
Spartanics Ltd.

Installation & Maintenance Manual For The Spartanics Model-44 Automatic Registration Strip Feed



MADE IN U.S.A.

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Record of Revisions

Revision No.	Date of Revision	Description of Major Changes
0	12/1/85	Original Edition
1.	8/1/87	<ol style="list-style-type: none"> 1. Split manual into metric and American versions including bolt sizes, tool sizes, and measurements. 2. Added safety tip that refers installer to government safety regulation when modifying press. 3. Added a section describing how to choose a press. 4. Added optional edge guide installation instructions. 5. Added air filter cleaning section. 6. Added sensing head cleaning section. 7. Added sensing head replacement section. 8. Added upside-down sensing head installation section. 9. Added drive wheel cleaning section. 10. Added drive wheel replacement section. 11. Added strip pressure adjustment section. 12. Added chapter for ordering parts. 13. Added illustrated parts list. 14. Added shipping chapter.
2	5/1/88	<ol style="list-style-type: none"> 1. Typeset Manual 2. Updated shipping list. 3. Updated Illustrated Parts List.

PREFACE

If you have any comments, suggestions, or questions about this manual, please feel free to contact Spartanics. We will do our best to help you out. Our address and telephone number are listed on the title page of this manual. There is also a technical manual change form on the last page of this manual that you can fill out and send in if you have any comments or suggestions about this manual.

SAFETY TIPS

IMPORTANT!

Please Read

This manual gives instructions on how to install the Spartanics Model-44 Strip Feed. Please follow the safety tips listed below when installing or maintaining the strip feed.

1. This manual is intended to be used by persons who have a good mechanical and technical understanding of machinery and who are also familiar with the basic safety practices for setting up die presses. This manual is not intended for use by daily press operators.

2. Any modifications that are made to the press to accommodate the strip feed must be in full compliance with O.S.H.A. regulations or the safety regulations set by your country's government. This applies to using a modified press with or without the strip feed.

Your company is liable for any injury or damage that occurs if this rule is not followed.

Information on which O.S.H.A regulation to follow and where to get the regulation is on the next page.

3. Read this manual before trying to install the strip feed.

This is by far the most important safety tip to follow because, without this manual, you just simply do not know what to watch out for when installing the Model-44 Strip Feed.

4. Be safety conscious when working on the strip feed.

You may have been working with presses and dies for many years and are quite familiar with basic safety practices. But you must recognize that the Model-44 Strip Feed represents a new and unfamiliar piece of machinery to you. Accidents are more likely to happen to people working on unfamiliar machinery because some people tend to concentrate too much on how to install the machinery and too little on good safety practices. Keep this in mind and be **SAFETY CONSCIOUS**.

Continued on the next page.

SAFETY TIPS (CONT.)

5. Always make sure that the press is turned off and the flywheel is stopped before putting your hands or other parts of your body between the upper and lower die shoes.
6. Make sure that the strip feed is properly grounded.
7. Never install the strip feed when you are alone. Always make sure that someone is around to help you in case you get hurt.
8. Never operate the strip feed in an explosive atmosphere.
9. Never operate the strip feed in a wet or moist environment.
10. Call Spartanics or your service representative if you have any questions about installing or maintaining the strip feed. Don't try to solve problems by guessing.

The basic safety concerns listed above and in other parts of this manual are specific safety concerns for the Spartanics Model-44 Strip Feed. The user management must also comply fully with the basic safety practices for punch presses as detailed in the "Occupational Safety and Health Act of 1971. The parts of this act that pertain to mechanical power presses are detailed in the two following documents:

O.S.H.A. Public Act 91-596

This is available from the--

Superintendent of Documents
U.S. Government Printing Office
Washington D.C. 20402

A.N.S.I. B11.1 1982 "Safety Requirement for the Construction, Care, and use of Mechanical Power Presses"

This is available from the--

American National Standards Institute
1430 Broadway
New York, New York 10018

Additional safety and training aids are available from the National Safety Council, local safety councils, trade associations, insurance carriers, the U.S. Department of Labor, and the National Machine Tool Builders' Association.

