CE

TAT-SRV

TURN AROUND TESTER FOR SAFETY RELIEF VALVES WITH OPTIONAL HYDROSTATIC CIRCUIT

OPERATING MANUAL

ORIGINAL INSTRUCTIONS

CALDER
VALVE TESTING & REPAIR SYSTEMS BY CLIMAX

P/N 98061
February 2021
Revision 2

CLIMAX | BORTECH CALDER H&S TOOL

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- Your name
- Shipping address
- Telephone number
- Machine model
- Serial number (if applicable)
- Date of purchase

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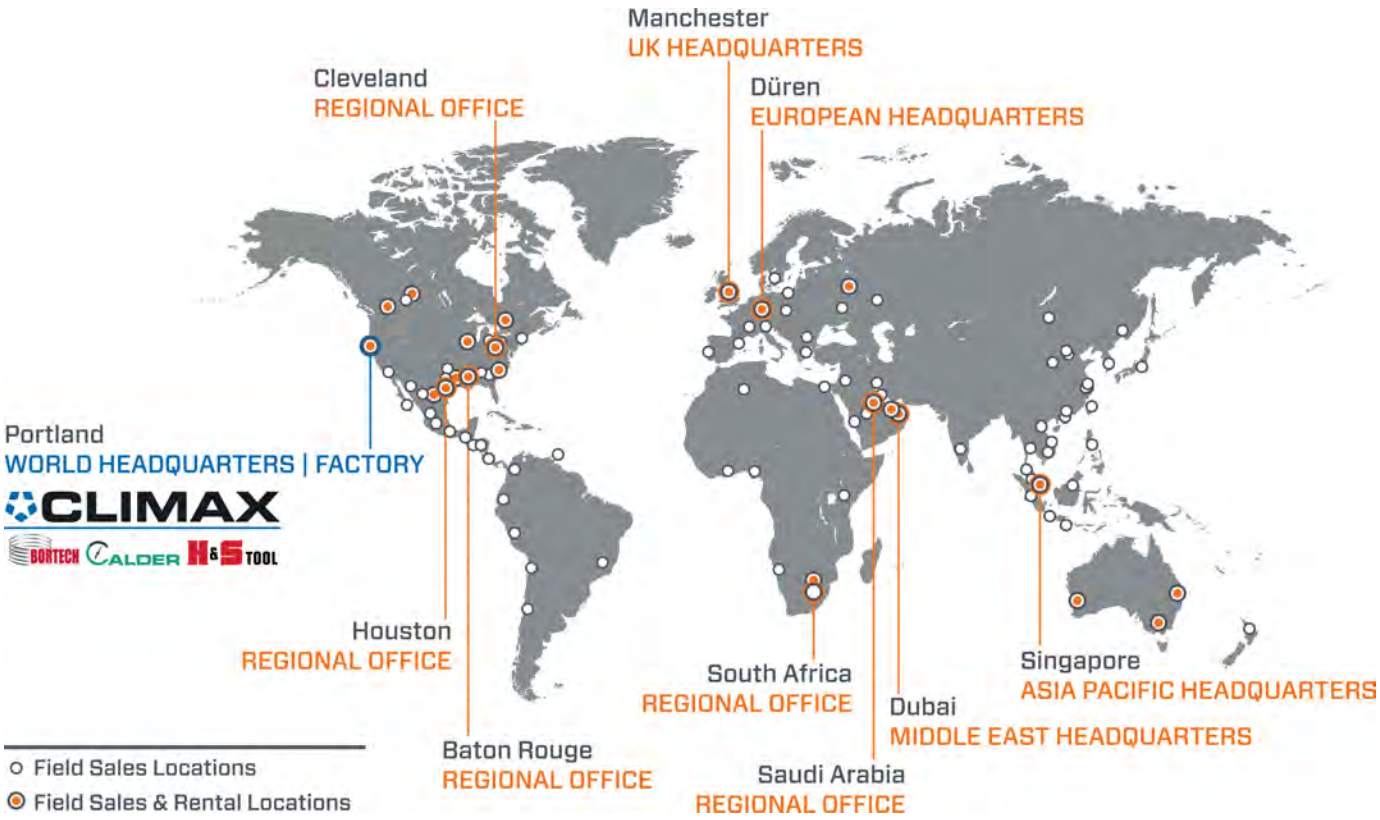

CE DOCUMENTATION

Declaration of Conformity

2006/42/EC Machinery Directive

2014/68/EU Pressure Equipment Directive

Choose an item.

Name of Manufacturer:
Climax Portable Machining and Welding Systems

Full postal address including country of origin:
2712 E. Second St., Newberg, OR 97132, USA

Object(s) of the Declaration:
Valve Tester Pressure Source

Name, type or model, batch or serial number:
TAT w/gas; TAT w/gas & H2O S/N Range: 2001049 and up
Max Working Pressure 6000 psi (413.7 bar); Temperature Range 0°F to 130°F(-18°C to 54°C)

PED Components
Accumulator; Volume 2.5 Gallon (9.46L): assessed under module G (purchased with CE marking)
Pressure relief valves: assessed under module B+D (purchased with CE marking)
Piping: Sound Engineering Practice (designed for pressures equivalent or below working pressure)

Harmonised Standards used, including number:
EN 349:1993+A1:2008 - Safety of Machinery; Gaps
Choose an item.
EN ISO 3744:2010 - Acoustic Power
EN ISO 4413:2010 - Hydraulic Fluid Power
EN ISO 4414:2010 - Pneumatic Fluid Power
EN ISO 11201:2010 - Acoustics; Noise Emitted
EN ISO 12100:2010 - Safety for Machinery; Principles
EN ISO 13732-1:2008 - Temperature of Touchable Surfaces
EN ISO 13849-1:2015 - Safety of Machinery; Controls
ASME B31.3 (other standard)

Assessment module
EU type "B" (production type) certification # and D certification #

By Notified Body
HPi Verification Services Ltd.(Ireland)
Clonross, Dunshaughlin, Co. Meath, A85 XN59, Ireland
Notified Body's number: 2810

Full postal address of the authorized person in the Community:
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Approved as conforming to Standard ISO 9001:2015 by:
Eagle Registrations Inc.
40 N. Main Street, Suite 1880
Dayton, OH 45423

CE DOCUMENTATION

Declaration of Conformity

Declaration

I declare that as the Manufacturer, the above information in relation to the supply/manufacture of this product, is in conformity with the stated standards and other related documents following the provisions of the above Directives and their amendments.

This Declaration of Conformity is issued under the solo responsibility of Climax Portable Machining and Welding Systems.

Signature of Manufacturer: 

Position Held: VP of Engineering

Name: Scott Thiel

Date and Place: 7/22/2021 **;USA**

CE

LIMITED WARRANTY

CLIMAX Portable Machine Tools, Inc. (hereafter referred to as “CLIMAX”) warrants that all new machines are free from defects in materials and workmanship. This warranty is available to the original purchaser for a period of two years after delivery. If the original purchaser finds any defect in materials or workmanship within the warranty period, the original purchaser should contact its factory representative and return the entire machine, shipping prepaid, to the factory. CLIMAX will, at its option, either repair or replace the defective machine at no charge and will return the machine with shipping prepaid.

CLIMAX warrants that all parts are free from defects in materials and workmanship, and that all labor has been performed properly. This warranty is available to the customer purchasing parts or labor for a period of 90 days after delivery of the part or repaired machine or 180 days on used machines and components. If the customer purchasing parts or labor finds any defect in materials or workmanship within the warranty period, the purchaser should contact its factory representative and return the part or repaired machine, shipping pre-paid, to the factory. CLIMAX will, at its option, either repair or replace the defective part and/ or correct any defect in the labor performed, both at no charge, and return the part or repaired machine shipping prepaid.

These warranties do not apply to the following:

- Damage after the date of shipment not caused by defects in materials or workmanship
- Damage caused by improper or inadequate machine maintenance
- Damage caused by unauthorized machine modification or repair
- Damage caused by machine abuse
- Damage caused by using the machine beyond its rated capacity

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Be sure to review the terms of sale which appear on the reverse side of your invoice. These terms control and limit your rights with respect to the goods purchased from CLIMAX.

About this manual

CLIMAX provides the contents of this manual in good faith as a guideline to the operator. CLIMAX cannot guarantee that the information contained in this manual is correct for applications other than the application described in this manual. Product specifications are subject to change without notice.

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1 INTRODUCTION

IN THIS CHAPTER:

1.1 How to use this manual

This manual describes information necessary for the setup, operation, maintenance, storage, shipping, and decommissioning of the TAT-SRV.

The first page of each chapter includes a summary of the chapter contents to help you locate specific information. The appendices contain supplemental product information to aid in setup, operation, and maintenance tasks.

Read this entire manual to familiarize yourself with the TAT-SRV before attempting to set it up or operate it.

1.2 Safety alerts

Pay careful attention to the safety alerts printed throughout this manual. Safety alerts will call your attention to specific hazardous situations that may be encountered when operating this machine.

Examples of safety alerts used in this manual are defined here[1]:

⚠ DANGER

indicates a hazardous situation which, if not avoided, ***WILL*** result in death or severe injury.

⚠ WARNING

indicates a hazardous situation which, if not avoided, ***COULD*** result in death or severe injury.

1. For more information on safety alerts, refer to *ANSI/NEMA Z535.6-2011, Product safety Information in Product Manuals, Instructions, and Other Collateral Materials*.

⚠ CAUTION

indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

indicates a hazardous situation which, if not avoided, could result in property damage, equipment failure, or undesired work results.

1.3 GENERAL SAFETY PRECAUTIONS

CLIMAX leads the way in promoting the safe use of portable machine tools and valve testers. Safety is a joint effort. You, the end user, must do your part by being aware of your work environment and closely following the operating procedures and safety precautions contained in this manual, as well as your employer's safety guidelines.

Observe the following safety precautions when operating or working around the machine.

Training – Before operating this or any machine tool, you should receive instruction from a qualified trainer. Contact CLIMAX for machine-specific training information.

Risk assessment – Working with and around this machine poses risks to your safety. You, the end user, are responsible for conducting a risk assessment of each job site before setting up and operating this machine.

Intended use – Use this machine in accordance with the instructions and precautions in this manual. Do not use this machine for any purpose other than its intended use as described in this manual.

Personal protective equipment – Always wear appropriate personal protective gear when operating this or any other machine tool.

Work area – Keep the work area around the machine clear of clutter. Restrain cords and hoses connected to the machine. Keep other cords and hoses away from the work area.

Lifting – Many CLIMAX machine components are very heavy. Whenever possible, lift the machine or its components using proper hoisting equipment and rigging. Always use designated lifting points on the machine.

Lock-out/tag-out – Lock-out and tag-out the machine before performing maintenance.

Moving parts – CLIMAX machines have numerous exposed moving parts and interfaces that can cause severe impact, pinching, cutting, and other injuries. Except for stationary operating controls, avoid contact with moving parts by hands or tools during machine operation. Remove gloves and

secure hair, clothing, jewelry, and pocket items to prevent them from becoming entangled in moving parts.

1.4 MACHINE-SPECIFIC SAFETY PRECAUTIONS

Eye hazard – Always wear eye protection when operating the machine.

Sound level – This machine produces potentially harmful sound levels. Hearing protection is required when operating this machine or working around it.

Hazardous environments – Do not operate the machine in environments where potentially explosive materials, toxic chemicals, or radiation may be present.

Pressurization – Do not over-pressurize the valve test system beyond the limits described in this manual and on machine labels.

Test gauges – Do not use any gauge above its rating. Do not remove test gauges while the system is pressurized.

Utility service requirements – Do not exceed the pressure ratings stated in this manual and on the machine labels.

⚠ WARNING

This machine is equipped with an interlocking valve control knob to prevent accidental release of clamp pressure while the valve under test is pressurized.

Do not operate this machine if these interlocking knobs are missing, damaged, or altered. Doing so could result in property damage or personnel injury.

1.5 RISK ASSESSMENT AND HAZARD MITIGATION

To achieve the intended results and to promote safety, the operator must understand and follow the design intent, set-up, and operation practices that are unique to valve testers.

The operator must perform an overall review and on-site risk assessment of the intended application. Due to the unique nature of high-pressure water testing, identifying one or more hazards that must be addressed is typical.

When performing the on-site risk assessment, it is important to consider the valve tester and the workpiece as a whole.

⚠ WARNING

High-pressure valve testing may result in the sudden, unexpected release of stored energy with the potential to cause property damage or personnel injury. Potential hazards may include the possibility of high-velocity fluid escaping and high-energy projectile impact. The end-user must assess the application and install protective barrier devices, as appropriate.

1.6 RISK ASSESSMENT CHECKLIST

The following checklist is not intended to be an all inclusive list of things to watch out for when setting up and operating this valve testing machine. However, these checklists are typical of the types of risks the assembler and operator should consider. Use these checklists as part of your risk assessment:

TABLE 1-1. RISK ASSESSMENT CHECKLIST BEFORE SET-UP

	Before set-up
☐	I took note of all the warning labels on the machine.
☐	I removed or mitigated all identified risks (such as tripping, cutting, crushing, entanglement, shearing, or falling objects).
☐	I considered the need for personnel safety guarding and installed any necessary guards.
☐	I considered the potential hazards that are inherent in high-pressure valve testing, including the possibility of high velocity fluid escape or workpiece fragmentation, and have installed appropriate protective barriers.
☐	I read the machine assembly instructions (Section 3) and took inventory of all the items required but not supplied (Section 2.5).
☐	I considered how this machine operates and identified the best placement for the controls, cabling, and the operator.
☐	I evaluated and mitigated any other potential risks specific to my work area.

TABLE 1-2. RISK ASSESSMENT CHECKLIST AFTER SET-UP

	After set-up
☐	I checked that the machine is safely installed (according to Section 3).
☐	I identified all possible pinch points, such as those caused by rotating parts, and informed the affected personnel.
☐	I followed the required maintenance checklist (Section 5).
☐	I checked that all affected personnel have the recommended personal protective equipment, as well as any site-required or regulatory equipment.
☐	I checked that all affected personnel understand and are clear of the danger zone.
☐	I evaluated and mitigated any other potential risks specific to my work area.

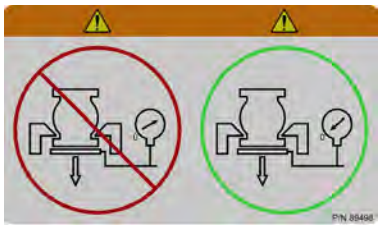
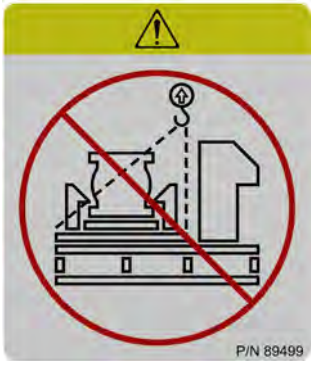
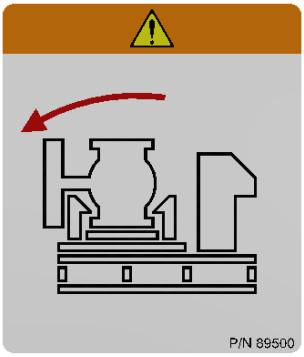
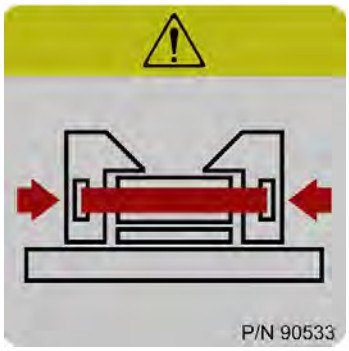
1.7 LABELS

The following warning and identification labels should be on your machine. If any are defaced or missing, contact CLIMAX immediately for replacements.

TABLE 1-3. TAT-SRV LABELS

	P/N 29154 ID plate		P/N 59033 Label: center of balance
	P/N 79328 Warning label: read the operating manual		P/N 80905 Warning label: hand crush hazard
	P/N 81008 Warning label: wear ear and eye protection		P/N 82144 Warning label: danger, use caution
	P/N 90160 Warning label: high-pressure water release hazard		P/N 89497 Warning label: do not exceed the maximum pressure rating of the valve

TABLE 1-3. TAT-SRV LABELS

	P/N 89498 Warning label: do not release the clamp the valve is pres-surized		P/N 89499 Warning label: do not lift with valve clamped
	P/N 89500 Warning label: tip-over hazard		P/N 89548 Warning label: do not plug
	P/N 90533 Label: clamp arm shipping strap	CALDER TURN-AROUND-TESTER™ Powered by CLIMAX	P/N 90585 Label: Calder TAT
CALDER | TURN-AROUND-TESTER™ Powered by CLIMAX		P/N 90595 Label: Calder Turn-Around-Tester	

For identifying label locations on the machine, refer to the exploded views in Appendix A.

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2 OVERVIEW

IN THIS CHAPTER:

The standard TAT-SRV (model P/N 98222) is a valve-testing system that hydraulically clamps and seals flanged safety relief valves for high-pressure air or nitrogen testing and for gas (air or nitrogen) over water testing.

The TAT-SRV Plus (model P/N 96229) has the same capabilities as the standard version, as well as a hydrostatic circuit and an on-board water tank.

DANGER

When using gas or air, this machine is intended for and capable of testing safety relief valves only. Using the machine to test other valves (control valves, gate valves, etc.) with air or gas could cause severe damage to the machine and injure personnel.

2.1 Features and Components

The TAT-SRV is a valve-testing system that hydraulically clamps and seals flanged valves for water and high-pressure air or nitrogen testing.

Principal components of the TAT-SRV include:

Test console – this controls the test pressure of the valve being tested.

Clamp fixture – this holds the valve being tested and maintains a seal between the test equipment and the valve being tested.

Safety interlock – this prevents accidental release of valve clamp hydraulic pressure which the valve under test is pressurized.

The following optional components are sold separately:

DOT bottle assembly – a high-pressure air reservoir.

Compressor – an air pressure source for the high-pressure test.

Seat leakage fixtures – these capture and measure leakage with a bubble jar (API 527 compliant).

Seal plate adapters – these are used to seal sizes not included on the base seal plate.

2.2 CONTROLS

The controls are all located on the control console and the clamp fixture console.

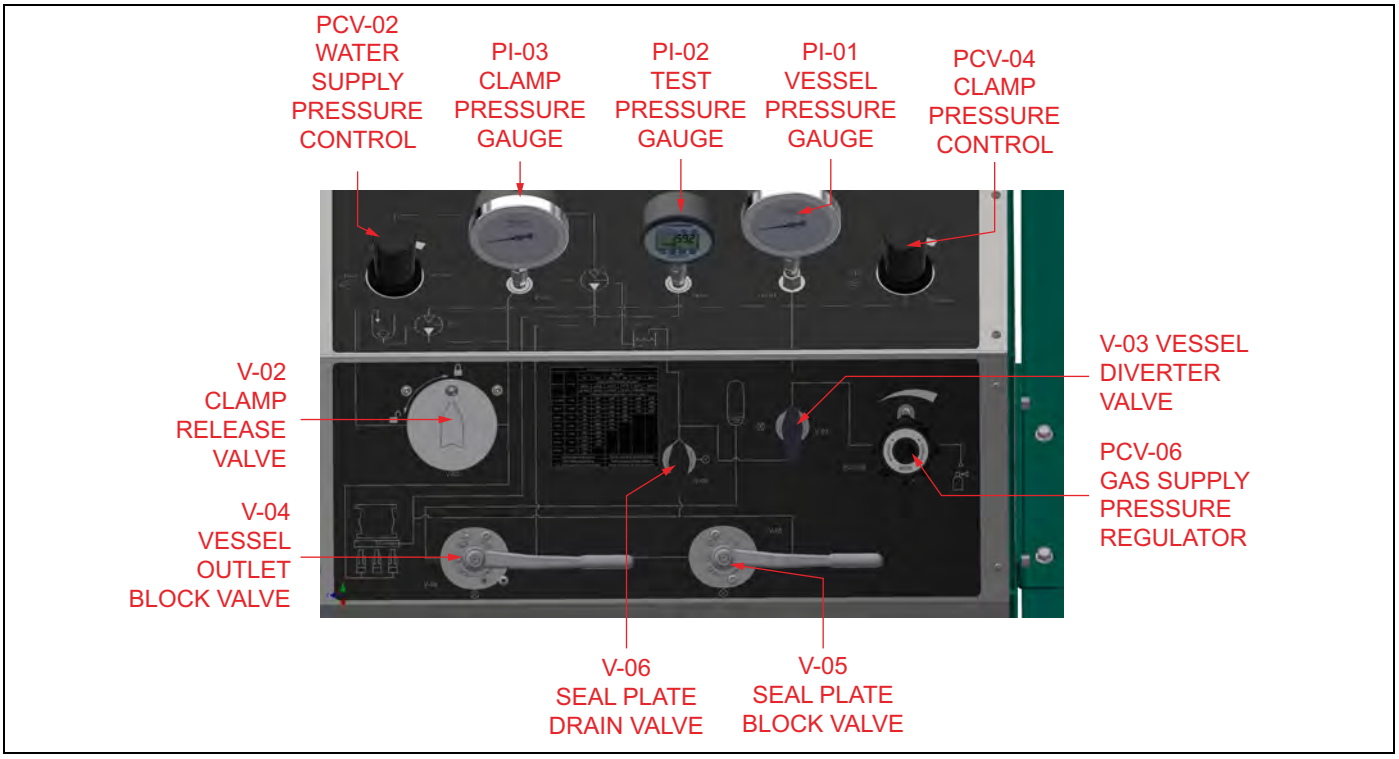

FIGURE 2-1. UPPER CONSOLE CONTROLS

TABLE 2-1. UPPER CONSOLE CONTROL IDENTIFICATION

Console label	Function
PCV-02	Water supply pressure control (for TAT-SRV Plus only)
PI-03	Clamp pressure gauge
PI-02	Test pressure gauge
PI-01	Vessel pressure gauge
PCV-04	Clamp pressure control
V-03	Vessel diverter valve
PCV-06	Gas supply pressure regulator
V-05	Seal plate block valve
V-06	Seal plate drain valve
V-04	Vessel outlet block valve
V-02	Clamp release valve

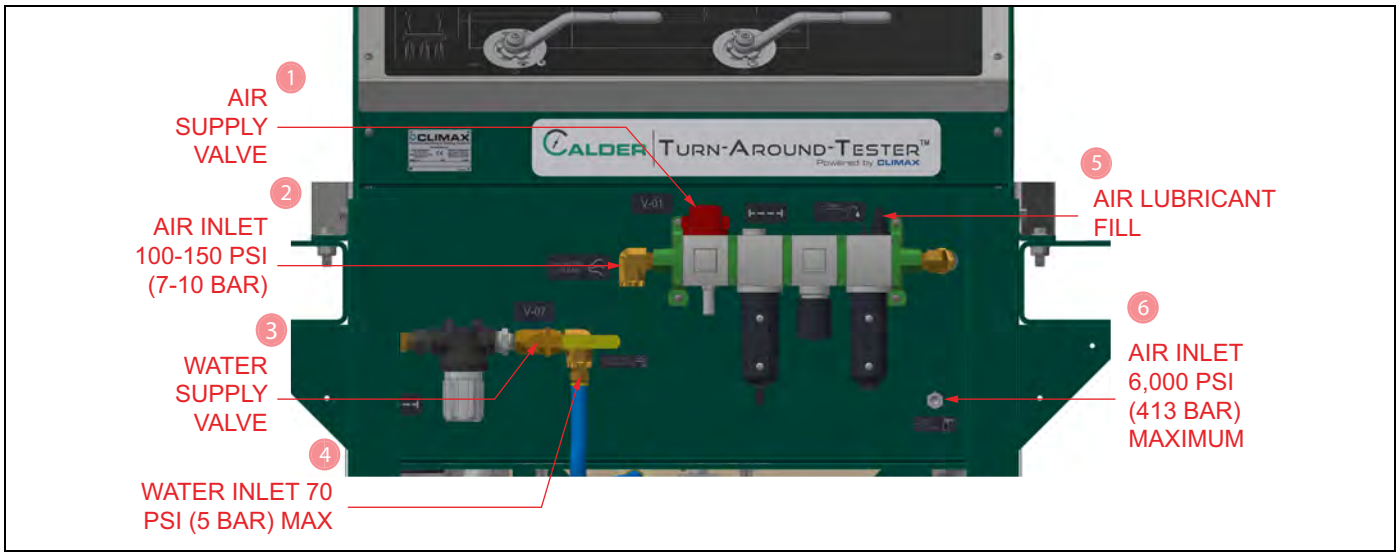

FIGURE 2-2. LOWER FRONT CONSOLE CONTROLS

TABLE 2-2. LOWER CONSOLE CONTROLS IDENTIFICATION

Number	Console label	Component
1	**V-01**	Air supply valve
2		Air inlet 100–150 psi (7–10 bar)
3	**V-07**	Water supply valve
4		For the standard TAT-SRV (model P/N 98222): Water inlet connection 70 psi (5 bar) maximum
5		Air lubricant fill
6		Air inlet 6,000 psi (413 bar) maximum

2.3 DIMENSIONS

Figure 2-3 on page 12 shows the machine dimensions.

