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!!!DANGER!!!

DO NOT USE THIS EQUIPMENT TO PURGE TOXIC OR FLAMMABLE GAS

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GVM-16G TURNAIR® SERIES

AUTOMATIC CYLINDER VALVING MACHINE

INSTRUCTION MANUAL

MANUAL NUMBER 21-11-1002

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Revision B Issued December, 1997

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1.0 INTRODUCTION

The Galiso GVM-16G High Speed Turnair Valving Machine is designed to provide a fast, efficient means for removing valves from compressed gas cylinders. The GVM-16G features patented Turnair Valve Tongs, a counterbalanced power head assembly and a powerful pneumatic Cylinder Clamp. A convenient small cylinder stand is also provided to speed and simplify valving or de-valving of almost any type of compressed gas cylinder.

The Turnair Valve Tongs automatically adjust to grip valves from 7/8” to 1-7/8”. The Tong Assembly also features a special Power Multiplier Assembly, which holds the valve securely, no matter how much torque is applied. The patented Turnair design eliminates slipping and valve damage caused by loose fitting conventional tongs.

The GVM-16G develops 550 to 600 ft./lbs of torque with a 90 to 100 PSI air supply, adequate power to insert or remove almost any cylinder neck valve. Torque is adjustable and may be set to "Stall Out" at any predetermined value. A torque booster button allows override of the torque control to provide additional power for removing particularly stubborn valves.

The Valve Tong Drive Motor is activated by a single control lever. Response is instantaneous in either direction. The unit stops immediately when the lever is released. The Valve Tongs, Drive Motor, and controls are all housed in a counterbalanced steel enclosure, allowing the Valve Tongs to be raised, or lowered as needed.

The GVM-16G includes a powerful air operated Cylinder Clamp, which holds the cylinder securely while the valve is removed or inserted. The Clamp Jaws are rubber faced, and fully adjustable to hold cylinders from 3 inches to 16 inches in diameter. Clamping force is controllable up to over 2,500 lbs. Since no chains or grooved "V" blocks are used to hold cylinders, the finish on the cylinders is not marred or scarred by clamping action.

The GVM-16G High Speed Turnair Valving Machine is available in several different configurations to adapt to the work flow of each individual facility. The portable model (GVM-16G PV) includes heavy duty locking casters to allow the unit to be easily moved from work area to work area. The standard model GVM-16G features a heavy steel base plate for permanent installation in a fixed location. Right, and Left-hand models of the GVM-16G are also available. The GVM-16G LH features a Cylinder Clamp which opens on the left-hand side and the GVM-16G RH features a Cylinder Clamp which opens on the right-hand side. In addition, Electronic Torque Measuring System and Automatic Small Cylinder Lift options are available.

2.0 SPECIFICATIONS:

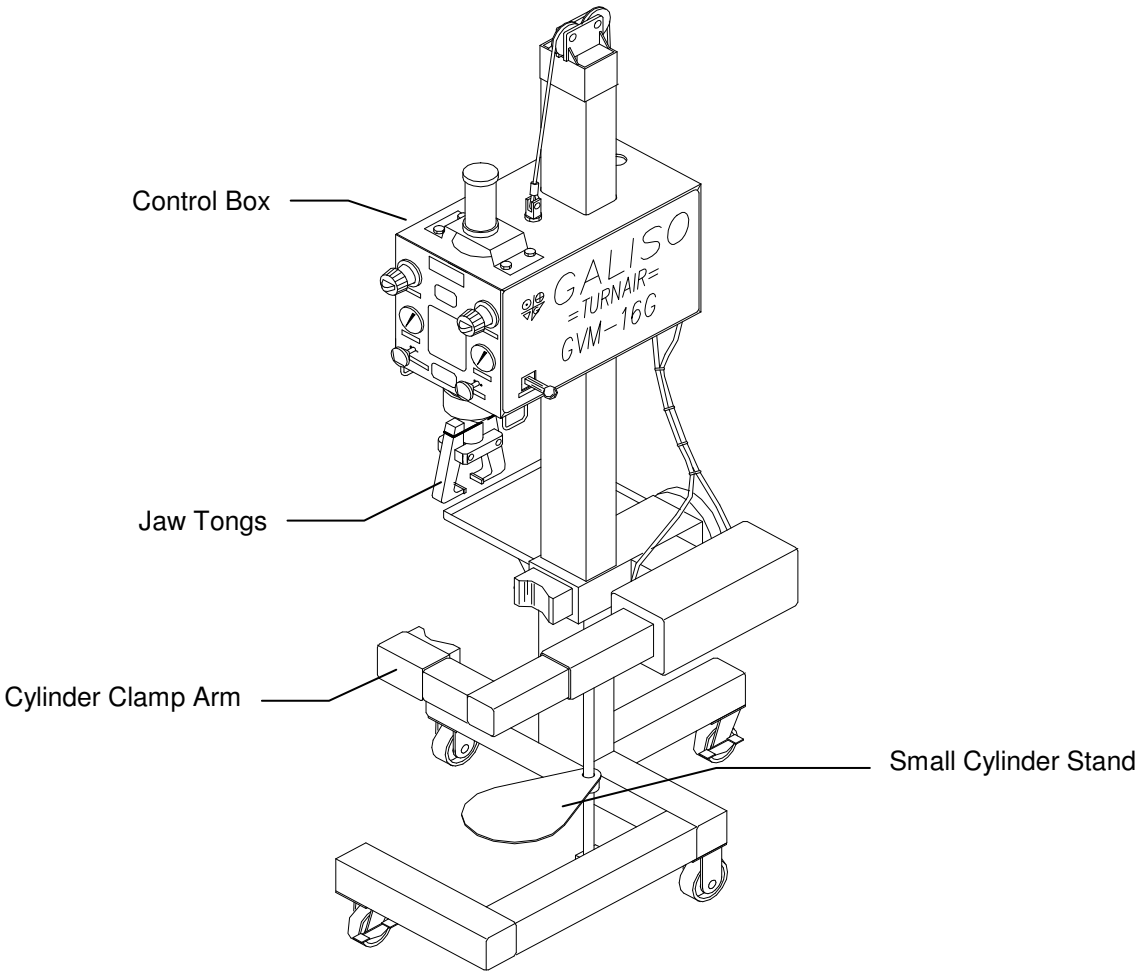


Figure 2 - 1 GVM-16G-LHPV

Specifications:

Dimensions: 8 ft. 6 in. High x 4 ft. Long x 3 ft. Wide

Weight: 1000 lbs.(approx.) Crated: 1300 lbs. (approx.)

