



Flop Valve

Assembly and Operation Manual

This manual applies to the following models:

Flop Valve, K Configuration, Manual

Flop Valve, K Configuration, Air Actuator

Flop Valve, K Configuration, Motor Drive

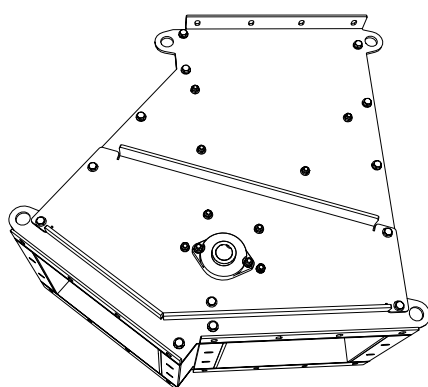
Flop Valve, K Configuration, Electric Actuator

Flop Valve, Y Configuration, Manual

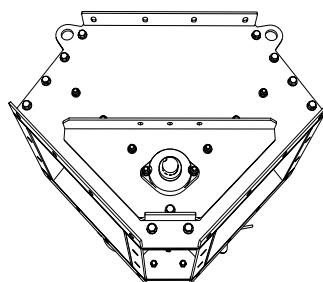
Flop Valve, Y Configuration, Air Actuator

Flop Valve, Y Configuration, Motor Drive

Flop Valve, Y Configuration, Electric Actuator



K VALVE



Y VALVE



Read this manual before using product. Failure to follow instructions and safety precautions can result in serious injury, death, or property damage. Keep manual for future reference.

Part Number: 8210-30047 R0

Revised: November 2023

Original Instructions

This product has been designed and manufactured to meet general engineering standards. Other local regulations may apply and must be followed by the operator. All personnel must be trained in the correct operational and safety procedures for this product. Use the sign-off sheet below to record initial and periodic reviews of this manual with all personnel.

[illegible]

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1. Introduction

Follow the instructions in this manual for safe use of this flop valve. Following proper operation and maintenance will help to keep the flop valve running in optimal condition.

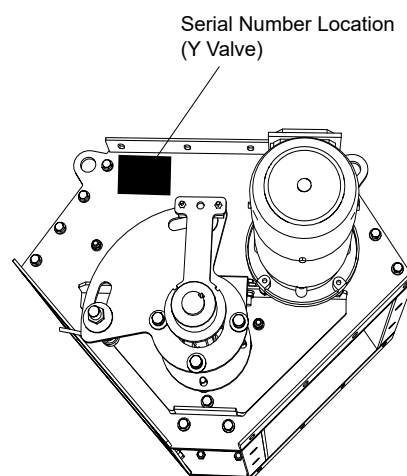
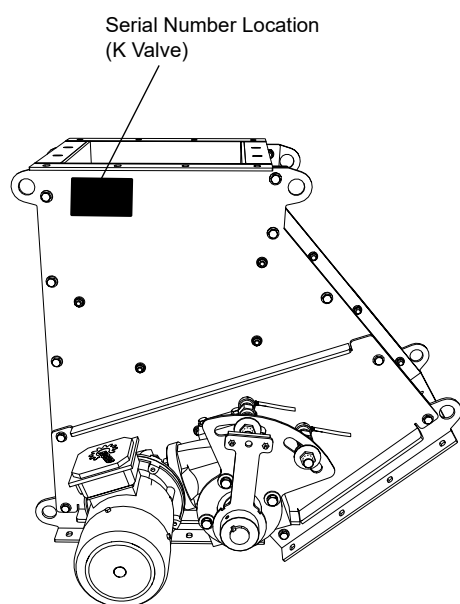
Keep this manual handy for frequent reference and to review with new personnel. A sign-off form is provided on the inside front cover for your convenience. If any information in this manual is not understood or if you need additional information, please contact AGI or your representative for assistance.

This manual should be regarded as part of the equipment.

1.1. Intended Use

The flop valve is intended for use as described throughout this manual and as specified on the approval drawing. Use in any other way is considered contrary to the intended use and is not covered by the warranty.

1.2. Serial Number Locations



2. Safety

2.1. Safety Alert Symbol and Signal Words



This safety alert symbol indicates important safety messages in this manual. When you see this symbol, be alert to the possibility of injury or death, carefully read the message that follows, and inform others.

Signal Words: Note the use of the signal words **DANGER**, **WARNING**, **CAUTION**, and **NOTICE** with the safety messages. The appropriate signal word for each message has been selected using the definitions below as a guideline.



Indicates an imminently hazardous situation that, if not avoided, will result in serious injury or death.



Indicates a hazardous situation that, if not avoided, could result in serious injury or death.



Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.



Indicates a potentially hazardous situation that, if not avoided, may result in property damage.

2.2. General Safety Information

Read and understand all safety instructions, safety decals, and manuals and follow them when operating or maintaining the equipment.

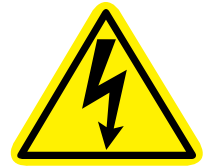
- Owners must give instructions and review the information initially and annually with all personnel before allowing them in the work area. Untrained users/operators expose themselves and bystanders to possible serious injury or death.
- Use for intended purposes only.
- Modification of the flop valve in any way without written permission from the manufacturer is not covered by the warranty.
- Follow a health and safety program for your worksite. Contact your local occupational health and safety organization for information.
- Follow applicable local codes and regulations.



2.3. Electrical Equipment Safety

WARNING Power Source

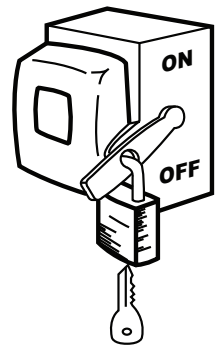
- Electrical equipment and controls shall be installed and serviced by a qualified electrician and must meet all local codes and standards.
- Locate main power disconnect switch within reach from ground level to permit ready access in case of an emergency.
- All electrical equipment must be properly grounded.
- Covers and guards must be in place and secure.
- Ensure electrical wiring and cords remain in good condition; replace if necessary.



Lockout

- Lockout power source before making adjustments, cleaning, maintaining equipment or when not in use. Ensure that all personnel are clear before turning on power to equipment

SERVICE DISCONNECT



2.4. Emergency Shutdown

The flop valve electrical system is equipped with a Disconnect Switch (DS). To engage the DS, turn the switch to the OFF position on the PLC Panel or at the valve location (if applicable). Advise all operating personnel of the location and operation of all emergency controls and devices. Maintain clear access to these controls and devices. Lock out power before correcting the problem.

2.5. Safety Decals

- Keep safety decals clean and legible at all times.
- Replace safety decals that are missing or have become illegible. See decal location figures that follow.
- Replaced parts must display the same decal(s) as the original part.
- Replacement safety decals are available **free of charge** from your distributor, dealer, or factory as applicable.

2.5.1 Safety Decal Locations and Details

Replicas of the safety decals that are attached to the flop valve and their messages are shown in the figure(s) that follow. Safe operation and use of the flop valve requires that you familiarize yourself with the various safety decals and the areas or particular functions that the decals apply to, as well as the safety precautions that must be taken to avoid serious injury, death, or damage.

