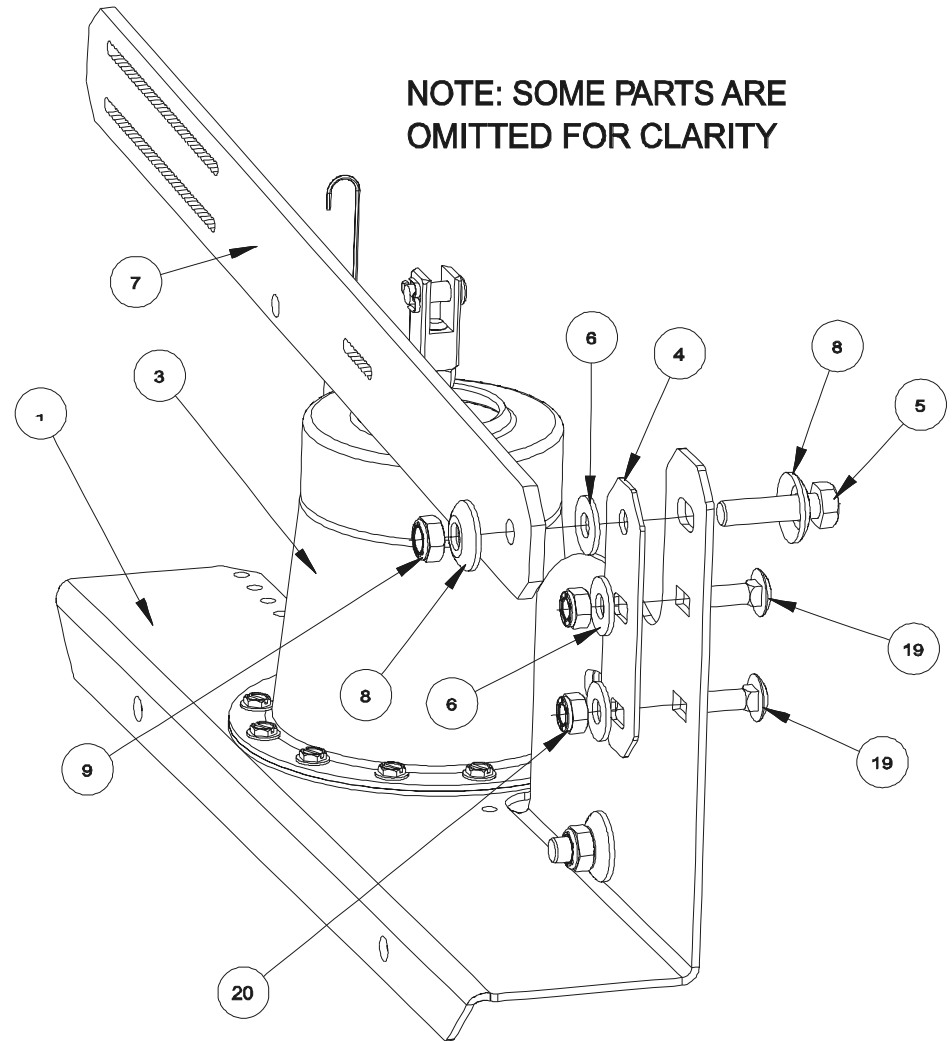
30 OPEN



40 OPEN

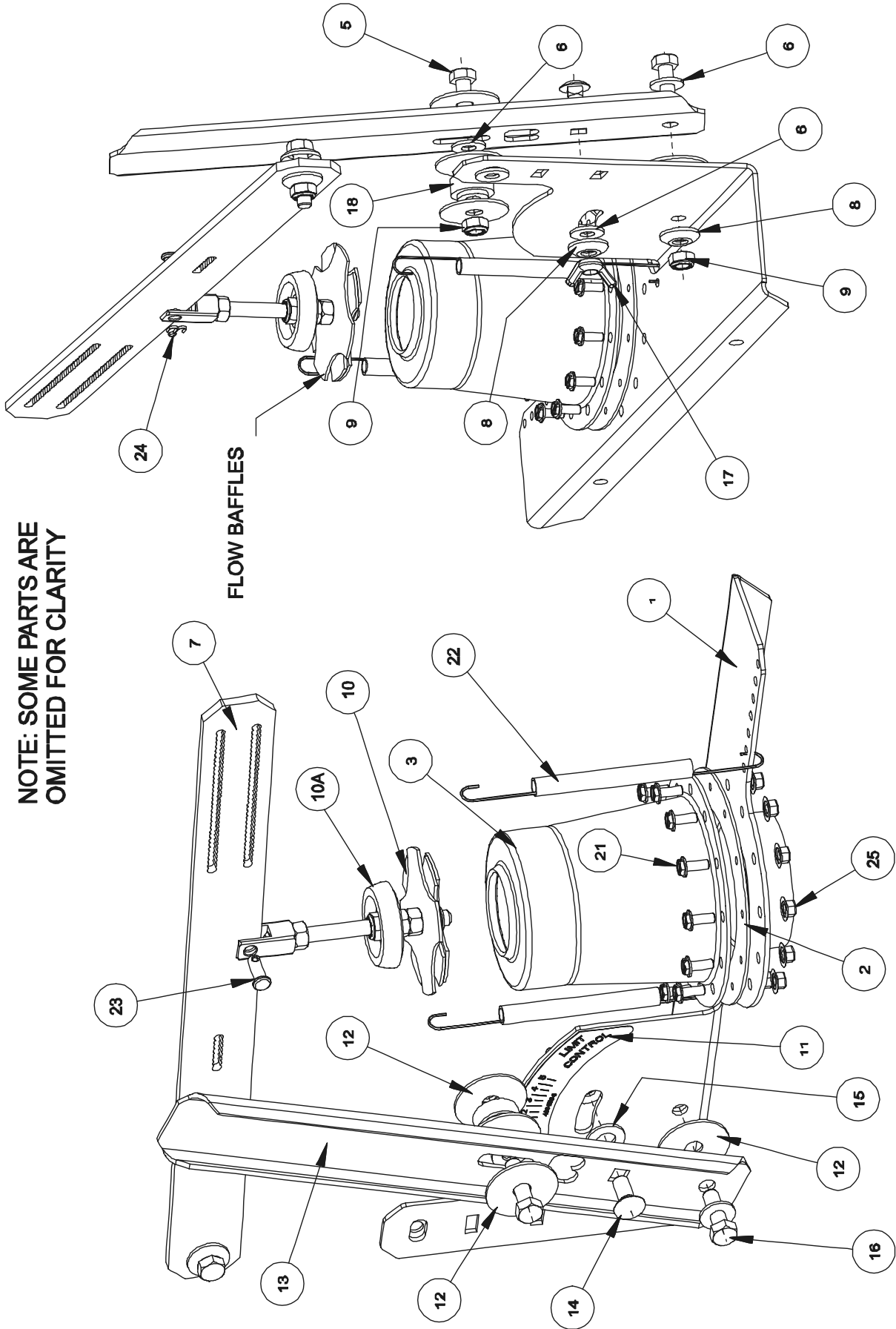
VCV-260 (VCV Upper Valve Assembly) Parts

VCV-260 (VCV UPPER VALVE ASSY)			
ITEM	PART NO.	DESCRIPTION	QTY
1	410-1275-GY	VALVE BASE WELDMENT - VCV GRAY	1
2	406-1225-1	GASKET - BODY - VCV	1
3	401-1714-5	VALVE BODY (SPINNING) - VCV	1
4	401-1711-1	VCV LEVER ADJUST PLATE	1
5	S-4276	BOLT HHTB 5/16-18x1-1/4 ZN GR5	2
6	S-1430	WASHER FLAT 1/4 USS ZN GR2	6
7	401-1710-3	LEVER - ACTUATOR VCV	1
8	3FH0977	WASHER-CUPPED,SPECIAL7/8X11/32	4
9	S-7382	NUT NYLOCK 5/16-18 ZN GR5	3
10	415-2464-6	PLUNGER VALVE SUB-ASSY - VCV	1
10A	406-1233-5	VALVE PLUNGER WITH 5/16 HOLE	1
11	420-1153-6	DECAL - VCV LIMIT CONTROL	1
12	S-7569	WASHER FENDER 5/16x1-1/2 ZN	4
13	401-1713-7	LIMIT CONTROL LEVER - VCV	1
14	S-7645	BOLT CARG 5/16-18x3/4 ZN GR5	1
15	S-248	WASHER FLAT 3/8 USS ZN YDP GR2	1
16	S-1196	BOLT HHCS 5/16-18x1 ZN GR5	1
17	S-4301	WING NUT, 5/16-18 ZN GR2	1
18	017-1029-2	BEARING WC88008 - VCV	1
19	S-9080	BOLT CARG 1/4-20x3/4 ZN GR5	2
20	S-7025	NUT NYLOCK 1/4-20 ZN HEX GR5	2
21	S-8772	SCREW MS #10-32x1/2 HWH ZN	12
22	322-1013-0	TENSION SPRING - VCV	2
23	090-1409-3	CLEVIS PIN 1/4x5/8	1
24	093-1014-5	COTTER PIN 1/16x3/4	1
25	1FH0994	NUT-LOCK,FLG,#10-32 PLTD	12

