TIPPER TIE®

A DOVER INDUSTRIES COMPANY

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Clipper Manual
Model AZ4100LM

Manual No. 80-1204
Revision No. 03
8-2-01

Tipper Tie Model AZ4100LM
Table of Contents

Chapter 1: Machine Description and Specifications

1.1 Description

The **AZ4100LM** clipper mounts upright onto the **CVW (Clipper VAC)** machine. The clipper is designed to work well with all assorted bag sizes and materials.

For each clipper cycle, the machine will:

* *DRAW A VACUUM ON PACKAGE*
* *GATHER THE BAG NECK*
* *APPLY A SECURE VACUUM TIGHT CLIP*
* *TRIM EXCESS MATERIAL FROM BAG TAIL*

This clipper along with the **CVW, (Clipper VAC)** is designed to package a variety of products, red meats, processed meats, poultry, cheeses, etc.

This clipper is designed to operate with the Tipper Tie Z400 Series clips.
Z401 Clips cover barrier bags (3 mil), 8"-18" flat width
Z410 Clips cover barrier bags (3 mil), 8"-18" flat width
Z411 Clips cover barrier bags (3 mil), 10"-23" flat width

1.2 Applications

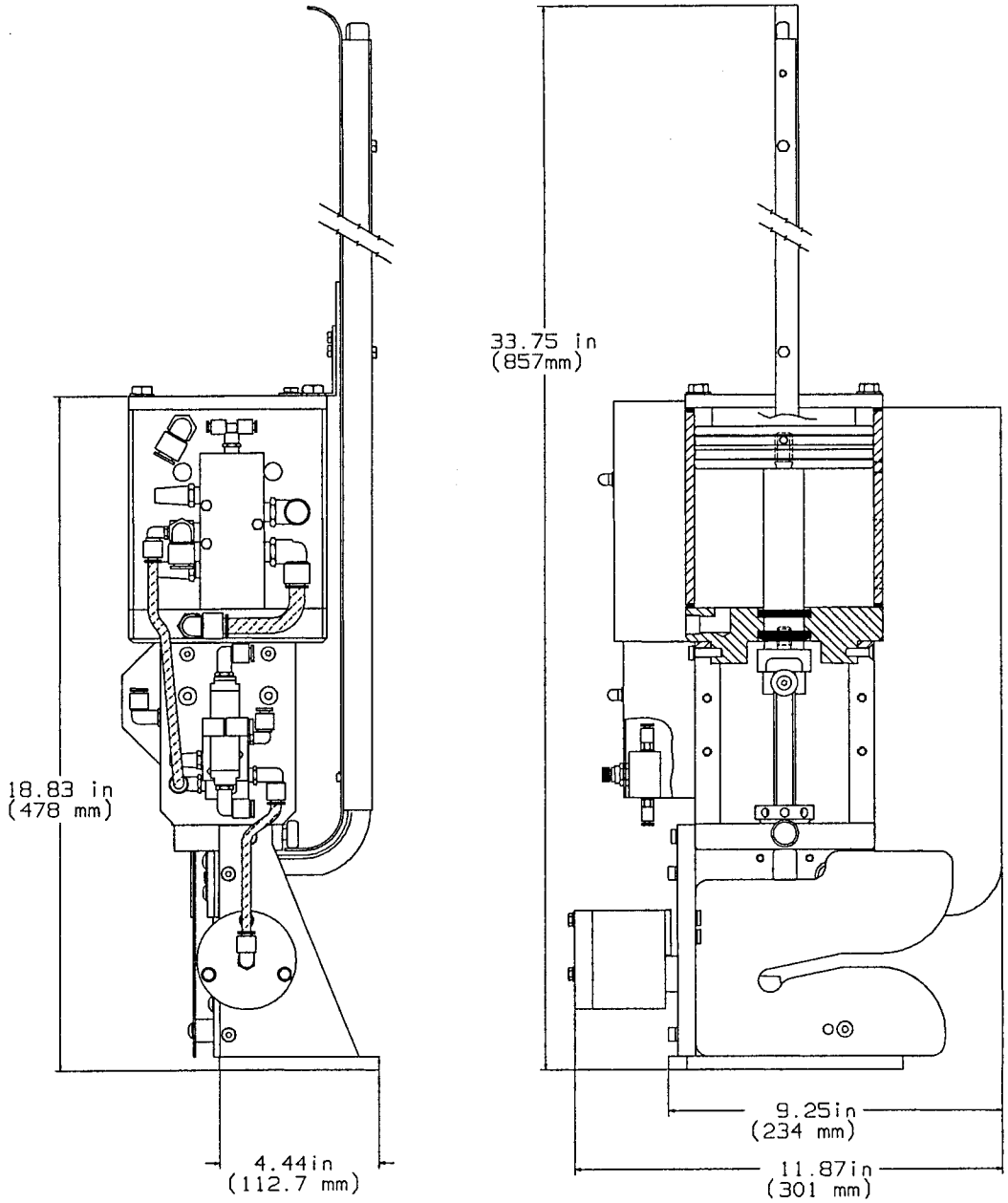
The clipper is designed to provide one-step closing for a variety of food products, such as beef, poultry, cheeses, or a wide assortment of non-food products.

1.3 Machine Specifications

Air Consumption: 6.2 cubic feet per minute [175.6 liters] @20 cycles per minute
Air Requirements: .80-100 psi [5.5-6.8 bar]

Clip rail capacity: 3 clip sticks [234 clips]

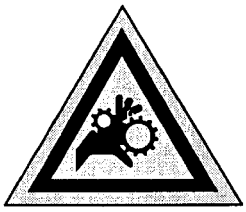
Machine weight: 42 LBS [19.05 kg]
Shipping weight: .47 LBS [21.3 kg]



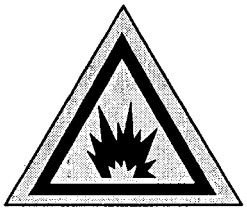
Chapter 2: Safety Instructions
2.1 International Safety Signs

INTERNATIONAL SAFETY SIGNS USED TO COMMUNICATE HAZARD INFORMATION USED WITH APPROPRIATE MACHINE FUNCTIONS

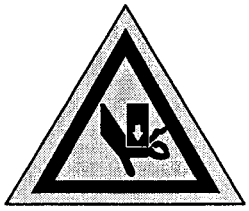
- THE YELLOW TRIANGLE SIGNS WARN OF EXISTING HAZARDOUS CONDITIONS
- THE BLUE CIRCULAR SIGNS DEFINE MANDATORY ACTIONS REQUIRED



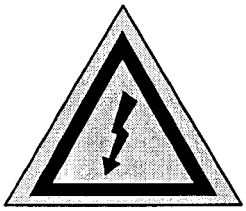
WARNING: DANGER OF CRUSHING



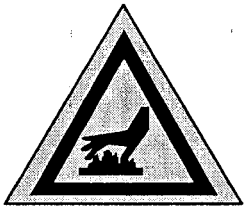
WARNING: EXPLOSIVE ATMOSPHERE



WARNING: KEEP HANDS AWAY FROM PINCH AREA



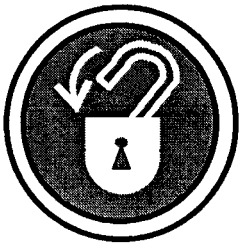
WARNING: DANGEROUS ELECTRICAL CURRENT



WARNING: HOT SURFACE

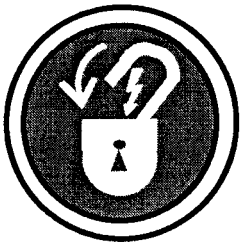
WARNING: KEEP HANDS AWAY FROM KNIFE AREA

WARNING:

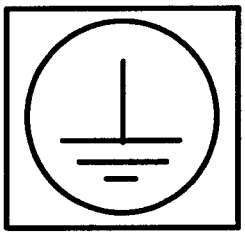


INSERT SAFETY LOCKOUT

CONSULT SERVICE MANUAL

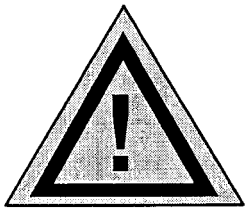


ELECTRICAL LOCKOUT REQUIRED



PROTECTIVE EARTH GROUND

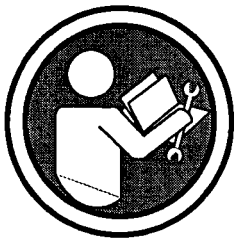
2.1 International Safety Signs continued:



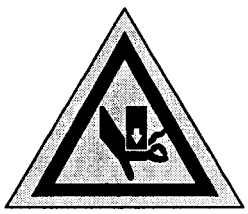
WARNING:

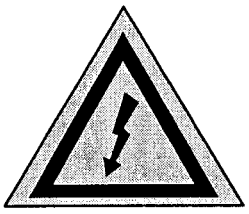
When using this machine, all operating instructions, safety instructions and precautions must be followed and strictly adhered!

Do not attempt to install, setup or operate this machine before you have read and understood this manual and any accompanying supplier's manuals.



Follow all warnings and safety instructions in this manual. Failure to comply with safety instructions could result in serious injury.





2.2 Safety Instructions

With the use of this machine, the following safety precautions must be obeyed:

- Before installing and first operating the machine, this manual must be read and understood. Follow all operating and safety instructions and exercise extreme care.

- This machine must be installed securely, and permanently attached to a solid surface before starting and operating.

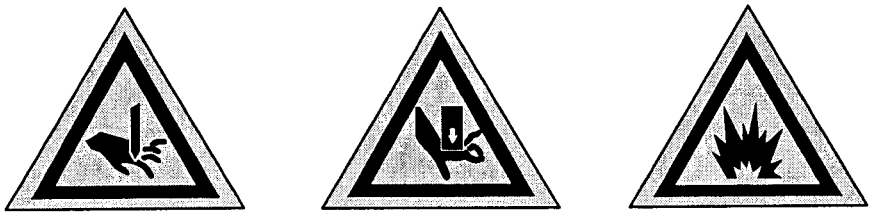
- This machine must be operated only by trained personnel. Training must be repeated at regular intervals.

- Safety devices must be checked each day to ensure proper operation. Safety features should be examined once each year by experts.

- All guards, protective covers and shields must be in place before operating the machine. Do not modify, remove, disable or bypass the guards. Operating this machine with guards, covers and shields removed could result in serious injury. **Never operate this machine without safety devices.**

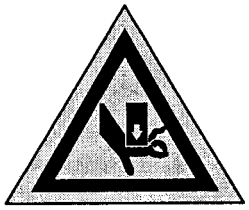
- **The maximum working pressure for this machine is 100 psi, (6,9 bars)** Air pressure greater than this could cause an explosive rupture in any of the air lines or pneumatic components. Failure to adhere to this caution could result in personal injury or damage to the machine.

- Keep hands and fingers clear of the punch, die and knife areas at all times. Never touch these areas while the machine is in operation. Do not allow fingers, hands, jewelry or clothes around moving parts during operation of this machine.