Figure 1. K Valve Safety Decal Location

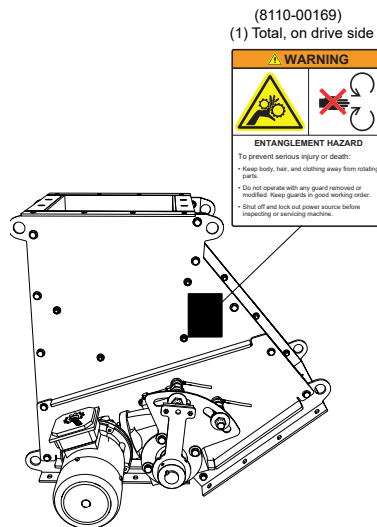
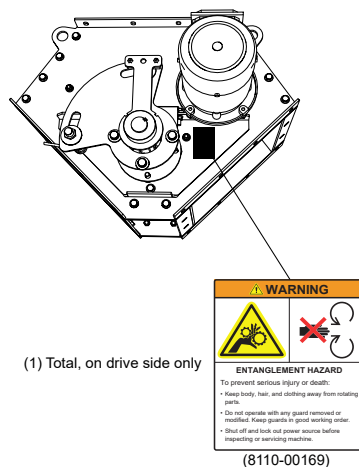


Figure 2. Y Valve Safety Decal Location



2.5.2 Decal Installation/Replacement

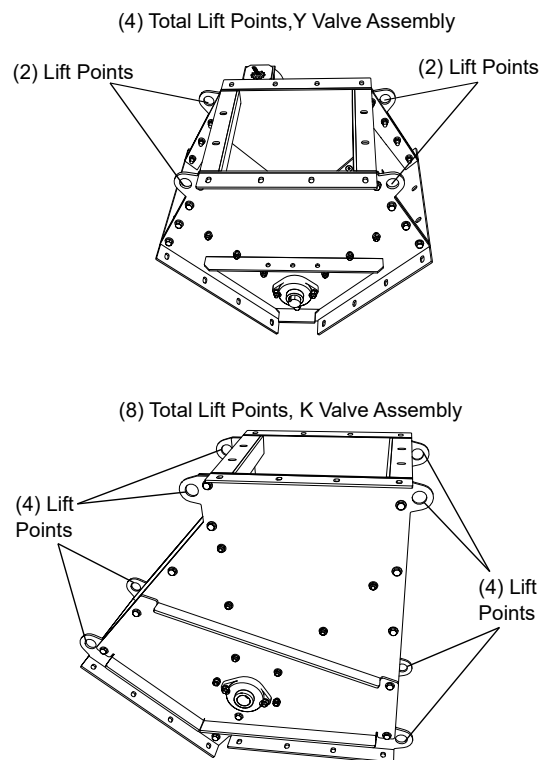
1. Decal area must be clean and dry, with a temperature above 50°F (10°C).
2. Decide on the exact position before you remove the backing paper.
3. Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
4. Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
5. Small air pockets can be pierced with a pin and smoothed out using the decal backing paper.

2.6. Lifting and Moving

WARNING

- Inspect all slings and lifting equipment prior to each lift.
- Extreme care must be taken to prevent damage when moving assembled equipment or components.
- Consider unusually heavy items such as gear drives and electric motors when choosing support points due to load balance and possible shifting effects.
- Create a barrier using tape or rope to prevent bystanders from entering the work area.
- Never lift with only one support point. Refer to [Figure 3 on page 8](#).

Figure 3. Typical Flop Valve Lift Points



3. Features

K Components, Manually Operated

Figure 4. Drive Side View

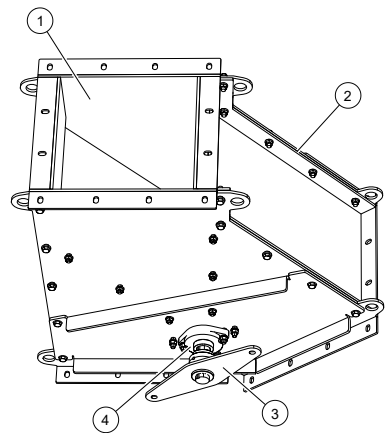
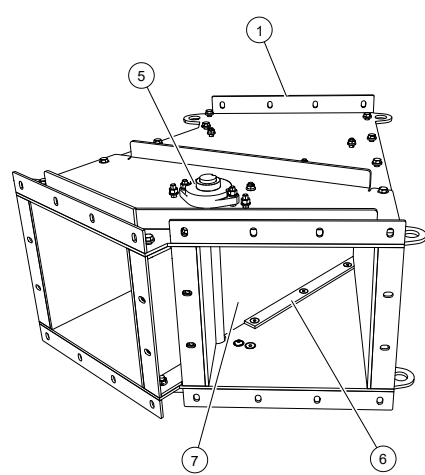


Figure 5. Non-Drive Side View



Item	Description
1	Flop Valve Inlet
2	Flop Valve Body
3	Control Adapter

Item	Description
4	Inboard Bearing
5	Outboard Bearing
6	Valve Flap Stop Bar

Item	Description
7	Valve Flap

K Components, Air Operated

Figure 6. Drive Side View

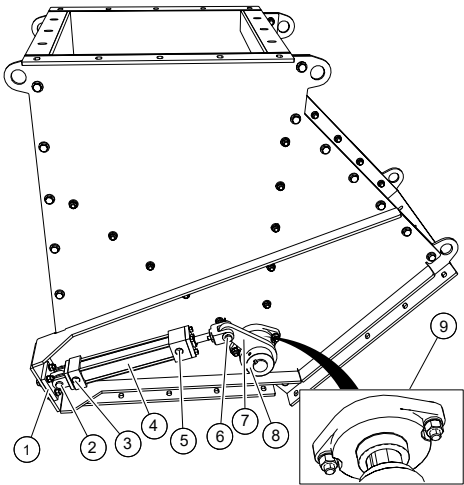
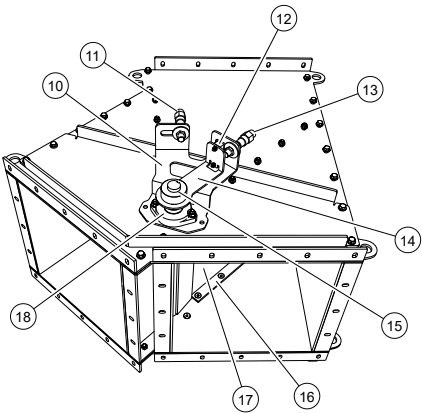


Figure 7. Non-Drive Side View



Note

Optional sensor configurations are available for this equipment.
Refer to [Section 7.9 – Optional Sensor Maintenance on page 28](#) as required.