SPARTANICS, LTD.

Spartanics Automatic Registration Feed
Punch Press Interface

The Automatic Registration Feed requires connection to the punch press for primary AC power, shop air, and trip signal interface. The Power Box Assembly (PN #44-1300) is typically mounted to the punch press and contains connection points for AC power and trip signal interface. A separate air system assembly containing a regulator, filter, and quick-disconnect air hose is also normally mounted on the press. Attaching the feed to a modified press involves connecting one electrical cable and one air line.

Primary AC Power: The Power Box Assembly contains a line-matching transformer which allows the feed to be operated from 50/60 Hz lines at voltages from 200 to 480 volts. In most installations, the feed is wired to operate from the same line as the press motor. Operating voltage is selected by the user at the time of installation.

Shop Air: The feed requires shop air for parts ejection. The feed includes an integral parts ejection air system consisting of an electrically actuated valve, a distribution manifold, and up to four air nozzle assemblies. The air is pulsed for each press cycle in order to blow blanked parts clear of the die. The parts ejection air system requires clean, regulated air for reliable operation.

Trip Signal: The Power Box Assembly has a connection for the trip signal. The trip signal is an electrical output from the feed that is energized when the feed requests a press cycle and is deenergized when the feed requesting a top stop. The signal is suitable for driving 12-volt DC coils up to 20 watts. Alternately, a relay is supplied with the feed which can be mounted in the Power Box Assembly. The relay has four form C contacts (common, normally open, and normally closed) which are available to interface with a press control system.

Parts Eject Sensor: Connection points are available in the power box assembly for a parts eject sensor (user supplied). The Feed can be programmed by the operator to stop the press if parts ejection is not sensed. For proper operations, the parts eject sensor must signal the feed with a contact closure each time a part is ejected.

Press Selection: All presses must have proper point of action guarding installed whenever they are operated with the Feed.

WARNING!

DO NOT OPERATE WITHOUT ADEQUATE GUARDING

GUARDING IS RESPONSIBILITY OF USER-MANAGEMENT

The highest production rates will be achieved on a press capable of continuous operation at press rates adjustable from 100 strokes per minute downward. The maximum continuous rate is a function of the parts step up and the time available for the feed to move the material. This maximum rate may be lower if the part step up exceed 3.5" (89 cm) or if the tool contacts the material for more than 20% of the press cycle. Production rates are considerably slower if the press runs in a single stroke mode.

Any press can be operated manually without being connected to the trip signal from the feed. In this mode, the feed senses press cycles with a die switch and synchronizes material motion to the press. This is not a recommended mode of operation as it requires continuous operator involvement to actuate the press and monitor the feed operation.

Please note that if your press does not currently run continuous, the feed will not make it run continuous. If continuous operation is required, the press must be capable of continuous operation without the Feed installed. It is the users responsibility to supply appropriate connection points on the press for the Feed Trip Signal. For optimum performance, the press must start and run continuously when the trip signal is present and stop when the trip signal is removed. If the trip signal is removed after the bottom of a stroke, then the press must top stop. The foot switch contacts on a press control system often providing the most convenient connection points for the Feed Trip Signal.

Most presses can be interfaced to the feed in a way that will allow standard press operation when the feed is disconnected. A press does not need to be dedicated to the feed and a number of presses can be modified to accept the feed without distributing their normal operation. Installation of a normal feed mode switch will permit easy conversion.

Mechanical Clutch Presses: A mechanical clutch press is a good choice for use with the Feed. In many instances, the feed will be able to operate the press in a continuous mode so that noise and clutch wear are minimized. The press clutch should be air or solenoid actuated for use with the feed. If the press selected is currently a foot treadle press, it should be outfitted with an air cylinder or solenoid actuator.