Maximum Torque: 600 ft./lbs. (fully adjustable)

Maximum Clamping Force: 3000 lbs. (fully adjustable)

Maximum Cylinder Size: 3 in. to 16 in. diameter (see Table 2-1 for cylinder heights)

Valve Tong Range: 7/8 in. to 1-7/8 in.

Air Requirements: 20 CFM at 120 psi when operating at maximum torque.

2.1 Equipment Options

Several versions of the basic GVM-16G valving machine are available to suit specific facility and operational requirements. Table 2-1, below, shows the model and part numbers for the available options:

Table 2 - 1 GVM-16G Options

Model No.	Part No.	Cylinder Loading	Max. Cyl. Height	Features
GVM-16G-LH	14-54-0183	Left Hand	62”	Floor Mount
GVM-16G-RH	14-54-0184	Right Hand	62”	Floor Mount
GVM-16G-LH-72	14-51-0537	Left Hand	74”	Floor Mount
GVM-16G-RH-72	14-51-0544	Right Hand	74”	Floor Mount
GVM-16G-LHPV	14-54-0176	Left Hand	62”	Portable
GVM-16G-RHPV	14-54-0182	Right Hand	62”	Portable
GVM-16G-LHPV-72	14-51-0542	Left Hand	74”	Portable
GVM-16G-RHPV-72	14-51-0543	Right Hand	74”	Portable

Notes: 1. Maximum cylinder height for standard valve installation (removal) without the ETMS.

2.2 Auxiliary Equipment

In addition to the options shown in Table 2-1, the following auxiliary equipment is available from Galiso.

A. Electronic Torque Measuring System (ETMS)

The ETMS provides automatic torque control for installation of cylinder valves to specified torque values. Reference Galiso part number 37-41-9419 for the ETMS option. See the ETMS manual addendum for additional information.

B. Automatic Small Cylinder Lift (SCL)

The SCL provides the capability to valve small cylinders using an air powered piston. Reference Galiso part numbers 14-51-0448 and 14-51-0449 the SCL option.

3.0 SAFETY

Read all instructions before attempting to install or operate the GVM-16G Series High Speed Turnair Valving Machines. GALISO INC. IS NOT RESPONSIBLE FOR DAMAGE OR INJURY CAUSED BY UNSAFE USE, MAINTENANCE, OR APPLICATION OF THESE MACHINES. Please contact Galiso for guidance when you are in doubt regarding the proper safety precautions to be taken when installing or operating these machines.

3.1 Cylinder Preparation

DEVALVING A FULLY PRESSURIZED CYLINDER COULD RESULT IN EXTREME BODILY INJURY, OR DEATH!

Cylinders which still contain gas should be vented to release pressure prior to removal of the valve. Always observe the applicable regulations and safety precautions regarding disposal of gas product.

To avoid dangerous pressure release, verify that all pressure has been released from the cylinder before attempting to remove the valve. Valves that have been blocked by contaminants will appear to be open, while pressure is still trapped in the cylinder. Check the valve before removing it, by injecting a stream of nitrogen gas through the valve and into the cylinder. Use a blow gun equipped with a rubber tip to inject a small amount of nitrogen (or any other clean inert gas) through the valve and into the cylinder. When the blow gun is removed, the operator should be able to hear or feel the gas escaping through the valve. This indicates that the valve passage is open, and that all pressure has been released from the cylinder.

Verify that the cylinder has not contained a toxic, or flammable gas, and then open the valve all the way. In cases where the cylinder has contained a toxic, or flammable gas, check with your supervisor or safety engineer for proper disposal procedure.

THE STANDARD GVM-16G IS NOT DESIGNED FOR USE IN AN ACETYLENE OR OTHER EXPLOSIVE GAS ENVIRONMENT. ANY SUCH USE CAN RESULT IN SEVERE EQUIPMENT DAMAGE, EXTREME BODILY INJURY OR DEATH!

A “spark-free” jaw tong shoe is available from Galiso to reduce the risk of sparking from contact between cylinder valves and the jaw tongs. Reference Galiso part number 14-32-0202 for ordering the “spark free” jaw tong shoe.

3.2 Equipment Precautions

The Galiso GVM-16G High Speed Turnair Valving Machine is capable of generating very powerful twisting, and clamping forces. Operators must be careful to keep their hands, fingers, hair, loose clothing, jewelry, and etc. clear of moving parts, and pinch points.

The portable model of the High Speed Turnair Valving Machine (GVM-16G PV) features heavy duty casters which allow the unit to be easily rolled from on work location to another. Before activating the GVM-16G PV Drive Motor, make certain that all casters are locked, to prevent the machine from slipping, or moving.

If a compressed gas other than air is used to power the GVM-16G Turnair Valving Machine, be certain to provide adequate ventilation to prevent dangerous accumulation of exhaust gases. Refer to Section 4.0, Installation, for additional information regarding use of gasses other than compressed air.

To increase unit life, and maintain proper safety feature operation of the GVM-16G, keep the assembly clean, and lubricated. Report any malfunctions, or minor repairs needed, to your supervisor or safety engineer, at once. With proper attention, years of trouble free, reliable valving will be provided by the Galiso GVM-16G. Take care to keep work area around the GVM-16G clean, dry, and free of debris.

Wear eye protection, head protection, foot protection, and gloves when operating the GVM-16G High Speed Turnair Valving Machine.

Never insert any object such as a crow bar or breaker bar, between the jaws of the Valve Tongs to apply additional torque to the tongs. Use of a lever or bar to apply additional torque to force a stubborn valve, can damage the Planetary Drive Gearing assembly. NEVER hit the Jaw Tongs with a hammer. Doing so could cause a piece of the Jaw Tong or hammer to break, causing personal injury, and/or damage to the Planetary Drive Gear Assembly.

4.0 Installation

Read all instructions before attempting to install or operate the GVM-16G High Speed Turnair Valving Machine.

4.1 Receiving and Placement

Carefully uncrate the GVM-16G Valving Machine and remove all packing materials.

Select a suitable location for the GVM-16G. The GVM-16G should not be installed near a shot blasting system, sand blaster, or other equipment which spreads abrasive material through the work area. Abrasive material such as, sand, or shot may collect at the slide points of the GVM-16G, and cause the unit to jam.

If the Valving Machine has been purchased in the portable configuration, roll the unit to the work area, and lock the casters in place. If the High Speed Turnair Valving Machine has been purchased in the stationary configuration, move the unit to the installation location and bolt or clip the base to the shop floor.