Item	Description
1	Actuator Mount
2	Actuator Mounting Pin
3	Air Port (extend)
4	Air Cylinder
5	Air Port (retract)
6	Shaft Arm Pin

Item	Description
7	Shaft Arm
8	Keyed Arm Base
9	Outboard Bearing
10	Sensor Plate
11	Position Sensor A
12	Magnetic Target

Item	Description
13	Position Sensor B
14	Target Arm
15	Keyed Arm Base
16	Valve Flap Stop Bar
17	Valve Flap
18	Inboard Bearing

K Components, Motor Driven

Figure 8. Drive Side View

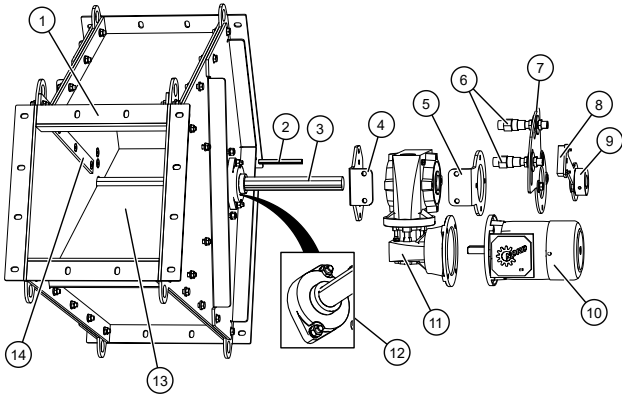
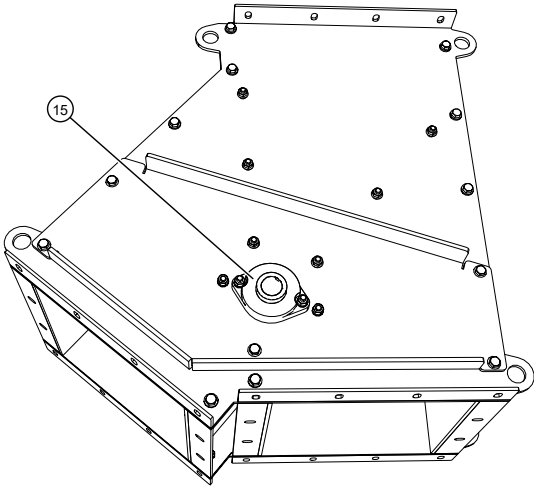


Figure 9. Non-Drive Side View



Item	Description	Item	Description	Item	Description
1	Valve Inlet	6	Position Sensors	11	Gear Reduction Drive
2	Key	7	Sensor Plate	12	Inboard Bearing
3	Keyed Main Shaft	8	Magnetic Target	13	Valve Flap
4	Drive Torque Plate	9	Target Arm	14	Valve Flap Stop Bar
5	Drive Support Plate	10	Electric Motor	15	Outboard Bearing

K Components, Electric Actuator Operated

Figure 10. Drive Side View

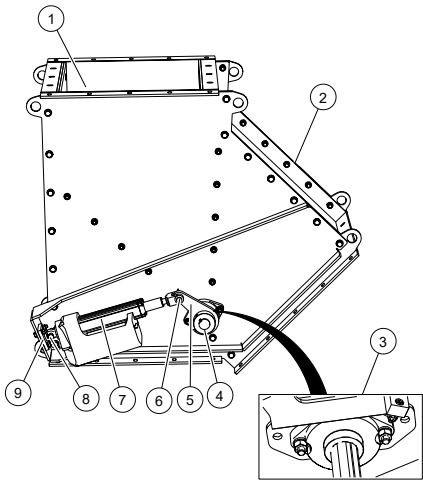
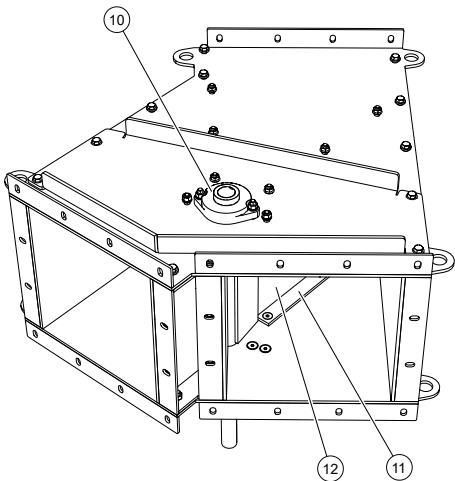


Figure 11. Non-Drive Side View



Item	Description
1	Flop Valve Inlet
2	Flop Valve Body
3	Inboard Bearing
4	Keyed Target Arm Base

Item	Description
5	Shaft Arm
6	Shaft Arm Pin
7	Electric Actuator
8	Actuator Mounting Pin

Item	Description
9	Actuator Mount
10	Outboard Bearing
11	Valve Flap Stop Bar
12	Valve Flap

Y Components, Manually Operated

Figure 12. Drive Side View

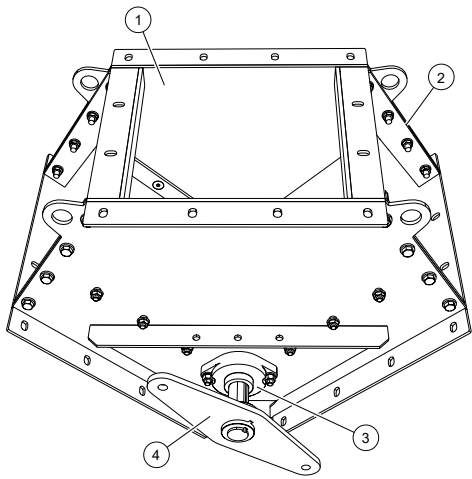
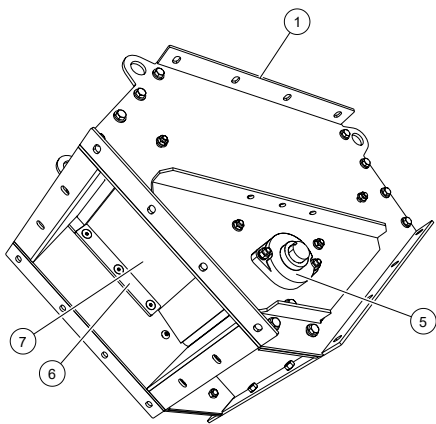


Figure 13. Non-Drive Side View



Item	Description
1	Flop Valve Inlet
2	Flop Valve Body
3	Inboard Bearing

Item	Description
4	Control Adapter
5	Outboard Bearing
6	Valve Flap Stop Bar

Item	Description
7	Valve Flap

Y Components, Air Operated

Figure 14. Drive Side View

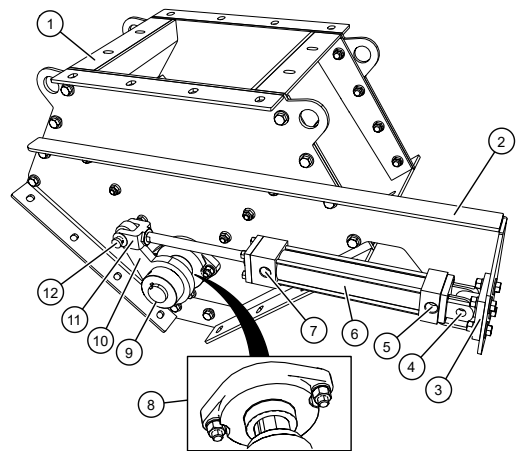
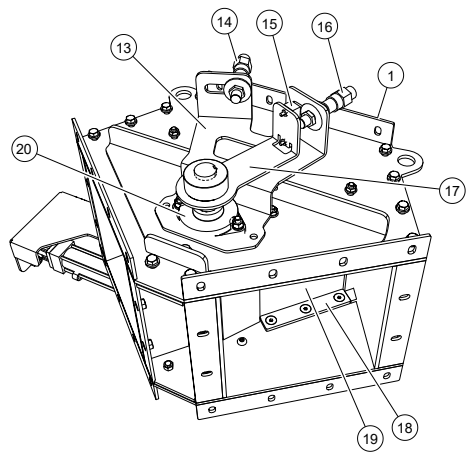


Figure 15. Non-Drive Side View



Note

Optional sensor configurations are available for this equipment.
Refer to [Section 7.9 – Optional Sensor Maintenance on page 28](#) as required.