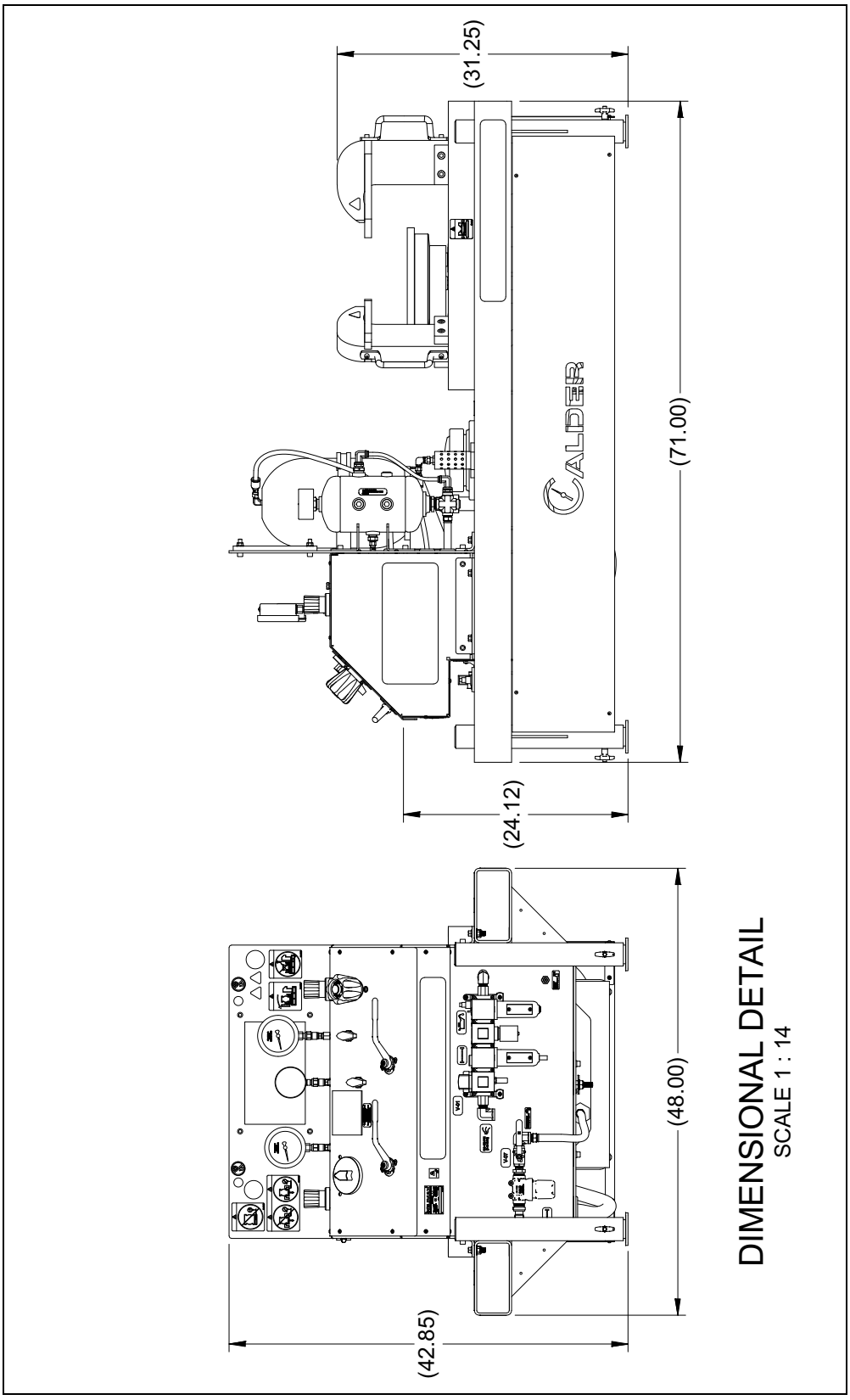

FIGURE 2-3. TAT-SRV DIMENSIONS

2.4 SPECIFICATIONS

TABLE 2-3. SPECIFICATIONS

	Safety relief valves (SRVs)	All other valves
Test media:	Air or nitrogen (see notice below)	Water
Ambient operating temperature:	0–130° F (-17– 54° C)	0–130° F (-17– 54° C)
Maximum test pressure:	6,000 psi (413 bar)	6,000 psi (413 bar)
Maximum hydraulic test pressure:	5,700 psi (393 bar)	5,700 psi (393 bar)
Shop air required:	100–150 psi at 40 scfm (6.9–10.3 bar at 1.1 m^3/min)	100–150 psi at 40 scfm (6.9–10.3 bar at 1.1 m^3/min)
Hydraulic ram force:	25 tons (23 tonnes)	25 tons (23 tonnes)
Approximate machine weight:	1,500 lbs (680 kg)	1,500 lbs (680 kg)
Approximate shipped weight:	2,000 lbs (907 kg)	2,000 lbs (907 kg)

⚠ WARNING

Do not use the machine in any application that exceeds these operating specifications. Failure to follow these guidelines could result in personnel injury and property damage, and will void the warranty.

NOTICE

This machine should only be used with ambient gas or liquid. No corrosive liquids or gas should be used in the system.

2.5 ITEMS REQUIRED BUT NOT SUPPLIED

The following items are required but not supplied in your CLIMAX product kit:

- Shop air (100–150 psi [6.9–10.3 bar])
- Hydraulic fluid AW-32 or AW-46
- Air tool oil (general purpose, such as AW-32)
- Lock-out/tag-out device
- High-pressure gas supply
- A machinist’s square
- Water source (70 psi maximum)

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3 SETUP

IN THIS CHAPTER:

This section describes the setup and assembly procedures for the TAT-SRV.

3.1 RECEIPT AND INSPECTION

Your CLIMAX product was inspected and tested prior to shipment, and packaged for normal shipment conditions. CLIMAX does not guarantee the condition of your machine upon delivery.

When you receive your CLIMAX product, perform the following receipt checks:

1. Inspect the shipping containers for damage.
2. Check the contents of the shipping containers against the included invoice to make sure that all components have been shipped.
3. Inspect all components for damage.

Contact CLIMAX immediately to report damaged or missing components.

NOTICE

Keep the shipping container and all packing materials for future storage and shipping of the machine.

3.2 LIFTING AND RIGGING

Lift the TAT-SRV by using the forklift pockets, as seen in Figure 3-1.

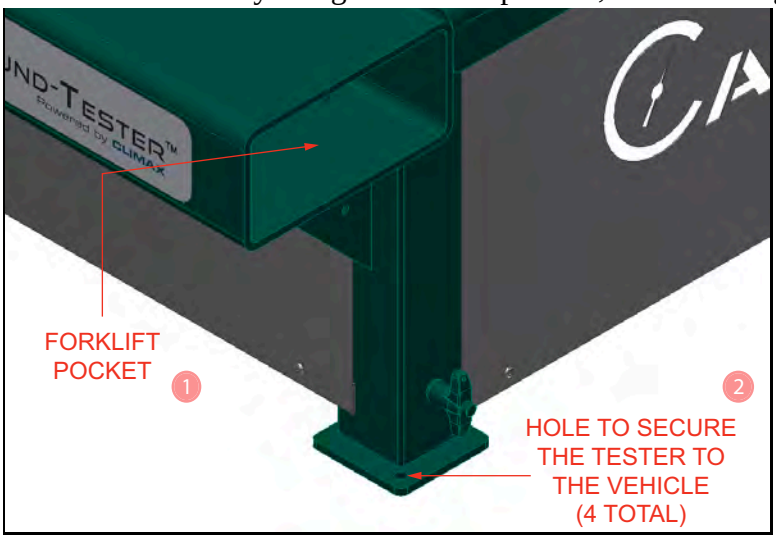


FIGURE 3-1. LIFTING AND SECURING POINTS

TABLE 3-1. LIFTING AND SECURING POINT IDENTIFICATION

Number	Component
1	Forklift pocket. Dimensions: inside width is 32.5" (823 mm), outside width is 47.5" (1,207 mm)
2	Hole to secure the tester in the vehicle (four total)

If using straps, place the straps through both forklift pockets.

3.3 SECURING THE TEST STAND

The TAT-SRV has been designed with portability in mind. The service vehicle to transport the TAT-SRV must have the appropriate weight rating for the test stand and other testing tools included.

3.3.1 Bolting the test stand to a service vehicle

When the test stand must be permanently installed on a vehicle, use the holes on each end of the base frame, as identified in Figure 3-1, to bolt it down to the vehicle.

3.3.2 Strapping the test stand to a service vehicle

When the stand is moved to a test site, attaching straps around the forklift pockets is required for safety during transport.

3.4 FILLING THE RESERVOIRS AND LUBRICATOR

Do the following before operating:

1. Fill the hydraulic reservoir with hydraulic oil (AW-32 or AW-46) to half of the sight gauge.
2. Fill the lubricators with air tool oil (generic purpose, such as AW-32) and adjust the knob to set it to one drop per 25 strokes of the pump.

NOTICE

Operating the pump with insufficient lubrication will result in pump failure.

3.5 CONNECTING AIR FROM THE SOURCE

Low-pressure air (100–150 psi [6.9–10.3 bar]) is the primary source of power in the clamping system. The console has an air filter with a 1/2" (13 mm) NPT air inlet.

TIP:

Use the backing wrench when tightening the fitting.

Connect the shop air to the shop air inlet at 100–150 psi (6.9–10.3 bar).

NOTICE

In the event of valve malfunction, the operator may need to shut off the shop air at the source instead of the console to avoid potential equipment or valve damage.

3.5.1 High-pressure sources for testing

The right side of the console has one 1/4" (6.4 mm) NPT (6,000 psi [414 bar] maximum) inlet connection port for testing. Connect the customer-supplied high-pressure air or gas at this location, or use a compressor or DOT bottle assembly (sold separately) at the high-pressure sources.

⚠ WARNING

Exceeding the rated pressure for the inlet could result in machine damage or personnel injury.

3.6 CLAMPING PROCEDURE

Do the following (refer to Figure 2-3 on page 11 as needed):

1. Check the integrity of the o-rings on the seal plates. Replace any damaged o-rings.

NOTICE

Any imperfections to the o-ring surface may cause a loss of pressure during testing.

2. Review Table 3-2 on page 19 for the correct clamping pressure.
3. Place the test valve on the table and align the valve with the correct o-ring diameter.

⚠ WARNING

The relief port of the safety relief valve (that is, the device under test) should face away from the operator and any other personnel during the test. The splash shield is not rated for high-pressure impact.

4. For a flanged valve, slide the clamp arms in until they securely engage with the flange.
5. Check that the clamp pressure control regulator is turned counter-clockwise until it stops.
6. On the clamp fixture console, lock the clamp release valve.
7. Open the air supply valve.
8. Turn the clamp pressure regulator clockwise while monitoring the clamp pressure gauge until the correct pressure is achieved, as listed in Table 3-2 on page 19.

⚠ WARNING

The safety interlock is only a secondary measure to the correct operating procedure. Some residual pressure (up to 20 psi [1.38 bar]) may remain in the valve under test when the safety interlock cylinders disengage, which may cause a pressure release and personnel injury if the clamp drain valve is opened. Always remove test pressure, drain the test circuit, and check that the TEST PRESSURE GAUGE and VESSEL PRESSURE GAUGE read 0 psi/bar before opening the clamp drain valve.

NOTICE

Precision in this operation is important to prevent overshooting the designated pressure, which could damage the valve under test.

⚠ WARNING

Check Table 3-2 for recommended clamping pressures. Excess clamp pressures may damage the workpiece and machine and may result in serious personnel injury.

If the valve flange does not seal against the seal plate, refer to Section 5.2 on page 31 for troubleshooting before increasing the clamp pressure.

REQUIRED CLAMPING PRESSURE							
Valve Size	O-Ring	ANSI Class					
		150	300	600	900	1500	2500
		MAXIMUM TEST PRESSURE, PSI (BAR)*					
		450 PSI	1125 PSI	2250 PSI	3375 PSI	5625 PSI	6000 PSI
		(31 BAR)	(78 BAR)	(155 BAR)	(233 BAR)	(388 BAR)	(413 BAR)
		HYDRAULIC PRESSURE REQUIRED TO SEAL PSI (BAR)*					
1-1/2 INCH	2-230	300	600	1,100	1,600	2,600	2,700
		(21)	(41)	(76)	(110)	(179)	(186)
2 INCH	2-230	400	1,000	1,900	2,800	4,600	4,900
		(28)	(69)	(131)	(193)	(317)	(338)
3 INCH	2-239	700	1,700	3,300	4,900		
		(48)	(117)	(228)	(338)		
4 INCH	2-350	1,100	2,800	5,500			
		(76)	(193)	(379)			
5 INCH	2-358	1,600	3,900				
		(110)	(269)				
6 INCH	2-364	2,200	5,500				
		(152)	(379)				
8 INCH	2-372	3,600					
		(248)					
See the operating manual				Voir le manuel de fonctionnement			
Siehe Betriebsanleitung				Patrz Instrukcja obsługi maszyny			
см. руководство по эксплуатации				Véase el manual de funcionamiento			

TABLE 3-2. HYDRAULIC LOAD CHART FOR FLANGED VALVES

If using ring type joint (RTJ) plates, refer to Figure A-31 on page 63 and Table A-3 on page 63.

WARNING

To minimize the risk of damage to the machine, workpiece, and personnel injury, use technical judgment and discretion when increasing the clamping pressure above the recommendations listed in Table 3-2.

The test pressures listed by valve class represent machine capability and may not apply to your valve to be tested. Actual valve test pressures may be lower than the pressures listed in Table 3-2 due to the valve material, intended operating temperature, and potential other factors. Refer to the valve manufacturer's specifications for the correct testing pressure. Failure to do this could result in property damage or personnel injury.

Determine the correct hydraulic load by following these steps with Table 3-2:

1. Locate the size of the valve to be tested in the valve nominal diameter column (example: 4" [102 mm]).
2. Choose the appropriate required test pressure in the header (example: 1,125 psi [78 bar]).
3. Identify the cell in the valve diameter row and clamp pressure column to find the hydraulic gauge pressure required to seal the valve being tested (example: 2,800 psi [193 bar]).

4 OPERATION

IN THIS CHAPTER:

4.1 PRE-OPERATION CHECKS

Refer to Figure 2-1 on page 10 and Figure 2-2 on page 11 as necessary.

Do the following checks before operating the machine:

1. Complete the risk assessment checklist in Table 1-2 on page 5.
2. Check that the work area is clear of non-essential personnel and equipment.
3. Check that the test pressure gauges) show 0 psi/bar.
4. Check that the following valves are in the specified positions:
   - Seal plate drain valve and clamp release valve are in the open position.
   - Clamp pressure control is turned counter-clockwise until it stops.
   - Vessel diverter valve is in the drain position.
   - Gas supply pressure regulator and water supply pressure control valves are turned counter-clockwise until it stops.
5. Remove the seal plate transport cover and strap (see Figure 4-1 on page 26). Place them on the hook behind the operating console.
6. Review Table 3-2 on page 19 to check the correct clamping pressure for the valve. (See Section 3.6 on page 18.)
7. For the TAT-SRV Plus (model P/N 96229) only: Fill the tank three-quarters full from the top before entering the field.
8. For the standard TAT-SRV (model P/N 98222): Connect the water source to the water inlet (70 psi maximum).

NOTICE

Follow any pressure ratings indicated on the load chart on the console, as shown in Table 3-2 on page 19. Exceeding the rated pressures could result in equipment damage.

⚠ WARNING

High-pressure valve testing may result in the sudden, unexpected release of stored energy with the potential to cause property damage or personnel injury. Potential hazards may include the possibility of high-velocity fluid escaping and high-energy projectile impact. The end-user must assess the application and install protective barrier devices, as appropriate.

4.2 CONDUCTING HYDROSTATIC TESTS (ONLY WITH TAT-SRV PLUS)

4.2.1 Purging the system with water

Do the following to purge the system, referring to Figure 2-1 on page 10:

1. Close the vessel outlet block valve and the seal plate drain valve.
2. Open the seal plate block valve.
3. Open the air supply valve.
4. Turn the water supply pressure control clockwise while monitoring the test pressure to check that no pressure builds up.
5. After no more bubbles emerge from the seal plate, turn the water supply pressure control counter-clockwise to zero.

4.2.2 Hydrostatic test

Do the following to run the water test, referring to Figure 2-1 on page 10:

1. Clamp the valve into the machine, following the steps in Section 3.6 on page 18.
2. Purge the air from the device under test. Review the valve manufacturer's manual for instruction on purging the valve.
3. Open the seal plate block valve.
4. Close the vessel outlet block valve and the seal plate drain valve.
5. Open the air supply valve.
6. Turn the water supply pressure control clockwise while monitoring the test pressure gauge, until it reaches the desired test pressure. Increase pressure gradually.

4.2.3 Adjusting the valve on the seal plate

If the valve (device under test) needs to be adjusted, do the following while referring to Figure 2-1 on page 10:

1. Reduce the water supply pressure control to zero.
2. Open seal plate drain valve slowly to release all remaining pressure within the system and to drain water from the test piece as needed from the valve under test.

NOTICE

Failure to open the valve slowly could deform the water tank, making it unusable for future tests. This damage will invalidate the warranty.

3. Check that test pressure gauge shows 0 psi/bar.
4. Unclamp the valve and reposition as necessary, following the steps in Section 4.5 on page 25.
5. Repeat Section 4.2.1 as necessary.

4.3 CONDUCTING A HIGH-PRESSURE AIR OR NITROGEN TEST

4.3.1 Purging the vessel and system of water

Do the following to purge the vessel of water, referring to Figure 2-1 on page 10:

1. Clamp the blind flange on the seal plate (see Section 3.6 on page 18).
2. Turn the vessel diverter valve upward.
3. Open the seal plate drain valve.
4. Open the vessel outlet block valve and the seal plate block valve.
5. Adjust the gas supply pressure regulator slowly to expel the water through the drain.

Do the following to purge the system of water:

1. Unclamp and remove the blind flange.
2. Adjust the gas supply pressure regulator slowly to expel the water through the seal plate.

4.3.2 Running the high-pressure air or nitrogen test

Do the following to run the high-pressure air or nitrogen test, referring to Figure 2-1 on page 10:

1. Clamp the valve into the machine, following the steps in Section 3.6 on page 18.
2. Close the seal plate drain valve.

3. Open the seal plate block valve and vessel outlet block valve.
4. Turn the gas vessel diverter valve upward).
5. Turn the gas supply pressure regulator clockwise and monitoring the test pressure gauge, until it reaches the desired test pressure. Increase pressure gradually.

4.3.3 Adjusting the valve on the seal plate

If the valve (device under test) needs to be adjusted, do the following while referring to Figure 2-1 on page 10:

1. Reduce the gas supply pressure control to zero.
2. Open seal plate drain valve slowly to release all remaining pressure within the system and to drain air or nitrogen from the test piece as needed from the valve under test.

NOTICE

Failure to open the valve slowly could deform the water tank, making it unusable for future tests. This damage will invalidate the warranty.

3. Check that test pressure gauge shows 0 psi/bar.
4. Unclamp the valve and reposition as necessary, following the steps in Section 4.5.

4.4 CONDUCTING AN AIR OR NITROGEN OVER WATER TEST

Do the following to run an air or nitrogen over water test, referring to Figure 2-1 on page 10 and Figure 2-2 on page 11:

1. Clamp the valve into the machine, following the steps in Section 3.6 on page 18.
2. Close the seal plate block valve and open the vessel outlet block valve. Turn the vessel diverter valve downward.
3. Close the seal plate drain valve.
4. Open the air supply valve and turn the water supply pressure control clockwise while monitoring the vessel pressure gauge to check that no pressure is building up.
5. Once the vessel has filled with the desired volume, close the vessel outlet block valve.
6. Open the seal plate block vale.
7. Purge the air from the device under test (review the valve manufacturer's manual for instruction on purging the valve).
8. Once the valve is full of water, turn off the water supply pressure control by turning it counter-clockwise.

9. Turn the vessel diverter valve to upward.
10. Turn the gas supply pressure regulator clockwise while monitoring the test pressure gauge, until it reaches the desired test pressure. Increase pressure gradually.

4.5 RELEASING THE CLAMP

⚠ WARNING

Do not release the clamp pressure while the valves under test is pressurized. Releasing valves under pressure could result in property damage or personnel injury.

When all tests have been conducted or the valve needs to be adjusted, do the following to remove the test piece, referring to Figure 2-1 on page 10:

1. Rotate the gas supply pressure regulator and water supply pressure control valves to zero.
2. Open the seal plate drain valve slowly to release all pressure from the system and test piece.
3. Check that the test pressure and vessel pressure gauges show 0 psi/bar.

NOTICE

The TAT-SRV turn around tester for safety relief valves is equipped with a safety interlock system to reduce the likelihood of releasing clamp pressure from the valve under test while the test pressure circuit is pressurized.

The interlock system is equipped with air cylinders under the clamp drain valve that sense test pressure and pop up to prevent the clamp drain valve from opening and releasing clamp pressure while the valve under test is pressurized.

⚠ WARNING

The safety interlock is only a secondary measure to the correct operating procedure. Some residual pressure (up to 20 psi [1.38 bar]) may remain in the valve under test when the safety interlock cylinders disengage, which may cause a pressure release and personnel injury if the clamp drain valve is opened.

Always remove test pressure, drain both test circuits, and check that both the top and bottom pressure gauges read 0 psi/bar before opening the clamp drain valve.

4. Rotate the clamp pressure control to zero.
5. Check that clamp pressure gauge shows 0 psi/bar.
6. Open the clamp release valve to release the test piece from the test table.
7. Slide the clamp bars away from the test piece and remove from the table.

4.6 PREPARING THE MACHINE FOR TRANSPORT

When transporting the machine to a different location, do the following:

1. Clamp the seal plate transport cover onto the table to protect the seal plate and arm during transport (see Figure 4-1).
2. Follow Section 3.6 on page 18 for clamping the cover and obtaining 250 psi (17 bar).

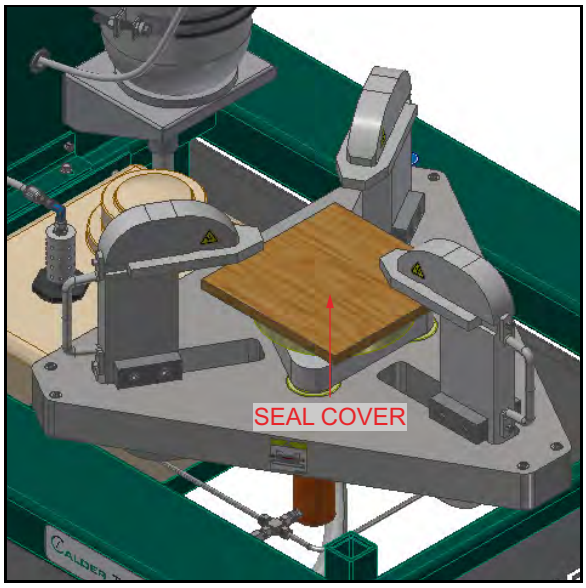


FIGURE 4-1. SEAL COVER

NOTICE

Once pressure is established, do not release the clamp pressure but turn the clamp pressure regulator to minimum.