4.2 Utility Connections

Connect a compressed air supply line (1/2” dia. Minimum) to the port on the GVM-16G Valving Box which is labeled AIR IN. The air supply should provide 20 CFM at 120 PSI for maximum torque capability.

Facilities that are not equipped with an air compressor may wish to use an alternate source of compressed gas (such as carbon dioxide or nitrogen) to power the GVM-16G. Any clean, nonflammable, nontoxic, nonoxidizing, noncorrosive gas can be used to power the unit, providing that the precautions discussed below in Section 4.3 Use Of Gases Other Than Compressed Air, are observed.

4.3 Use Of Gases Other Than Compressed Air

Adequate ventilation must be provided, or the exhaust from the GVM-16G must be piped to the outdoors to prevent accumulation of dangerous concentrations of gas in the work area. Note that if an extremely long exhaust line is used to pipe exhaust to the outdoors, the GVM-16G will not be able to provide maximum torque due to the increased back pressure. Accumulation of exhaust gas can deplete the supply of breathing air, resulting in the danger of suffocation.

If Carbon Dioxide or Nitrogen is used to power the unit, the following additional precautions must be taken:

4.3 Use Of Gases Other Than Compressed Air, continued.

A. A high volume Carbon Dioxide regulator must be installed at the storage unit to reduce the line pressure to between 100 and 120 PSI.

B. Approximately 20 to 30 feet of 1/2" to 3/4" pipe or tubing must be run between the regulator and the connection to the Turnair Valving Machine. The purpose of the line is to allow the Carbon Dioxide gas to warm up to ambient temperatures to prevent the drive motor from freezing or sticking.

C. In the event that the ambient temperature is too low to provide adequate warm up of the gas prior to entering the Drive Motor, auxiliary heat of some type should be used to warm the gas to at least 100 degrees Fahrenheit before it enters the Turnair Valving Machine.

4.4 Air Motor Lubricator Fill

GVM-16G valving machines are shipped with the air lubricator drained. Prior to system operation, the Air Lubricator Reservoir must be filled with SAE 10 weight non-detergent oil. Fill and adjust the air lubricator as described below:

CAUTION

Do not normally operate the High Speed Turnair valving Machine without the side panels in place. Extra caution should be taken when adjusting the oil feed as the air pump will need to be operating.

A. Disconnect air supply to the GVM-16G and bleed off all trapped air pressure. Open and close the Clamp Control Valve and Directional Control Lever to make certain that all air pressure has escaped from the system.
B. Remove the side cover to gain access to the Air Line Lubricator. Remove the fill plug from the Lubricator. Fill with SAE 10 weight non-detergent oil. See Figure 6-1.
C. Replace the fill plug and reconnect air pressure to the GVM-16G.
D. The oil feed should be adjusted to 1 drop per minute at full speed air flow, or one drop every ten seconds. When the torque gauge reads 90 PSI.
E. Replace the side cover.

5.0 OPERATIONS

5.1 Description of Control Panel Components

The GVM-16G control panel components are shown in figure 5-1.

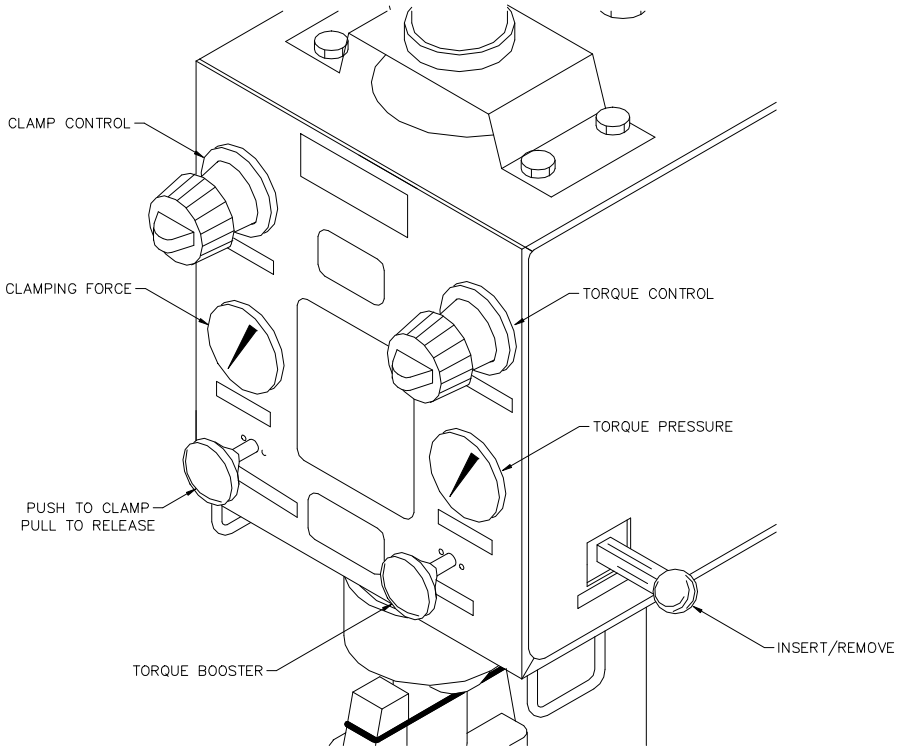


Figure 5 - 1 GVM-16G Control Panel

5.1.1 Cylinder Clamp Control

The knob located in the lower left-hand corner of the Control Panel (see figure 5-1), is used to control the Cylinder Clamp. Push the Cylinder Clamp Control Knob to clamp the cylinder, Pull the Cylinder Clamp Control Knob to release the cylinder.

5.1.2 Clamp Force Air Regulator and Gauge

The gauge and regulator located on the left-hand side of the face of the Control Panel are used to control the cylinder clamping force. The air pressure to clamp force ratio is approximately 1 to 26.78. For example, if the Clamp Force Gauge reads 100 PSI, the Cylinder Clamp will provide 2,678 pounds of clamping force.

5.1.2 Clamp Force Air Regulator and Gauge, continued

Turn the knob clockwise to increase the clamping force and counter-clockwise to decrease the clamping force.

When servicing thin walled cylinders such as, Propane or Ammonia cylinders, the clamping force should be reduced to prevent the Cylinder Clamp force from crushing or damaging the cylinder.

5.1.3 Torque Pressure Regulator And Gauge:

The gauge and regulator located on the right-hand side of the Control Panel are used to control the amount of torque that is applied to the Turnair Valve Tongs. Turn the knob clockwise to increase the torque and counter-clockwise to decrease the torque. Table 5-1 shows the amount of torque that is produced in relation to the Torque Pressure Regulator setting. Note that all torque values are approximate.