Item	Description	Item	Description	Item	Description
1	Valve Inlet	8	Inboard Bearing	15	Magnetic Target
2	Actuator Support Plate	9	Keyed Main Shaft	16	Position Sensor B
3	Actuator Mount	10	Shaft Arm	17	Target Arm
4	Actuator Mounting Pin	11	Adjustable Adapter	18	Valve Flap Stop Bar
5	Air Port (extend)	12	Shaft Arm Mounting Pin	19	Valve Flap
6	Actuator	13	Sensor Plate	20	Outboard Bearing
7	Air Port (retract)	14	Position Sensor A		

Y Components, Motor Driven

Figure 16. Drive Side View

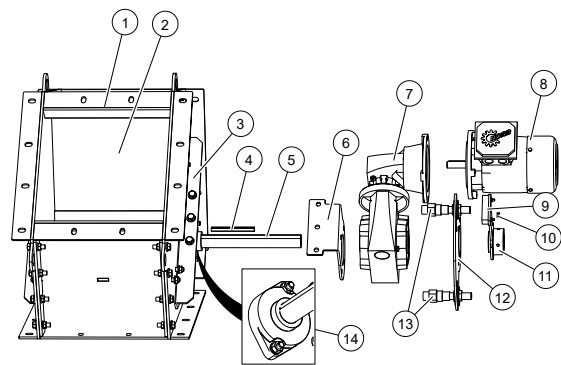
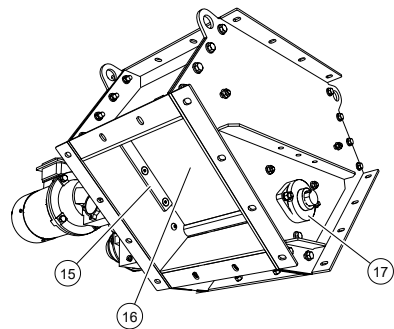


Figure 17. Non-Drive Side View



Item	Description	Item	Description	Item	Description
1	Valve Inlet	7	Gear Reduction Drive	13	Position Sensors
2	Valve Flap	8	Electric Motor	14	Inboard Bearing
3	Reinforcement Plate	9	Magnetic Target	15	Valve Flap Stop Bar
4	Key	10	Target Arm Lock Pin	16	Valve Flap
5	Keyed Shaft	11	Target Arm	17	Outboard Bearing
6	Drive Torque Plate	12	Sensor Plate		

Y Components, Electric Actuator Operated

Figure 18. Drive Side View

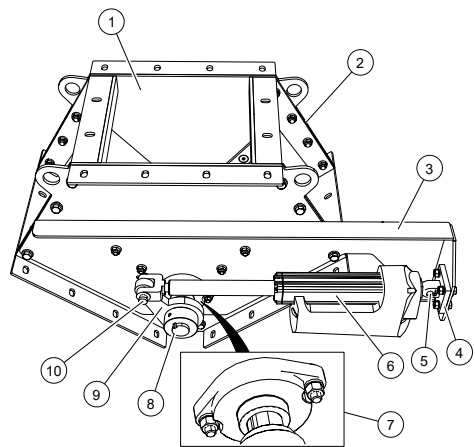
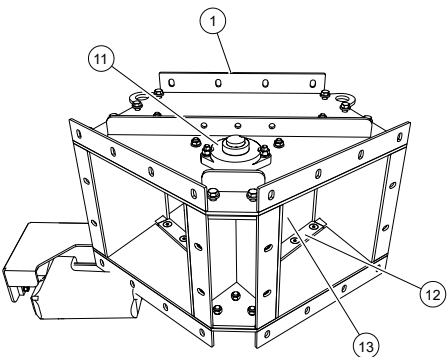


Figure 19. Non-Drive Side View



Item	Description
1	Flop Valve Inlet
2	Flop Valve Body
3	Actuator Support Plate
4	Actuator Mount
5	Actuator Mounting Pin

Item	Description
6	Electric Actuator
7	Inboard Bearing
8	Keyed Target Arm Base
9	Target Arm
10	Shaft Arm Mounting Pin

Item	Description
11	Outboard Bearing
12	Valve Flap Stop Bar
13	Valve Flap

4. Pre-Installation

4.1. Approval Drawing

An approval drawing from AGI is provided with the flop valve. Use the approval drawing when assembling/installing as it contains specific information about component placement and locations.

4.2. Inspect the Shipment

1. Check if the loads have shifted or have been damaged during transport.
2. Inspect all sides of the shipment for any visible signs of damage. Look for deformation of the housing. Take photos of the damaged components on the truck.
3. Inspect drives, electric motors, actuators, and position sensors for visible signs of damage. Look for bent or cracked components. Take photos of the damaged components on the truck.
4. Check that all components listed on delivery receipt are included.
5. If components are damaged or missing, note these on the delivery receipt and immediately report all missing or damaged parts to the freight company.

4.3. Receiving

- Check all assemblies and parts against shipping papers, and inspect all items upon arrival. Look for deformation of the body and flanges.
- Check all drives, electric motors, actuators, position sensors, and any visible wiring harness or cabling for damage.
- Check all boxes containing additional hardware against shipping papers, and ensure everything has been received as required.
- Never assemble or install broken or damaged parts.
- For damaged parts, file an immediate claim with the carrier.
- The supplier should be notified of any damages, including all required repairs performed during the equipment's installation.
- Prior to installation, make sure that all supplementary instructions are included. If items are missing, consult the supplier.

5. Installation

5.1. Installation Safety

**WARNING**

Before continuing, ensure you have completely read and understood this manual's Safety section, in addition to the safety information in the section(s) below.

- Do not take chances with safety. The components can be large, heavy, and hard to handle. Always use the proper tools, properly rated lifting equipment, and recommended lifting points for the job.
- Make sure you have sufficient space and adequate lighting for the work area.
- Tighten all fasteners according to their specifications. Never replace or substitute fasteners or other hardware that is of lesser quality than the hardware supplied by the manufacturer.
- The equipment shall be installed in accordance with applicable local codes and regulations.
- All installation and servicing operations are to be carried out by qualified technicians.
- All electrical connections shall be made by a qualified electrician and must meet the applicable local codes and regulations.
- When testing the flop valve, be aware of moving components and avoid all potential pinch points.