3. Check that there is still clamp pressure holding the seal plate cover in place once the air supply is removed from the test stand.
4. Thread the shipping strap around the handles of the clamp arms to keep the arm over the seal plate cover during transportation (see Figure 4-1).

⚠ WARNING

Release stored energy and drain water from the vessel before transporting the machine. Failure to do so could result in catastrophic failure and unexpected pressure release, causing severe injury or death.

5. Remove the gauges and store them in a vehicle before transporting.

5 MAINTENANCE

5.1 MAINTENANCE CHECKLIST

Table 5-1 lists maintenance intervals and their associated tasks.

TABLE 5-1. MAINTENANCE INTERVALS AND TASKS

Interval	Task
Before each use	Inspect the testing unit, including all hose connections, inlet supply lines, and outlet lines.
	Check the o-rings on the seal plates for cracks or nicks. Replace if necessary.
During use	Check the lubricator to ensure one drip to every 25 strokes of the pump. Adjust as needed. Use air tool oil (general purpose, such as AW-32) for the lubricator.
After daily use	Wipe the component parts clean and dry to prevent corrosion. Refer to Section 4.3.1 on page 23 to purge the system of water.
Once a month	Inspect mufflers for damage and plugging. Replace if any are clogged.
	Check the oil level in the hydraulic clamp reservoir. The level should be half of the sight tube. Use Hydraulic Oil AW-46 or AW-32.
As needed	Change the air filter element (Parker PN PS701P Kit 40 micron).
For shipping or travel	Adjust the machine legs to the lowest height.

5.2 TROUBLESHOOTING

If unable to hold a seal, remove the valve and do the following:

1. Check for the correct minimum hydraulic gauge pressure required to seal, according to Table 3-2 on page 19.
2. Check for the correct test pressure, according to Table 3-2 on page 19.
3. Check that all clamp arms are making good contact with the flange. Adjust if necessary.
4. Check for any cracks or nicks in the O-rings and replace any damaged ones.
5. Check for any damage (such as gouges, scratches, dents) on the raised face of the valve and the seal plate on the test bench.
6. Check the seal plate and raised face for any debris. Clean both surfaces.
7. Check that the source air compressor has minimum cfm requirements to prevent heating or excessive moisture in the air system.

WARNING

To minimize the risk of damage to the machine, workpiece, and personnel injury, use technical judgment and discretion when increasing the clamping pressure above the recommendations listed in Table 3-2 on page 19.

6 STORAGE AND SHIPPING

IN THIS CHAPTER:

6.1 STORAGE

Proper storage of the TAT-SRV will extend its usefulness and prevent undue damage.

Before storing, do the following:

1. Clean and dry the machine.
2. Drain the hydraulic fluid and air tool oil.

Store the TAT-SRV in its original shipping container. Keep all packing materials for repackaging the machine.

6.1.1 Short-term storage

Do the following for short-term storage (three months or less):

1. Purge the system of water, referring to Section 4.3.1 on page 23.
2. Remove the tooling.
3. Remove the hoses.
4. Cap the ports.
5. Remove o-rings in the seal plate.
6. Remove the workpiece from the machine.
7. Spray all unpainted surfaces with LPS-2 to prevent corrosion.
8. Store the turn around tester for safety relief valves in its original shipping box.

6.1.2 Long-term storage

Do the following for long-term storage (longer than three months):

1. Follow the short-term storage instructions, but use LPS-3 instead of LPS-2.
2. Add a desiccant pouch to the shipping container. Replace according to manufacturer instructions.
3. Store the shipping container in an environment out of direct sunlight with temperature < 70ºF (21ºC) and humidity < 50%.

6.2 SHIPPING

Check that the machine's legs are adjusted to the lowest height (see Section 4.6 on page 26).

6.3 DECOMMISSIONING

To decommission the TAT-SRV before disposal, remove the air tool oil and hydraulic fluid before dismantling machine components. Refer to Appendix A for component assembly information.

APPENDIX A ASSEMBLY DRAWINGS

Drawing list

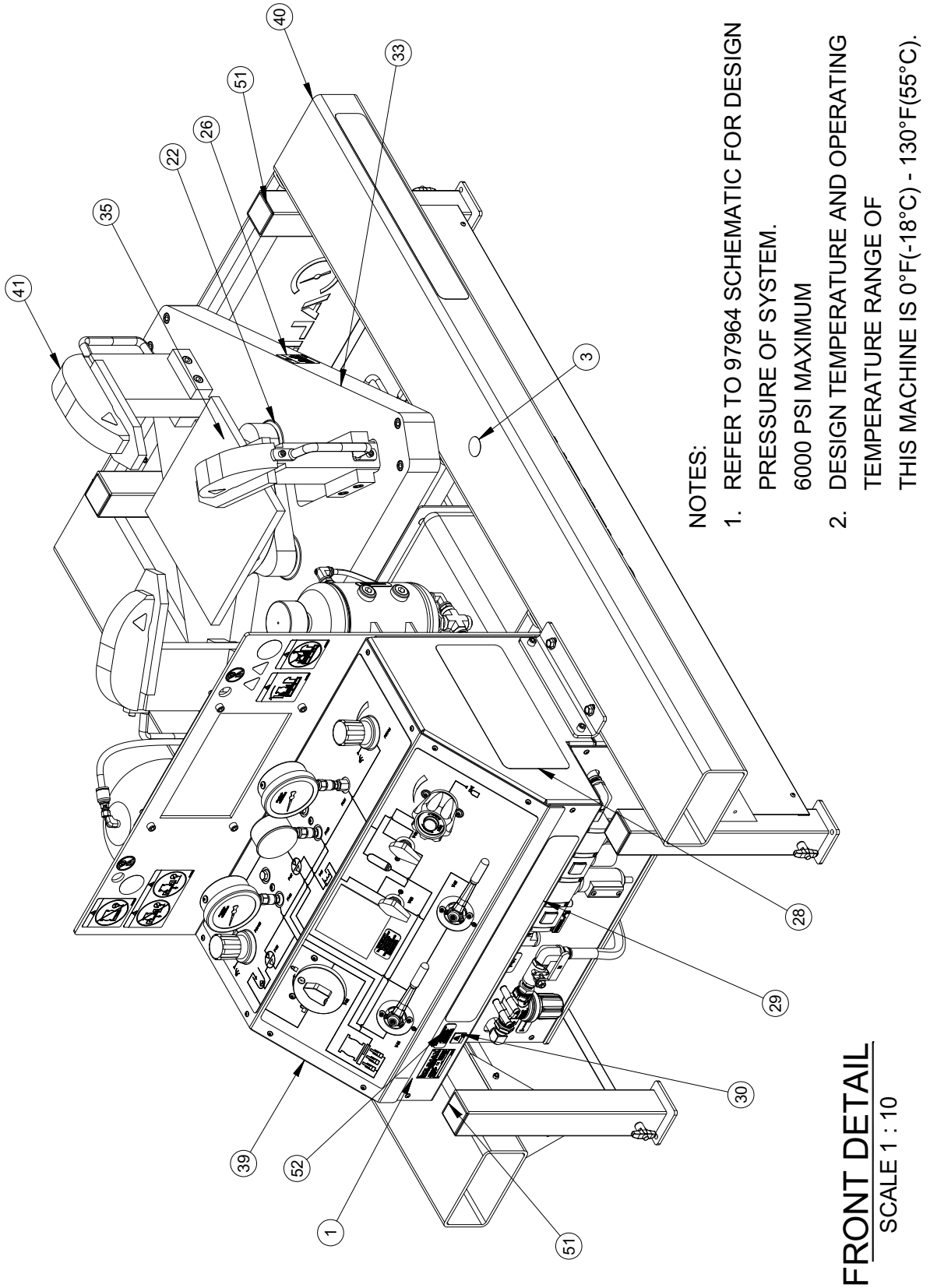


FIGURE A-1. TAT-SRV ASSEMBLY WITH HYDRO FRONT DETAIL (P/N 96229)

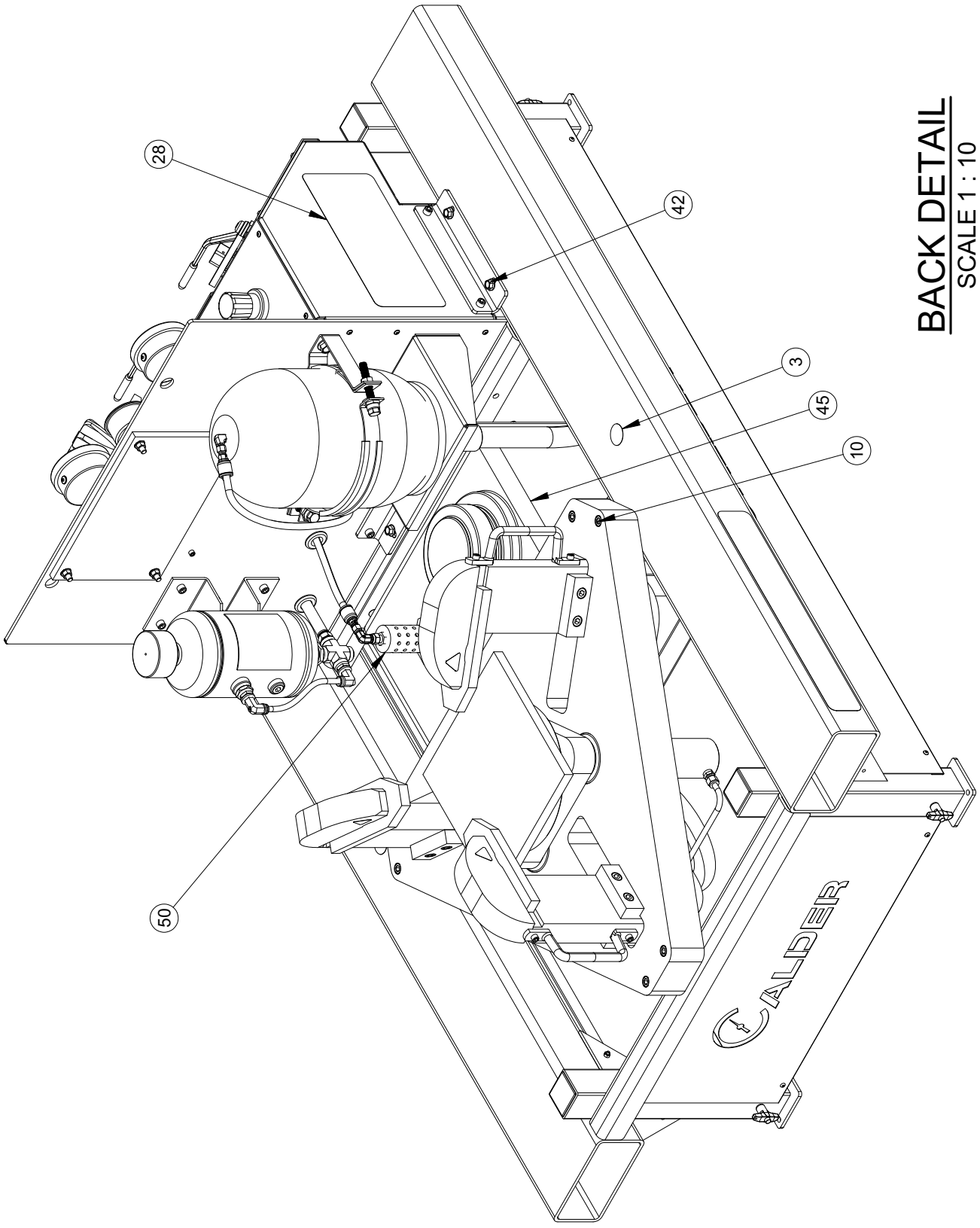


FIGURE A-2. TAT-SRV ASSEMBLY WITH HYDRO BACK DETAIL (P/N 96229)

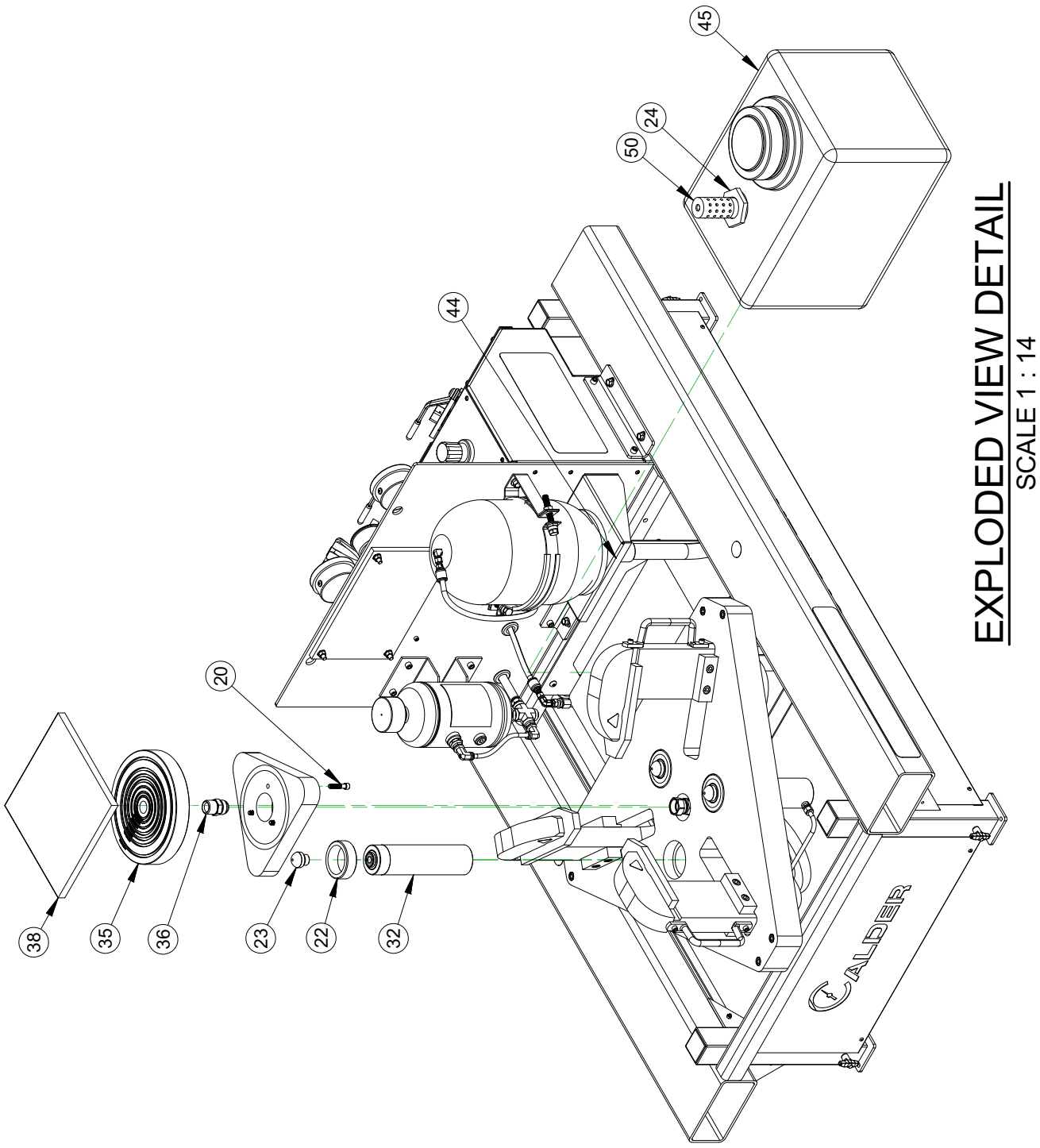


FIGURE A-3. TAT-SRV ASSEMBLY WITH HYDRO BACK DETAIL 2 (P/N 96229)

ITEM	QTY	P/N:	DESCRIPTION
1	1	29154	PLATE SERIAL YEAR MODEL CE 2.0 X 3.0
2	1	46531	(NOT SHOWN) CRATE 79 X 54 X 48 ECORRCRATE TAT-8-25
3	2	59033	LABEL WARNING - CENTER OF BALANCE 1.5" DIA
4	18	64045	(NOT SHOWN) SLEEVE WELD COVER- 2.0 DIA W/VELCRO CLOSURE
5	2	77489	FTG CONNECTOR 3/8NPTM X 3/8 TUBE
6	6	78414	NUT 1/2-13 HEX LOCKING SERRATED FLANGED
7	1	80787	(NOT SHOWN) TIE DOWN QUICK RELEASE STRAP 1"W X 90 L 333 LBS IMPRINTED
8	1	81803	FTG ADAPTER MALE 3/8 TUBE X 3/8 NPTM SS
9	2	81917	FTG PUSH-ON BARB 1/2 NPTM X 1/2 HOSE SWIVEL BRASS
10	6	82655	SCREW 1/2-13 X 3 1/2 SHCS SS
11	4	82687	WASHER 5/16 FLTW SS
12	20	82847	HOSE LOW PRESSURE PUSH LOK 1/2 ID
13	1	82882	FTG TUBE ADAPTER 1/4 NPTF X 3/8 TUBE SS
14	10	83559	NUT 3/8-16 HEX FLANGED SERRATED SS
15	1	84083	FTG UNION CROSS 3/8 TUBE
16	1	84877	FTG BULKHEAD 1/2 NPTF POLY
17	4	85751	SCREW 3/8 - 16 X 1-1/4 BHSCS 316SS
18	12	87533	NUT 10-24 STDNYLOC SS
19	1	88047	FTG BULKHEAD 3/8 NPTF X 3/8 JICM
20	3	88740	SCREW 3/8-16 X 1-3/4 SHCS SS 316
21	4	89144	SCREW 5/16-18 X 5/8 BHCS 18-8 SS
22	3	89425	COLLAR THREADED CYLINDER
23	3	89426	CAP DOME CYLINDER
24	1	90000	FTG BULKHEAD 1-1/2 NPTF X 1-1/2 NPTF X 4 L POLYPROPYLENE
25	1	90025	(NOT SHOWN) KIT TAT-8-25T SEAL PLATE 1.5" - 8" O-RINGS
26	1	90533	LABEL CAUTION CLAMP ARM SHIPPING STRAP
27	12	90567	SCREW 10-24 X 3/4 BHCS SS
28	2	90585	LABEL CALDER TURN AROUND TESTER TAT 6 X 13
29	3	90595	LABEL CALDER TURN AROUND TESTER TAT 2.75 X 19.5
30	1	91217	PLATE MASS CE 1.0 X 1.0 KG ADHESIVE BACKED
31	1	94742	FTG ELBOW SS JIC-6F X JIC-6M
32	3	95320	CYLINDER HYD 15 TON 6-1/8 STROKE SINGLE-ACTING
33	1	95406	TABLE TOP TAT SRV
34	1	95417	TOP PLATE TAT SRV
35	1	96030	SEAL PLATE TAT SRV
36	1	96285	FTG ADAPTER 1 NPTM X JIC-16M SS 10 KSI
37	1	96313	(NOT SHOWN) HOOK MOUNT HANGER STEEL WITH 3 FT LENGTH PLASTIC STRAP
38	1	97203	SEAL PLATE PROTECTOR PLYWOOD 12 X 12 X 3/4 THICK QUICKSET SRV (HFR)
39	1	97861	ASSY CONSOLE TAT-SRV 6K 25T
40	1	97963	WELDMENT FRAME TAT SRV
41	3	97981	CLAMP ARM ASSY STANDARD TAT SRV
42	6	98039	SCREW 3/8-16 X 1 HEX FLANGED SS
43	1	98061	(NOT SHOWN) MANUAL INSTRUCTION CALDER TAT SRV 6K NON-CE
44	1	98065	SUPPORT TANK 16 GAL TAT SRV STANDARD
45	1	98066	TANK 16 GA 14.13 T" X 14.25 W X 20.38 L MODIFIED TAT SRV STANDARD
46	1	98068	TUBE 3/8 TAT SRV HYD CYL 1
47	1	98069	TUBE 3/8 TAT SRV HYD CYL 2
48	2	98115	SKIRT FRAME SIDE TAT SRV STANDARD
49	1	98116	SKIRT FRAME BACK TAT SRV STANDARD
50	1	98123	MODIFIED HIGH FLOW MUFFLER 1-1/2" NPTM
51	4	98757	PLUG SQUARE 2 IN X 2 IN X .5 IN POLYETHYLENE 50 DURO
52	1	101218	LABEL CE TESTING REQUIREMENTS TAT SRV

FIGURE A-4. TAT-SRV ASSEMBLY WITH HYDRO PARTS LIST (P/N 96229)

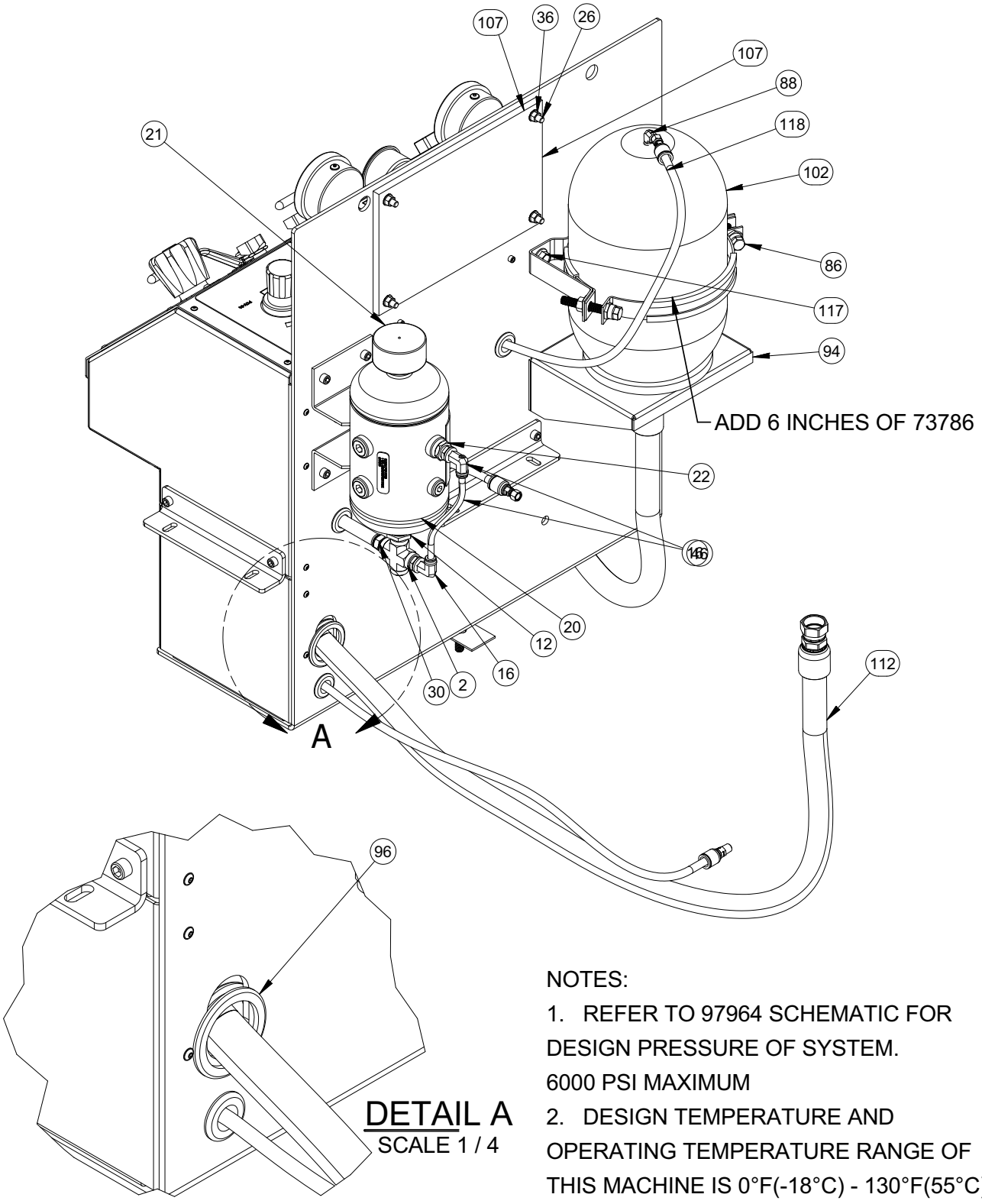


FIGURE A-5. CONSOLE ASSEMBLY DETAIL A (P/N 97861)