The 12-volt trip request from the Feed may be used to directly drive a solenoid or solenoid valve with a 12-volt coil rated at 20-watts or less. For coils with other ratings, the relay output option for the Feed should be requested and the relay contacts should be used to energize the coil.

It is recommended that the press be set to operate in a continuous mode as this results in the highest production rates and minimum press wear. If a single stroke interlock is installed on the press, the feed will be unable to run the press in a continuous mode.

Air Clutch Presses: Air clutch presses are typically delivered with some type of electrical control system. In these cases, the relay output option should be selected for the Feed. The relay contacts can then be connected to the press control system to request press cycles. The user or press manufacturer may have to modify the control system in order for the Feed to start and stop the press properly.

Hydraulic, Pneumatic, and Electrical Presses: Hydraulic, pneumatic, and electrical presses are inherently single stroke presses. On these presses, it is generally a simple matter to connect the optional relay contacts in a manner that will trip the press. Continuous mode operation is not a concern on this type of press.

SPECIFICATIONS

Strip Length Range:	12"-64"
Strip Width Range:	0.75"- 10.00" (Wider strips are possible, depending on material type and tooling used).
Strip Thickness Range:	.008"-.062"
Step Up Range (step up is the distance between the center of one piece on the strip and the center of an adjoining piece on the strip):	.1"-10"
Accuracy:	Up To ± 0.003 " consistently.
Speed:	Maximum Press Rate: 120 strokes per minute.
Maximum Feed Rate:	12" per second.
Registration Marks:	Lines or edges of any visible color.
Materials (Semi-Rigid/Rigid):	Metal, Plastic, Paper
Power Requirements:	110VAC to 480VAC, Single Phase, 50/60Hz Approximately 250 VA
Air Requirements (for clearing die area and tripping press):	60-150 PSIG
Strip Feed Mechanism Dimensions:	See Engineering Print in the front of this manual.
Weight	Electronics Package -- 27 lbs. Strip Feed Mechanism --30 lbs. Press Interface Box -- 25 lbs.

*Note: Specifications are subject to change without notice.

1.0 Installation

Choosing a Press:

The first thing you have to do to install a strip feed is choose a press to install it on. The best type of press for the strip feed is a light to medium weight (5-25 ton) press with a mechanical dog-type clutch that's engaged with an air cylinder or a foot treadle. Also, the press must operate at a rate of less than 120 strokes per minute.

If you don't have this type of press, don't worry. The strip feed has been installed on everything from a 1-ton, electro-magnetic, table top press to a 150-ton, single-stroke, hydraulic press.

The reason why it's best to use a press with a mechanical dog-type clutch is because it is the easiest type of press to make run open (in a continuous mode). By running a press continuously, your production is maximized and your press wear is minimized.

This manual gives you instructions on how to modify mechanical dog-type clutches for use with the strip feed.

The strip feed can also be used on air-clutch type presses. Usually, very little modification has to be made to air-clutch type presses. The clutch's engagement valve, in this case, is triggered by a relay in the strip feed's power box.

At this point, you might be asking yourself "Why is it better to use a mechanical dog-type clutch press if it requires more modification than air-clutch type press?"

The reason is because most air-clutch type presses cannot be made to run open without modification to the press's circuitry. The strip feed's relay will tell the clutch to engage but after the press cycles once, the press's circuitry will tell the the clutch to disengage. Thereby allowing the press to only single stroke.

In most cases, however, a press's circuitry can be modified to defeat this problem.

If you choose to modify the circuitry of your press, be careful not to defeat any safety features. You should also work closely with your press's manufacturer when making modifications to ensure that everything is done safely. Your company is responsible for any safety or damage liability associated with modifying your press's circuitry.

Also, when making modifications, make sure the press will be safe to use either when the strip feed is installed or when it *is not* installed. This sounds obvious but it is sometimes overlooked.

Hydraulic, pneumatic, and electrical presses are inherently single stroke. For these presses, a trip signal can be tapped off of an optional relay in the strip feed's power supply box.