Table 5 - 1 Air Pressure VS Torque

Regulator Setting (PSI)	Torque (Foot/lbs.)
20	80
30	142
40	204
50	267
60	330
70	392
80	454
90	516
100	578

Table 5-2 shows the recommended torque values for insertion of several standard valve sizes, according to MIL-027210D(ASG), using teflon tape conforming to MIL-T-27730.

5.1.3 Torque Pressure Regulator And Gauge, continued

Table 5 - 2 Valve Size VS Torque

Valve Size	Torque (ft-lbs)
3/8" NPT Male	100
1/2" NPT Male	150
3/4" NPT Male	250
1" NPT Male	350

5.1.4 Insert/Remove Directional Control

The lever located on the right side of the Control Panel, controls the direction of the Valve Tong rotation. To remove a valve, push the Insert/Remove Directional Control Lever towards the back of the control box. To install a valve, pull the Insert/Remove Directional Control Lever towards the front of the control box.

When the Insert/Remove Directional Control Lever is allowed to return to the center position, Valve Tong rotation will stop.

5.1.5 Torque Booster Control

The knob located in the lower right-hand corner of the Control Panel is used to temporarily override the regulated torque setting. When the Torque Booster Control is depressed, full line pressure will be delivered to the air motor to provide additional power. This feature is intended for use during valve removal only. When dealing with valves that are particularly difficult to remove, momentarily pressing the torque booster control will usually break the valve loose.

5.1.5 Torque Booster Control, continued

!! CAUTION !!:

When the Torque Booster Control is depressed, full available line pressure is delivered to the air motor. If the air supply provides more than 120 PSI, use of the Torque Booster Control will damage the air motor.

In cases where the available air supply exceeds 120 PSI, a secondary regulator should be installed to limit pressure to the GVM-16G to 120 PSI.

!! CAUTION !!:

Do not use the Torque Booster when installing a valve. Excess torque could damage the valve, cylinder and/or the GVM-16G

5.2 Loading A Cylinder:

THE STANDARD GVM-16G IS NOT DESIGNED FOR USE IN AN ACETYLENE OR OTHER EXPLOSIVE GAS ENVIRONMENT. ANY SUCH USE CAN RESULT IN SEVERE EQUIPMENT DAMAGE, EXTREME BODILY INJURY OR DEATH!

A “spark-free” jaw tong shoe is available from Galiso to reduce the risk of sparking from contact between cylinder valves and the jaw tongs. Reference Galiso part number 14-32-0202 for ordering the “spark free” jaw tong shoe.

Prior to loading the cylinder into the Cylinder Clamp, rotate the Valve Tongs to the loading position. Use the Directional Control Lever to position the Valve Tongs so that the flat "face" of the tongs faces toward the front of the machine.

Carefully grasp one side of the Valve Tongs. While holding the Valve Tong stationary, use the Directional Control Lever to rotate the Cam Actuator until the black line on the Cam Actuator lines up with the black line on the Valve Tong Assembly. This will open the Valve Tongs to the widest possible position.

When loading the cylinder into the Valve Tongs, tilt the cylinder forward and roll it between the Cylinder Clamp Jaws. Align the valve between the Valve Tongs, and allow the cylinder to fall back between the Tongs.

5.3 Cylinder Clamp Adjustment

To adjust the Cylinder Clamp, proceed as follows:

A. Adjust the Cylinder Clamp Force Regulator for the cylinder(s) to be processed. Generally, 60 to 80 PSI is adequate for most types of cylinders. However, clamp force should be increased when valve tong torque is increased to prevent the cylinder from turning in the Clamp Jaws. Clamp force should be decreased for thin walled cylinders such as Freon; Propane or Ammonia containers.

B. Load a cylinder into the Clamp Jaws and position the cylinder so the flats of the valve line up with the Valve Tongs.

C. Turn the rear adjustment hand-wheel until the rubber Cylinder Clamp Grip contacts the wall of the cylinder.

D. Press the Cylinder Clamp Control Knob to clamp the cylinder.

NOTE:

When the Cylinder Clamp is engaged, the valve flats should align perfectly with the Valve Tong Jaws. If the valve cannot be exactly centered within the Valve Tongs, release the clamp and readjust the hand-wheel before proceeding.

If many cylinders of the same size are being serviced, it is not necessary to readjust the clamp for each cylinder. Once the clamp has been properly adjusted, load the cylinder into the clamp as straight as possible, actuate the clamp, and then check to make certain that the valve is properly aligned with the Tongs.

5.4 Valve Tong Operation

The patented Turnair Valve Tongs self-adjust to fit valves from 7/8 " to 1-7/8 " wide across the flat side. The Valve Tongs are actuated by the Power Multiplier Assembly, which is located just above the Valve Tongs. To operate the self-adjusting Valve Tongs, proceed as described below.

5.4.1 Closing the Tongs

A. Actuate the Cylinder Clamp to firmly grip the cylinder.

B. Carefully grasp one side of the Valve Tongs. While holding the Valve Tong stationary, actuate the Insert/Remove Lever. As the Cam Actuator begins to turn, the cam will meet the resistance of the stationary tongs and force will be applied to close the Valve Tongs.

C. As the Valve Tong Jaws close against the valve flats, the Valve Tong Assembly will lock and begin to turn as a single unit. Release hand hold from the Valve Tong when the assembly locks and begins to rotate as a unit.

D. Always hold the Tongs stationary until they have securely clamped onto the flats of the valve, and the Tong Assembly begins to turn as a unit. If the Tong is not held stationary, the Valve Tongs will rotate without closing to grip the valve, resulting in possible damage to both the Tongs and the valve.

The Valve Tong gripping force is much greater than the maximum torque that may be applied by the machine. This assures that the valve tongs will maintain a solid grip on the valve no matter how much torque is applied for insertion or removal.

5.4.2 Releasing the Tongs

To release the Valve Tongs proceed as follows:

A. In order to speed and simplify operation, the Valve Tongs should always be stopped in the position with the flat side of the Valve Tong facing toward the front of the machine.

B. Carefully grasp one side of the Valve Tongs. Hold the Valve Tong Assembly stationary and actuate the Insert/Remove Lever to rotate the tongs in the opposite direction until the black stripe on the Cam Actuator lines up with the black stripe on the Valve Tong Assembly. If the black lines are not aligned, it will be very difficult, if not impossible, to remove the cylinder from the Valve Tongs and Cylinder Clamp.

C. Release the Cylinder Clamp and remove the cylinder.

!! CAUTION !!:

Never insert any object, such as a crow bar or breaker bar, between the jaws of the Valve Tongs to apply additional torque to the tongs.