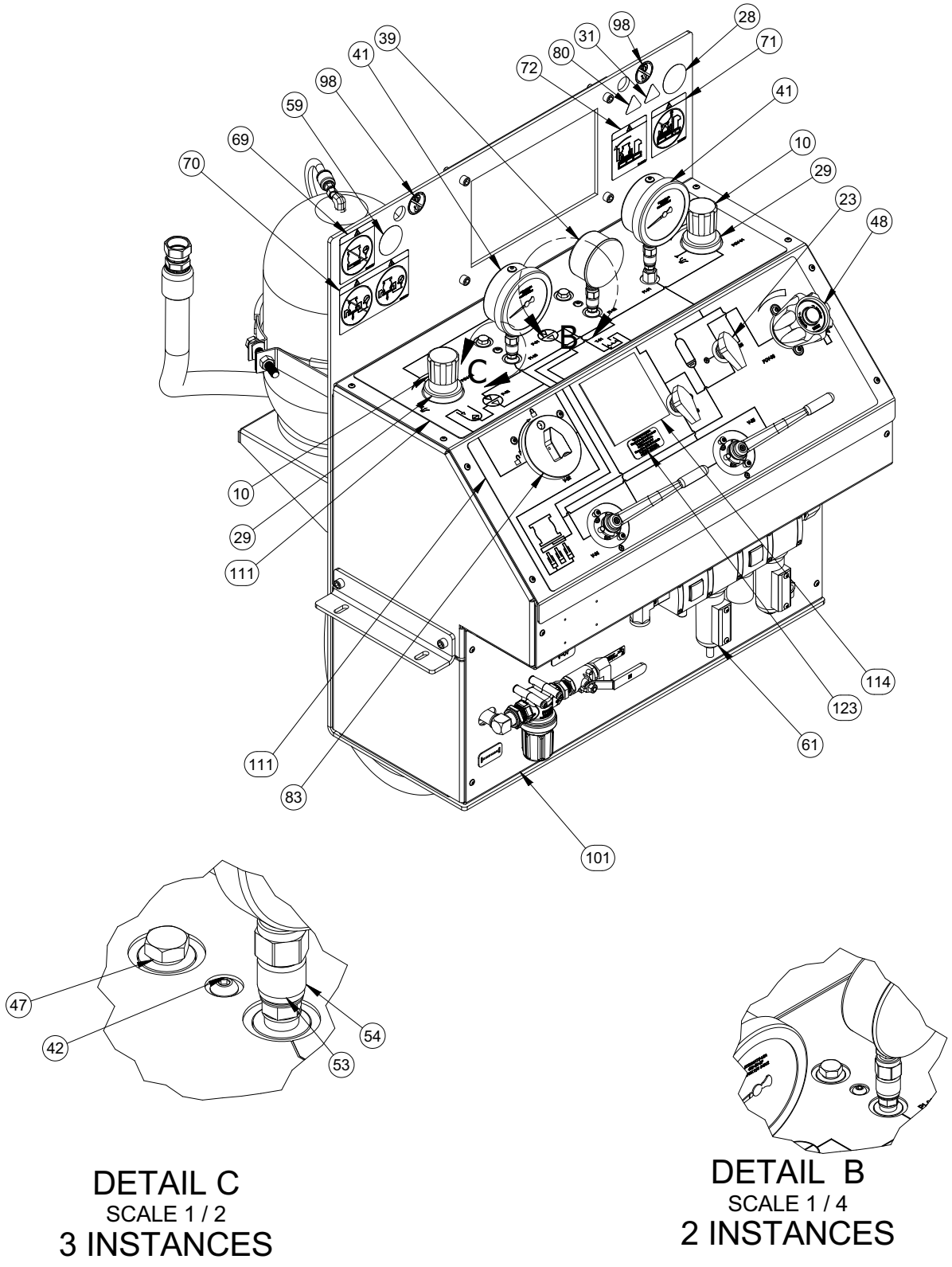


FIGURE A-6. CONSOLE ASSEMBLY DETAIL B AND C (P/N 97861)

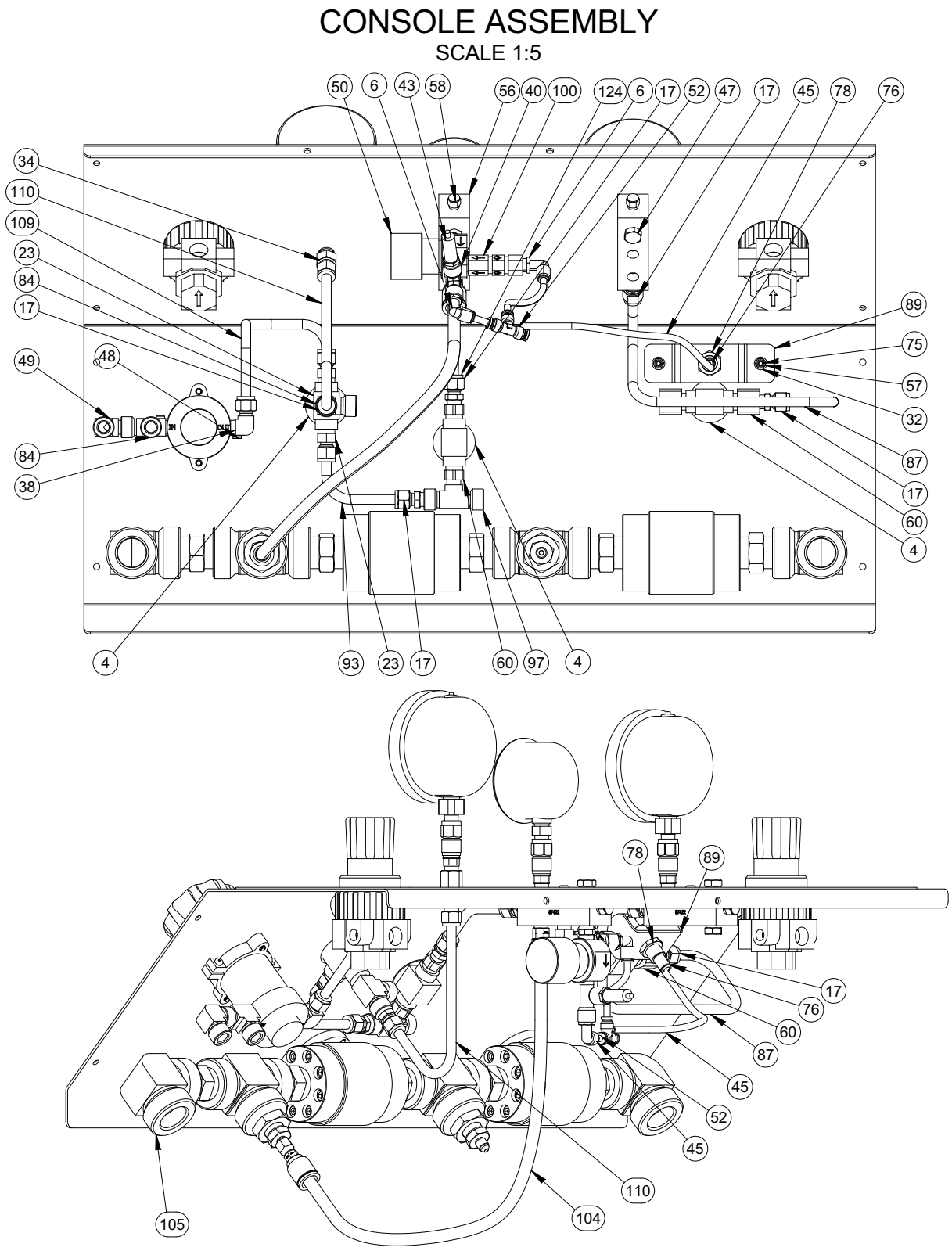


FIGURE A-7. CONSOLE ASSEMBLY INTERIOR (P/N 97861)

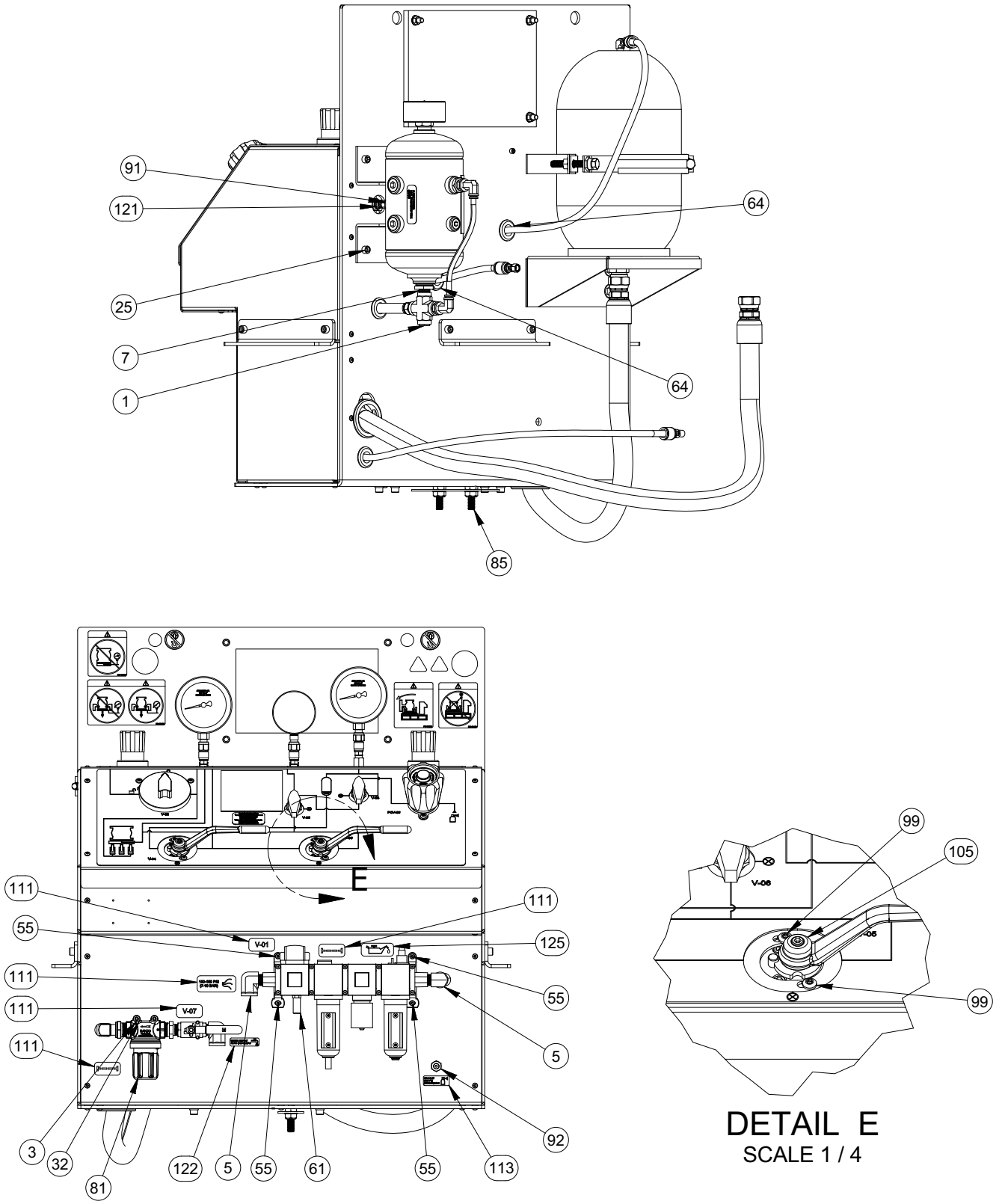


FIGURE A-8. CONSOLE ASSEMBLY DETAIL E (P/N 97861)

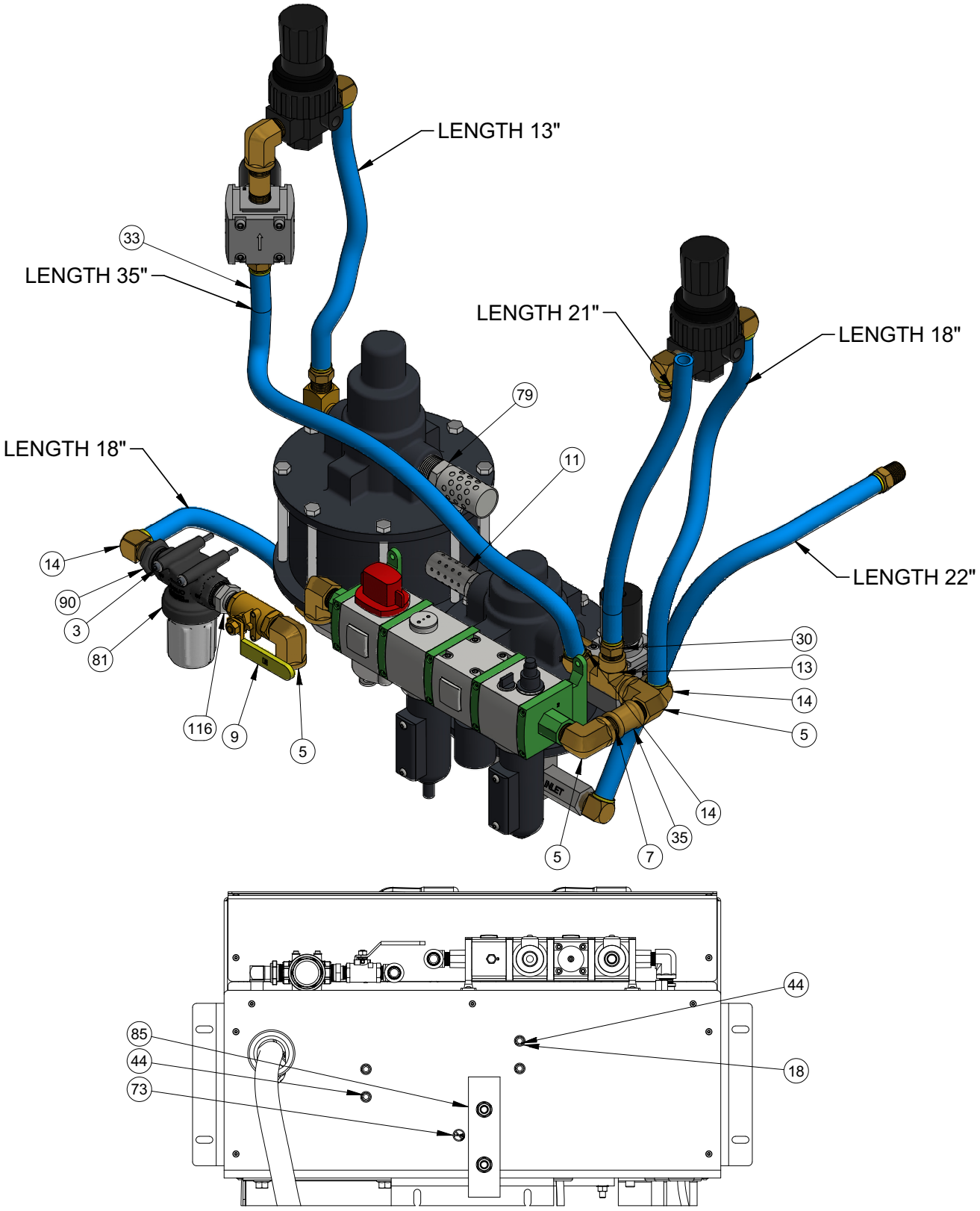
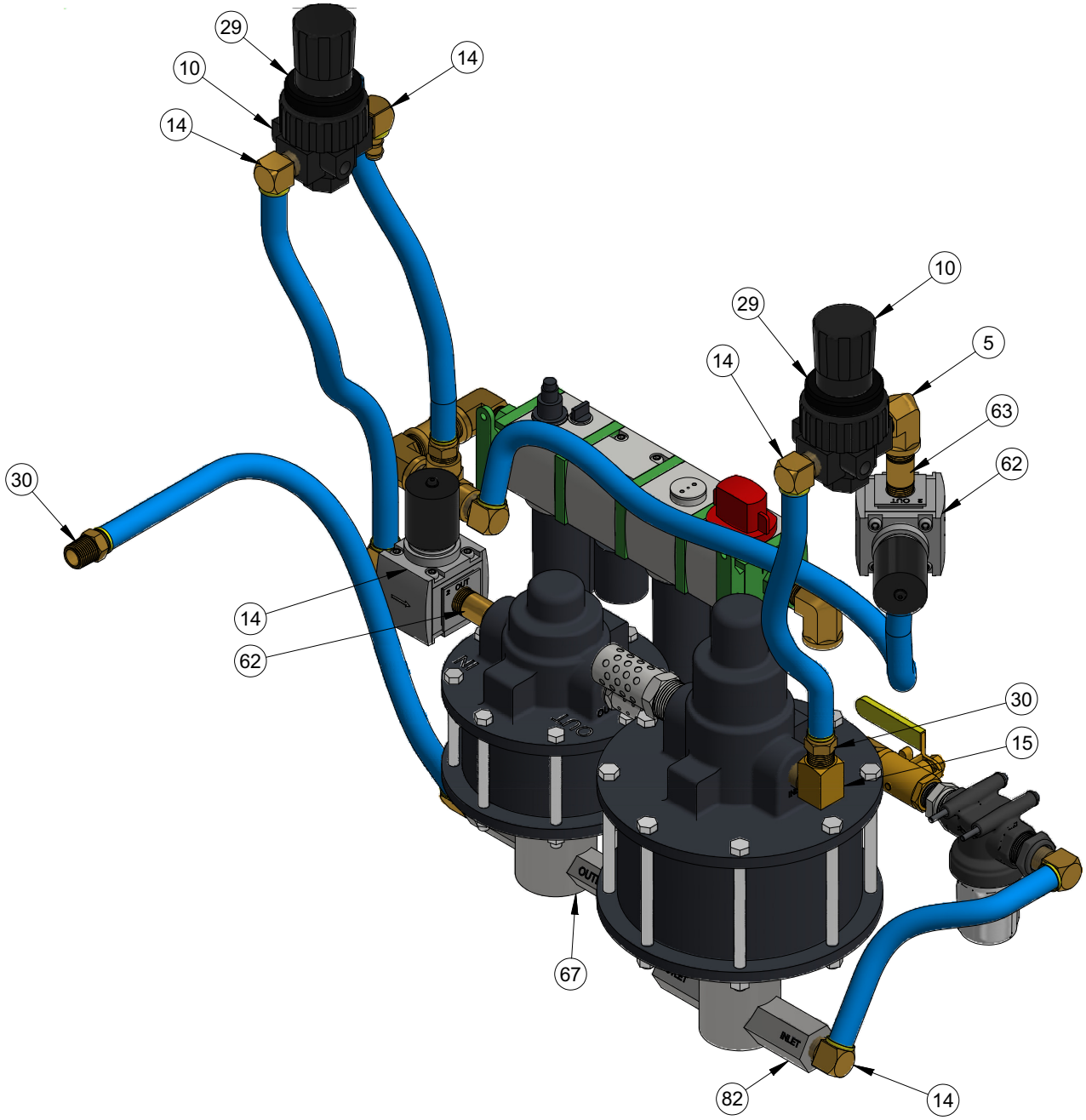


FIGURE A-9. CONSOLE HOSE ASSEMBLY (P/N 97861)



LOW PRESSURE HOSE ASSEMBLY

SCALE 1:5

FIGURE A-10. CONSOLE LOW-PRESSURE HOSE ASSEMBLY (P/N 97861)

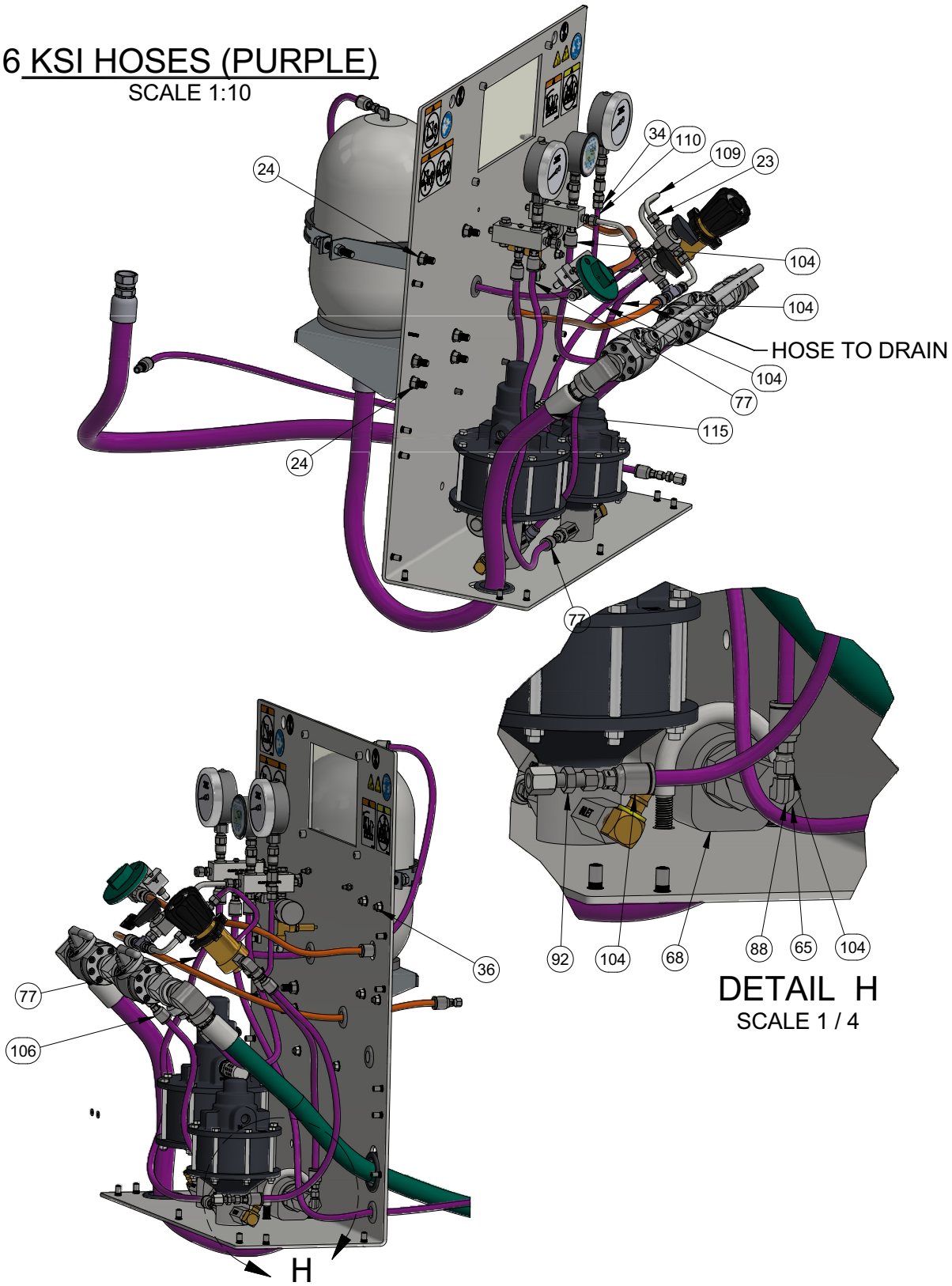


FIGURE A-11. CONSOLE 6 KSI HOSE ASSEMBLY AND DETAIL H (P/N 97861)