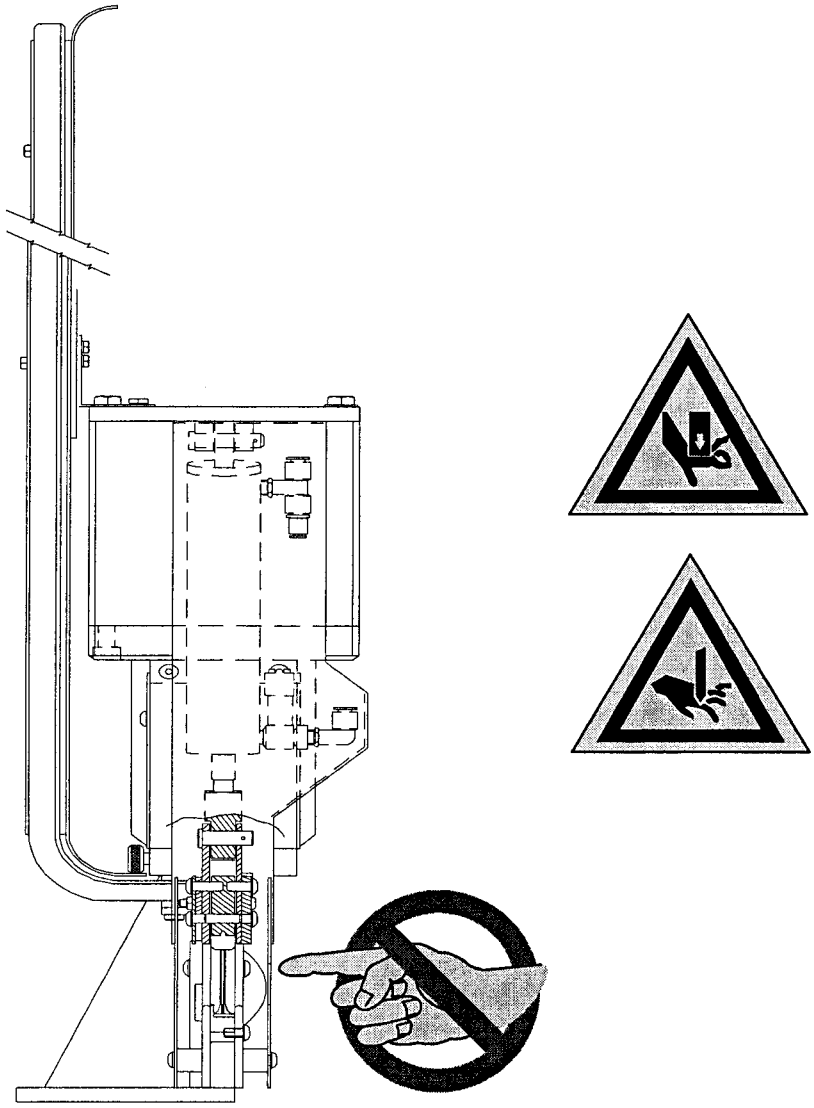
2.2 Safety Instructions continued:

- Immediately report any malfunction to the person in charge
- Stop machine to correct malfunctions.
- Disconnect air supply prior to servicing or moving the machine. The main air supply line must be disconnected from the machine before performing any service operation or maintenance.
- When this machine is not in operation, the air supply must be disconnected at the plant / regulator junction or at the quick disconnect on the machine. Failure to disconnect the air supply from this machine creates serious risk of injury. To prevent unauthorized personnel from operating this machine, rotate the red emergency stop valve 1/4 turn clockwise. Attach a padlock through the holes.
- When moving the machine, keep hands and fingers clear of punch, die and knife areas.
- Use only original spare parts and accessories.
- If the machine is sold, the manual must be supplied to the new owner.



2.3 Danger areas

Warning:
Keep hands and fingers clear of die, punch, and knife areas.



Chapter 3: Delivery and Inspection

3.1 Delivery

Upon delivery, inspect the shipping container and equipment for damages due to shipping and handling. If damage is found or suspected, contact the shipping agent immediately. In order that the carrier may have an opportunity to inspect goods and thereby properly verify claims, any loss or damage discovered after delivery should be reported to the agent of the delivering line immediately or within 15 days after receipt of goods.

In many instances, the original container is not opened and the contents not examined before reshipment to final destination. Therefore, under (SUBPART C: CLAIMS FOR LOSS OR DAMAGE: SECTION 1226.200 NATIONAL MOTOR FRIGHT CLASSIFICATION), 9 months are allowed for filing claims for loss or damages.
The shipping agent or carrier will help you in processing your claim. Remember to report all suspected damages immediately. If additional assistance is required, TIPPER TIE will gladly help in settling your claim. However, first contact the carrier or his agent involved.

WITH ALL CORRESPONDENCE, INCLUDE THE FOLLOWING:

* Original bill of lading or copy thereof. *
* Vendor invoice, or certified copy, when claim is based on weight or valuation of shipment has been improperly described.
* Catalog pages or product information.
* Original packing slip or receiving reports.
  * or copy of electronic bill of lading manifest.

3.2 Unpacking Equipment

For ease of shipping, partial disassembly of the machine sometimes is necessary. Check the shipping list and loose parts list to ensure that all items have been received. Do not discard packing materials until machine is assembled and operation. notify **Tipper Tie** immediately if any component is missing or if additional assistance is required.

Refer to the installation and operating instructions before starting to operate the equipment. Add all required oils and fluids, and make all machine adjustments as instructed before starting machine. Failure to do so may result in equipment damage or personal injury, and voids product warranty.

Chapter 4: Air Connections and Lubrication

4.1 Air connections

Recommended clipper working pressure setting is 55 psi (3,8 Bar). Before operating, check clipper air line connections as set at factory. If lines have become disconnected, reassemble as shown per pneumatic schematic. Air pressure can be regulated from the air regulator assembly. The air regulator assembly consists of filter, regulator, and oiler. Please note incoming air direction. (plant air flow)

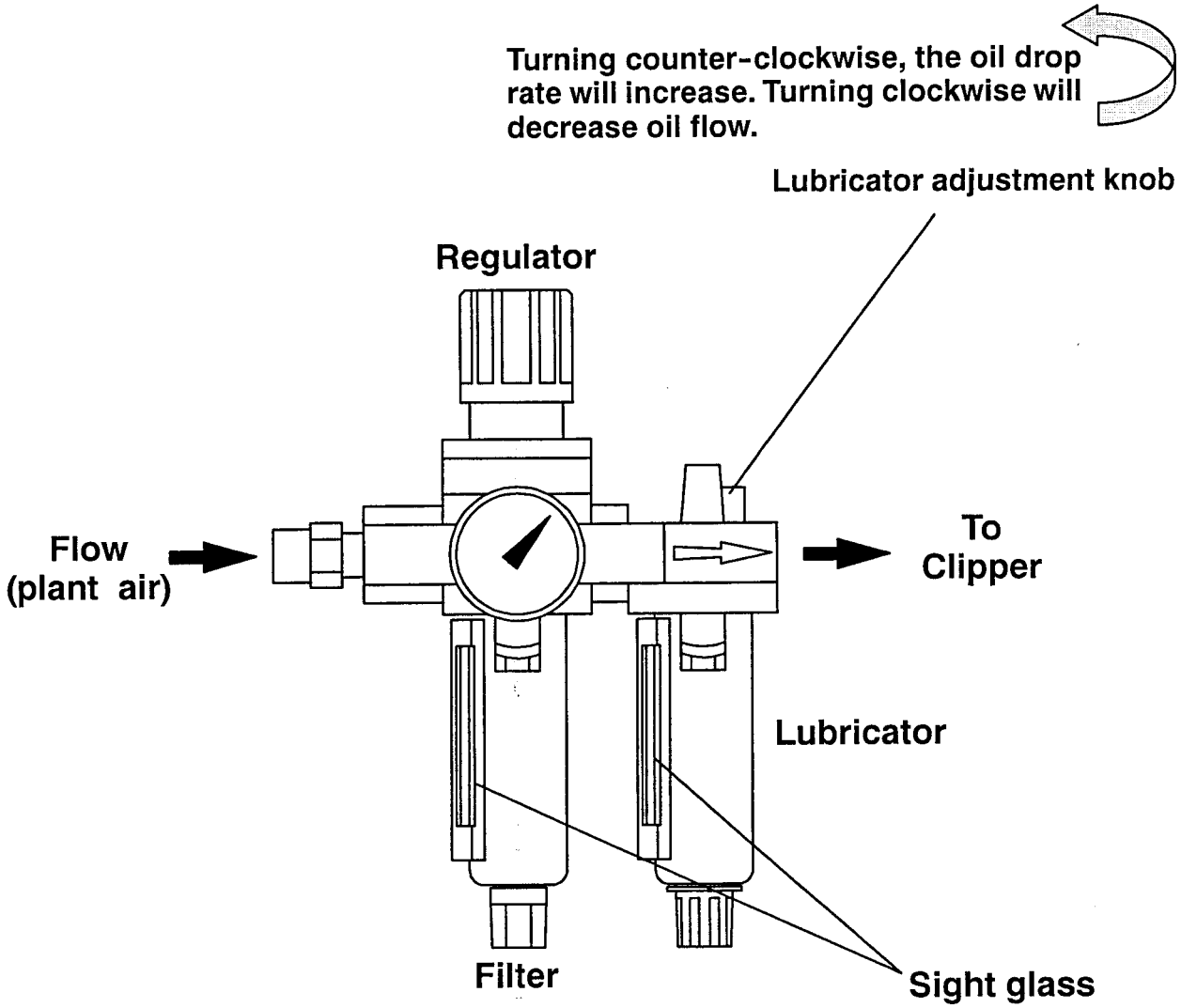
Assemble the factory air supply to the air regulator assembly by means of the quick-disconnect, connector. This quick-disconnect provides a means of removing the air supply for servicing and clean-up. The quick-disconnect must be attached with the check valve half (female), to the supply side of the air circuit.

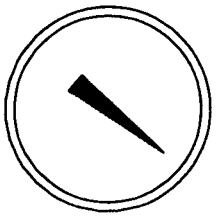
4.2 Filter / Regulator

The filter must be kept clean to maintain maximum filtering efficiency. Open drain cock, under the filter periodically and drain off any bowl accumulation before it reaches level of lower baffle. A visible coating of dirt or condensate on the filter element surface or an excessive pressure drop is an indication that cleaning is necessary. To clean, turn-off air supply, and depressurize. Loosen locking collar and remove bowl. Clean all parts with denatured alcohol and blow-out the inside with compressed air.

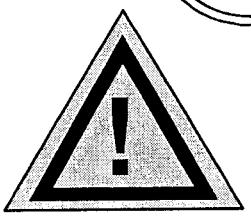
To regulate air pressure, pull the locking type adjustment knob away from the body of the regulator until the orange band is visible. Rotate knob to regulate air pressure (clockwise to increase pressure / counter-clockwise to decrease the pressure). When adjustment is complete, push the knob back into the body of the regulator.

4.3 Air Regulator Assembly



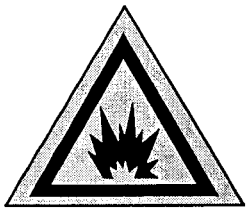


Recommended Pressure Setting:
55 psi, (3,8 bar)



Warning:
Do not set air pressure above 100 psi, (6,9 bar)

4.4 Lubricator Adjustment



Do not attempt to add oil to the lubricator while under pressure. Disconnect the air pressure supply and purge pressure from the system before filling with lubrication fluids.