Using a bar or lever to apply additional torque to force a stubborn valve can damage the Planetary Drive Gearing Assembly.

NEVER hit the Jaw Tongs with a hammer! Doing so could cause a piece of the Jaw Tong or hammer to break, causing personal injury, and/or damage to the Planetary Drive Gear Assembly.

5.5 Removing A Valve

Verify that all pressure has been released from each cylinder to be serviced and that the cylinder has not contained a toxic, or flammable gasses. In cases where the

cylinder has contained a toxic, or flammable gas, check with your supervisor or safety engineer for proper disposal procedure.

Use a blow gun equipped with a rubber tip to inject a small amount of nitrogen (or any other clean inert gas) through the valve and into the cylinder. When the blow gun is removed, the operator should be able to hear, or feel the gas escaping through the valve. This indicates that the valve passage is open and that all pressure has been released from the cylinder.

DEVALVING A FULLY PRESSURIZED CYLINDER
COULD RESULT IN EXTREME BODILY INJURY, OR DEATH!

With the cylinders properly prepared for valve removal, proceed as follows:

A. Adjust the Cylinder Clamp Force Regulator for the cylinder(s) to be processed.

B. Adjust the Cylinder Clamp as described in Section 5.3, Cylinder Clamp Adjustment.

C. Adjust the Torque Pressure Regulator as described in Section 5.1.3.

D. Position the control box/jaw tong assembly to line up to the correct height adjustment for clamping to the cylinder valve flats.

E. Load a cylinder into the Cylinder Clamp and position the valve within the Valve Tongs as described in Section 5.4, Valve Tong Operation.

F. Push the Cylinder Clamp Control Knob to clamp the cylinder.

G. Carefully grasp one side of the Valve Tong Assembly and hold it stationary. Push the Insert/Remove Lever to the REMOVE position while holding the Tong stationary and allow the Valve Tong Assembly to self-adjust as described in Section 5.4, Valve Tong Operation.

H. When the Valve Tongs have self-adjusted, and securely gripped the valve flats, the Valve Tong Assembly will lock and begin to turn as a single unit. Release your grasp from the Valve Tong and allow the GVM-16G to turn the valve out.

5.5 Removing A Valve, continued

I. If a valve does not begin to unscrew, press the Torque Booster Control Knob. This overrides the regulated torque setting and provides additional torque power for removing particularly stubborn valves. Never use a bar or lever to apply

additional torque to the Valve Tongs. Torque applied in this fashion can damage the Planetary Drive Gear Assembly.

J. After the valve has been removed from the cylinder, carefully grasp one side of the Valve Tongs. Hold the Valve Tong stationary and push the Directional Control Lever to the INSERT position to rotate the Tongs in the opposite direction until the black stripe on the Cam Actuator lines up with the black stripe on the Valve Tong Assembly.

K. Remove the valve from the Tong Assembly and tag the valve with the serial number of the cylinder.

L. Pull the Cylinder Clamp Control Knob to release the Cylinder Clamp. Remove the cylinder from the clamp and proceed to the next cylinder.

5.6 Installing A Valve

Perform the following steps to install a valve in a cylinder:

A. Tape the valve threads with Teflon Tape conforming to MIL-T-27730.

B. Match the valve with the cylinder serial number that was recorded on the tag after the valve was removed.

C. Insert the valve into the cylinder neck and manually turn the valve until it is hand-tight. This will speed the installation procedure and assure that the threads are properly engaged.

D. Adjust the Cylinder Clamp Force Regulator as described in Section 5.1.2.

E. Adjust the Cylinder Clamp as described in Section 5.3, Cylinder Clamp Adjustment.

F. Adjust the Torque Pressure Regulator. See Tables 5-1 and 5-2, and the Torque Setting datasheet, Attachment 2.

G. Position the Drive Assembly/Control Box at the correct height for the cylinder. The height of the Valve Tong Jaws must align with the height of the valve flats.

5.6 Installing A Valve, continued

H. Load a cylinder (with partially installed valve) into the Cylinder Clamp and position the valve within the Tongs as described in Section 5.4, Valve Tong Operation.

I. Push the Cylinder Clamp Control Knob to clamp the cylinder.

J. Carefully grasp one side of the Valve Tong Assembly and hold it stationary. Push the Directional Control Lever to the INSERT position while holding the Tong Stationary and allow the Valve Tong Assembly to self-adjust as described in Section 5.4, Valve Tong Assembly.

K. When the Valve Tongs have self-adjusted and securely gripped the valve flats, the Valve Tong Assembly will lock, and begin to turn as a single unit. Release your grasp from the Valve Tong and allow the GVM-16G to install the valve.

L. When the maximum regulated torque is reached, the Tong Assembly will stop turning. Release the Directional Control Lever and allow it to return to the OFF position.

M. Carefully grasp one side of the Valve Tongs. Hold the Valve Tong stationary and push the Directional Control Lever to the REMOVE position to rotate the Tongs in the opposite direction until the black stripe on the Cam Actuator lines up with the black stripe on the Valve Tong Assembly.

N. After the black lines on the Cam Actuator and Valve Tong Assembly have been aligned, release your grasp on the Tong and allow the assembly to rotate until the flat face of the Tong Assembly faces toward the front of the machine.

O. Pull back on the Cylinder Clamp Control Knob to release the Cylinder Clamp. Remove the valved cylinder from the clamp and proceed to the next cylinder.

6.0 Maintenance

6.1 Air Motor Lubrication:

The Air Line Lubricator must be kept filled with 5 or 10 weight non-detergent oil. Fill and adjust the Air Line Lubricator as described below:

!! CAUTION !!:

Do not normally operate the High Speed Turnair Valving Machine without the side panels in place. Extra caution should be taken when adjusting the oil feed as the air pump will need to be operating.

A. Disconnect air supply to the GVM-16G and bleed off all trapped air pressure. Open and close the Clamp Control Valve and Directional Control Lever to make certain that all air pressure has escaped from the system.

B. Remove side cover to gain access to the Air Line Lubricator. Remove the fill plug from the Lubricator. Fill with 10 weight non-detergent oil.

C. Replace the fill plug and reconnect air pressure to the GVM-16G.

D. The oil feed should be adjusted to 1 drop per minute at full speed air flow, or one drop every ten seconds when the torque gauge reads 90 PSI.