5.2. Electrical Safety

Electrical system shall be installed and serviced by a qualified electrician. The system should be installed in accordance with the local electrical regulation.

5.3. Valve Installation

This section provides general instructions for installation of K and Y style flop valves. Details may vary depending on the application.

Important

- Flop valve mounting flanges and all mating flanges should be checked for bends, warping, dirt, and damage. Flanges must be clean, flat, and square with all attached equipment before tightening any bolts.
- Flop valve is not part of the spouting support system. Ensure spouting is supported correctly to avoid twisting of the valve housing.

NOTICE

Optional sensing devices may be installed on this equipment.

Refer to the assembly drawings and sensing device manufacture's documentation as required.

Install the equipment according to the following steps to ensure smooth operation and accurate movement of the flop valve. When installed properly, the valve should move smoothly to all positions with no binding.

Flop valve assemblies provide lift points for use in lifting and positioning the valve during installation. Refer to [Section 2.6 – Lifting and Moving on page 8](#) for additional information.

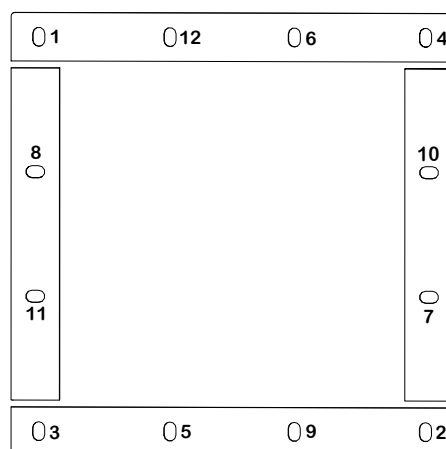
Installation Procedure

Note

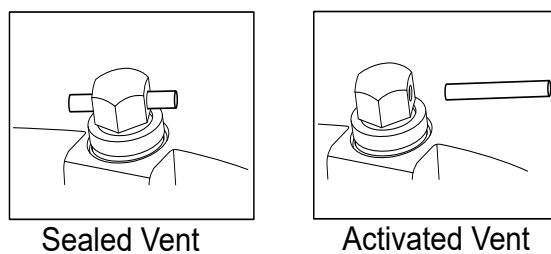
Sealant can also be applied before placing the flop valve into position. If this method is preferred, use care not to disturb the sealant during lifting and positioning procedures.

1. Using the appropriate slings (attached to the four lift points) raise the valve assembly and move into position for installation.
2. Align all flanges and install flange bolts and nuts to four corners of each flange connection.
3. Hand-tighten flange bolts, keeping a square alignment between the flanges. Leave a small gap between flange mating surfaces for sealant
4. Apply a small bead of silicone sealant to one flange of each connection.
5. Install all remaining fasteners. Carefully draw all flange connections together evenly keeping flanges square and straight with one another. Use a cross-pattern sequence as shown in the following figure. Snug all fasteners in sequence and in several stages to minimize distortion. Tighten all bolts (in sequence) to the recommended torque. Refer to the following figure as required.

Figure 20. Flange Bolt Tightening Sequence Example



6. Verify the valve control system properly identifies each position sensor, and commands the correct flap position and product flow direction.
7. After the equipment is fully installed and properly connected, operate the valve fully through its range of travel. If the valve has position sensors, check for proper operation with valve in all commanded positions. Refer to [Section 7.8 – Position Sensor Maintenance on page 26](#) as required.
8. Install covers as necessary.
9. After equipment is fully assembled and known to be operating normally, engage full-flow of product through the system. Operate the valve several times when loaded with product.
10. Monitor for proper valve function. If no problems, valve can be used in normal operation. If problems are encountered, refer to [Section 8.1 – Troubleshooting on page 30](#) for more information.
11. If valve is equipped with a gear reduction drive, remove the shipping insert from the gear reducer breather vent as shown in the example below. Ensure breather plug hole is open and unobstructed.

Figure 21. Typical Gear Drive Breather Vent Activation

6. Operation



Before continuing, ensure you have completely read and understood this manual's Safety section.

This section does not cover specific operation of the equipment, as operation may depend on the system in which the flop valve is integrated into.

Below are some general guidelines to keep in mind when operating the flop valve.

- Read and understand the operation of the system for which the flop valve is installed.
- Visually inspect the equipment. Refer to Maintenance Section for inspection instructions.
- Inspect wiring, cabling, hoses, and electrical or air connections for loose or damaged components.
- Before adding material from the upstream equipment, confirm functionality of the valve by cycling through the full range of travel 2 to 3 times.
- Monitor equipment regularly during normal operation.
- Perform scheduled maintenance as required.

6.1. Shutdown

When operation has been completed:

1. Once the flop valve is clear of product, lock out the power source.
2. Clean the entire work area.

6.2. Extended Shutdown

After the season's use, the flop valve should be thoroughly inspected and prepared for extended shutdown.

1. Clean the flop valve thoroughly and remove all dirt, mud, debris, or residue.
2. Inspect all moving or rotating parts to see if anything has become entangled in them. Remove any entangled material.
3. Touch up all paint nicks and scratches to prevent rusting.
4. Remove access covers and clean all components of the flop valve, including the top and bottom of the valve assembly. Ensure magnetic targets are clean, and have a clear path of travel to between the two position sensors.
5. Inspect the flop valve for cracks and tightness of fasteners. Replace worn or damaged components as necessary.
6. Lubricate bearings as required. Refer to [Section 7.5 – Lubricate the Equipment on page 23](#) for maintenance intervals.
7. If possible, use waterproof covering to protect components if stored outside. Do not seal coverings around the equipment. Always provide a path for moisture to evaporate.
8. Cycle the valve (without product) through the full range of travel 2-3 times per month when not in use.

7. Maintenance



Before continuing, ensure you have completely read and understood this manual's safety section.

7.1. Maintenance Safety

WARNING

- Keep components in good condition. Follow the maintenance procedures.
- Ensure the service area is clean, dry, and has sufficient lighting.
- Do not modify any components without written authorization from the manufacturer. Modification can be dangerous and result in serious injuries.
- Shut down and lock out power before maintaining equipment.
- After maintenance is complete, replace all guards, service doors, and/or covers.
- Use only genuine AGI replacement parts or equivalent. Use of unauthorized parts will void warranty. If in doubt, contact AGI or your local dealer.



7.2. Maintenance Schedule

Follow the Maintenance Schedule below. Keep good records of the hours the flop valve has been operated and the maintenance performed.

Maintenance Intervals
Daily:
Check equipment for proper operation during and after startup up. If a problem is encountered, repair the problem before continuing normal operations. Refer to Section 8.1 – Troubleshooting on page 30 as necessary.
Monthly:
Refer to Section 7.3 – Visually Inspect the Equipment on page 23 . Refer to Section 7.5 – Lubricate the Equipment on page 23
Quarterly:
Refer to Section 7.4 – Cleaning the Flop Valve on page 23 .
Annually:
Refer to Section 7.7 – Inspecting the Wiring, Actuator, or Electric Motor on page 26 .