The lubricator cannot be filled while under pressure.

LUBRICATION:
For average operating conditions, the use of SAE #10 (SUV > 150-200 SEC @100 degrees F) oil is recommended. Other lubrications may be used if not heavier than SAE #40 (SUV 800 SEC @ 100 degrees F).

FILLING:
The lubricator cannot be refilled under pressure. Always **shut off** the air pressure supply and purge pressure from the system before refilling with lubricating fluids.

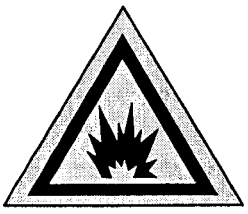
ADJUSTMENT:
Lubricator oil flow is adjusted by turning the front needle valve. By turning counter-clockwise, the oil drop rate will increase. Turning clockwise will decrease oil flow.

To check lubrication, hold a mirror of similar material near the equipment exhaust. A heavy film discharge indicates over-lubrication. The oil drop rate should be reduced by turning the knob to a lower setting, decreasing oil drop rate.

If no oil drips through the sight glass with the needle valve open, proceed as follows:

- Make certain there is sufficient oil in the bowl.
- Check to determine whether there is air pressure ahead of the lubricator.
- Check the air flow from the lubricator.

If oil still does not drip through the sight glass, an accumulation of dirt in the lubricator is indicated. The lubricator will need to be cleaned.



It is recommended that air pressure remain between 43.5-87 psi (3-6 bar)

Always keep air pressure below 100 psi (6,9 bar)

Chapter 5: Operating instructions

5.1 Preparation

Before operating, check all air connections. If they have become disconnected, reassemble as shown in the pneumatic schematic. Adjust incoming air to the recommended pressure of 55psi (3,8 bar) and check for any air leakage. If leakage is present, correct before continuing. Load the stick clips onto the clip rail. Check for proper feeding, and for any obstructions at the punch, knife, and die areas.

5.2 Operating the Machine

- When the operator valve located on the **CLIPPER VAC MODEL CVW** cabinet is activated, the gate air cylinder pressurizes, closing the front gate. The air continues through the stroke sensor and punch valve into the main cylinder body.

- The clip punch attached to the punch piston drives down, taking a clip from magazine rail through the die support plate, and continues to the clip forming die.

- The clip forms around the product in the die-gate, completing the closure.

- Air continues thru the flow control into the air volume chamber. It continues through the flow valve, allowing adjustment as needed for cut-off knife timing and speed. The cut-off knife extends to trim off excess bag tail.

- With the release of the operator valve, **(on Clipper VAC Cabinet)** the cut-off knife and punch return for another cycle. Punch moves up, knife-retracts, and gate opens

- Knife stroke is controlled by air pressure from the main piston chamber, flow control and air volume chamber. The machine is designed to complete the clip closure before the cut-off knife extends. The knife will cycle after closure is formed to cut-off the extra material, (tail) left on the product. The flow control valve may be used to adjust the timing and speed of the knife extension.

- Machine is ready for another cycle.

Warning!

If a clip jams in the die area, do not attempt to cycle the machine again until the jam is cleared. Follow all safety procedures! Turn off the air supply, lock-out the emergency stop valve, before attempting to remove the clip or other obstruction from the die area.

5.3 Crimp Control

- Remove the Crimp control guard on the side of the clipper for access to the Crimp control ring located inside. The crimp control ring is attached to the support base,encircling the punch.

- Before adjusting, loosen the knurled locking knob.

- By turning the crimp control ring counter-clockwise a looser clip crimp will result. clockwise a tighter crimp. After adjusting, lock into position with the knurled knob, and replace guards before operating.

Adjustments to the air pressure and crimp control are required to set the machine for the best closure. Differences in casing and bag sizes require adjustments to be made as outlined for optimum closing and sealing.

5.4 Clipper Cycle

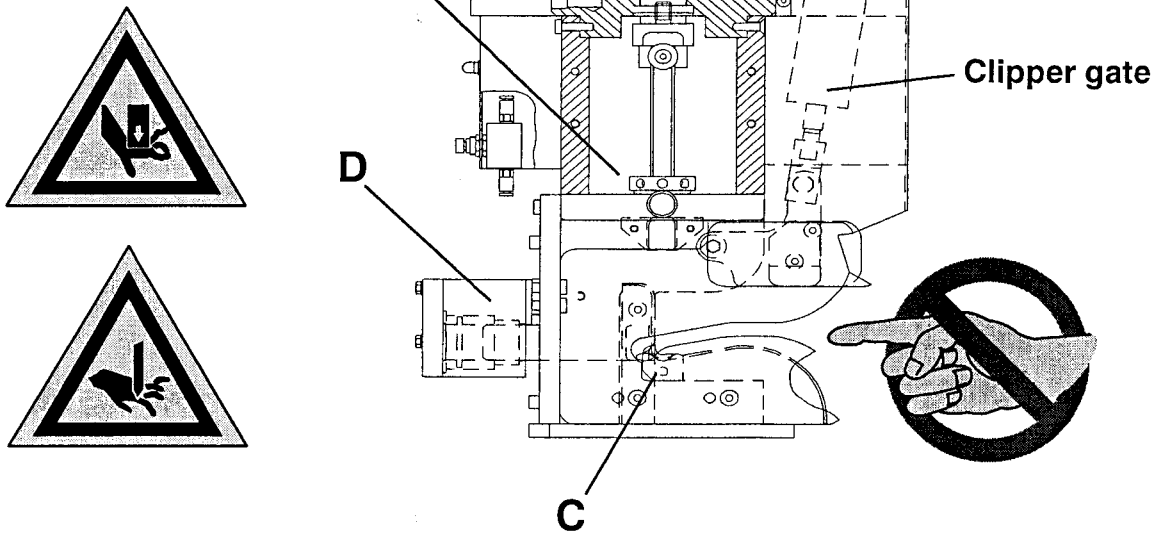
A GATE CYLINDER ACTIVATED BY VALVE ON CABINET, CLOSING GATE AROUND PRODUCT

B AIR ENTERS CYLINDER, DRIVES PUNCH/PISTON DOWN, CLIP IS TAKEN FROM MAGAZINE RAIL

C CLIP FORMS AROUND PRODUCT IN DIE

D AIR ENTERS KNIFE CYLINDER, KNIFE TRIMS OFF EXCESS MATERIAL FROM BAG

E VALVE ON CABINET CLOSES FOR RETURN STROKE
PUNCH MOVES-UP
KNIFE-RETRACTS
GATE REOPENS



Chapter 6: Cleaning Procedure

6.1 U.S. Department of Agriculture Guidelines

APPROVED CLEANING COMPOUNDS:
U.S. DEPARTMENT OF AGRICULTURE
FOOD SAFETY AND INSPECTION SERVICE
(REFERENCE AGRICULTURE HANDBOOK NO. 562)

This publication is intended to assist in applying approved cleaning methods under the USDA meat and inspection program. Cleaning materials used must be in compliance with the USDA. Compliance with the requirements set forth in the publication does not, in itself constitute authorization. Users must submit application with the USDA for consideration of suitability of preparations and their safety for use as directed.

Submit requests for such evaluation to :

Compounds Evaluation Unit, CPS
Product Safety Branch
Food Ingredient Assessment Division, Science, FSQS
U.S. Department of Agriculture
Building 396, Room 300, Barc-East
Beltsville, MD 20705
Tel (301) 344-2566

U.S. Department of Agriculture Food Safety and Inspection Service Handbook No. 562 Part 5, Section 5.1 Cleaning Compound

(A) GENERAL USE CRITERIA

(1) Neutral or mildly alkaline preparations consisting of any combination of soaps, detergents, wetting agents, emulsifiers, solubilizers, and common inorganic builders may be used on any surface in and department

(2) Strongly alkaline preparations (those containing in excess of 20 percent caustic soda or other ingredients with the equivalent causticity thereof) may be used only in soak tanks or with steam or mechanical cleaning devices in any department

(3) Acidic preparations consisting of mineral acids, organic acids, or acidic salts may be used in any department for the removal of rust, corrosion, scale, or other deposits which are not readily removed by alkaline preparations.

(B) RESTRICTIONS OF USE

(1) Before using any cleaning preparation, food products and packaging materials must be removed from the room or carefully protected. After using such preparations, all surfaces must be thoroughly rinsed with potable water.

(2) Preparations having a characteristic odor of fragrance as diluted for use may, in the opinion of the **USDA,** interfere with sanitary inspection of food contact surfaces may not be used on food contact surfaces. They may be authorized for limited use on floors and walls only.

(3) Preparations containing abrasive materials such as silica, pumice, etc. may be used on food contact surfaces only if care is taken to remove all odors or residues resulting from their use by thorough rinsing with potable water.

(4) Boric acid and salts thereof, may be used in such preparations only at concentrations up to 90 percent in association with strong acids, strong alkalis, soaps, or synthetic detergents.

6.2 Cleaning procedure

After use of machine, the clipper must be cleaned to remove all residues (food products) from the throat, punch, knife and die areas, (*food contact zone)*. Also check all other machine surfaces and surrounding work station for material residues or contamination. All surfaces must be cleaned using the recommended materials and procedures as outlined by the U.S. Department of Agriculture Food and Inspection Service Handbook No. 562. A copy of Part 5,Section 5.1,Titled: Cleaning Compounds: is included with this manual. Cleaning product approval, in writing is required, as outlined in the copy provided.

Remember, before cleaning the clipper, ensure that the air supply has been disconnected from the clipper, and all lock-out procedures have been followed.

Never attempt to clean the clipper while it is attached to the air supply!

- Turn off factory air and disconnect the air line from the clipper with the "Quick disconnect" attached on the rear of the clipper.
- Remove all guards to expose all surfaces for cleaning.
- Clean all surfaces as outlined by the U.S. Department of Agriculture Handbook.
- After cleaning, (FDA food contact approved) light mineral should be applied to all pivot areas. The internal moving parts are lubricated by the filter / regulator / lubricator.
- After cleaning and lubricating, reassemble all guards and check for safe function. Check for and tighten all loose connections and screws before returning machine to operation. Check for and remove all burrs around die pocket.
- While cleaning the clipper, inspect for worn or damaged components needing replacement. For replacement parts refer to the list of recommended spare parts, and assembly drawing.

Chapter 7: Maintenance

7.1 General Maintenance Checklist

- Check regularly for loose screws.
- Check the oil level in the lubricator regularly
- Check the air filter on a regular basis
- Check the knife for signs of chipping
- Check the end of the punch for burrs
- Check guards for safe function

Check for and tighten all loose connections and screws before returning machine to operation. Check for and remove any burrs around die pockets.

While cleaning the clipper, inspect for worn or damaged components needing replacement. For replacement parts refer to the list or recommended spare parts and assembly drawings.

7.2 Lubricator Maintenance

The oil level in the lubricator must never be allowed to drop below the end of the dip tube. To replenish oil, first shut off the air supply, lock-out the system. Remove the slotted filler plug and fill to oil level mark. Replace and tighten plug.