E. Replace the side cover.

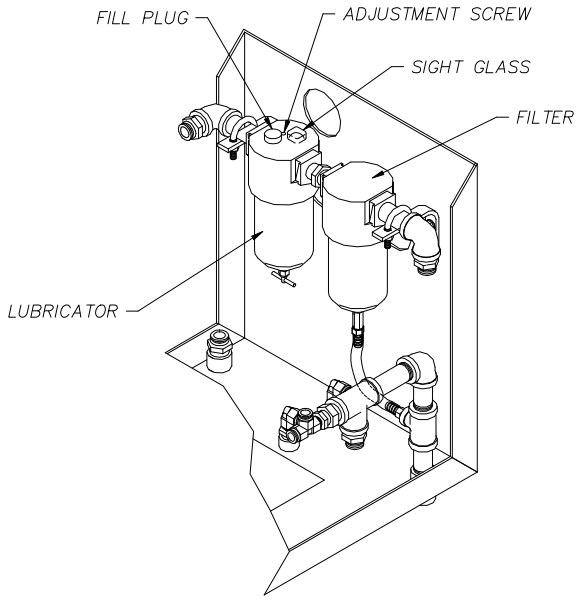


Figure 6-1 Air Motor Lubricator

6.2 Valve Tong Assembly Pivot Points And Cam Surfaces

The Valve Tong Pivot Points and Cam surfaces must be regularly lubricated with Molybdenum Disulfide dry spray lubricant.

6.3 Spare Parts

Table 6-1 lists the Galiso part numbers for GVM-16G components which may require replacement from time to time.

Part Number	Description	Quantity
14-13-0137	Hose Clamp Cylinder	1
14-13-0138	Hose Clamp Cylinder	1
14-32-0069	Hand Wheel (rear)	1
14-32-0118	Cable Assy (counter weight)	1
14-32-1232	Stub Shaft	1
14-33-0045	Cylinder Grip	1
14-42-0171	Jaw Tong Assy	2
14-42-1054	Propane Jaw Tong Assy	1
48-11-5000	Pulley Wheel	1
62-83-5804	Nylock Nuts	2
62-12-2709	Shoulder Bolts	2
36-11-0520	0-160 PSI Gauge	1
37-11-3048	Regulator	1
37-11-3049	Regulator Repair Kit	1
38-11-0017	Air Motor	1
38-11-6017	Cylinder Clamp, 6X9	1
40-91-6339	Retractor O-Ring	1
81-11-0002	Torque Boost Valve	1
81-11-0003	Clamp Valve	1

PRODUCT WARRANTY

1. **DURATION:** Galiso extends a one-year warranty from date of purchase, to the original purchaser, for all its manufactured products. For all spare parts purchases, Galiso extends the manufacturer's warranty or 90 days, whichever is longer. Soft goods parts, such as speed seals, washers, and O-rings, which are subject to wear in the normal course of operation, are not covered under this warranty. Collar Tooling products are warranted for six months.

2. **COVERAGE:** Galiso manufactured equipment is warranted against defective materials or workmanship. THIS WARRANTY IS VOID IF:

   A) THE EQUIPMENT HAS BEEN DAMAGED BY ACCIDENT OR UNREASONABLE USE, IMPROPER SERVICE/MAINTENANCE, IMPROPER INSTALLATION, ABNORMAL OPERATING CONDITIONS, NEGLECT, REPAIR BY ANY PERSON NOT AUTHORIZED BY GALISO, INC. OR OTHER CAUSES NOT RELATED TO MATERIAL DEFECTS OR WORKMANSHIP.

   B) THE SERIAL NUMBER HAS BEEN ALTERED OR DEFACED.

3. **PERFORMANCE:** Galiso reserves the right to make warranty determination only after inspecting the item at the Galiso manufacturing facility. If the warranty determination indicates that the defective item is covered under warranty, the item will be repaired or replaced with same parts/items or parts/items of equivalent quality, at the option of Galiso. In the event of replacements, the replacement unit will continue under the original equipment warranty or carry a 90-day warranty, whichever is longer. No charge will be made for warranty repairs, and/or replacements. All freight charges are the responsibility of the customer requesting warranty service.

   If the warranty determination indicates that the item is not covered by warranty, a repair/replacement cost estimate will be submitted to the purchaser for approval prior to initiating any repair work.

4. **CLAIMS:** In the case of equipment malfunction, notify Galiso (1-800-854-3789) and provide the Model Name, Model Number, Serial Number and a description of the problem. Return Authorization Number, shipping and/or service information will be provided on receipt of the required information.

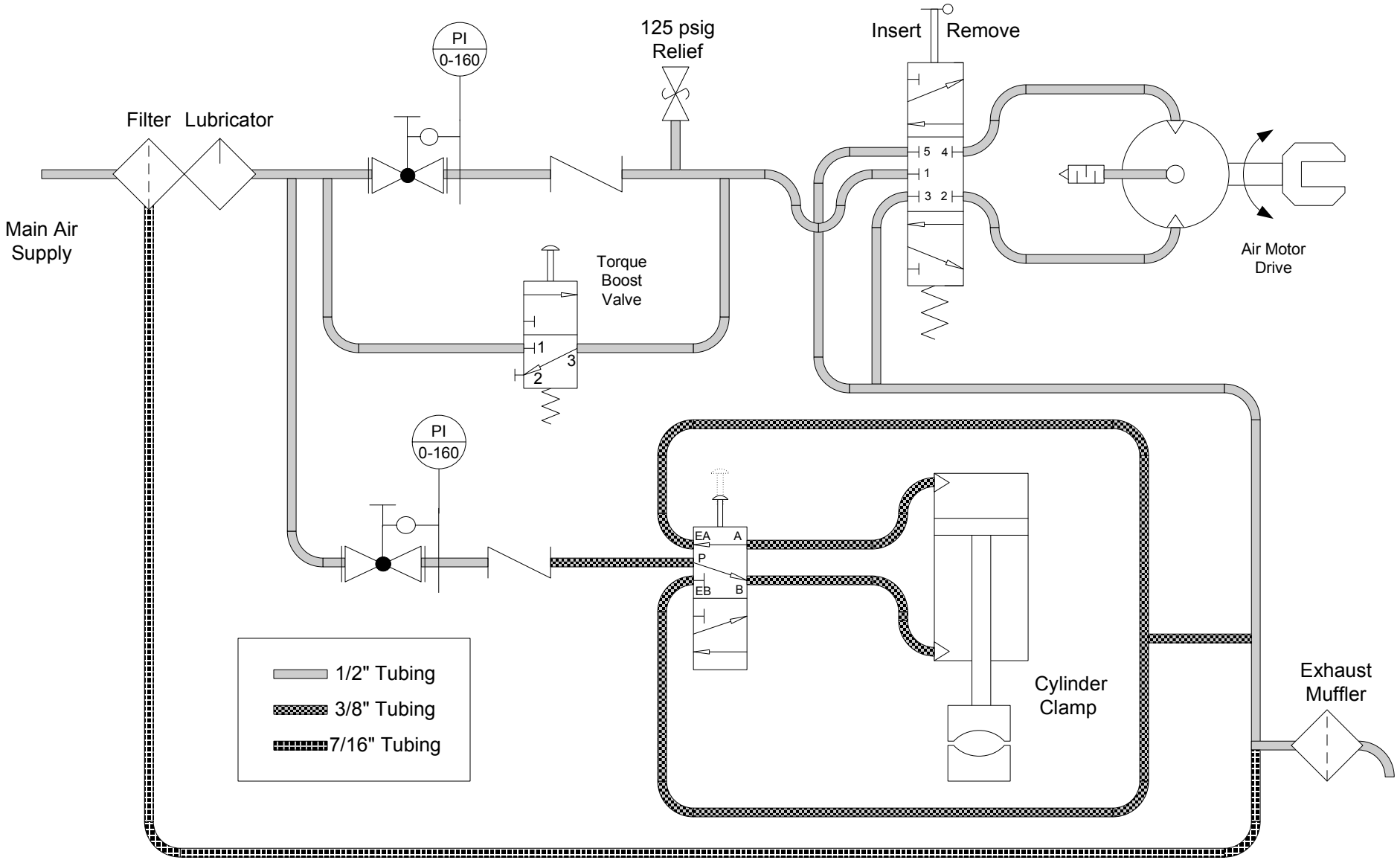
5. **SERVICE EQUIPMENT:** Galiso attempts to make available, whenever possible, a limited amount of service equipment at a minimal use charge, plus freight expense, for those customers wishing to avoid downtime during repair of their equipment. Such items are available on a first come, first served basis and are billable at the specific service charge applying with a one-month minimum.