As required:
Refer to Section 7.6 – Gear Drive Maintenance on page 24.
Refer to Section 7.8 – Position Sensor Maintenance on page 26.
Refer to Section 7.9 – Optional Sensor Maintenance on page 28.

7.3. Visually Inspect the Equipment

⚠ CAUTION Shut down and lock out power prior to maintenance activities.

1. Examine the flop valve for damage or unusual wear.
2. Check that the valve path is free of obstruction. Remove obstructions as necessary.
3. Be sure safety decal is in place and legible.
4. Check for dirt, debris, or other obstructions that may restrict flop valve movement. Clean and remove obstructions as necessary.
5. Check for missing or loose mounting hardware. Replace or tighten hardware as required.
6. Check that all components of the valve assembly are properly aligned and tightly secured. Realign parts and tighten hardware as necessary.
7. Check that visible portions of the two positions sensors are not damaged and are tightly secured. Replace sensor if damaged. Verify proper sensor-to-magnet air gap and tighten sensor as required. Refer to [Section 7.8 – Position Sensor Maintenance on page 26.](#)
8. **Manual Flop Valves Only:** Inspect condition of cables and cable clamps. Repair or replace cable and hardware as required.

7.4. Cleaning the Flop Valve

⚠ CAUTION Shut down and lock out power prior to maintenance activities.

1. Use vacuum to remove any buildup from exterior of the valve assembly. Remove any material from control wiring, mechanical linkages, magnetic target, and position sensors as required.
2. If access permits, use vacuum to remove any material left on the inside of the valve.
3. Ensure stop bars and valve flap are clean and clear of material buildup. Flap should move into each position and seal completely against stop bars.
4. Ensure that the magnetic target's path is clear of all obstructions and debris.
5. Ensure that the valve is operating smoothly through it's entire range of travel.

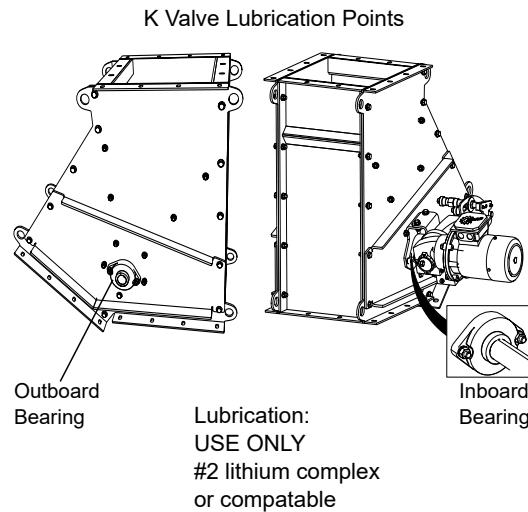
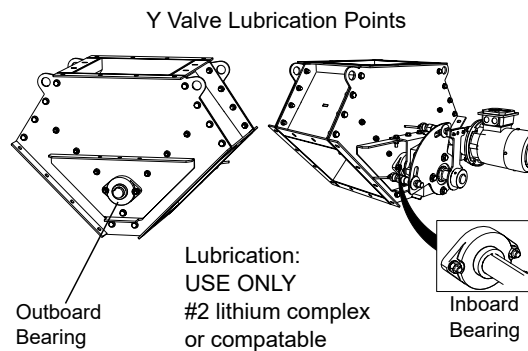
7.5. Lubricate the Equipment

⚠ CAUTION Shut down and lock out power prior to maintenance activities.

Note

The required lubrication period of a bearing is dependant upon speed, load, and working environment of a specific installation. A maintenance routine can be determined by equipment observation.

- Apply grease at each lubrication point until a small amount of grease is forced out of the bearing ends. It is recommended to lubricate bearings while they are in motion when possible.
- Select a grease that is compatible with #2 lithium complex grease.
- Suggested lubrication intervals are every six months, based on 8 hours per day.
- Refer to the following figures for locations of lubrication points for each type of valve.

Figure 22. K Valve Lubrication**Figure 23. Y Valve Lubrication**

7.6. Gear Drive Maintenance

⚠ CAUTION Shut down and lock out power prior to maintenance activities.

Check the following regularly:

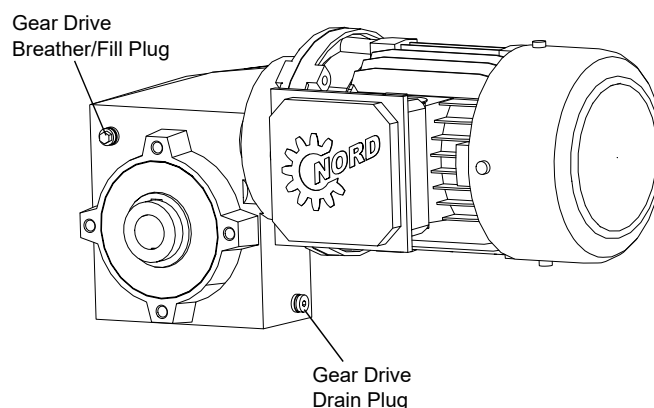
- Check the exterior of the gear drive unit and attached components for damage. Replace damaged components as required.
- Check gear drive seals for leakage. Replace seals as required. Refer to gear drive manufacturer's documentation.

- Check that torque arm bolts are tightened to proper torque. Refer to [Section 9.1 – Bolt Torque on page 32](#) for fastener torque specifications.
- Check the gear drive's breather vent for obstructions and clogging. Clean or replace breather vent as required.

NOTICE

Restricted breather vent may cause drive seal leakage and premature seal failure.

Inspect breather vent regularly. Clean or replace vent as required.

Gear Drive Lubrication Replacement**Figure 24. Typical Gear Drive, Drain Plug and Fill Plug Locations****Note**

For the recommended oil type, check the data plate attached to the housing of the gear drive.

Table 1. Recommended Drive Maintenance Interval

Lubrication	Interval
Mineral oil	Replace mineral oil every 10,000 hours or every 2 years.
Synthetic oil	Replace synthetic oil every 20,000 hours or every 4 years.
Oil analysis	Replace gear drive oil if: <ul style="list-style-type: none"> • Viscosity change is in excess of 10% • Debris particles exceed 25 ppm • Iron content exceeds 150 ppm • Water content is greater than 0.05% or 500 ppm • Total Acid Number (TAN) change is in excess of 5%

7.7. Inspecting the Wiring, Actuator, or Electric Motor

⚠ CAUTION Shut down and lock out power prior to maintenance activities.

- Check electric motor, external components, and cable connections for damage. Repair as necessary.
- Check for frayed/exposed wiring. Replace wiring as necessary.
- Ensure all electrical connections are secure. Tighten and secure wiring connections as required.
- Ensure harnesses and wiring are properly attached to the flop valve's body as required.
- Replace damaged and defective components.
- Follow manufacturer specific instructions for routine maintenance of electrical actuators and electric motors as required.