Normally. the lubricator should require only occasional cleaning, provided clean oil is used, and the air supply is kept clean by the filter system. However, if no oil drips through the sight glass, and the oil supply has been replenished, the lubricator requires cleaning.

Check the following before cleaning the lubricator:

- Make sure there is sufficient oil in the bowl.
- Check to determine whether there is air pressure ahead of the lubricator
- Check the air flow from the lubricator

If each of these areas are functioning properly, continue to clean the lubricator.

7.3 Filter / Regulator / Maintenance

The air filter should be cleaned periodically to maximumize filter efficiency. Open the drain cock under the filter periodically and drain off any bowl accumulation before it reaches its over flow level. A visible coating of dirt on the filter's elements surface or an excessive pressure drop in an indication that cleaning is necessary.

To clean the filter, turn off air supply, lock out system, and depressurize. Loosen locking collar and remove bowl. Clean all parts with denatured alcohol and blow out the inside with compressed air.

To clean the regulator, turn off air supply, lock out system, and depressurize. Remove the bottom plug, spring, and disk. Clean all parts with denatured alcohol. Wipe off seat and blow out regulator body with compressed air. Reassemble the filter / regulator unit. Before tightening the plug, make certain the disk is centered.

After cleaning and servicing, the air regulator may need adjusting. Adjust the incoming air to the recommended pressure settings of 43.5-87 psi, (3-6 bar). Always keep air pressure below 100 psi, (6,9 bar).

Always check the air muffler for oil build up and blockage. A muffler caked with oil or accumulated contamination will restrict the porting of the used air into the atmosphere, and slow down the machine. Always check the mufflers when servicing the filter / regulator unit, and replace as required.

Chapter 8: Trouble Shooting Guide

Symptoms		*Solution*
Clipper has no power		Air connection may be loose. Check all air connections.
	or	Regulator may be turned off. Check the regulator unit.
	or	Water may be in the system. Drain and change the filter.
Clipper is slow		Water may be in the system. Drain the water and change the filter.
	or	Muffler may be clogged. Replace the muffler.
	or	Pressure to the clipper is low. Check the pressure setting and increase if necessary.
	or	Air lines are pinched. Replace the air lines.
	or	Cylinder is stuck. First check for pinched air line and check the air pressure. If cylinder is still stuck, disconnect air line and check for broken or worn parts. Replace bad parts or air cylinder.
Punch does not retract		Knife blade housing may be jammed with product residue. Disassemble and clean.
Knife does not cut		Check knife for nicks and sharpen as needed.
Malformed clips		Punch or die may be damaged. Replace as necessary.
	or	Air pressure may be too low or too high. Check air pressure and adjust if necessary.
Clips are loose and seal poorly		Check crimp control and adjust if needed.
	or	Air pressure is to low. Check air pressure and adjust if necessary.
	or	Punch and die may be worn down. Check for wear on punch and die, and replace if needed.

Chapter 9: Spare parts List

When ordering replacement or spare parts, always include the following:
Machine model number and date of purchase:
Identifying part numbers stamped on part:
Part number or numbers on spare parts list,
or identifying item numbers on assembly drawings:

9.1 Recommended Spare parts

Item	Part No.	Description	Qty.
1	05-0072	Die	1
2	13-2102	Punch	1
3	17-0742	Spring, knife cylinder	1
4	21-0164	Punch valve	1
5	21-0165	Knife valve	1
6	21-0210	Valve	1
7	41-0050	U-cup, punch piston	1
8	41-0802	U-cup, knife	1
9	41-1726	U-cup shaft	1
10	62-0005	O-ring, knife cylinder	1
11	62-0033	O-ring, punch cylinder cap	1
12	99-1725	Shaft wiper	1

The above items may be ordered by individual part numbers
or they may be ordered as a kit: No. 55-0091

9.2 Loose Parts List

Item	Part No.	Description	Qty.
1	24-9930	White oil (ISO VG32 Equivalent)	1
2	80-1204	Model Operators Manual	1

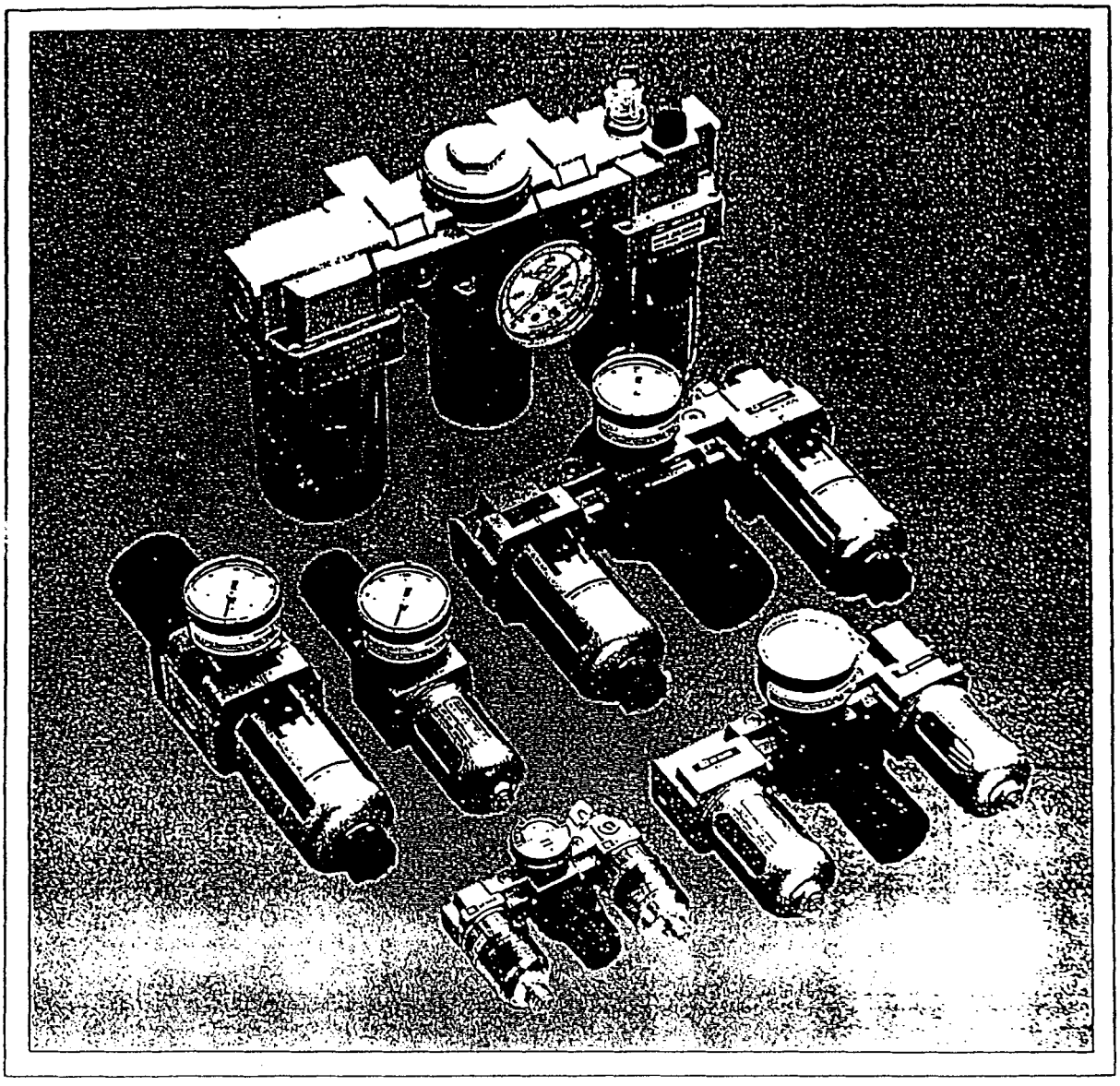
Chapter 10: Assembly Drawings

AZ4100LM	Clipper assembly drawing
00-0522	Rail assembly
00-0523	Gate assembly L.H.
63-0071	Pneumatic schematic

Modular Type

F.R.L. Combination

Filter • Regulator • Lubricator • Filter/Regulator
Mist Separator • Micro Mist Separator

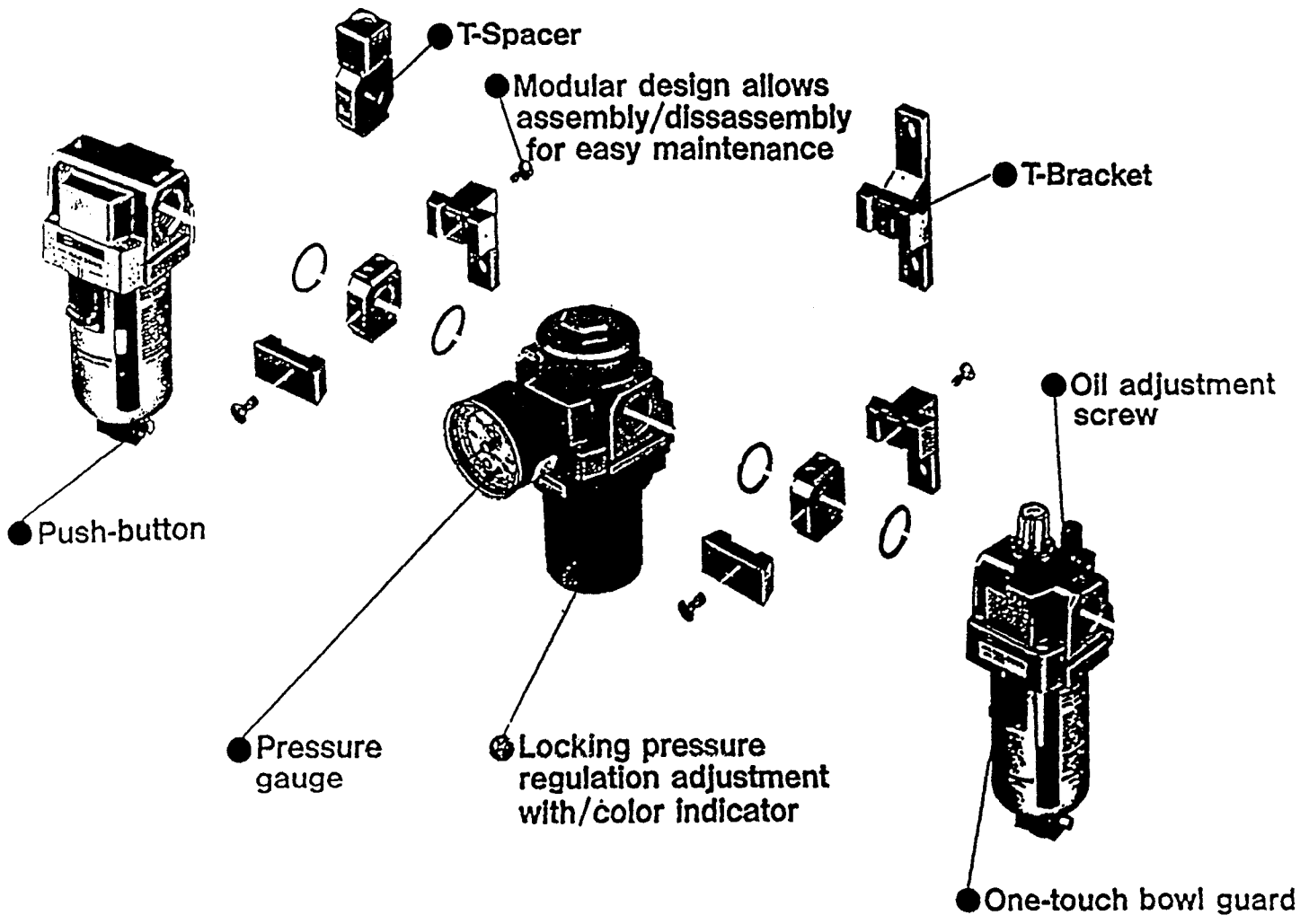


SMC

SMC Pneumatics, Inc.