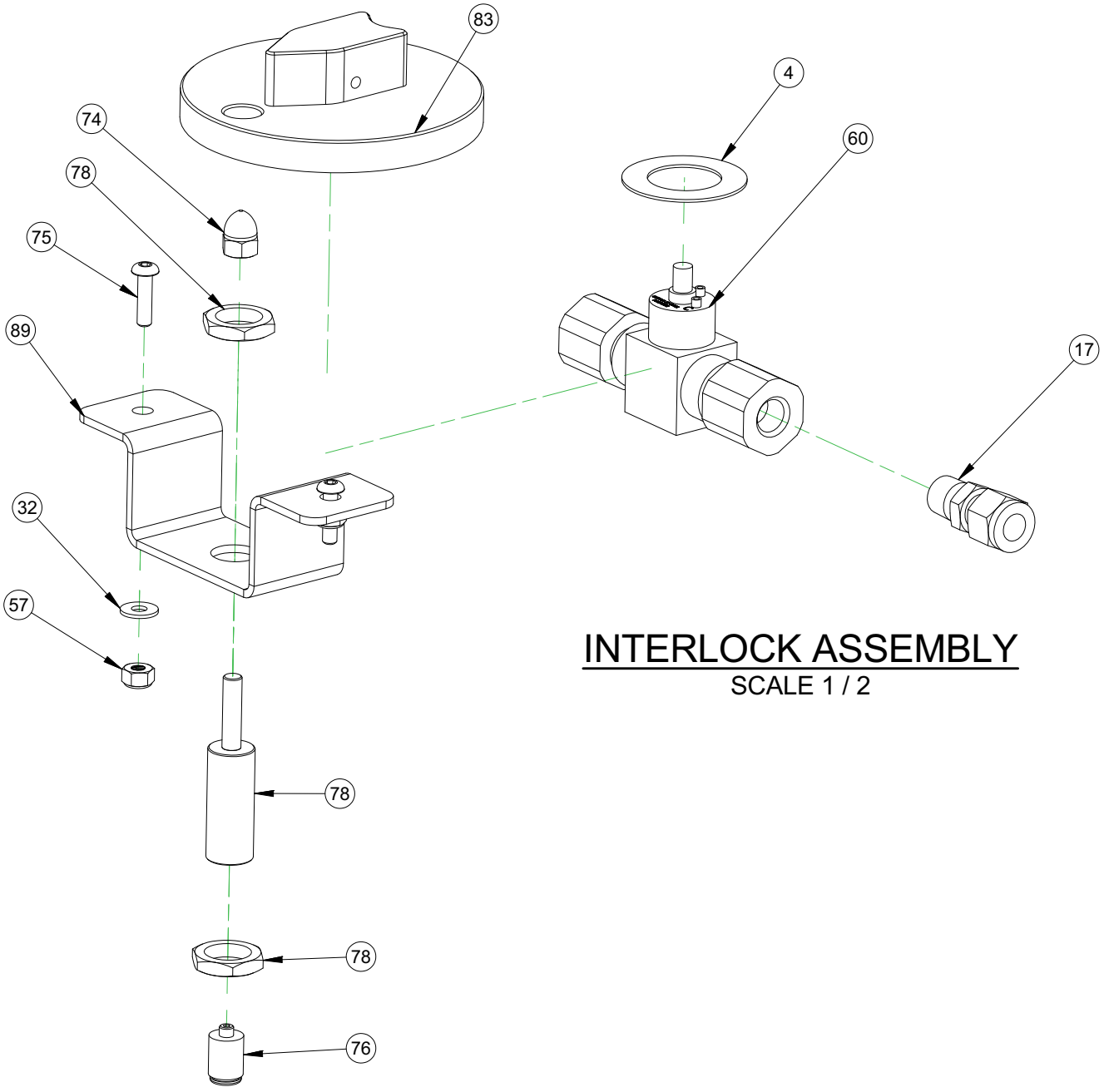


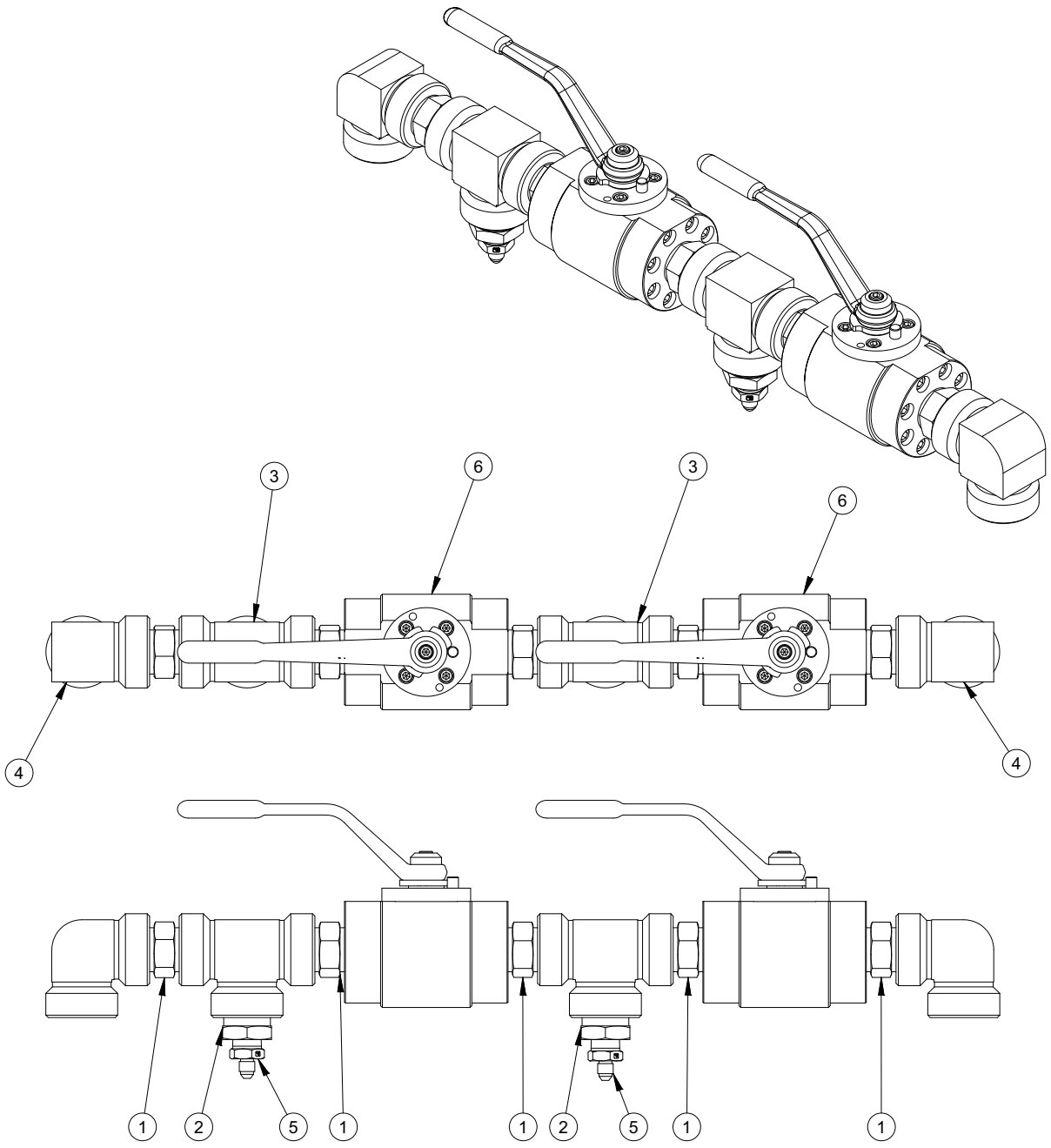
FIGURE A-12. CONSOLE INTERLOCK ASSEMBLY (P/N 97861)

PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	1	12579	FTG PLUG 1/2 NPTM SOCKET
2	1	15472	FTG CROSS 1/2 NPTF
3	2	17105	SCREW 10-32 X 3 SHCS
4	3	27551	WASHER THRUST .984 ID X 1.654 OD X .039
5	5	35692	FTG ELBOW 1/2 NPTM X 1/2 NPTF ST 90 DEG BRASS
6	2	59342	FTG ELBOW 1/4 NPTMS X 1/4 TUBE F PRESTOLOCK NP
7	2	59438	FTG NIPPLE 1/2 NPTM X 1-1/8 BRASS
8	6	73786	FOAM STRIP .75W X .5 SOFT URETHANE ADHESIVE BACKED
9	1	77389	BALL VALVE 1/2 NPT FEMALE 160 PSI
10	2	77394	REGULATOR AIR 1/2 NPT 125 PSI
11	1	77399	HIGH FLOW MUFFLER 3/4 NPTM COMPACT
12	1	77403	STRAINER OIL 1 NPTM X 1/2 NPTF
13	1	77422	FTG TEE 1/2 NPTM X 1/2 NPTF MALE RUN TEE BRASS
14	8	77427	FTG BARB 1/2 NPTM X 1/2 HOSE 90 DEG ELBOW
15	1	77457	FTG ELBOW 1/2 NPTM X 1/2 NPTF STREET 90 DEG
16	2	77459	FTG ELBOW 1/2 NPTM X 3/8 TUBE PRESTOLOC SWIVEL 90 DEG BRASS
17	6	77493	FTG CONNECTOR 1/4 NPTM X 3/8 TUBE SS
18	4	77523	WASHER 3/8 LOCK SS
19	2	77544	WASHER 1/4 FLTW SS
20	1	77788	RESERVOIR HYDRAULIC 1 GAL
21	1	77804	FILLER BREATHER 3/4 NPTM
22	1	77877	FTG BUSHING BRASS 3/4 NPTM X 1/2 NPTF
23	1	77916	BALL VALVE 3 WAY 3/8" TUBE 6000 PSI
24	8	78414	NUT 1/2-13 HEX LOCKING SERRATED FLANGED
25	4	78427	SCREW 3/8-16 X 1 SHCS SS
26	4	79970	SCREW 3/8-16 X 1 1/2 SHCS SS
27	2	80952	SCREW 1/4-20 X 3/4 BHCS SS
28	1	81008	LABEL WEAR HEARING AND EYE PROTECTION 2.0 DIA
29	2	81787	MOUNT NUT REGULATOR PANEL
30	4	81917	FTG PUSH-ON BARB 1/2 NPTM X 1/2 HOSE SWIVEL BRASS
31	1	82144	LABEL WARNING - GENERAL DANGER GRAPHIC 1.30 X 1.13
32	4	82685	WASHER #10 FLTW SS
33	127	82847	HOSE LOW PRESSURE PUSH LOK 1/2 ID
34	1	83373	FTG BULKHEAD 1/4 NPTF X 3/8 TUBE
35	1	83419	FTG COUPLING 1/2 NPTF X 1/2 NPTF
36	8	83559	NUT 3/8-16 HEX FLANGED SERRATED SS
37	1	83714	FTG HEX NIPPLE 1/4 NPTM
38	1	83801	TUBE MALE ELBOW 3/8 TUBE X 1/4 MNPT
39	1	84517	GAUGE DIGITAL PRESSURE PEEK HOLD 1/4 NPTM 10KSI
40	1	84571	FTG TEE 1/4" NPT STREET BRASS
41	2	84812	GAUGE PRESSURE 4 INCH DIA 6000 PSI GLYCERIN FILLED 1/4 MNPT BOTTOM MOUNT
42	2	84926	SCREW 1/4-20 X 3/8 BHSCS 18-8 SS
43	1	85240	VALVE PRESSURE RELIEF AIR 120 PSI 1/4 NPTM
44	4	85271	SCREW 3/8-24 X 3/4 SHCS SS
45	24	85288	TUBING 1/4 OD X .170 ID POLYETHELYNE
46	10	85289	TUBING 3/8 OD X 1/4 ID POLYETHELYNE
47	3	85330	FTG PLUG 1/4 NPTM HEX HEAD 15 KSI
48	1	85478	REGULATOR SELF VENT 6 KSI BRASS 1/4 NPT
49	1	85546	FTG ELBOW 1/4 NPTM X 1/4 NPTF SS
50	1	85550	REGULATOR PRE-SETTABLE 80-140 PSI 2 PORTS 1/4 NPTF
51	1	85586	FTG ADAPTER 4 JICM X 1/4 NPTM SS
52	1	86220	FTG TEE 1/4" TUBE PRESTOLOK
53	3	87040	FTG TEST POINT 10 KSI 1/4 NPTM - M12 X 1.5 SS
54	3	87041	FTG TEST POINT GAUGE ADAPTER 10 KSI 1/4 NPTF - M12 X 1.5 FEMALE SS
55	4	87231	SCREW 10-32 X 1 BHSCS FLANGED SS316
56	2	87422	MANIFOLD GAUGE HTC 10 KSI
57	2	87533	NUT 10-24 STDNYLOC SS
58	2	87572	FTG PLUG 1/8 NPTM HEX HEAD 10KSI
59	1	87593	LABEL WARNING - CONSULT OPERATORS MANUAL 2.0 DIA
60	2	87668	VALVE BALL 2 WAY 1/4 NPTF 6000 PSI
61	1	87836	ASSY AIR PREP UNIT & LUBRICATOR USV
62	2	87838	REGULATOR 1/2 NPTF 7-125 PSIG TAMPER RESISTANT VENTED
63	2	88033	FTG NIPPLE 1/2 NPTM X 2-1/2 BRASS
64	4	88670	1-1/4" DIA GROMMET FOR 1/4" THICK PANEL

FIGURE A-13. CONSOLE ASSEMBLY PARTS LIST 1 (P/N 97861)

ITEM	QTY	P/N:	DESCRIPTION
65	1	88733	FTG ADAPTER 10000 PSI 3/4 NPTF X 1/4 NPTF
66	1	88735	FTG 1/4 NPTM X 1/4 NPTM SS ELBOW
67	1	89377	PUMP AIR DRIVEN 5800 PSI OIL SERVICE
68	1	89460	VALVE PRESSURE RELIEF SET @ 6200 PSI CE CERTIFIED
69	1	89497	LABEL WARNING DO NOT EXCEED MAX RATING OF DUT
70	1	89498	LABEL WARNING DO NOT RELEASE CLAMP WHILE VALVE IS PRESSURIZED
71	1	89499	LABEL CAUTION DO NOT LIFT WITH VALVE CLAMPED
72	1	89500	LABEL WARNING TIP OVER HAZARD WITH ACTUATOR OVERHANGING
73	1	89548	LABEL DO NOT PLUG / BLOCK PORT
74	1	89850	NUT 1/4-28 ACORN HIGH CROWN SS
75	2	89865	SCREW 10-24 X 3/4 BHSCS SS
76	1	89869	FTG STRAIGHT 10-32 X 1/4 TUBE PRESTOLOK
77	1	90012	HOSE ASSY 1/4 ID 1/4 NPTM SS X 1/4 FEM JIC SS WITH 1/2 NPTM SS ADAPTER X 42 IN OAL 6KSI (4M6K)
78	1	90078	CYLINDER PNEUMATIC SINGLE ACTING 1/2 BORE X 1/2 STROKE
79	1	90147	HIGH FLOW MUFFLER 1 NPTM COMPACT
80	1	90160	LABEL WARNING - EXPLOSION RELEASE OF PRESSURE 1.30 X 1.13
81	1	90575	STRAINER T POLY 3/4 NPT 80 MESH CLEAR BOWL
82	1	91018	PUMP AIR DRIVEN 6600 PSI OIL/WATER SERVICE
83	1	93087	KNOB INTERLOCK CLAMP DRAIN
84	2	94706	FTG STREET TEE 1/4 NPTF X 1/4 NPTM X 1/4 NPTF SS
85	1	94711	RUBBER CUSHIONED U-BOLT SS 1/2-13 THREAD, 2-7/8 ID
86	1	94719	MOUNTING COLLAR 2.5-15 GAL 6000 PSI
87	1	94734	TUBE 3/8 7859 6
88	2	94744	FTG ELBOW 90 DEG 1/4 NPTM X 4 JICM SS
89	1	94745	BRACKET INTERLOCK KNOB
90	1	94749	FTG POLY REDUCER BUSHING 3/4 NPTM X 1/2 NPTF
91	1	94750	FTG ADAPTER JIC-4M X 1/2 NPTM STEEL
92	1	94751	FTG ADAPTER 1/4 NPTF X JIC-4M STEEL WITH NUT
93	1	96254	TUBE 3/8 7912 2
94	1	96281	MOUNTING BASE ACCUMULATOR 6K 2.5-15 GAL 6000 PSI
95	1	96285	FTG ADAPTER 1 NPTM X JIC-16M SS 10 KSI
96	2	96296	GROMMET 2 1/4 ID X 3 OD X 2 1/2 HOLE 1/4 PANEL THICKNESS RUBBER
97	1	96305	FTG BRANCH TEE 1/4 NPTM X 1/4 NPTF X 1/4 NPTF SS
98	2	96384	LABEL WARNING NOT A LIFT POINT ROUND 1.5"
99	4	97228	SCREW 1/4-28 X 1/2 BHSCS
100	1	97386	FTG CHECK VALVE 1/4 NPTF 6 KSI SS
101	1	97868	CONSOLE TEST SYSTEM TAT-SRV 6K
102	1	97967	VESSEL 6 KSI 2.5 GALLON CE/PED APPROVED
103	1	97986	FTG ELBOW 1/2 NPTM X 1/2 NPTM SS
104	3	97995	HOSE ASSY 6 KSI 1/4 ID JIC-4F SS SWIVEL X 1/4 NPTM SS X 28 OAL PIN PRICKED
105	1	97998	TAT SRV VALVE SUBASSEMBLY ONE INCH
106	1	98013	HOSE ASSY 6 KSI 1/4 ID JIC-4F SS SWIVEL X 1/2 NPTF SS X 20 OAL PIN PRICKED
107	1	98014	SHEET HYGARD CG 9.0" X 14.0" X .5" THICK
108	1	98015	TUBE 3/8 7912-A1 1
109	1	98016	TUBE 3/8 7912-A1 2
110	1	98018	TUBE 3/8 7912-A1 4
111	1	98027	LABEL INSTRUMENT PANEL STANDARD TAT SRV CE W/ HYDRO TESTING
112	1	98029	HOSE ASSY 6 KSI 1 ID JIC-16F SS SWIVEL X 1 NPTM SS X 76 OAL PIN PRICKED
113	1	98052	LABEL AIR INLET 6000 PSI (413 BAR) MAX
114	1	98057	LABEL CLAMPING CHART TAT SRV 6K
115	1	98060	HOSE ASSY 6 KSI 1 ID JIC-16F SS SWIVEL X 1 NPTM SS X 54 OAL PIN PRICKED
116	1	98067	FTG POLY REDUCER BUSHING 3/4 NPTM X 1/2 NPTM
117	6	98075	SCREW 1/2-13 X 1-1/2 HHCS SS FLANGED
118	1	98089	HOSE ASSY 6 KSI 1/4 ID JIC-4F SS SWIVEL X 1/4 NPTM SS X 45 OAL PIN PRICKED
119	1	98090	HOSE ASSY 6 KSI 1/4 ID JIC-4F SS SWIVEL X 1/4 NPTM SS X 75 OAL
120	1	98091	HOSE ASSY 3 KSI 1/4 ID JIC-6F SS SWIVEL X 1/4 NPTM SS X 40 OAL
121	1	98092	HOSE ASSY 3 KSI 1/4 ID JIC-4F SWIVEL X 1/4 NPTM X 30 OAL
122	1	98121	LABEL WATER SUPPLY
123	1	100853	LABEL OPERATING TEMPERATURE TAT SRV CE

FIGURE A-14. CONSOLE ASSEMBLY PARTS LIST 2 (P/N 97861)



PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	5	79935	FTG NIPPLE 1 NPTM X 1 NPTM SS
2	2	91977	FTG ADAPTER PIPE 1 NPTM X 1/2 NPTF
3	2	92023	FTG TEE 1 NPTF SS
4	2	95334	FTG ELBOW 1 NPTF X 1 NPTF 90 DEG SS
5	2	97829	FTG ADAPTER 4 JICM X 1/2 NPTM SS
6	2	97833	VALVE BALL 2-WAY 1 NPTF 6KSI PANEL MOUNTED .88" BORE

FIGURE A-15. TAT-SRV 1" (25 MM) SUB-ASSEMBLY (P/N 97998)

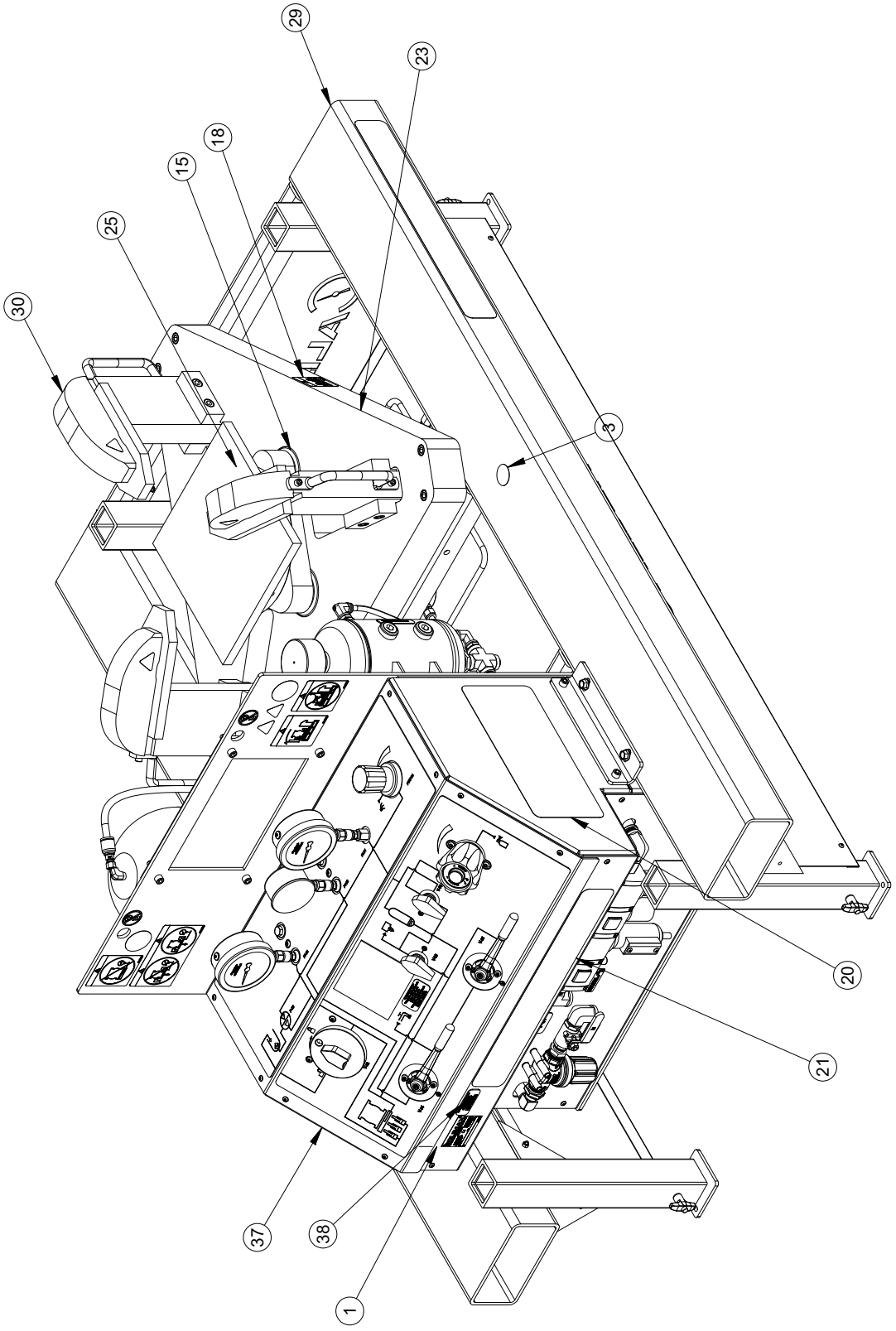


FIGURE A-16. TAT-SRV WITHOUT HYDRO ASSEMBLY FRONT DETAIL (P/N 98222)