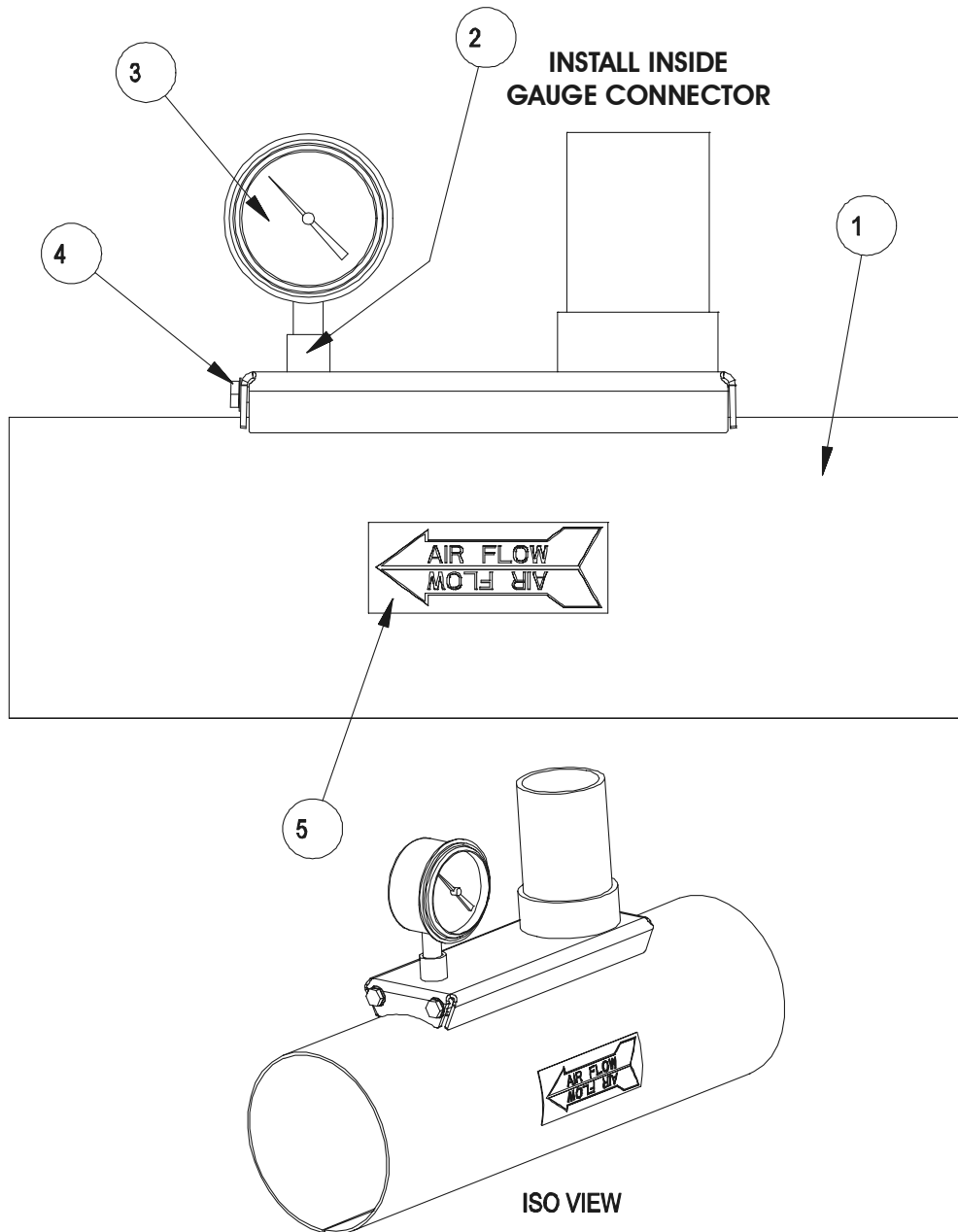


VCV-260 (VCV Upper Valve Assembly)

NOTE: SOME PARTS ARE OMITTED FOR CLARITY



Junction Tube Assemblies



JUNCTION TUBE ASSEMBLIES

ITEM	PART NO.	DESCRIPTION	4" QTY	5" QTY	6" QTY
1	410-1282-GY	VCV JUNCTION TUBE WELD 4IN GRY	1	-	-
1	410-1283-GY	VCV JUNCTION TUBE WELD 5IN GRY	-	1	-
1	410-1284-GY	VCV JUNCTION TUBE WELD 6IN GRY	-	-	1
2	420-2021-4	FILTER - AIR GAUGE	1	1	1
3	PT1127	GAUGE-(PRESS)OIL FLD 0-15 PSI	1	1	1
4	S-7335	SCREW SMSAB 1/4 x 3/4 HWH ZN	2	2	2
5	420-1110-6	DECAL - AIRFLOW	1	1	1