Modular Type

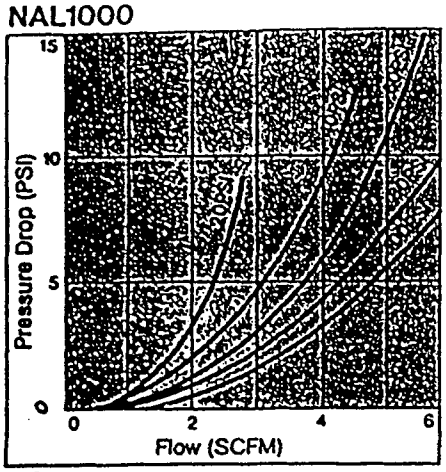
F.R.L. Combination



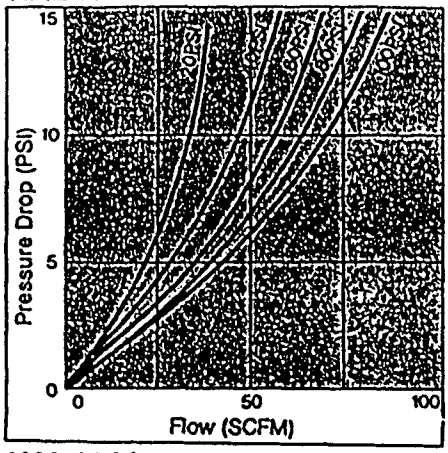
Flow Characteristics

Operating Pressure: 100 PSI

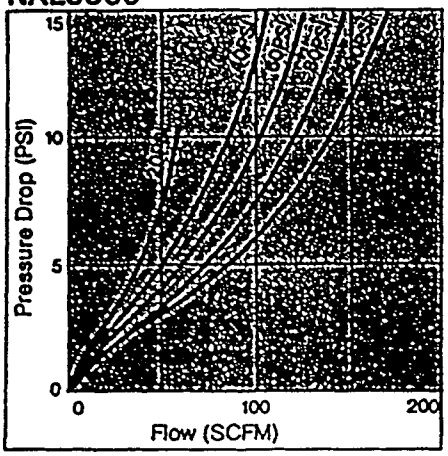
NAL1000



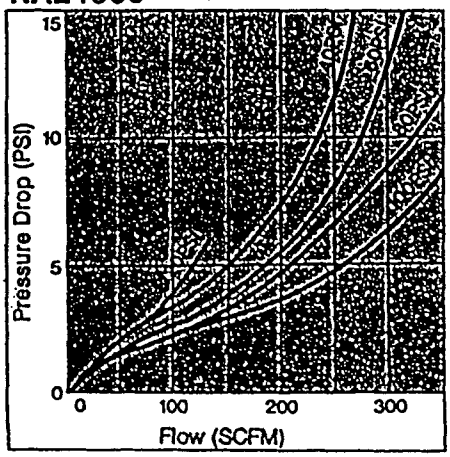
NAL2000



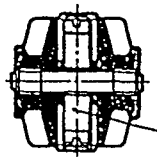
NAL3000

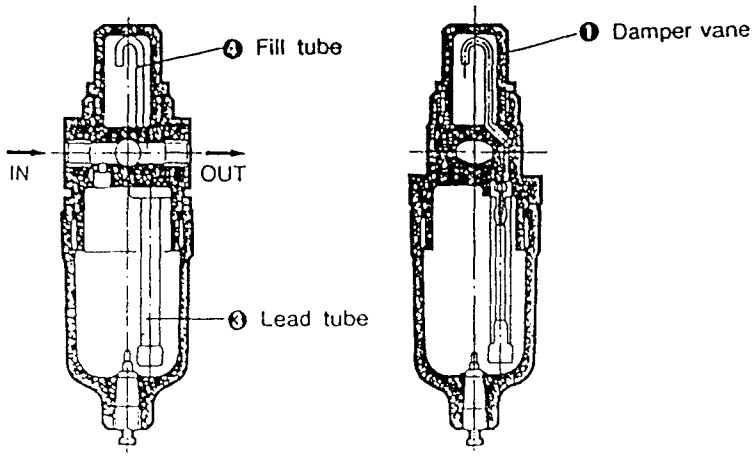


NAL4000



NAL1000





Air entering from the inlet port pressurizes the surface of the oil then flows through the needle valve to the outlet port. As a result of the differential pressure between the pressure in the bowl and the pressure in the damper vane, oil is passed through the lead tube and dropped out of the fill tube into the flow path of the air. Oil flow is adjusted by turning the front needle. Clockwise turns will increase oil drop rate and counter-clockwise will decrease oil drop rate. Leave the backside needle fully open.

Precautions

Installation

❶Recommended oil is ISO VG32.
❷Flush piping before installation.
❸If intended for use with power presser, please consult SMC factory

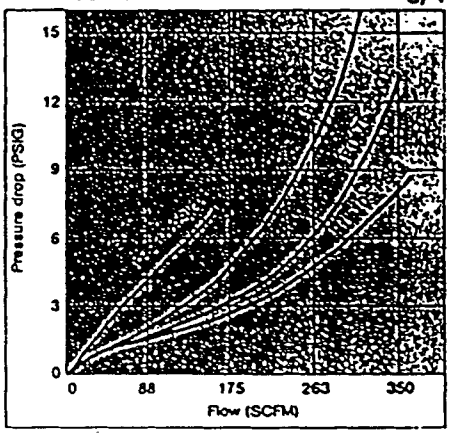
Atmosphere

❶Polycarbonate bowls may be damaged and possibly fail if exposed to synthetic oils, thinner solvents, trichlorethylene, kerosene and other aromatic hydrocarbons. If used above atmosphere a metal bowl is recommended.

Refill

❶A minimum air flow is required for proper operation.(see specifications). Please sure the minimum requirements are met.
❷NAL1000, 2000 type lubricators cannot be refilled under pressure. Shut off air pressure before refilling.

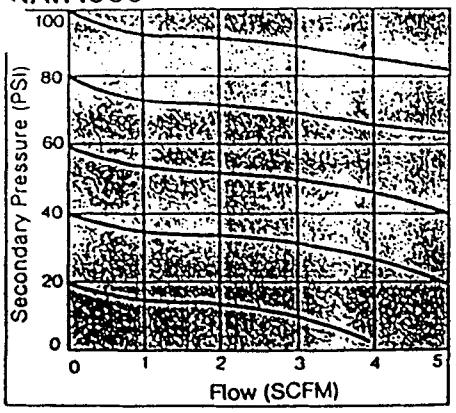
NAL4000-N06 3/4



Flow Characteristics

*Operating pressure:100PSI(7kgf/cm²)

NAW1000



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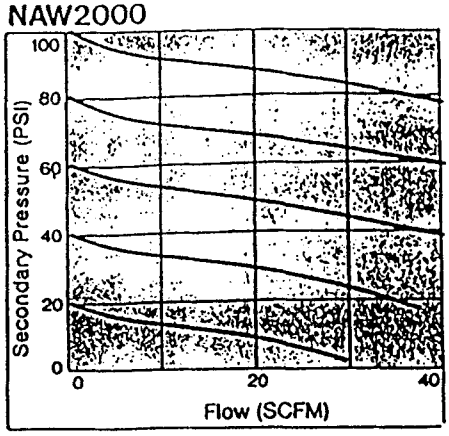

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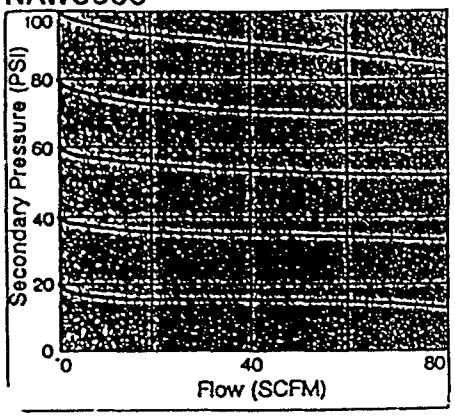

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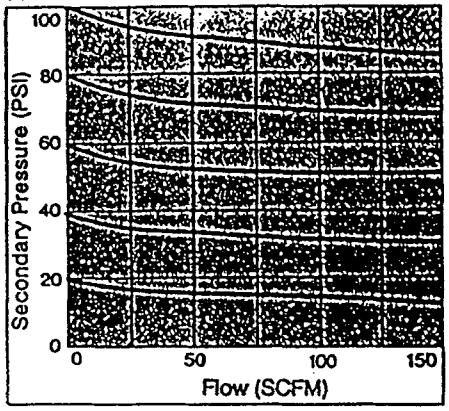
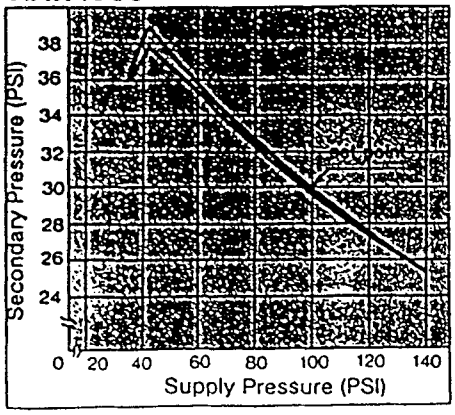


Pressure Characteristics

*Operating pressure:100PSI(7kgf/cm²)
Secondary Pressure:30PSI(2kgf/cm²)
Flow rate:0.7SCFM(20Nℓ/min)

NAW1000



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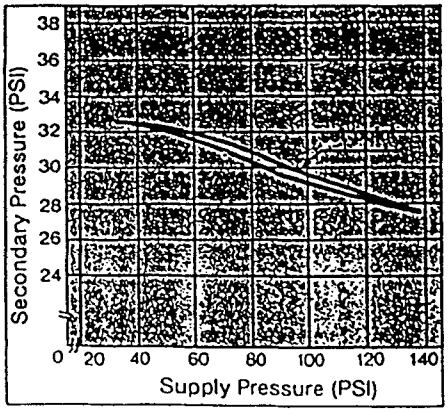
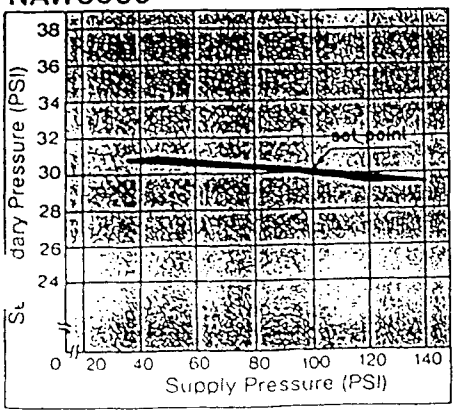


NAW3000



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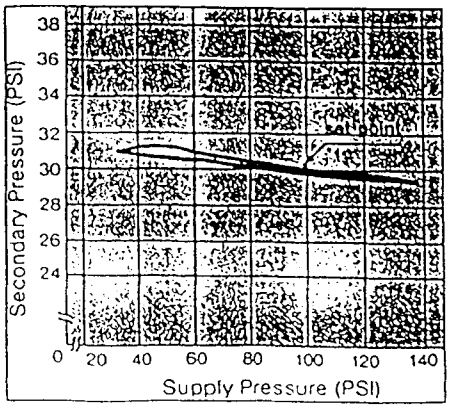
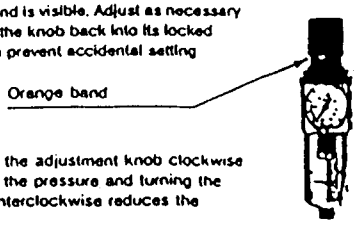


Setting

❶ The adjustment knob is a locking type. Pull the knob away from the body until the orange band is visible. Adjust as necessary and push the knob back into its locked position to prevent accidental setting change.