7.8. Position Sensor Maintenance

⚠ CAUTION Shut down and lock out power prior to maintenance activities.

- Check position sensors for damage. Replace defective or damaged sensors as required and perform the air-gap adjustment procedure.
- Check that sensors are attached tightly and that they do not screw in or out by hand. If a loose sensor is found, perform the following air-gap adjustment procedure.
- Check that magnetic target is tightly secured.
- Check that sensor mounting plate and target arm are tightly secured.
- Check magnetic target for damage and bent hardware. Replace damaged target or hardware as required.
- Check for loose or damaged wiring or connectors at sensors. Secure or repair as required.

Position Sensor Air-Gap Adjustment

1. Move the valve fully to the position to be adjusted.

Figure 25. K Valve Position Sensor and Magnetic Target

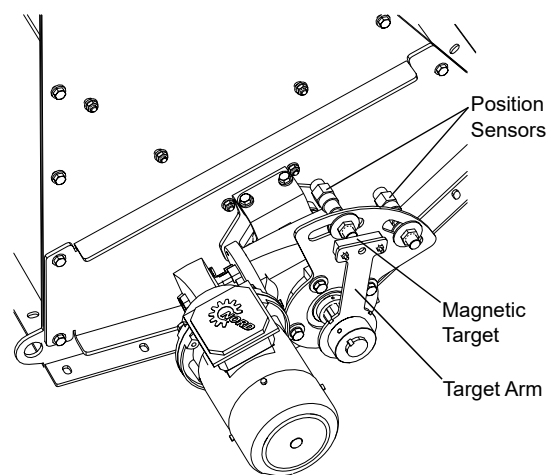
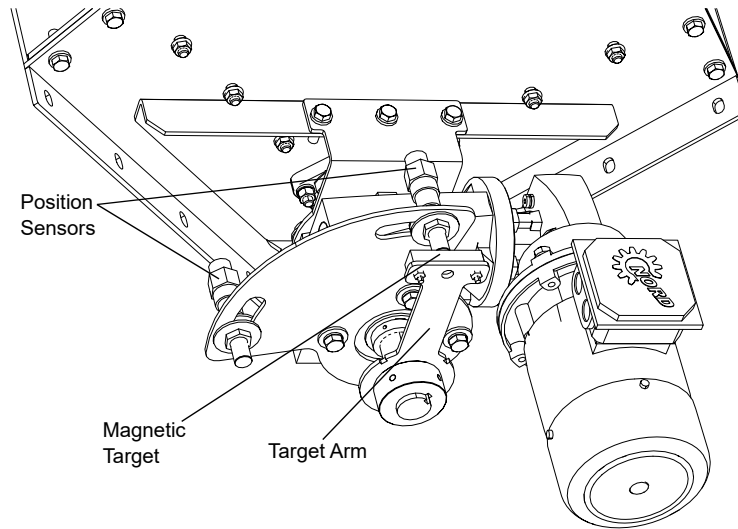
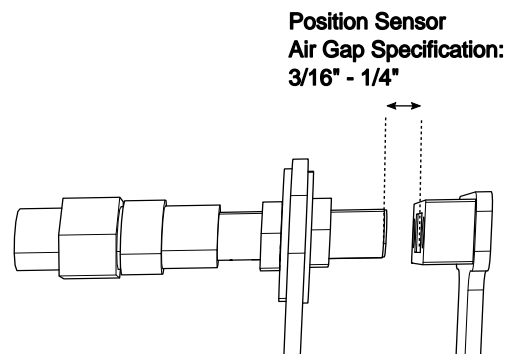


Figure 26. Y Valve Position Sensor and Magnetic Target

2. Lock out flop valve power.
3. Check that magnetic target is tightly secured and properly aligned with sensor. Sensor should be at center of the magnetic target.
4. Measure air-gap between magnetic target and tip of sensor. Air-gap specification is 3/16" - 1/4".

Figure 27. Typical Position Sensor Air Gap Specification

5. Loosen and rotate sensor jam-nuts and adjust to the specified air-gap as required.
6. While keeping the sensor body in position, tightly snug the jam-nuts to prevent sensor movement.
7. After securing the sensor, recheck air-gap. Readjust as necessary.
8. Using a 7/8" wrench, tighten one sensor jam nut to 14-22 ft- lb (20–30 Nm).
9. Remove lock out and restore flop valve power.
10. Operate valve and verify proper function and control.

7.9. Optional Sensor Maintenance

This section provides information for non-standard sensing devices. Optional sensing devices may be installed on some equipment.

⚠ CAUTION Shut down and lock out power prior to maintenance activities.

Note

Refer to the optional sensor's documentation for specific installation and troubleshooting information.

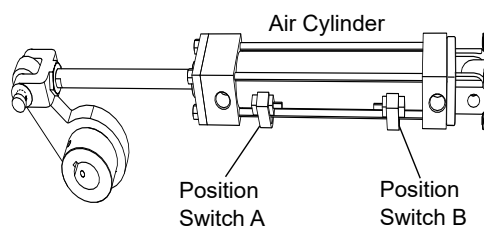
Options Available: Air Cylinder Position Sensor (Reed Switch)

- Check all position sensors for damage. Replace defective or damaged sensors as required and perform the following sensor adjustment procedure.
- Check sensors for damage and bent hardware. Replace damaged sensor or hardware as required and perform the following sensor adjustment procedure.
- Check that the sensing area of each sensor's is in full contact with the air cylinders. If a loose sensor is found, perform the following sensor adjustment procedure.
- Check for loose or damaged wiring or connectors at sensors. Secure or repair wiring and connectors as required.

Sensor Adjustment (Reed Switch)

1. Lock out flop valve's air supply, and relieve residual air pressure as required.
2. Check that sensors are tightly secured and properly attached to air cylinders.
3. Verify sensors are located at top and bottom of air cylinder as shown in the following figure.

Figure 28. Air Cylinder Reed Sensor Alignment



Adjust position switches to achieve proper switch activation at all flop valve positions.

4. If adjustments are required, loosen sensor retainer clamp, and adjust each position switch to activate at the required valve position.

NOTICE

Alignment Required

For proper operation, the sensing pad of each sensor must maintain full contact and proper location on the air cylinder.

5. Align each sensor and tightly snug the sensor retainer clamps to prevent sensor movement. Do not over-tighten retainer clamps.

6. Remove lock out and restore flop valve power.
7. Check that valve control system correctly identifies the correct valve positions. Calibrate system as required.
8. Operate valve and verify proper function and control.

8. Troubleshooting

Find causes and solutions to common problems that can be encountered.

8.1. Troubleshooting

⚠ CAUTION Shut down and lock out power prior to maintenance activities.

The following section covers some causes and solutions to some of the problems that may be encountered.

If there is a problem that is difficult to solve, even after having read through this section, please contact your representative or AGI. Have this manual and the serial number available.