WARRANTY

THE COMPANY WARRANTS ALL PRODUCTS MANUFACTURED TO BE FREE OF DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USAGE AND CONDITIONS FOR A PERIOD OF TWELVE (12) MONTHS AFTER RETAIL SALE TO THE ORIGINAL END USER OF SUCH PRODUCTS. OUR ONLY OBLIGATION IS, AND PURCHASER'S SOLE REMEDY SHALL BE TO REPAIR OR REPLACE, AT THE COMPANY'S OPTION AND EXPENSE, PRODUCTS THAT, IN THE MANUFACTURERS SOLE JUDGEMENT, CONTAIN A MATERIAL DEFECT DUE TO MATERIALS OR WORKMANSHIP. ALL DELIVERY AND SHIPMENT CHARGES TO AND FROM THE FACTORY WILL BE PURCHASER'S RESPONSIBILITY. EXPENSES INCURRED BY OR ON BEHALF OF THE PURCHASER WITHOUT PRIOR WRITTEN AUTHORIZATION FROM AN AUTHORIZED EMPLOYEE OF THE COMPANY SHALL BE THE SOLE RESPONSIBILITY OF THE PURCHASER.

EXCEPT FOR THE ABOVE EXPRESS LIMITED WARRANTIES, THE COMPANY MAKES NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH (i) PRODUCT MANUFACTURED OR SOLD BY THE COMPANY OR (ii) ANY ADVICE, INSTRUCTION, RECOMMENDATION OR SUGGESTION PROVIDED BY AN AGENT, REPRESENTATIVE OR EMPLOYEE OF THE COMPANY REGARDING OR RELATED TO THE CONFIGURATION, INSTALLATION, LAYOUT, SUITABILITY FOR A PARTICULAR PURPOSE, OR DESIGN OF SUCH PRODUCT OR PRODUCTS.

IN NO EVENT SHALL THE COMPANY BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOSS OF ANTICIPATED PROFITS OR BENEFITS. PURCHASER'S SOLE AND EXCLUSIVE REMEDY SHALL BE LIMITED TO THAT STATED ABOVE, WHICH SHALL NOT EXCEED THE AMOUNT PAID FOR THE PRODUCT PURCHASED. THIS WARRANTY IS NOT TRANSFERABLE AND APPLIES ONLY TO THE ORIGINAL PURCHASER. WE SHALL HAVE NO OBLIGATION OR RESPONSIBILITY FOR ANY REPRESENTATIVE OR WARRANTIES MADE BY OR ON BEHALF OF ANY DEALER, AGENT OR DISTRIBUTOR OF THE COMPANY.

THE COMPANY ASSUMES NO RESPONSIBILITY FOR FIELD MODIFICATIONS. MODIFICATIONS TO THE PRODUCT NOT SPECIFICALLY COVERED BY THE CONTENTS OF THIS MANUAL WILL NULLIFY ANY PRODUCT WARRANTY THAT MIGHT HAVE BEEN OTHERWISE AVAILABLE. THE USE OF OUR EQUIPMENT TO HANDLE MATERIALS OTHER THAN FREE FLOWING, NONABRASIVE AND DRY MATERIALS, AS INTENDED, WILL RESULT IN THE VOIDING OF THIS LIMITED WARRANTY.

THE FOREGOING WARRANTY SHALL NOT COVER PRODUCTS OR PARTS WHICH HAVE BEEN DAMAGED BY NEGLIGENT USE, MISUSE, ALTERATION, OR ACCIDENT. ANY NEGLIGENT USE, MISUSE, ALTERATION, OR DAMAGE DUE TO ACCIDENT, AS DETERMINED BY A COMPANY REPRESENTATIVE, MAY VOID THE WARRANTY. THIS WARRANTY COVERS ONLY PRODUCTS MANUFACTURED BY THE COMPANY. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. WE RESERVES THE RIGHT TO MAKE DESIGN OR SPECIFICATION CHANGES AT ANY TIME, BEARING NO RESPONSIBILITY TO MAKE SIMILAR DESIGN OR SPECIFICATION CHANGES ON PREVIOUSLY SOLD MERCHANDISE.

PRIOR TO INSTALLATION, PURCHASER HAS THE RESPONSIBILITY TO RESEARCH AND COMPLY WITH ALL FEDERAL, STATE, AND LOCAL CODES WHICH MAY APPLY TO THE LOCATION AND INSTALLATION.

07/21/98

This Equipment shall be installed in accordance with the current installation codes and applicable regulations which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installation occurs.

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