6. **MODEL CHANGES:** Galiso reserves the right to make changes in materials and specifications, without notice. Galiso may offer, for a stipulated fee, the opportunity to upgrade your equipment to the latest configuration.

7. **DISCLAIMERS:** Galiso provides technical data and assistance to aid customers in the selection and use of our products. There are no implied warranties of merchantability nor suitability for a particular purpose associated with the transmittal of technical data and/or customer assistance.

   Galiso does not assume liability for any consequential, incidental, or special damages. Liability under this warranty is limited to repairing, or replacing Galiso equipment items returned to the factory or an authorized facility.

REV.	AUTHORITY	DATE	BY:
A	Redrawn from 14-90172B	5/5/99	DST



GALISO
GAS LIQUIDS SOLIDS
MONTROSE,CO
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(970) 249-0607 FAX.

INTERPRET THIS DRAWING IN ACCORDANCE WITH ANSI Y14.5

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES:
.X = ±
.XX = ±
.XXX = ±
ANGLES ±

SURFACE ROUGHNESS

APPROVAL	
SIGNATURE	DATE
DRAWN BY:	DST
PRODUCTION	
ENGINEERING	
QUAL. ASSURANCE	

TITLE:

GVM-16G

PIPING AND INSTRUMENT DIAGRAM

DRAWING NUMBER	REVISION	EXTENSION	SHEET
21-61-1002	A	VSD	1 OF 1

GVM-16G TURNAIR® SERIES

AUTOMATIC CYLINDER VALVING MACHINE

JAW TONG DRIVE ASSEMBLY MAINTENANCE INSTRUCTIONS

GALISO® INCORPORATED

GASES LIQUIDS SOLIDS

MANUAL NUMBER 21-11-1151

22 Ponderosa Ct., Montrose, CO 81401
(970) 249-0233 800-854-3789

Revision A issued November, 1998

These instructions describe disassembly and assembly of the GVM-16G Jaw tong Drive assembly. Perform the following steps referring to figures 1 and 2, and the parts list as required to maintenance the Jaw Tong assembly.

1.0 Disassembly Instructions

A. Using a ½" diameter, 8" long rod, drive out the two (2) ½"-13 X 4" bolts (item 3) that hold the valve tongs (item 4) to the "H" block assembly (item 6). Inspect the bolts and replace during re-assembly if badly deformed.

B. Remove the "H" block retaining screw (item 1) and the retaining washer (item 2) to remove the "H" block assembly. Note that the retaining screw may require heating due to application of Loctite during initial installation.

C. After removing the "H" block assembly, remove the drive tube keys. (item 13) and slide the cam driver assembly (item 7) off of the planetary drive tube (item 6).

D. Remove the spacer washers (item 9). Clean and retain for lubrication and reassembly.

E. Unscrew the three planetary gear assembly screws (item 8), and slide the planetary drive tube (item 12) and planetary gear assembly off of the drive shaft.

F. Remove the sun gear keys (item 20) from the shaft, followed by the thrust race (item 19), washers (item 18), and upper planetary drive plate (item 23).

G. Place the planetary gear assembly in a suitable pan and remove the sun and drive gear shafts (item 22). The sun gear (item 21) and planet gears (item 14) will be free for removal.

Note: when removing planet gears, take care not to lose or drop the needle bearings (item 15) housed in the gear.

H. Clean all parts removed with a suitable solvent and dry carefully. Inspect all parts for wear or damage. Obtain the necessary replacement parts for reassembly.

2.0 Assembly Instructions

A. Prepare all parts for reassembly. A molybdenum disulfide grease should be liberally applied and worked into thrust bearings and races (items 18 and 19) as well as coating the planet gears (item 14), spacer washers (item 9), ring gear and cam driver assembly (item 7), and needle bearings (item 15).

B. Complete planetary drive assembly:

- ❖ Insert the lower thrust race and washers (items 18 and 19) into the planet gear housing (item 17).
- ❖ Assemble planet gear, bearing and shim assemblies (items 10, 14, & 15) using grease to hold items together.
- ❖ Slide planet gear assembly (items 10, 14 & 15) into the housing (item 17) and align with gear shaft holes and insert planet gear shafts (item 22).

C. Raise upper planetary drive plate (item 23) up the shaft followed by the upper thrust race and washers (items 18 & 19). Insert the sun keys (item 20) into the shaft keyways. Slip the sun gear over the shaft, align with keys and push up to contact thrust race washer.

D. Slide the planetary gear housing assembly up the shaft and mesh with sun gear, followed by the drive tube with O-Ring. Align the upper planetary drive plate, planet gear assembly and planetary drive tube. Start threading in the three 3/8" – 24UNF X 2" flat head screws (item 8). Alternately tightening each of the screws until the planetary gear shafts are pressed into the planetary drive tube and the screws are tight.