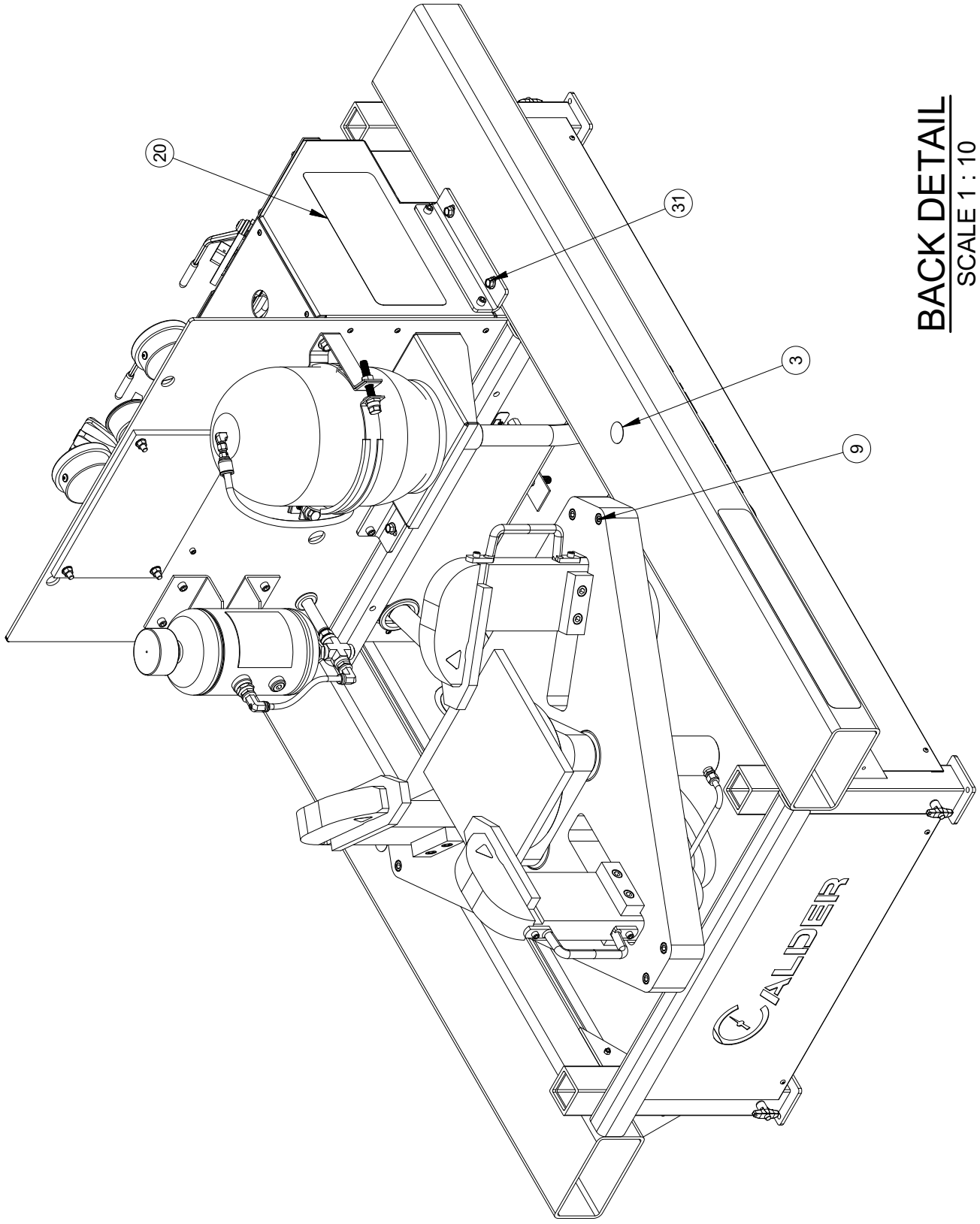


FIGURE A-17. TAT-SRV WITHOUT HYDRO ASSEMBLY BACK DETAIL 1 (P/N 98222)

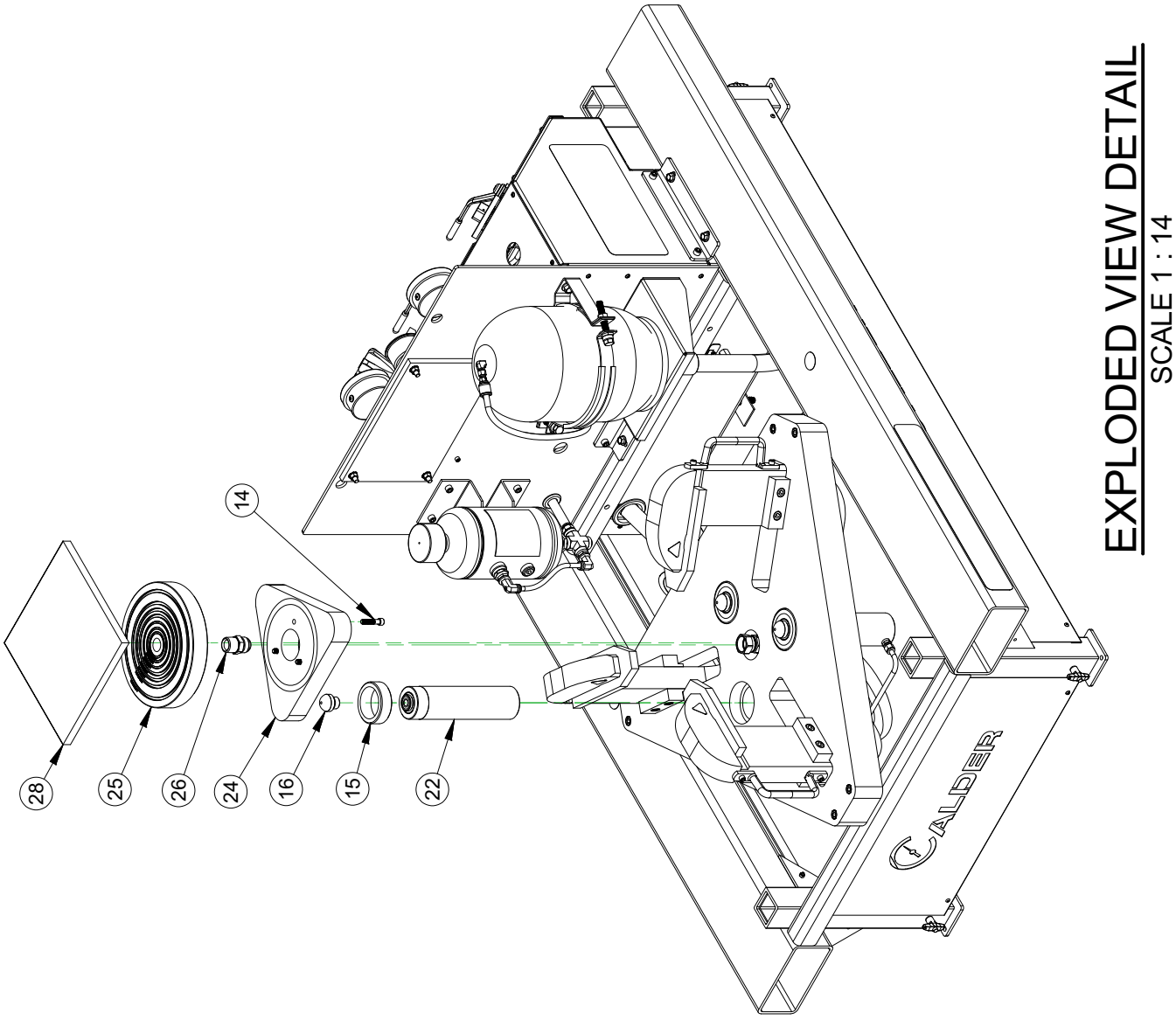


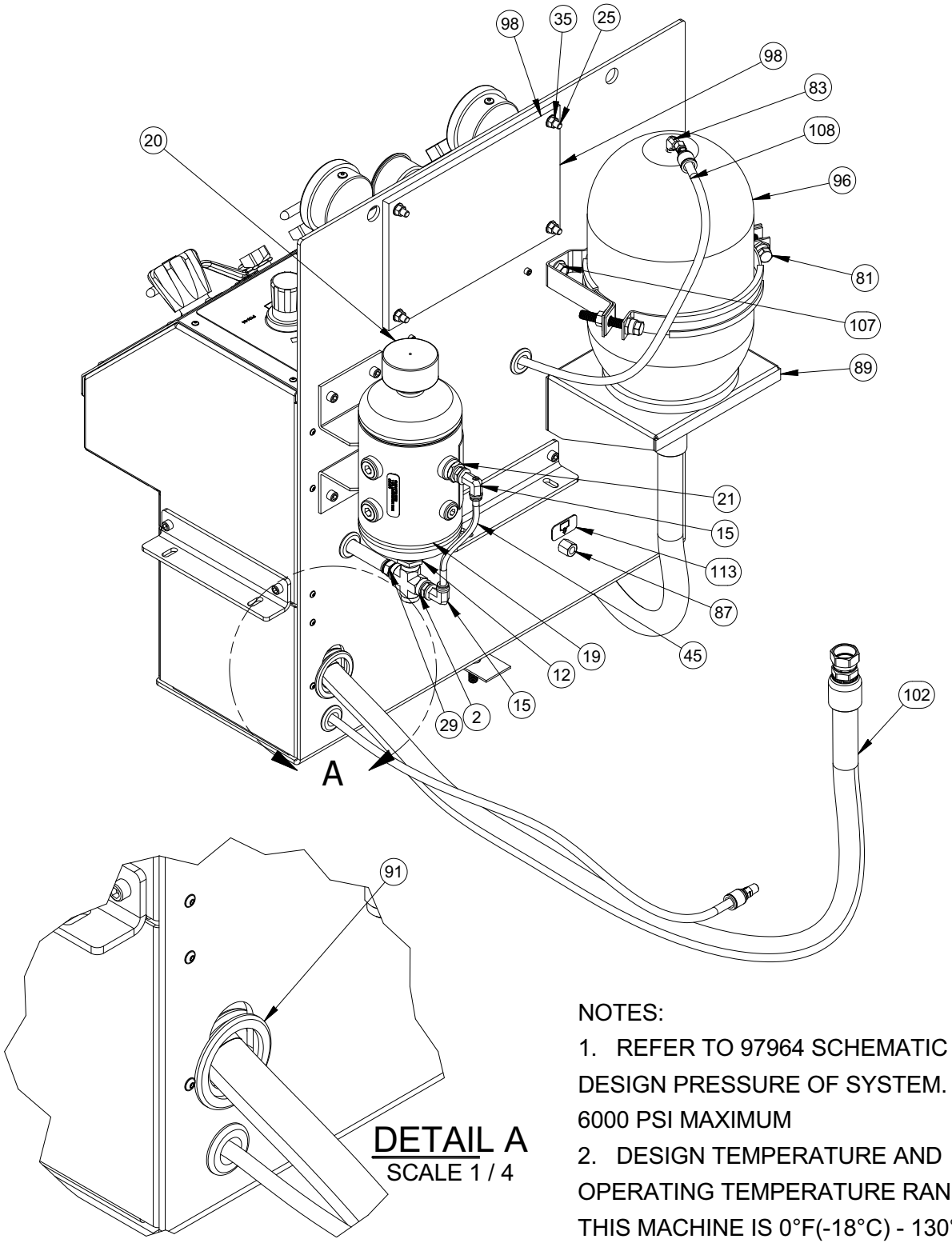
FIGURE A-18. TAT-SRV WITHOUT HYDRO ASSEMBLY BACK DETAIL 2 (P/N 98222)

PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	1	29154	PLATE SERIAL YEAR MODEL CE 2.0 X 3.0
2	1	46531	(NOT SHOWN) CRATE 79 X 54 X 48 ECORRCRATE TAT-8-25
3	2	59033	LABEL WARNING - CENTER OF BALANCE 1.5" DIA
4	18	64045	(NOT SHOWN) SLEEVE WELD COVER- 2.0 DIA W/VELCRO CLOSURE
5	2	77489	FTG CONNECTOR 3/8NPTM X 3/8 TUBE
6	6	78414	NUT 1/2-13 HEX LOCKING SERRATED FLANGED
7	1	80787	(NOT SHOWN) TIE DOWN QUICK RELEASE STRAP 1"W X 90 L 333 LBS IMPRINTED
8	1	81803	FTG ADAPTER MALE 3/8 TUBE X 3/8 NPTM SS
9	6	82655	SCREW 1/2-13 X 3 1/2 SHCS SS
10	1	82882	FTG TUBE ADAPTER 1/4 NPTF X 3/8 TUBE SS
11	6	83559	NUT 3/8-16 HEX FLANGED SERRATED SS
12	1	84083	FTG UNION CROSS 3/8 TUBE
13	12	87533	NUT 10-24 STDNYLOC SS
14	3	88740	SCREW 3/8-16 X 1-3/4 SHCS SS 316
15	3	89425	COLLAR THREADED CYLINDER
16	3	89426	CAP DOME CYLINDER
17	1	90025	(NOT SHOWN) KIT TAT-8-25T SEAL PLATE 1.5" - 8" O-RINGS
18	1	90533	LABEL CAUTION CLAMP ARM SHIPPING STRAP
19	12	90567	SCREW 10-24 X 3/4 BHCS SS
20	2	90585	LABEL CALDER TURN AROUND TESTER TAT 6 X 13
21	3	90595	LABEL CALDER TURN AROUND TESTER TAT 2.75 X 19.5
22	3	95320	CYLINDER HYD 15 TON 6-1/8 STROKE SINGLE-ACTING
23	1	95406	TABLE TOP TAT SRV
24	1	95417	TOP PLATE TAT SRV
25	1	96030	SEAL PLATE TAT SRV
26	1	96285	FTG ADAPTER 1 NPTM X JIC-16M SS 10 KSI
27	1	96313	(NOT SHOWN) HOOK MOUNT HANGER STEEL WITH 3 FT LENGTH PLASTIC STRAP
28	1	97203	SEAL PLATE PROTECTOR PLYWOOD 12 X 12 X 3/4 THICK QUICKSET SRV (HFR)
29	1	97963	WELDMENT FRAME TAT SRV
30	3	97981	CLAMP ARM ASSY STANDARD TAT SRV
31	6	98039	SCREW 3/8-16 X 1 HEX FLANGED SS
32	1	98061	(NOT SHOWN) MANUAL INSTRUCTION CALDER TAT SRV 6K NON-CE
33	1	98068	TUBE 3/8 TAT SRV HYD CYL 1
34	1	98069	TUBE 3/8 TAT SRV HYD CYL 2
35	2	98115	SKIRT FRAME SIDE TAT SRV STANDARD
36	1	98116	SKIRT FRAME BACK TAT SRV STANDARD
37	1	98223	ASSY CONSOLE TAT-SRV 6K 25T
38	1	101218	LABEL CE TESTING REQUIREMENTS TAT SRV

NOTES:

1. REFER TO 97964 SCHEMATIC FOR DESIGN PRESSURE OF SYSTEM. 6000 PSI MAXIMUM
2. DESIGN TEMPERATURE AND OPERATING TEMPERATURE RANGE OF THIS MACHINE IS 0°F(-18°C) - 130°F(55°C).

FIGURE A-19. TAT-SRV ASSEMBLY WITH HYDRO PARTS LIST (P/N 98222)



NOTES:

1. REFER TO 97964 SCHEMATIC FOR DESIGN PRESSURE OF SYSTEM. 6000 PSI MAXIMUM
2. DESIGN TEMPERATURE AND OPERATING TEMPERATURE RANGE OF THIS MACHINE IS 0°F(-18°C) - 130°F(55°C).

FIGURE A-20. CONSOLE ASSEMBLY DETAIL A (P/N 98223)

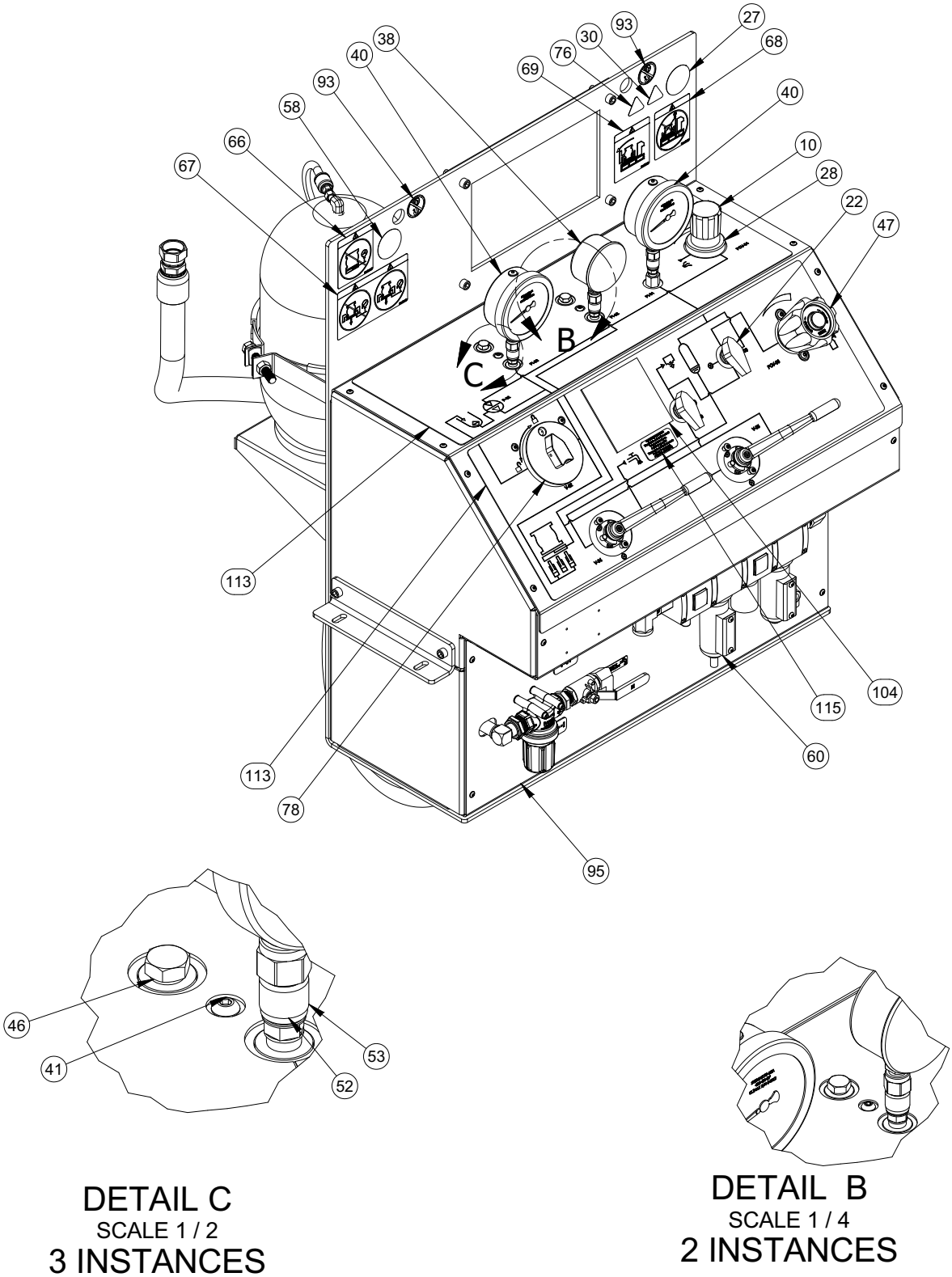


FIGURE A-21. CONSOLE ASSEMBLY DETAIL B AND C (P/N 98223)

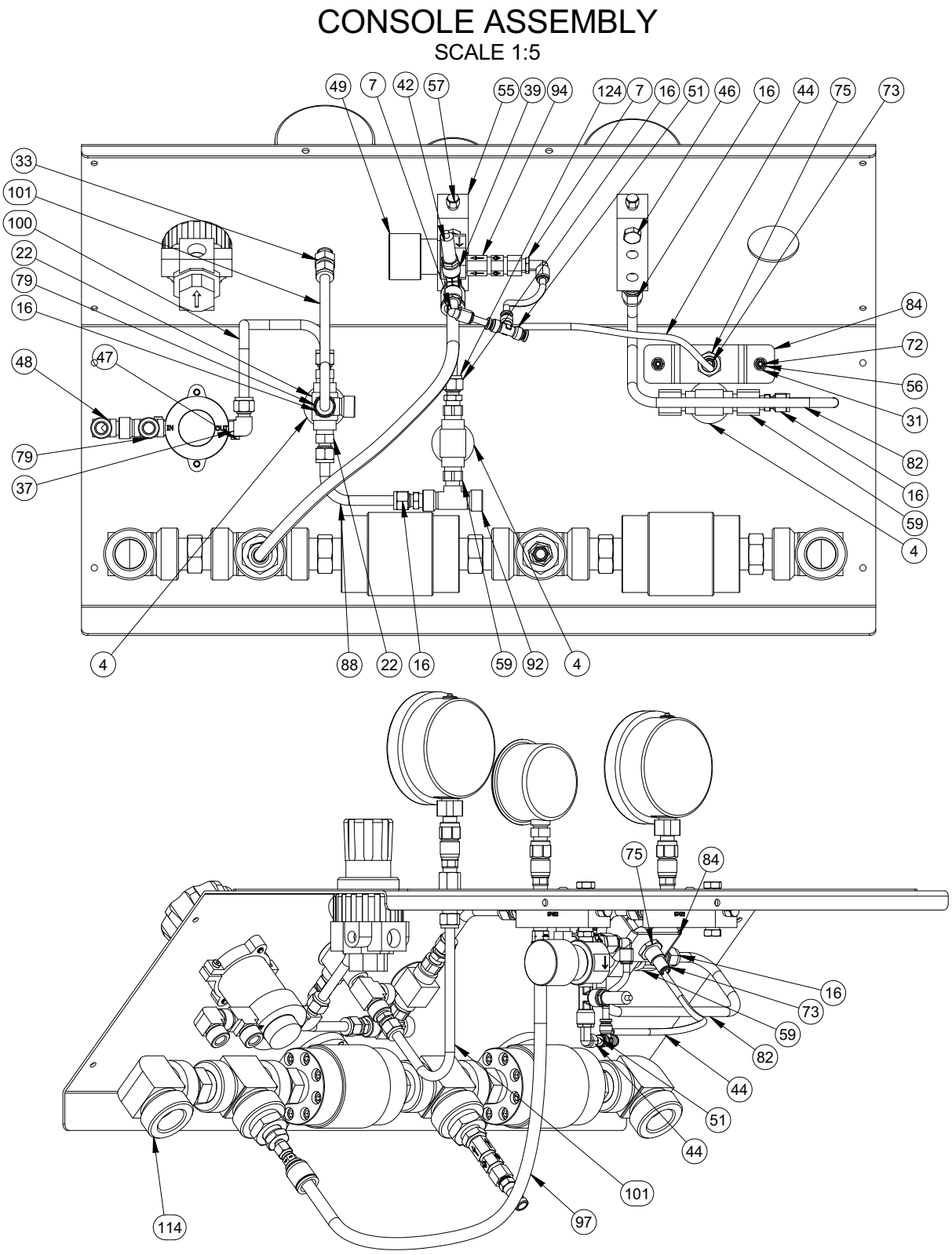


FIGURE A-22. CONSOLE ASSEMBLY INTERIOR (P/N 98223)