❷ Turning the adjustment knob clockwise increases the pressure and turning the knob counterclockwise reduces the pressure.

Precautions

Installation

❶ Flush piping before installation.
❷ The use of piping adapters will make installation easier.
❸ Must be installed with the knob up because the filter must be facing down.

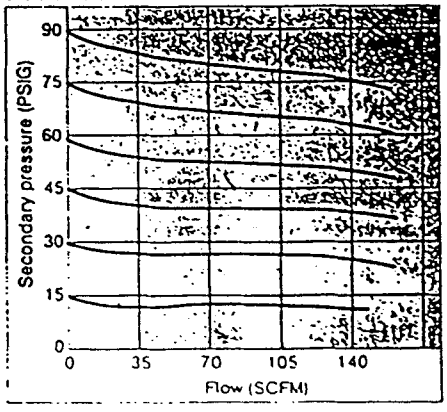
Maintenance

❶ Filter element should be changed after 1 year or when a pressure drop of 15 PSI (1 kgf/cm²) is reached.

Auto Drain

❶ Drain line should be ¼ inch (8mm) O.D. or more and should be less than 16.5 ft. (5m) long. Be sure not to have any upward turns in the drain line which could prevent drainage.
❷ Unsuitable for flow below 3.5 SCFM (100Nℓ/min).
❸ Operating pressure is more than 15 PSI (1kgf/cm²).
• Soft nylon tube of more than ⅜ inch (ø2.5) O.D. is recommended for drain pipe. The length should be less than 16.5 ft. (5m) long.
• Should be installed vertically.

NAW4000-06



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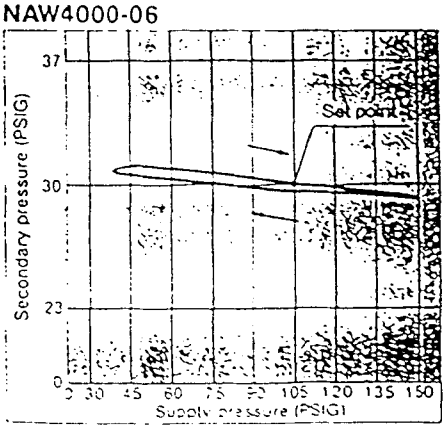
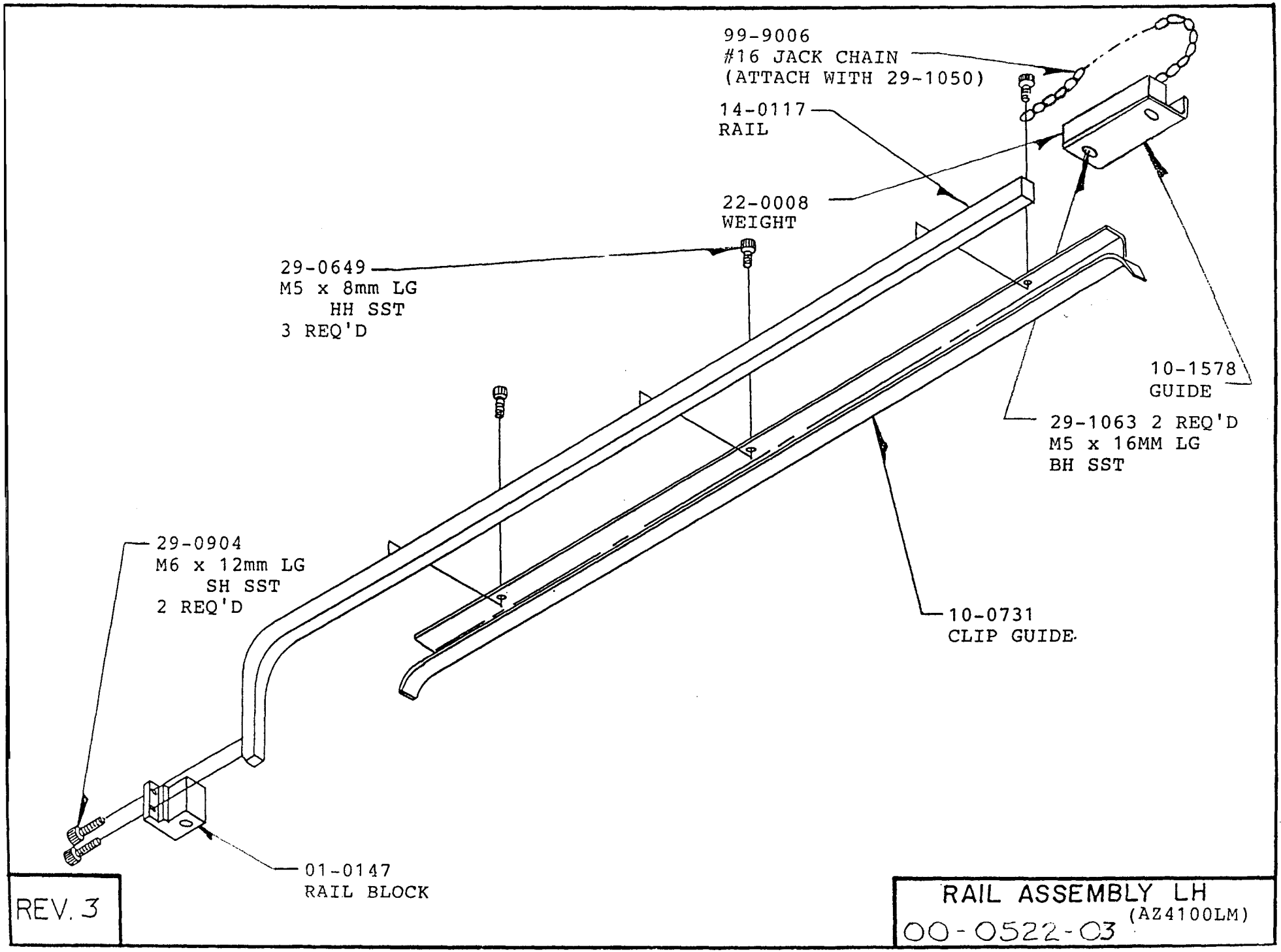
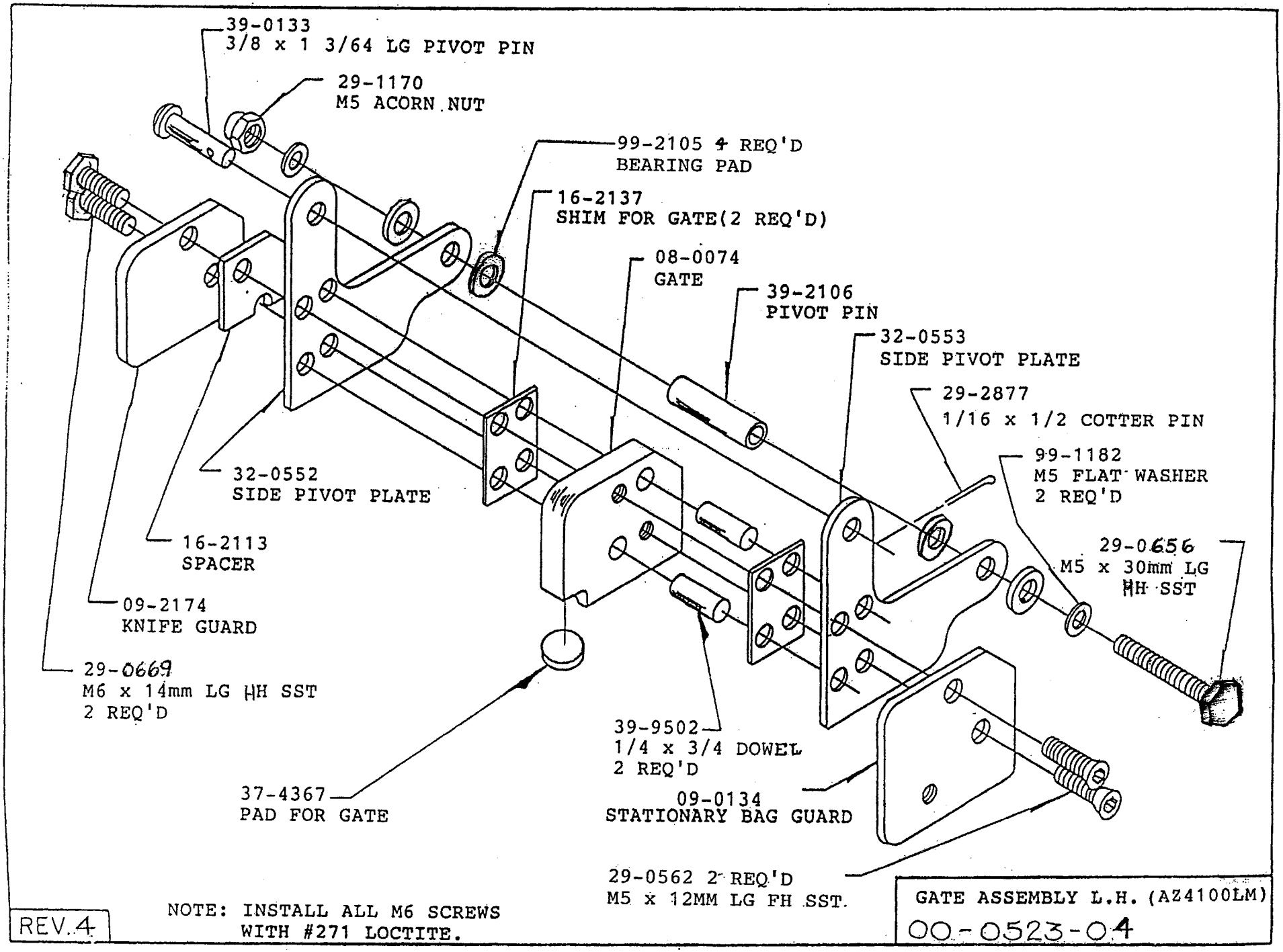




REV. 3

RAIL ASSEMBLY LH (AZ4100LM)

00-0522-03



REV.4

NOTE: INSTALL ALL M6 SCREWS WITH #271 LOCTITE.