E. Raise the spacer washers (item 9) followed by the cam driver assembly (item 7) over the planetary drive tube. Insert the drive tube keys and apply a thin film of grease over the entire drive tube.

F. Raise the "H" block through the cam driver assy., over the planetary drive tube. Secure the "H" block to the shaft using the retainer washer (item 2) and retainer screw (item 1) with loctite applied.

G. Apply a thin film of grease on the cam surface and coat the pivot surfaces of the valve tongs. Align the valve tongs (item 4) with the "H" block holes and tap the bolts (item 3) in and secure with hex nuts (item 11). Stretch the tong retainer (item 5) over the tongs into the retainer grooves.

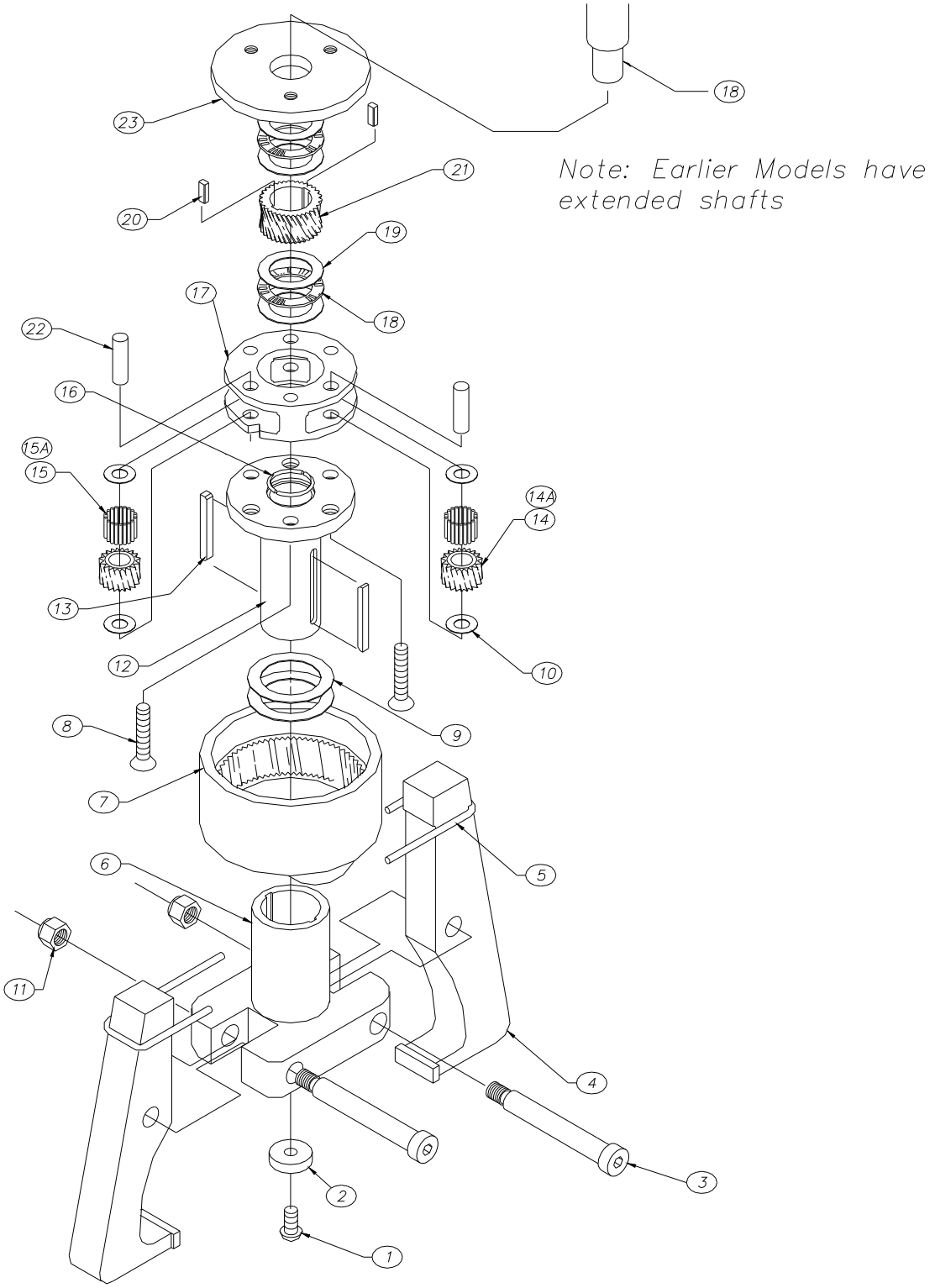

Figure 1: GVM-16G Jaw Tong Assembly

Table 1: GVM-16G Jaw Tong Drive assembly parts list

Item	QTY	P/N	Description
1	1	62-79-6505	3/8”-24NF x 1” Button Head Screw
2	1	14-41-0076	Retainer Washer
3	2	62-12-2709	Skt Hd Bolt, ½” – 13 x 4”
4	2	14-42-0171	Valve Tong Block Assembly
5	1	40-91-6339	O-ring Tong Retractor
6	1	14-31-0145	H-Block Assy
7	1	14-42-0093	Cam Driver Assy
8	3	62-79-7511	3/8”-24NF x 2” Flat Head Screw
9	2	50-00-0002	Thrust Race
10	6	48-11-0022	Planetary Gear Shims
11	2	62-83-5804	Hex Locknut
12	1	14-32-0056	Planetary Drive Tube
13	2	14-31-0109	Drive Tube Key
14	3	14-32-0008	Planet Gear, .633” ID
14A	3	14-32-0010	Planet Gear, .601” ID
15	54	50-11-0007	Needle Bearing, .093” Dia.
15A	63	50-11-0008	Needle Bearing, .077” Dia.
16	1	40-87-6123	Drive Shaft O-Ring
17	1	14-32-0046	Planetary Gear Housing Mod.
18	2	50-00-0004	Thrust Bearing, NTA 2031
19	4	50-00-0003	Thrust Race, TRA 2031
20	2	14-31-0108	Sun Gear Key
21	1	14-31-0052	Sun Gear
22	3	14-31-0116	Planet Gear Shaft
23	1	14-32-0044	Upper Planetary Gear Drive Plate
24	1	14-32-0009	Long Drive Shaft
OR,24	1	14-32-1232	Stub Drive Shaft

Contact your Galiso Customer Service representative at 1-800-854-3789 for additional information or assistance if necessary.