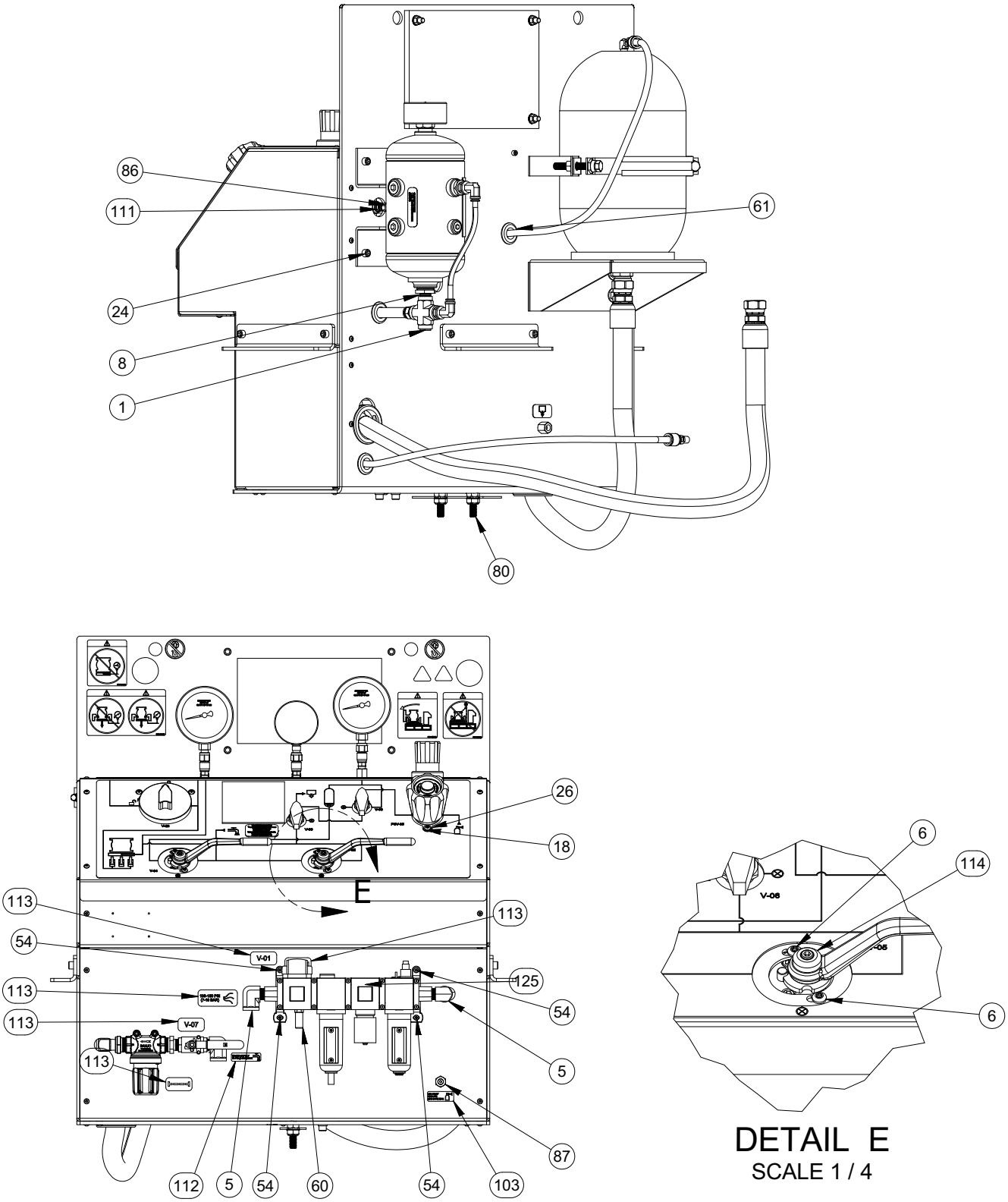


FIGURE A-23. CONSOLE ASSEMBLY DETAIL E (P/N 98223)

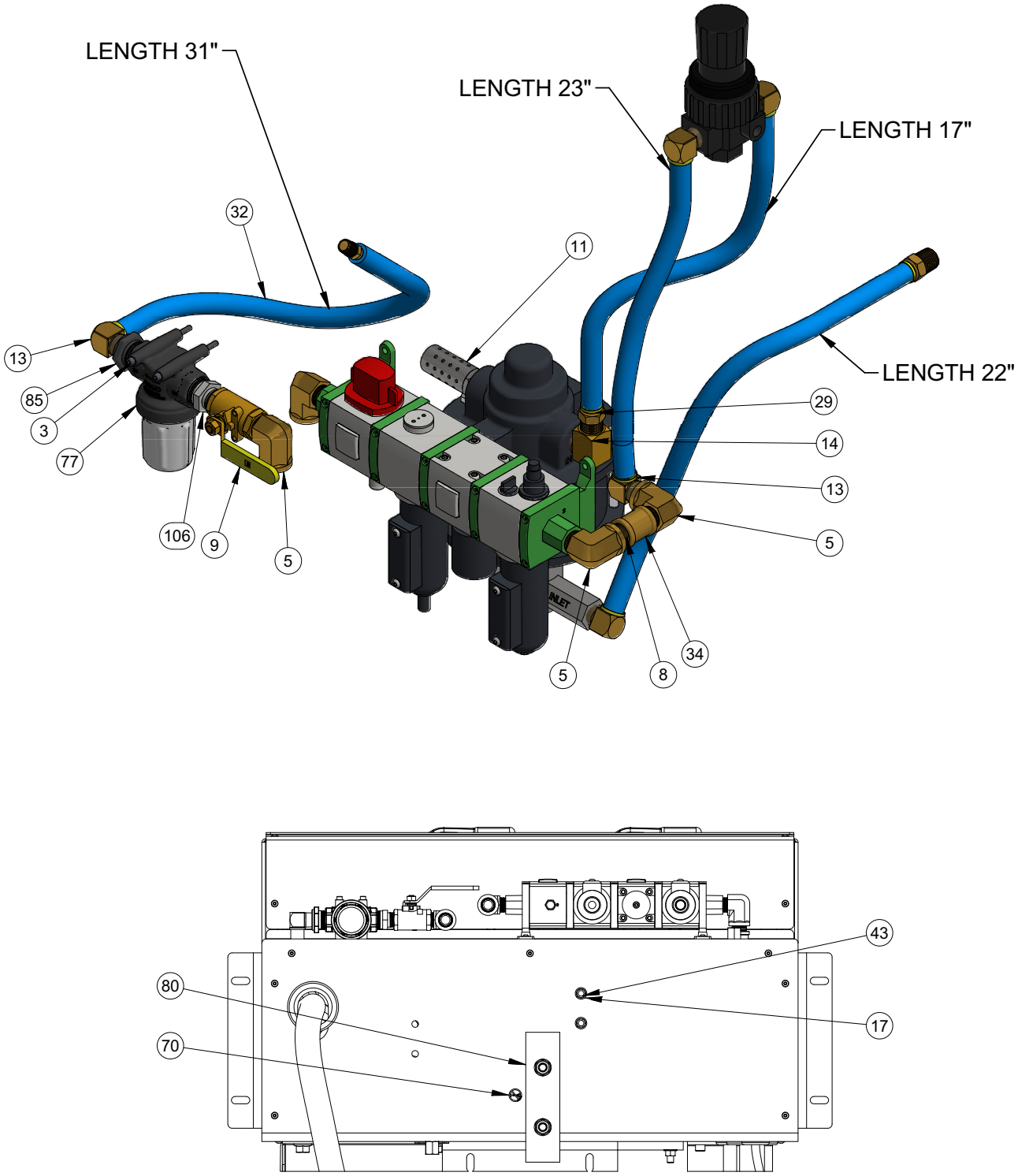
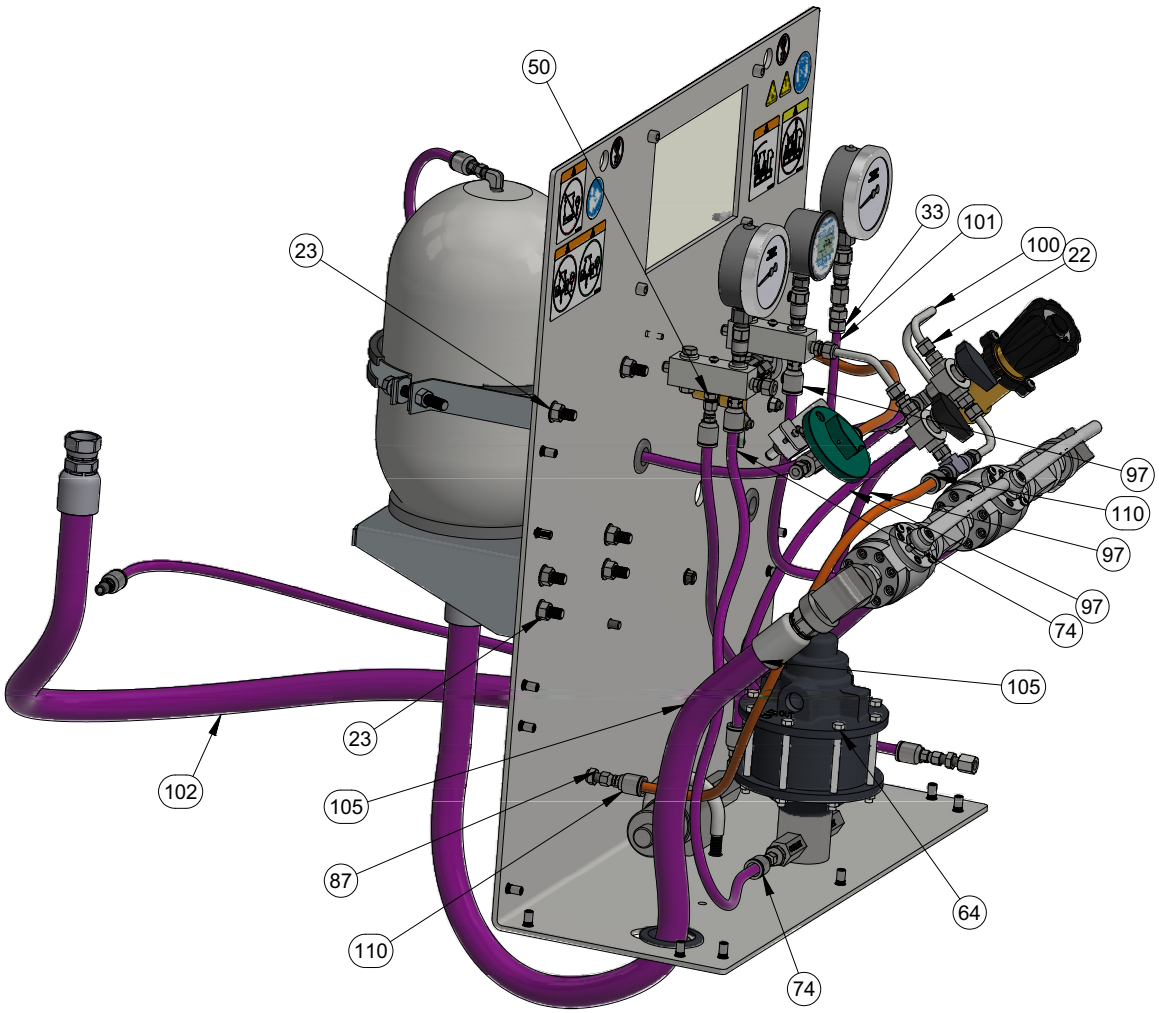


FIGURE A-24. CONSOLE HOSE ASSEMBLY (P/N 98223)



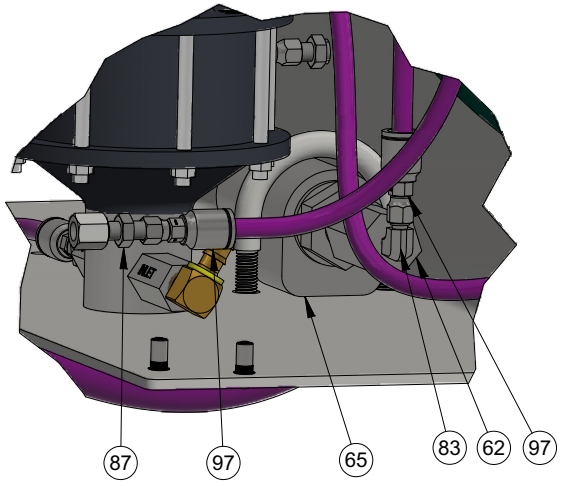


FIGURE A-25. CONSOLE 3 KSI AND 6 KSI HOSE ASSEMBLY (P/N 98223)

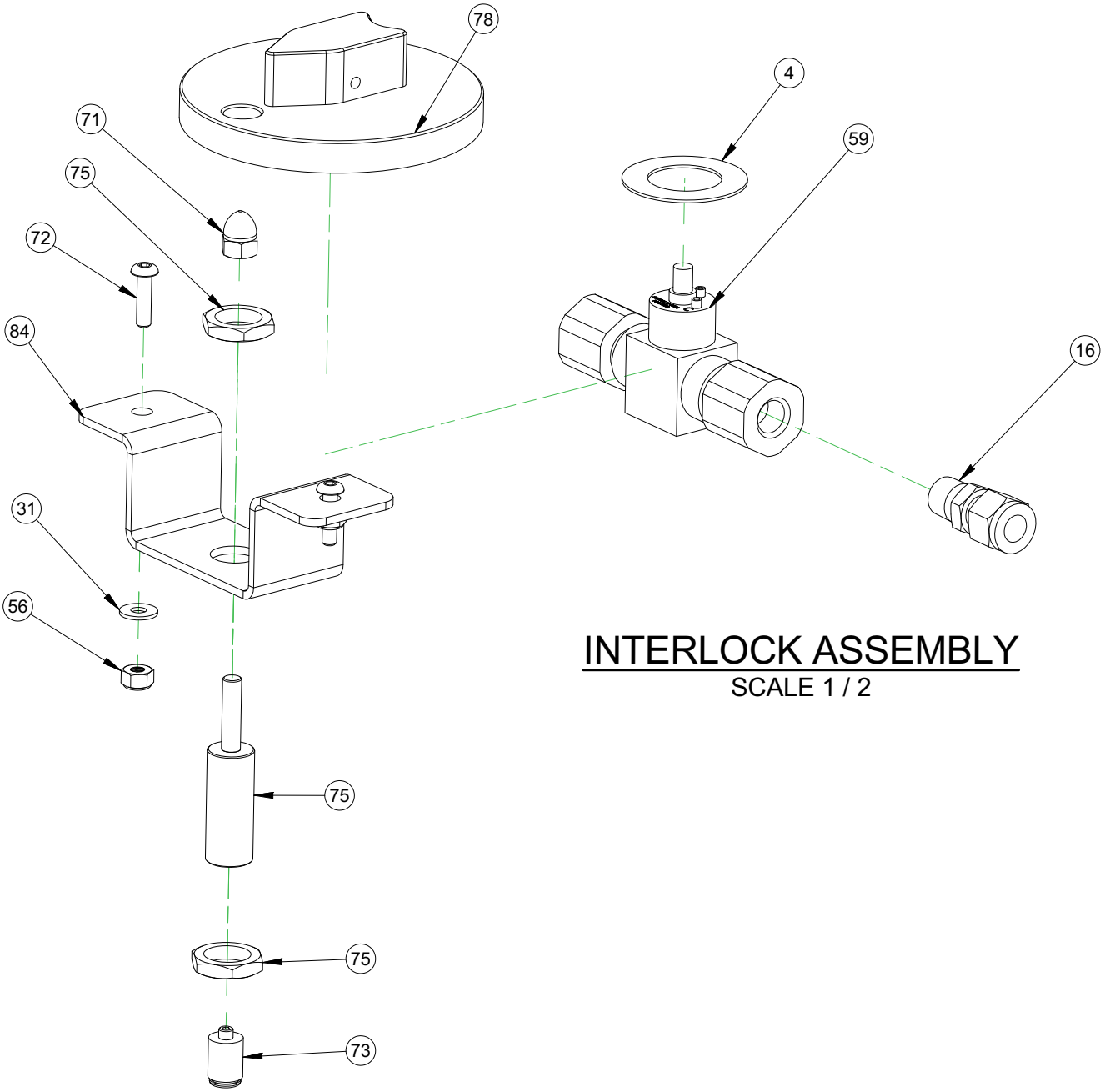


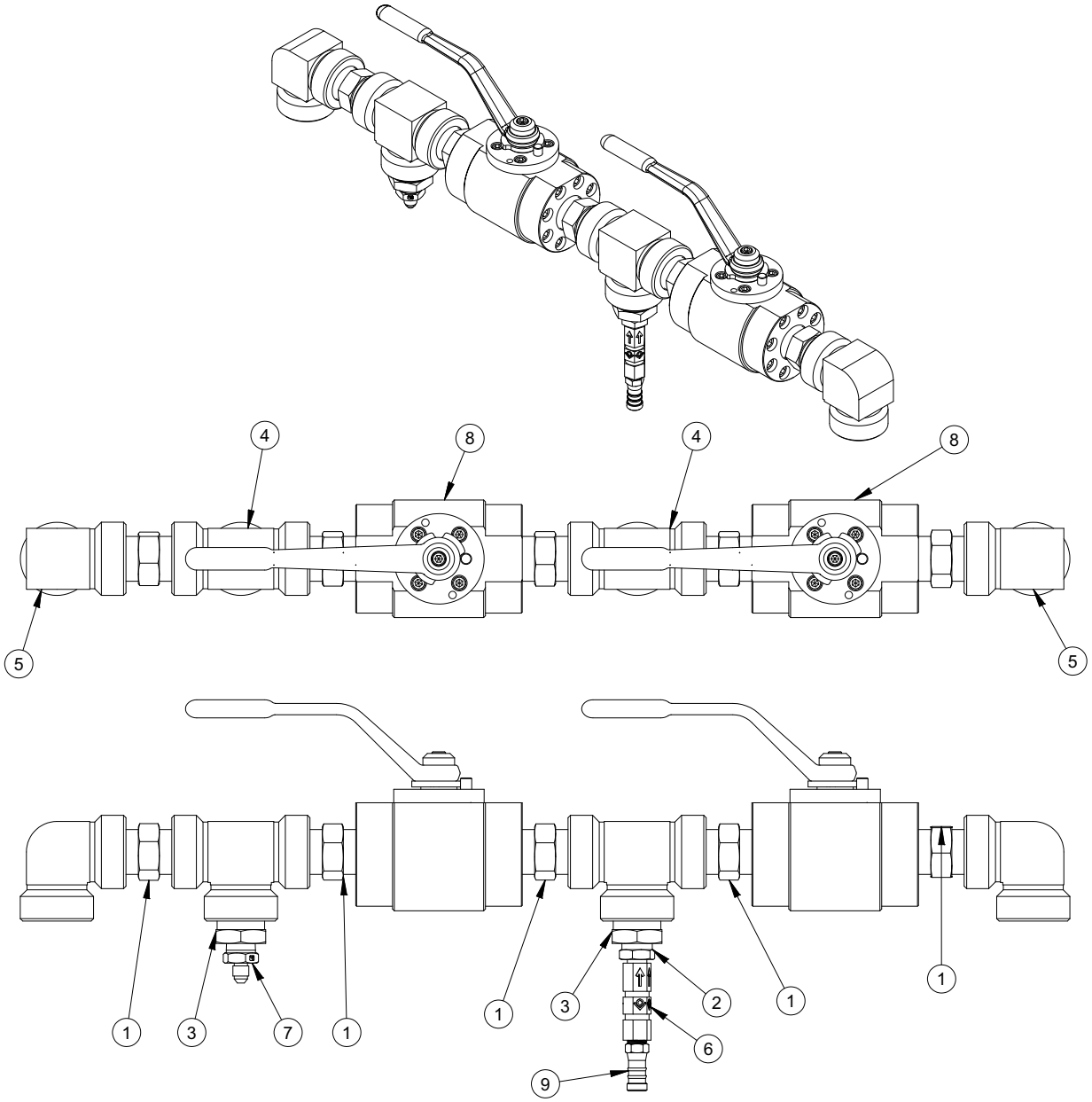
FIGURE A-26. CONSOLE INTERLOCK ASSEMBLY (P/N 98223)

ITEM	QTY	P/N:	DESCRIPTION
1	1	12579	FTG PLUG 1/2 NPTM SOCKET
2	1	15472	FTG CROSS 1/2 NPTF
3	2	17105	SCREW 10-32 X 3 SHCS
4	3	27551	WASHER THRUST .984 ID X 1.654 OD X .039
5	4	35692	FTG ELBOW 1/2 NPTM X 1/2 NPTF ST 90 DEG BRASS
6	4	57062	SCREW 1/4-28 X 1/2 BHSCS
7	2	59342	FTG ELBOW 1/4 NPTMS X 1/4 TUBE F PRESTOLOCK NP
8	2	59438	FTG NIPPLE 1/2 NPTM X 1-1/8 BRASS
9	1	77389	BALL VALVE 1/2 NPT FEMALE 160 PSI
10	1	77394	REGULATOR AIR 1/2 NPT 125 PSI
11	1	77399	HIGH FLOW MUFFLER 3/4 NPTM COMPACT
12	1	77403	STRAINER OIL 1 NPTM X 1/2 NPTF
13	5	77427	FTG BARB 1/2 NPTM X 1/2 HOSE 90 DEG ELBOW
14	1	77457	FTG ELBOW 1/2 NPTM X 1/2 NPTF STREET 90 DEG
15	2	77459	FTG ELBOW 1/2 NPTM X 3/8 TUBE PRESTOLOC SWIVEL 90 DEG BRASS
16	6	77493	FTG CONNECTOR 1/4 NPTM X 3/8 TUBE SS
17	2	77523	WASHER 3/8 LOCK SS
18	2	77544	WASHER 1/4 FLTW SS
19	1	77788	RESERVOIR HYDRAULIC 1 GAL
20	1	77804	FILLER BREATHER 3/4 NPTM
21	1	77877	FTG BUSHING BRASS 3/4 NPTM X 1/2 NPTF
22	1	77916	BALL VALVE 3 WAY 3/8" TUBE 6000 PSI
23	8	78414	NUT 1/2-13 HEX LOCKING SERRATED FLANGED
24	4	78427	SCREW 3/8-16 X 1 SHCS SS
25	4	79970	SCREW 3/8-16 X 1 1/2 SHCS SS
26	2	80952	SCREW 1/4-20 X 3/4 BHCS SS
27	1	81008	LABEL WEAR HEARING AND EYE PROTECTION 2.0 DIA
28	1	81787	MOUNT NUT REGULATOR PANEL
29	2	81917	FTG PUSH-ON BARB 1/2 NPTM X 1/2 HOSE SWIVEL BRASS
30	1	82144	LABEL WARNING - GENERAL DANGER GRAPHIC 1.30 X 1.13
31	2	82685	WASHER #10 FLTW SS
32	93	82847	HOSE LOW PRESSURE PUSH LOK 1/2 ID
33	1	83373	FTG BULKHEAD 1/4 NPTF X 3/8 TUBE
34	1	83419	FTG COUPLING 1/2 NPTF X 1/2 NPTF
35	8	83559	NUT 3/8-16 HEX FLANGED SERRATED SS
36	1	83714	FTG HEX NIPPLE 1/4 NPTM
37	1	83801	TUBE MALE ELBOW 3/8 TUBE X 1/4 MNPT
38	1	84517	GAUGE DIGITAL PRESSURE PEEK HOLD 1/4 NPTM 10KSI
39	1	84571	FTG TEE 1/4" NPT STREET BRASS
40	2	84812	GAUGE PRESSURE 4 INCH DIA 6000 PSI GLYCERIN FILLED 1/4 MNPT BOTTOM MOUNT
41	2	84926	SCREW 1/4-20 X 3/8 BHSCS 18-8 SS
42	1	85240	VALVE PRESSURE RELIEF AIR 120 PSI 1/4 NPTM
43	2	85271	SCREW 3/8-24 X 3/4 SHCS SS
44	35	85288	TUBING 1/4 OD X .170 ID POLYETHELYNE
45	10	85289	TUBING 3/8 OD X 1/4 ID POLYETHELYNE
46	3	85330	FTG PLUG 1/4 NPTM HEX HEAD 15 KSI
47	1	85478	REGULATOR SELF VENT 6 KSI BRASS 1/4 NPT
48	1	85546	FTG ELBOW 1/4 NPTM X 1/4 NPTF SS
49	1	85550	REGULATOR PRE-SETTABLE 80-140 PSI 2 PORTS 1/4 NPTF
50	1	85586	FTG ADAPTER 4 JICM X 1/4 NPTM SS
51	1	86220	FTG TEE 1/4" TUBE PRESTOLOK
52	3	87040	FTG TEST POINT 10 KSI 1/4 NPTM - M12 X 1.5 SS
53	3	87041	FTG TEST POINT GAUGE ADAPTER 10 KSI 1/4 NPTF - M12 X 1.5 FEMALE SS
54	4	87231	SCREW 10-32 X 1 BHSCS FLANGED SS316
55	2	87422	MANIFOLD GAUGE HTC 10 KSI
56	2	87533	NUT 10-24 STDNYLOC SS
57	2	87572	FTG PLUG 1/8 NPTM HEX HEAD 10KSI
58	1	87593	LABEL WARNING - CONSULT OPERATORS MANUAL 2.0 DIA
59	2	87668	VALVE BALL 2 WAY 1/4 NPTF 6000 PSI
60	1	87836	ASSY AIR PREP UNIT & LUBRICATOR USV
61	3	88670	1-1/4" DIA GROMMET FOR 1/4" THICK PANEL
62	1	88733	FTG ADAPTER 10000 PSI 3/4 NPTF X 1/4 NPTF