GATE ASSEMBLY L.H. (AZ4100LM)

00-0523-04

NOTES:
1. INTERPRET DRAWING PER LATEST ANSI STANDARDS.
2. INSPECTION CLASSIFICATIONS

   UNLESS OTHERWISE SPECIFIED ALL FEATURES ARE VISUAL INSPECTION CLASSIFIED

   FUNCTIONAL INSPECTION CLASSIFIED (FC)

   LIMIT INSPECTION CLASSIFIED (LI)

3. UNLESS OTHERWISE SPECIFIED, REMOVE ALL BURRS AND BREAK ALL SHARP EDGES.
4. MATERIAL:
5. UNLESS OTHERWISE SPECIFIED DO NOT PUT ANY OTHER STICKERS OR LABELS ON MACHINE IN ASSEMBLY.

DWG. NO. AZ4100LM

SHEET 1 OF 1

BACK

WITHOUT PNEUMATICS COVERS

10-0705 RAIL BRACKET
29-0688 M8 X 20mm LG HH SST 4 REQ'D
99-1184 M8 FLAT WASHERS 4 REQ'D
28-0194 KQH10-025 1 REQ'D
32-0579 TOP CYLINDER CAP
28-3640
21-4163 28-9091
28-0301 BRANCH TEE KQT04-01S
18-0543
28-0065 MODIFIED ELBOW
28-0215 MALE ELBOW KQL06-M5
28-3640 BRONZE MUFFLER 2 REQ'D
21-0184 VALVE VFA5120-02
21-4163 EXHAUST VALVE 2 REQ'D
28-9091 1/4" HEX NIPPLE 2 REQ'D
TO CABINET
28-0199 MALE ELBOW KQL06-01S 1 REQ'D
28-0216 MALE ELBOW KQL04-01S 1 REQ'D
28-0306 MALE ELBOW KQL06-02S 2 REQ'D
28-0329 PLUG 1 REQ'D
21-0223 VALVE VFA 3130-02
18-0068 SIDE SUPPORT
18-0041 SUPPORT PLATE
09-0135 SAFETY GUARD
32-0572 KNIFE CYLINDER CAP
16-4536 SPACER 1/2" LG 3 REQ'D
28-0298 MALE ELBOW KQL10-03S 3 REQ'D
28-0748 M4 X 35MM HH SST 3 REQ'D
28-0179 MALE ELBOW 1 REQ'D
29-0907 M8 X 20mm LG SH SST 3 REQ'D
28-0216 MALE ELBOW KQL04-01S
28-6053 VOL. CHAMBER
16-0543 M5 STHREADED SPACER 4 REQ'D
25-0889 M5 X 25MM LG SH SST
10-0794 VOL. CHAMBER BRACKET
21-0172 FLOW CONTROL WITHHEX NUT 2100 GR-1/8
29-0860 M8 X 40MM SH SST 2 REQ'D
28-7185 1/8" BRONZE MUFFLER 2 REQ'D
18-0046 BACK SUPPORT PLATE
28-0199 MALE ELBOW KQL06-01S
29-0654 M5 X 20mm LG HH SST 3 REQ'D
99-1182 M5 FLAT WASHER 3 REQ'D
04-0109 KNIFE CYLINDER
01-0180 BASE PLATE
29-0907 M8 X 20mm LG SH SST 4 REQ'D

L SIDE

00-0522 RAIL ASSEMBLY ATTACH WITH 29-0889 (M5 X 25mm SH SST)
29-0173 M8 X 10mm SET SCREW SILVER
41-0050 U-CUP 2 REQ'D
12-0031 PISTON
62-0033 O-RING 2 REQ'D
10-0733 CYLINDER MTG BRKT
39-0134 PIVOT PIN
32-0570 GATE CYLINDER CAP
32-1766 PNEUMATICS COVER
29-1171 M8 ACORN NUT 4 REQ'D
29-1128 M8 HEX NUT 4 REQ'D
29-0883 M5 X 8mm LG SH SST 4 REQ'D
29-0688 M8 X 20mm LG HH SST 3 REQ'D
04-0111 GATE CYLINDER
99-0450 LABEL: PATENTS LIST 1 REQ'D
04-0132 PUNCH CYLINDER
29-0905 M5 X 12mm SH 2 REQ'D
04-0137 BOTTOM CYLINDER CAP
15-0075 CYLINDER SHAFT
99-1725 SHAFT WIPER
29-0924 M8 X 30mm SH SST 4 REQ'D
41-1726 U-CUP
08-0133 GATE CYLINDER GUARD
18-0048 PUNCH SUPPORT
29-0584 M5 x 16mm FH SST 3 REQ'D
29-0906 M8 X 18mm LG SH SST
13-2102 PUNCH
99-1183 M8 FLAT WASHER
18-0047 SIDE SUPPORT
37-1735 CRIMP STOP
99-0234 CLEVIS
38-0171 SLEEVE BEARING
28-0303 MALE CONNECTOR KQH04-01S 2 REQ'D
32-2120 CLIP WINDOW COVER
00-0523 GATE ASSEMBLY
29-0906 M8 X 18mm LG SH SST 4 REQ'D
29-0923 M5 X 25mm LG SH SST 4 REQ'D
99-0232 BEARING PLUG
20-0074 CRIMP CONTROL
29-0884 M5 X 10mm SH SST 2 REQ'D (FROM FAR SIDE)
16-3721 SPACER
29-0889 M5 X 25mm LG SH SST 2 REQ'D
41-0802 CUT-OFF KNIFE U-CUP
62-0005 O-RING
09-0150 SAFETY GUARD
29-1071 M8 X 16mm BH SST
05-0072 CROSSOVER DIE
17-0742 SPRING
11-1607 KNIFE
10-2118 KNIFE GUIDE
29-0180 M6 X 7/8 LG BH SST 4 REQ'D
16-4549 SPACER 1/4" LG
09-3636 GUARD

FRONT

29-0648 M5 X 8mm LG HH SST 2 REQ'D
29-0665 M6 X 8mm LG HH SST 2 REQ'D
39-9522 COTTER PIN, 1/16 X 3/4 LG 2 REQ'D
TO CABINET
28-0212 BRANCH TEE KQT06-01S
28-0214 PLUG-IN REDUCER KQR04-06
21-0186 END OF STROKE SENSOR VALVE #ESS 0410
29-1069 M6 X 12mm BH SST 4 REQ'D
29-1067 M6 x 8MM BH SST
09-2122 CRIMP CONTROL GUARD 2 REQ'D
5.020
5.000
29-1068 M6 X 12mm LG BH SST
06-0061 DIE SUPPORT
29-0564 M6 X 16mm FH SST 3 REQ'D
09-3635 GUARD

REVISIONS

NO.	ZONE	DESCRIPTION	DATE	APPROVED
8		SEE ECN AZ4100LM-08	2/15/11	D.MAY
7		SEE ECN AZ4100LM-07	1/31/11	D.MAY
6		SEE ECN	8/14/08	T.GLASS
5		PCN NO. 930357	10/28/03	BKD
4		PCN NO. 930294	8/28/03	BKD
3		PCN NO. 930248	8/11/03	BKD
10		SEE ECN AZ4100LM-10	7-28-01	DH
9		SEE ECN AZ4100LM-09	3/01/01	DH

TIPPER TIE

DRAWN BY D. WICKEY 8/11/03

CHECKED BY DATE

APPROVED BY DATE

RELEASED BY DATE

AZ4100LM

SIZE E

PART NO. AZ4100LM-10

SCALE FULL

SHEET 1 of 1

NOTES:
1. INTERPRET DRAWING PER LATEST ANSI STANDARDS.
2. INSPECTION CLASSIFICATIONS

   UNLESS OTHERWISE SPECIFIED ALL FEATURES ARE VISUAL INSPECTION CLASSIFIED

   FUNCTIONAL INSPECTION CLASSIFIED (FC)

   LIMIT INSPECTION CLASSIFIED (LC)

3. UNLESS OTHERWISE SPECIFIED, REMOVE ALL BURRS AND BREAK ALL SHARP EDGES.
4. MATERIAL:
5. UNLESS OTHERWISE SPECIFIED DO NOT PUT ANY OTHER STICKERS OR LABELS ON MACHINE IN ASSEMBLY.