Table 2. Valve Troubleshooting

Problem	Cause	Solution
Product leaking from valve.	Valve flap not sealing.	<ul style="list-style-type: none"> • Check for proper operation of the valve. • Check stop bars and valve flap for buildup. Clean valve as necessary. • Check for loose or missing stop bars. Tighten or replace parts as required. • Check valve flap for distortion or bends. Repair or replace parts as required. • Check for proper gap between flop valve shaft and valve body. Adjust as required.
Valve operates slowly.	Accumulated buildup or debris inside valve assembly.	<ul style="list-style-type: none"> • Remove debris and clean flop valve.
	Dry or seized bearing.	<ul style="list-style-type: none"> • Lubricate or replace bearing as required.
	Valve flap sticking or binding	<ul style="list-style-type: none"> • Check valve flap for signs of sticking or binding. Repair or replace valve flap as necessary.
	(Pneumatic Valve) Low, leaking, or loss of air pressure.	<ul style="list-style-type: none"> • Check for water accumulation in all air system components. Drain accumulation from system regularly. • If the operating environment is low temperature, check for ice formation and the resulting component malfunctions and pressure restrictions in the air system and components. • Check for proper air system supply pressure. Repair as necessary. • Check air component exhaust ports for restrictions or clogging. Clean or replace component as required.

Table 2 Valve Troubleshooting (continued)





Problem	Cause	Solution
		<ul style="list-style-type: none"> Inspect air control valve for proper operation. Clean and adjust as required. Inspect air system components for proper operation and leakage. Repair or replace components as required.
	(Electric Actuator Valve) Low supply voltage or defective actuator.	<ul style="list-style-type: none"> Check for proper actuator supply voltage. Repair as necessary. Check for excessive heating or abnormal noise during actuator operation. Replace actuator as required.
Motor or actuator inoperative or stops frequently.	Component not receiving full supply voltage.	<ul style="list-style-type: none"> Check for proper supply voltage. Repair as necessary.
	Component may be damaged or defective.	<ul style="list-style-type: none"> Motor windings may be shorted. Repair or replace motor as required. Check for excessive heating or abnormal noise during component operation. Replace component as required.
Gear drive over heats.	Lack of lubrication in the gear drive.	<ul style="list-style-type: none"> Fill gear drive lubrication to proper level.
	Dry or seized equipment shaft bearing.	<ul style="list-style-type: none"> Lubricate or replace bearing as required.
Motor runs, gear drive inoperative	Loose or damaged coupler.	<ul style="list-style-type: none"> Inspect coupler for alignment and tightness. Realign and tighten coupler as required. If coupler shows signs of damage, replace coupler.

9. Appendix

9.1. Bolt Torque

Table 3 gives the correct torque values for various hardware. Tighten all bolts to the torque specified, unless otherwise noted. Check tightness periodically, using Table 3 as a guide. Replace the hardware with the same strength bolt, contact AGI if you are unsure.

Table 3. Recommended Bolt Torque

Size	Dry or Lubricated	Threads per inch (Course/Fine)	Area of Bolt (sq in.)		Recommended Torque (ft-lb)							
					 Grade 2		 Grade 5		 Grade 8		 8.8 S/S	
			Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine
1/4"	Dry	20/28	0.0318	0.0364	5.5	6.3	8	10	12	14	6.3	7.8
	Lubricated				6.3	4.7	6.3	7.2	9	10	-	-
5/16"	Dry	18/24	0.0524	0.058	11	12	17	19	24	27	11	11.8
	Lubricated				8	9	13	14	18	20	-	-
3/8"	Dry	16/24	0.0775	0.0878	20	23	30	35	45	50	20	22
	Lubricated				15	17	23	25	35	35	-	-
7/16"	Dry	14/20	0.1063	0.1187	32	36	50	55	70	80	31	33
	Lubricated				24	27	35	40	50	80	-	-
1/2"	Dry	13/20	0.1419	0.1599	50	55	75	85	110	120	43	45
	Lubricated				35	40	55	65	80	90	-	-
9/16"	Dry	12/18	0.182	0.203	70	80	110	120	150	170	57	63
	Lubricated				55	60	80	90	110	130	-	-
5/8"	Dry	11/18	0.226	0.256	100	110	150	170	210	240	93	104
	Lubricated				75	85	110	130	160	180	-	-
3/4"	Dry	10/16	0.334	0.373	175	200	260	300	380	420	128	124
	Lubricated				130	140	200	220	280	310	-	-
7/8"	Dry	9/14	0.462	0.508	170	180	430	470	600	670	194	193
	Lubricated				125	140	320	350	180	180	-	-
1"	Dry	8/14	0.606	0.679	250	280	640	720	910	1020	287	289
	Lubricated				190	210	480	540	680	760	-	-
1-1/8"	Dry	7/12	0.763	0.856	350	400	790	890	1290	1440	288	290
	Lubricated				270	300	590	670	970	1080	-	-
1-1/4"	Dry	7/12	0.989	1.073	500	550	1120	1240	1820	2010	289	291
	Lubricated				380	420	840	930	1360	1510	-	-
1-1/2"	Dry	6/12	1.405	1.581	870	960	1950	2200	3160	3560	-	-
	Lubricated				650	730	1460	1640	2370	2670	-	-

Note

Torque values in table are valid unless otherwise specified.
 Only lubricate bolts or cap screws as directed.
 If using locking hardware, increase final torque values by 5%.

9.2. Set Screw Torque

Imperial Grade 5 (lb·ft)	
4	1
5	1
6	1
8	2
10	3
1/4	8
5/16	15
3/8	26
7/16	42
1/2	63
5/8	122
3/4	210
7/8	479
1	667

9.3. Position Sensor Nut Torque

<u>5/8"-18 UNF</u>	
lb·ft	Nm
14-22	20-30

10. AGI Warranty

Ag Growth International Inc. warrants that the goods and/or services being supplied (the “Goods”) will be free from defects in materials and workmanship under normal conditions, use, service, and maintenance, for a period of twelve (12) months from the date of first operation of the Goods, but in no event more than eighteen (18) months from the date of delivery of the Goods to the end-user (the “Warranty Term”). If the Goods are being used for rental purposes, the Warranty Term for the subject Goods shall be limited to 90 days.

Subject to AGI’s sole discretion, if the Goods, or a component thereof, are found to have a default in materials and/or workmanship within the Warranty Term, AGI will, at its own option and expense, repair or replace the subject Goods or refund the purchase price for the applicable Goods. Any warranty related expenses incurred on behalf of or by the end-user without the prior written consent of AGI shall be the sole responsibility of the end-user. Expenses relating to travel, customs or import duties and tariffs, equipment rental, and any costs associated with accessing the Goods are the sole responsibility of the customer. Warranty shall be void in the event that the Goods are returned or disposed of without the written consent of AGI.

The customer shall not assert a claim that the Goods are defective unless the customer gives written notice to AGI of such defect within forty-eight (48) hours of discovering such defect. In the event of a warranty claim, the customer must complete any and all information required by AGI in order to properly assess or investigate the claim. AGI shall be given a reasonable opportunity to inspect and test the Goods in question. Failure by the customer to notify AGI of such claim within 48 hours shall operate as a waiver of any and all such claims by the customer.

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Please include the part number listed on the cover page in your message.