FIGURE A-27. CONSOLE ASSEMBLY PARTS LIST 1 (P/N 98223)

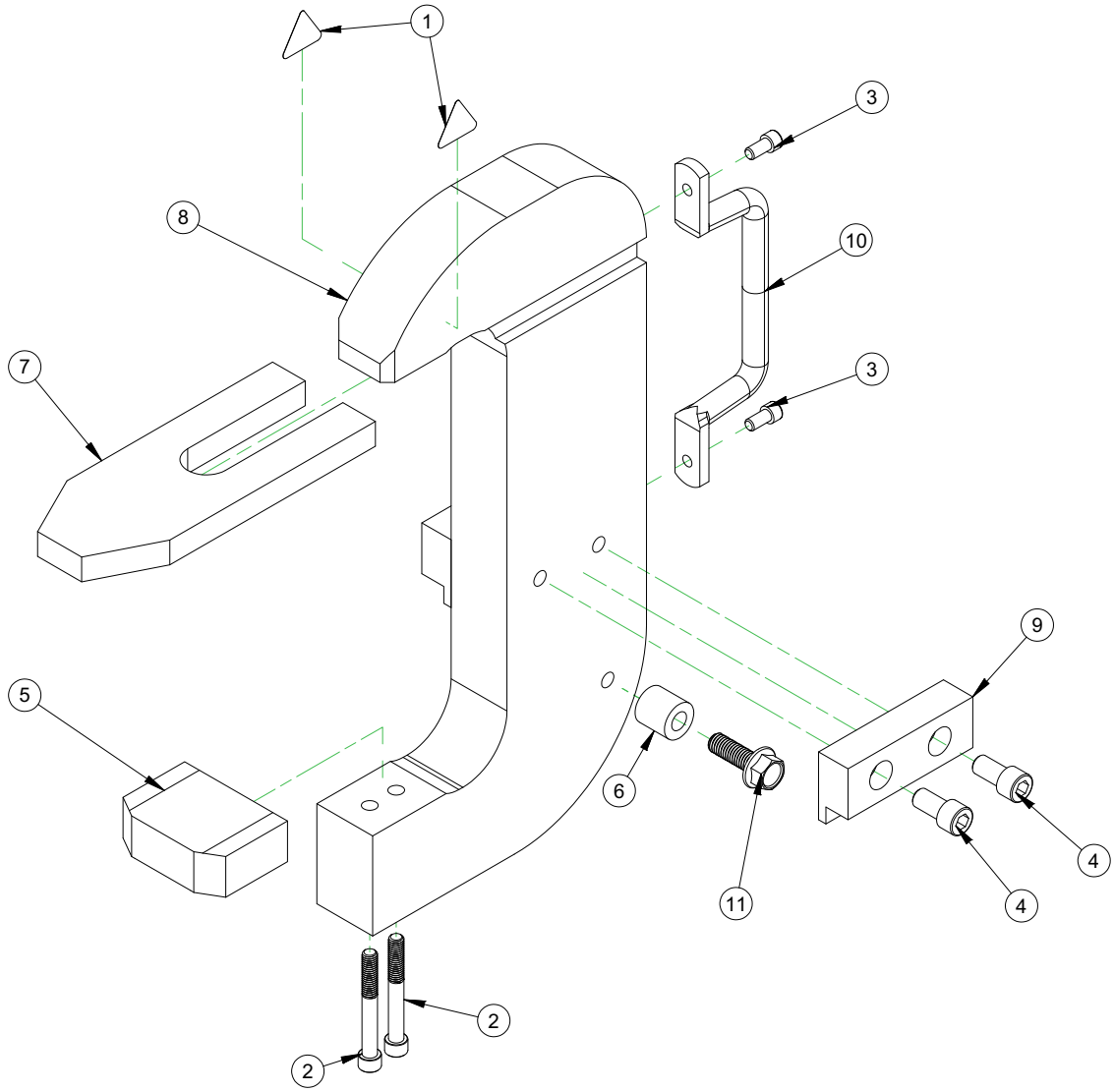
PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
63	1	88735	FTG 1/4 NPTM X 1/4 NPTM SS ELBOW
64	1	89377	PUMP AIR DRIVEN 5800 PSI OIL SERVICE
66	1	89497	LABEL WARNING DO NOT EXCEED MAX RATING OF DUT
67	1	89498	LABEL WARNING DO NOT RELEASE CLAMP WHILE VALVE IS PRESSURIZED
68	1	89499	LABEL CAUTION DO NOT LIFT WITH VALVE CLAMPED
69	1	89500	LABEL WARNING TIP OVER HAZARD WITH ACTUATOR OVERHANGING
70	1	89548	LABEL DO NOT PLUG / BLOCK PORT
71	1	89850	NUT 1/4-28 ACORN HIGH CROWN SS
72	2	89865	SCREW 10-24 X 3/4 BHSCS SS
73	1	89869	FTG STRAIGHT 10-32 X 1/4 TUBE PRESTOLOK
74	1	90012	HOSE ASSY 1/4 ID 1/4 NPTM SS X 1/4 FEM JIC SS WITH 1/2 NPTM SS ADAPTER X 42 IN OAL 6KSI (4M6K)
75	1	90078	CYLINDER PNEUMATIC SINGLE ACTING 1/2 BORE X 1/2 STROKE
76	1	90160	LABEL WARNING - EXPLOSION RELEASE OF PRESSURE 1.30 X 1.13
77	1	90575	STRAINER T POLY 3/4 NPT 80 MESH CLEAR BOWL
78	1	93087	KNOB INTERLOCK CLAMP DRAIN
79	2	94706	FTG STREET TEE 1/4 NPTF X 1/4 NPTM X 1/4 NPTF SS
80	1	94711	RUBBER CUSHIONED U-BOLT SS 1/2-13 THREAD, 2-7/8 ID
81	1	94719	MOUNTING COLLAR 2.5-15 GAL 6000 PSI
82	1	94734	TUBE 3/8 7859 6
83	2	94744	FTG ELBOW 90 DEG 1/4 NPTM X 4 JICM SS
84	1	94745	BRACKET INTERLOCK KNOB
85	1	94749	FTG POLY REDUCER BUSHING 3/4 NPTM X 1/2 NPTF
86	1	94750	FTG ADAPTER JIC-4M X 1/2 NPTM STEEL
87	2	94751	FTG ADAPTER 1/4 NPTF X JIC-4M STEEL WITH NUT
88	1	96254	TUBE 3/8 7912 2
89	1	96281	MOUNTING BASE ACCUMULATOR 6K 2.5-15 GAL 6000 PSI
90	1	96285	FTG ADAPTER 1 NPTM X JIC-16M SS 10 KSI
91	2	96296	GROMMET 2 1/4 ID X 3 OD X 2 1/2 HOLE 1/4 PANEL THICKNESS RUBBER
92	1	96305	FTG BRANCH TEE 1/4 NPTM X 1/4 NPTF X 1/4 NPTF SS
93	2	96384	LABEL WARNING NOT A LIFT POINT ROUND 1.5"
94	1	97386	FTG CHECK VALVE 1/4 NPTF 6 KSI SS
95	1	97868	CONSOLE TEST SYSTEM TAT-SRV 6K
96	1	97967	VESSEL 6 KSI 2.5 GALLON CE/PED APPROVED
97	3	97995	HOSE ASSY 6 KSI 1/4 ID JIC-4F SS SWIVEL X 1/4 NPTM SS X 28 OAL PIN PRICKED
98	1	98014	SHEET HYGARD CG 9.0" X 14.0" X .5" THICK
99	1	98015	TUBE 3/8 7912-A1 1
100	1	98016	TUBE 3/8 7912-A1 2
101	1	98018	TUBE 3/8 7912-A1 4
102	1	98029	HOSE ASSY 6 KSI 1 ID JIC-16F SS SWIVEL X 1 NPTM SS X 76 OAL PIN PRICKED
103	1	98052	LABEL AIR INLET 6000 PSI (413 BAR) MAX
104	1	98057	LABEL CLAMPING CHART TAT SRV 6K
105	1	98060	HOSE ASSY 6 KSI 1 ID JIC-16F SS SWIVEL X 1 NPTM SS X 54 OAL PIN PRICKED
106	1	98067	FTG POLY REDUCER BUSHING 3/4 NPTM X 1/2 NPTM
107	6	98075	SCREW 1/2-13 X 1-1/2 HHCS SS FLANGED
108	1	98089	HOSE ASSY 6 KSI 1/4 ID JIC-4F SS SWIVEL X 1/4 NPTM SS X 45 OAL PIN PRICKED
109	1	98090	HOSE ASSY 6 KSI 1/4 ID JIC-4F SS SWIVEL X 1/4 NPTM SS X 75 OAL
110	1	98091	HOSE ASSY 3 KSI 1/4 ID JIC-6F SS SWIVEL X 1/4 NPTM SS X 40 OAL
111	1	98092	HOSE ASSY 3 KSI 1/4 ID JIC-4F SWIVEL X 1/4 NPTM X 30 OAL
112	1	98121	LABEL WATER SUPPLY
113	1	98224	LABEL INSTRUMENT PANEL STANDARD TAT SRV CE W/ HYDRO TESTING
114	1	98331	TAT SRV VALVE SUBASSEMBLY ONE INCH W/ CHECK
115	1	100853	LABEL OPERATING TEMPERATURE TAT SRV CE

FIGURE A-28. CONSOLE ASSEMBLY PARTS LIST 2 (P/N 98223)



PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	5	79935	FTG NIPPLE 1 NPTM X 1 NPTM SS 2.77 LG
2	1	83139	FTG NIPPLE 1/2 NPTM X 1/4 NPTM SS
3	2	91977	FTG ADAPTER PIPE 1 NPTM X 1/2 NPTF
4	2	92023	FTG TEE 1 NPTF SS
5	2	95334	FTG ELBOW 1 NPTF X 1 NPTF 90 DEG SS
6	1	97386	FTG CHECK VALVE 1/4 NPTF 6 KSI SS
7	1	97829	FTG ADAPTER 4 JICM X 1/2 NPTM SS
8	2	97833	VALVE BALL 2-WAY 1 NPTF 6KSI PANEL MOUNTED .88" BORE
9	1	98336	FTG BARB 1/4 NPTM X 1/2 HOSE BRASS

FIGURE A-29. TAT-SRV 1" (25 MM) WITH CHECK SUB-ASSEMBLY (P/N 98331)



PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	2	80905	LABEL WARNING - HAND CRUSH / FORCE FROM ABOVE GRAPHIC 1.13 TALL TRIANGLE YELLOW
2	2	82666	SCREW 3/8-16 X 3 SHCS SS
3	2	84986	SCREW 5/16-18 X 5/8 SHCS SS
4	4	85923	SCREW 1/2-13 X 1 SHCS 316 STAINLESS
5	1	89421	BLOCK CONTACT CLAMP ARM
6	1	89483	SPACER 1/2 ID X 1 OD X 1 L ACETAL
7	1	96983	PLATE CLAMP ARM QUICKSET SRV
8	1	97982	CLAMP ARM STANDARD TAT SRV
9	2	98034	SHOE CLAMP ARM TAT SRV
10	1	98036	PULL HANDLE SS TAT SRV CLAMP ARM
11	1	98075	SCREW 1/2-13 X 1-1/2 HHCS SS FLANGED

FIGURE A-30. CLAMP ARM ASSEMBLY (P/N 97981)

TABLE A-1. O-RINGS KIT P/N 90025

Part number	Description	Quantity
77589	O-RING 3-5/8 ID X 3-7/8 OD X 1/8 W NITRILE 90 DUROMETER (2-239)	2
77590	O-RING 4-5/8 ID X 5 OD X 3/16 W NITRILE 90 DUROMETER (2-350)	2
78456	O-RING 5-5/8 ID X 6 OD X 3/16 W NITRILE 90 DUROMETER (2-358)	2
78457	O-RING 6-3/4 ID X 7-1/8 OD X 3/16 W NITRILE 90 DUROMETER (2-364)	2
78458	O-RING 8-3/4 ID X 9-1/8 OD X 3/16 W NITRILE 90 DUROMETER (2-372)	2
90026	O-RING 1-7/8 ID X 2-1/8 OD X 1/8 W NITRILE 90 DUROMETER (2-225)	2
90027	O-RING 2-5/8 ID X 2-7/8 OD X 1/8 W NITRILE 90 DUROMETER (2-231)	2

TABLE A-2. SPARE PARTS KIT (P/N 91731)

Part number	Description	Quantity
40920	SP ELEMENT PARKER AIR SEPARATOR	2
64446	OIL HYDRAULIC 5 GALLON 76 UNAX AW 32	1
77881	GAUGE PRESSURE 4 INCH 160 PSI 1/4 NPTM BOTTOM MOUNT GLYCERIN FILLED PSI/BAR	1
81794	GAUGE PRESSURE 4 INCH 10 KSI 1/4 NPTM BOTTOM MOUNT GLYCERIN FILLED PSI/BAR	3
90025	KIT TAT-8-25T SEAL PLATE 1.5" - 8" O-RINGS	4
91749	LOCKOUT HASP 1" DIA STEEL	1

REQUIRED CLAMPING PRESSURE						
RTJ size	ANSI Class					
	150	300	600	900	1500	2500
	MAXIMUM TEST PRESSURE, PSI (BAR)*					
	450 PSI	1125 PSI	2250 PSI	3375 PSI	5625 PSI	6000 PSI
	(31 BAR)	(78 BAR)	(155 BAR)	(233 BAR)	(388 BAR)	(413 BAR)
	HYDRAULIC PRESSURE REQUIRED TO SEAL PSI (BAR)*					
R29	500	1,000	1,900	2,400	2,800	3,400
	(34)	(69)	(131)	(166)	(193)	(234)
R31	600	1,100	2,200	2,800	3,300	4,000
	(41)	(76)	(152)	(193)	(228)	(276)
R36	800	1,600	3,200	4,000	4,800	5,700
	(55)	(110)	(221)	(276)	(331)	(393)
R37	800	1,600	3,200	4,000	4,800	5,700
	(55)	(110)	(221)	(276)	(331)	(393)
See the operating manual			Voir le manuel de fonctionnement			
Siehe Betriebsanleitung			Patrz Instrukcja obsługi maszyny			
см. руководство по эксплуатации			Véase el manual de funcionamiento			

FIGURE A-31. RTJ CLAMP PRESSURE CHART

TABLE A-3. RTJ ADAPTERS KIT (P/N 99936)

Part number	Description	Quantity
100004	SEAL PLATE TAT RTJ R29 AND R37	1
100071	SEAL PLATE TAT RTJ R31 AND R36	1
100741	CRATE 12.5 ID X 12.5 ID X 5 ID ECORRCRATE W/ SPACER	1

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APPENDIX B SCHEMATICS

Schematics list

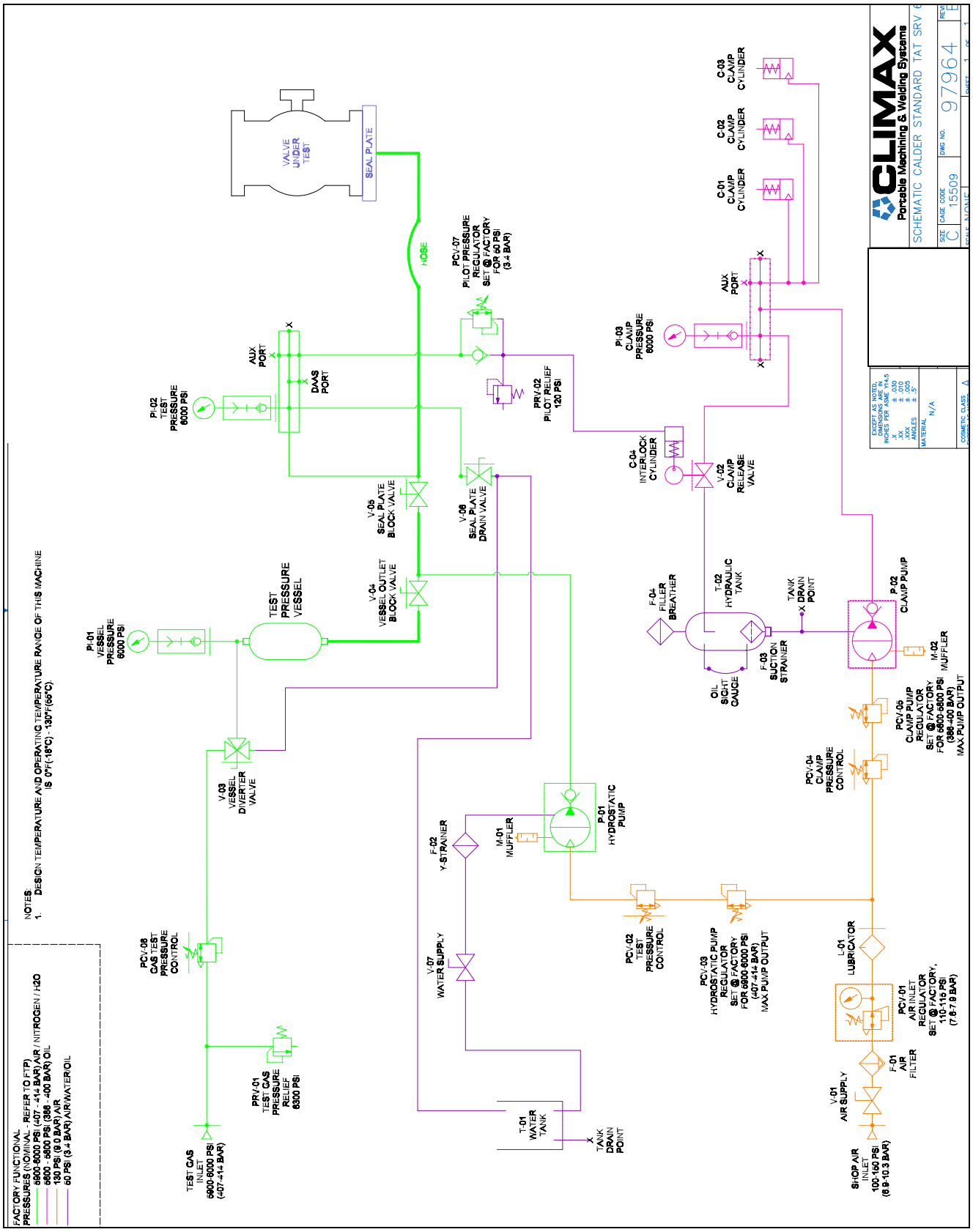

FIGURE B-1. SCHEMATIC (P/N 97964)

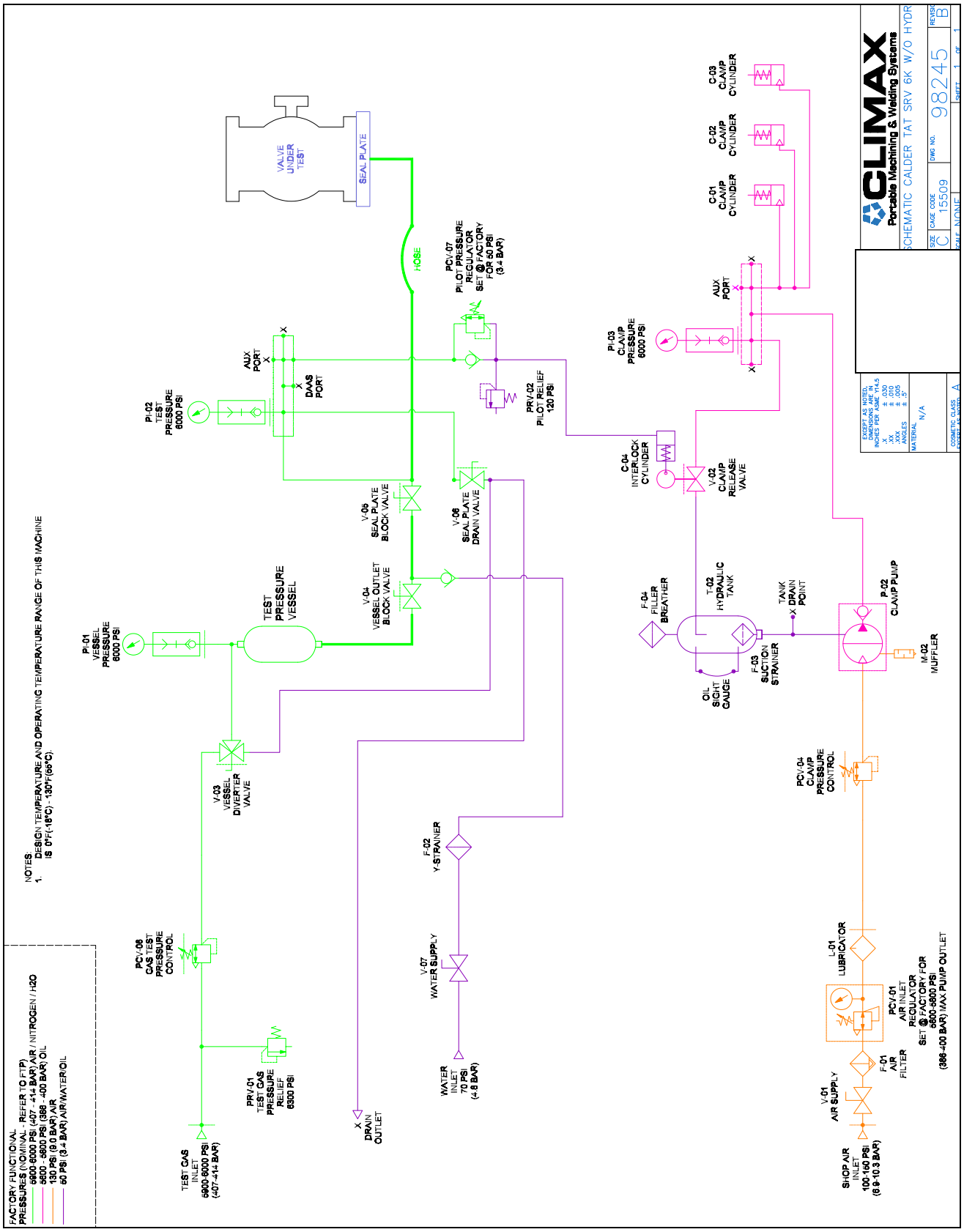

FIGURE B-2. SCHEMATIC (P/N 98245)

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APPENDIX C SDS

Contact CLIMAX for the current list of Safety Data Sheets.

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