BACK

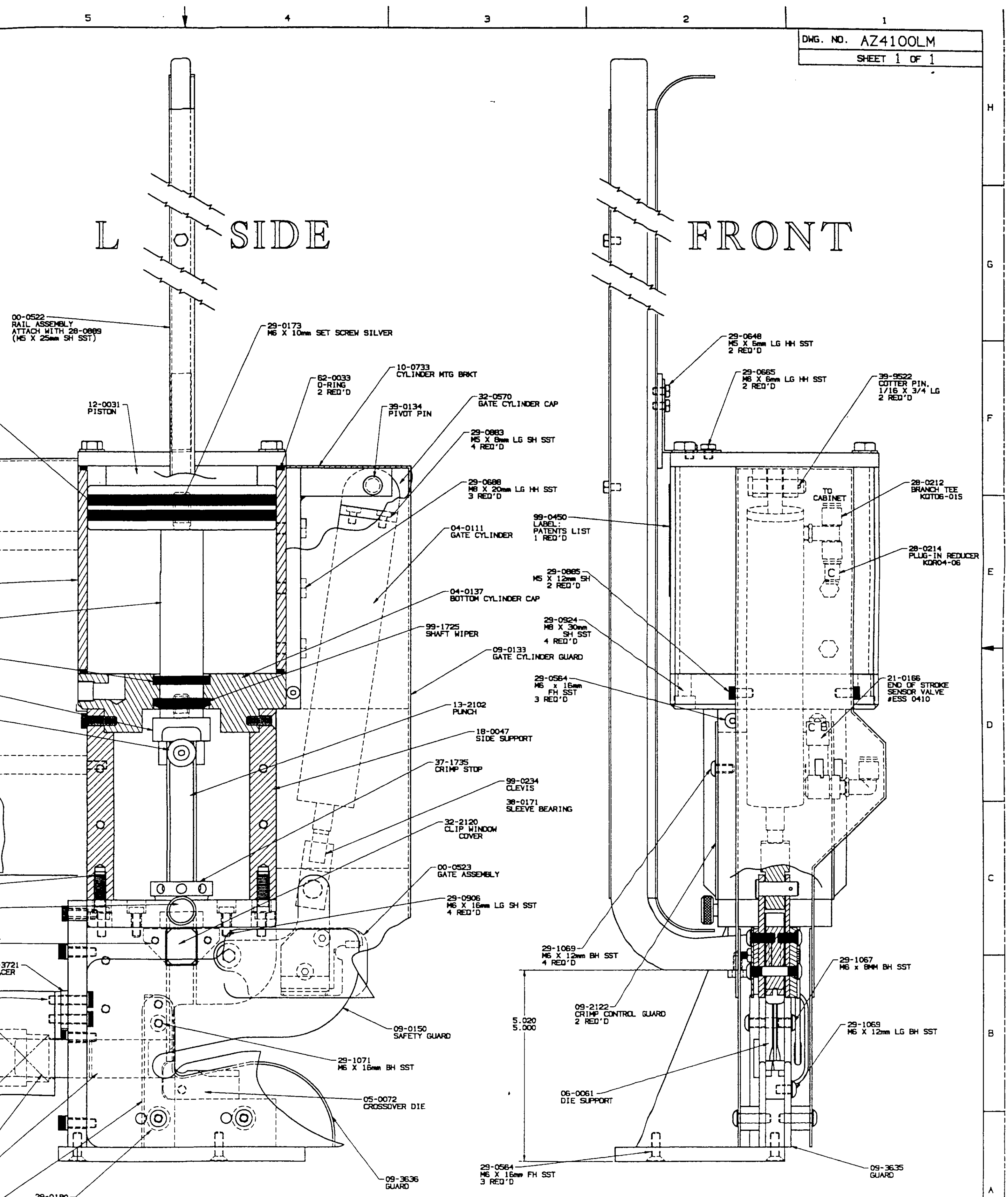
WITHOUT PNEUMATICS COVERS

L SIDE

10-0705 RAIL BRACKET
29-0688 M8 X 20mm LG HH SST 4 REQ'D
99-1184 M8 FLAT WASHERS 4 REQ'D
28-0194 KQH10-02S 1 REQ'D
32-0579 TOP CYLINDER CAP
28-3640
21-4163 28-9091
28-0301 BRANCH TEE KQT04-01S
18-0543
28-0065 MODIFIED ELBOW
28-0215 MALE ELBOW KQL06-M5
28-3640 BRONZE MUFFLER 2 REQ'D
21-0184 VALVE VFA5120-02
21-4163 EXHAUST VALVE 2 REQ'D
28-9091 1/4" HEX NIPPLE 2 REQ'D
TO CABINET
28-0199 MALE ELBOW KQL06-01S 1 REQ'D
28-0216 MALE ELBOW KQL04-01S 1 REQ'D
28-0306 MALE ELBOW KQL06-02S 2 REQ'D
28-0329 PLUG 1 REQ'D
21-0223 VALVE VFA 3130-02
18-0066 SIDE SUPPORT
18-0041 SUPPORT PLATE
09-0135 SAFETY GUARD
32-0572 KNIFE CYLINDER CAP
16-4538 SPACER 1/2" LG 3 REQ'D
28-0299 MALE ELBOW KQL10-03S 3 REQ'D
29-0748 M4 X 35MM HH SST 3 REQ'D
28-0179 MALE ELBOW 1 REQ'D
29-0907 M6 X 20mm LG SH SST 3 REQ'D
28-0216 MALE ELBOW KQL04-01S
28-8093 VOL. CHAMBER
16-0543 3.5"THREADED SPACER 4 REQ'D
29-0889 M5 X 25MM LG SH SST
10-0794 VOL. CHAMBER BRACKET
29-0860 M3 X 40MM SH SST 2 REQ'D
28-7185 1/8" BRONZE MUFFLER 2 REQ'D
28-0216 MALE ELBOW KQL04-01S
18-0046 BACK SUPPORT PLATE
28-0199 MALE ELBOW KQL06-01S
29-0654 M5 X 20mm LG HH SST 3 REQ'D
99-1182 M5 FLAT WASHER 3 REQ'D
01-0160 BASE PLATE
29-0907 M6 X 20mm LG SH SST 4 REQ'D

00-0522 RAIL ASSEMBLY ATTACH WITH 28-0889 (M5 X 25mm SH SST)
29-0173 M6 X 10mm SET SCREW SILV
62-0033 O-RING 2 REQ'D
41-0050 U-CUP 2 REQ'D
12-0031 PISTON
32-1766 PNEUMATICS COVER
29-1171 M6 ACORN NUT 4 REQ'D
29-1128 M6 HEX NUT 4 REQ'D
04-0132 PUNCH CYLINDER
15-0075 CYLINDER SHAFT
41-1726 U-CUP
18-0048 PUNCH SUPPORT
29-0906 M6 X 16mm LG SH SST
99-1183 M6 FLAT WASHER
28-0303 MALE CONNECTOR KQH04-01S 2 REQ'D
21-0172 FLOW CONTROL WITHHEX NUT 2100 GR-1/8
29-0923 M8 X 25mm LG SH SST 4 REQ'D
99-0292 BEARING PLUG
20-0074 CRIMP CONTROL
29-0864 M5 X 10mm SH SST 2 REQ'D (FROM FAR SIDE)
16-3721 SPACER
29-0889 M5 X 25mm LG SH SST 2 REQ'D
41-0802 CUT-OFF KNIFE U-CUP
62-0005 O-RING
04-0109 KNIFE CYLINDER
17-0742 SPRING
11-1607 KNIFE
10-2116 KNIFE GUIDE
29-0180 M6 X 7/8 LG BH SST 4 REQ'D
16-4649 SPACER 1/4" LG
29-1071 M6 X 16mm
05-0 CROS

NO.	ZONE	DESCRIPTION	DATE
8		SEE ECN AZ4100LM-08	2/15/01
7		SEE ECN AZ4100LM-07	1/30/01
6		SEE ECN	8/14/00
5		PCN NO. 930357	10/28/99



NO.	ZONE	DESCRIPTION	DATE	APPROVED	NO.	ZONE	DESCRIPTION	DATE	APPROVED
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7		SEE ECN AZ4100LM-07	1/30/01	D.MAY	3		PCN NO. 930248	8/11/93	BKD
6		SEE ECN	6/14/99	T.GLASS	10		SEE ECN AZ4100LM-10	7-09-01	DH
5		PCN NO. 930357	10/28/93	BKD	9		SEE ECN AZ4100LM-09	3/01/01	DH

REVISIONS

DRAWN BY: D. MICKEY	DATE: 5/11/93	TIPPER TIE®
CHECKED BY	DATE	
APPROVED BY	DATE	
RELEASED BY	DATE	

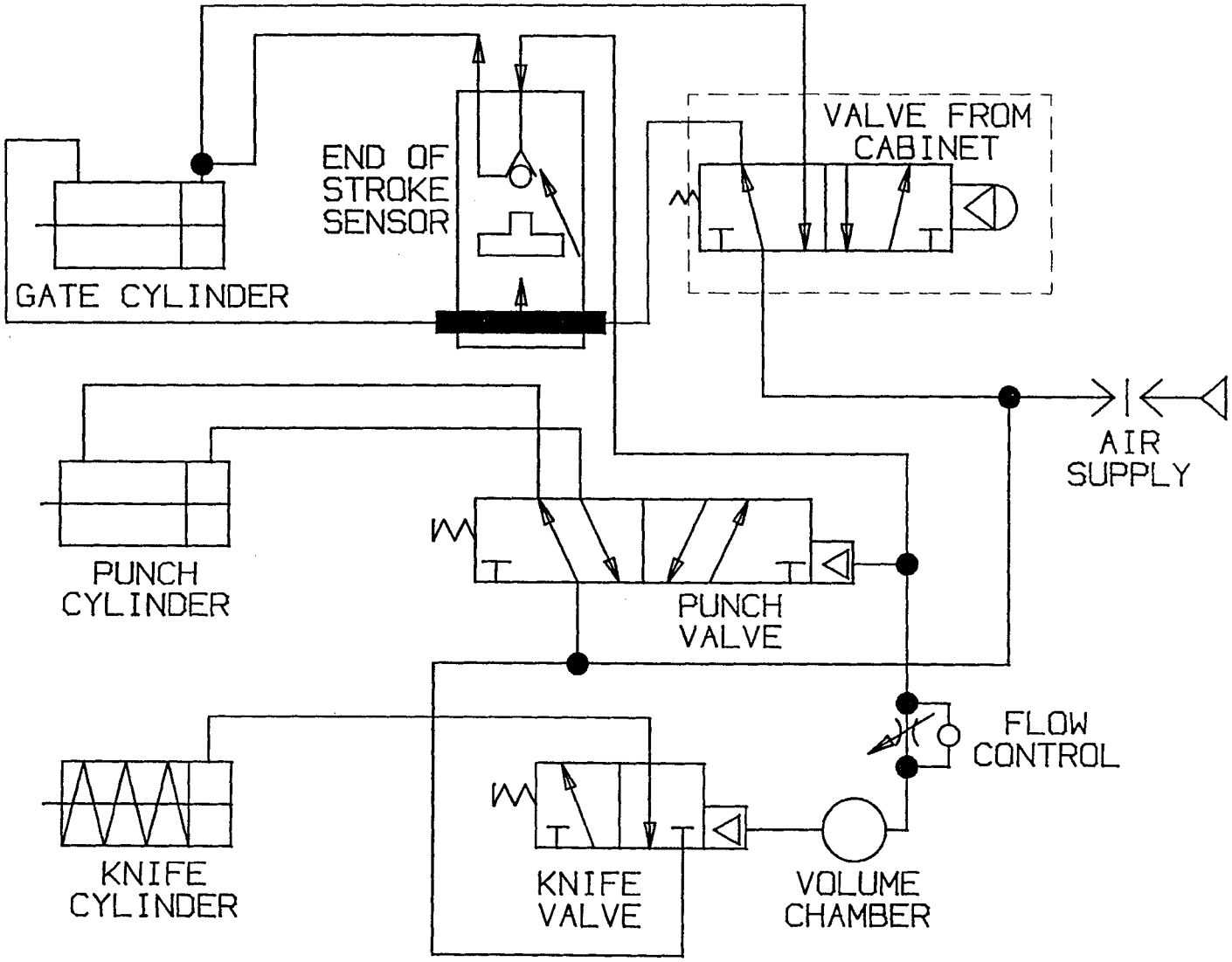
AZ4100LM

SIZE: E — PART NO. AZ4100LM-10

SCALE: FULL — SHEET 1 of 1

REVISIONS							
NO.	DESCRIPTION	DATE	APPROVED	NO.	DESCRIPTION	DATE	APPROVED

1. INTERPRET DRAWING PER LATEST ANSI STANDARDS.
2. UNLESS OTHERWISE NOTED, REMOVE ALL BURRS AND BREAK ALL EDGES.
3. MATERIAL:



TIPPER TIE®
A DOVER INDUSTRIES COMPANY

DRAWN BY DATE: B.DIGESO 11/11/93	RELEASED BY DATE	SIZE: A	AZ2100LM, AZ4100LM, AR4100LM
CHECKED BY DATE	PART NO.: 63-0071-00		
APPROVED BY DATE	SCALE: NTS	DO NOT SCALE DRAWING	SHEET 1 of 1

PNEUMATIC SCHEMATIC

Cleveland Range, LLC.
1333 East 179th Street
Cleveland, OH 44110
Phone: (216) 481-4900
Fax: (216) 481-3782
http://www.clevelandrange.com

CLIPPER VAC & CLIPPER

Model no._____
Serial no._____

Comments:

Steam Requirements

- ☐ Line sizes
- ☐ Phase
- ☐ Amp. draw

Air Requirements

- ☐ Line size
- ☐ Pressures
- ☐ Check lubricator
- ☐ Check for leaks

Clipper Mounting