The instructions on the following pages are a step-by-step guide on how to install the strip feed on almost any press. Please follow the steps carefully. If you have any questions, call Spartanics or your service representative for help.

1.0 Installation

Install the Spartanics Model-44 Strip Feed as follows:

Tools Needed: 3/16" hex wrench (Allen wrench)
1/4" ball driver (included with strip feed)
medium flat-tip screwdriver
medium adjustable-end wrench
small pipe wrench
pocket knife
scratch awl
hand-held power drill
13/32" drill bit
#8 (.1990") drill bit
"F" (.2570") drill bit
1/4"-20 tap
5/16"-18 tap
tap handle
tap cutting oil
center punch
hammer
1' X 2' carpenter's square
wire cutters & strippers

Materials Needed: *3" X 3" angle iron, 4" long
two 5/16"-18 X 3/4" socket head bolts
two 5/16" lock washers
two 5/16" flat washers
**3-wire power cable 14 gauge minimum with 1/4" eyelets
**electrical conduit with fittings

*Note: This size will work in most cases but not in all. The size depends on the size and shape of the die. Some adjustments may have to be made.

**Note: Length and type to be determined by installer.

STEP 1: Unpack shipping containers and compare strip feed parts to Figures 1-1 through 1-6 on the following pages and Table 1 on page 9. Table 1 can be folded out so that you can view any figure and the table at the same time without flipping through a lot of pages. If you find any of the parts damaged or missing, contact Spartanics immediately.

1.0 Installation

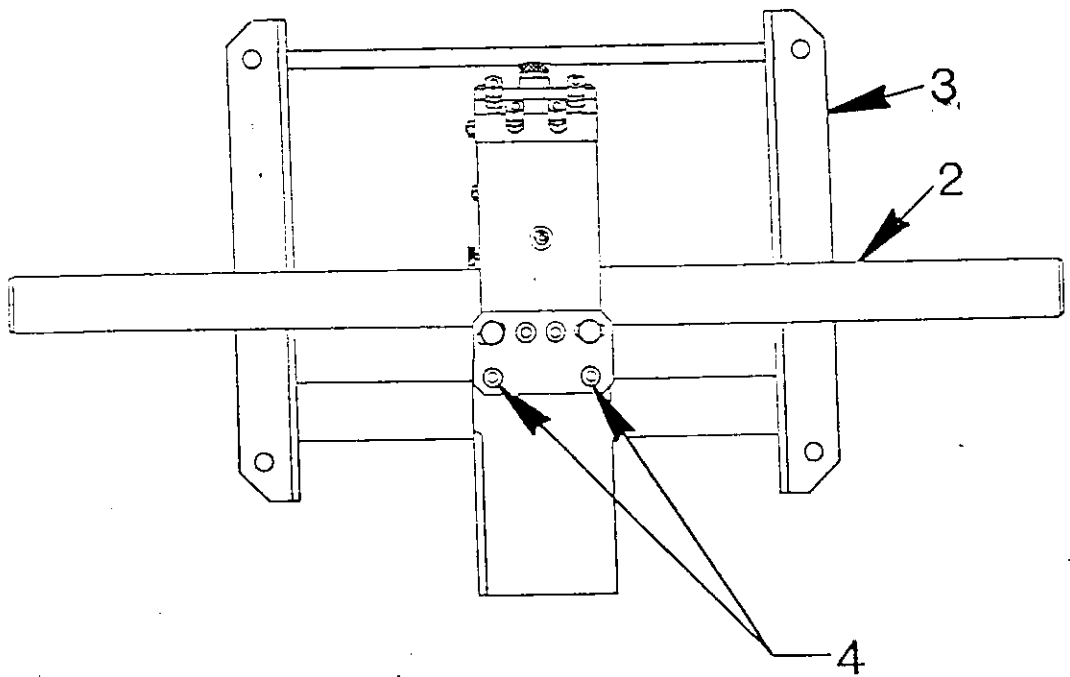
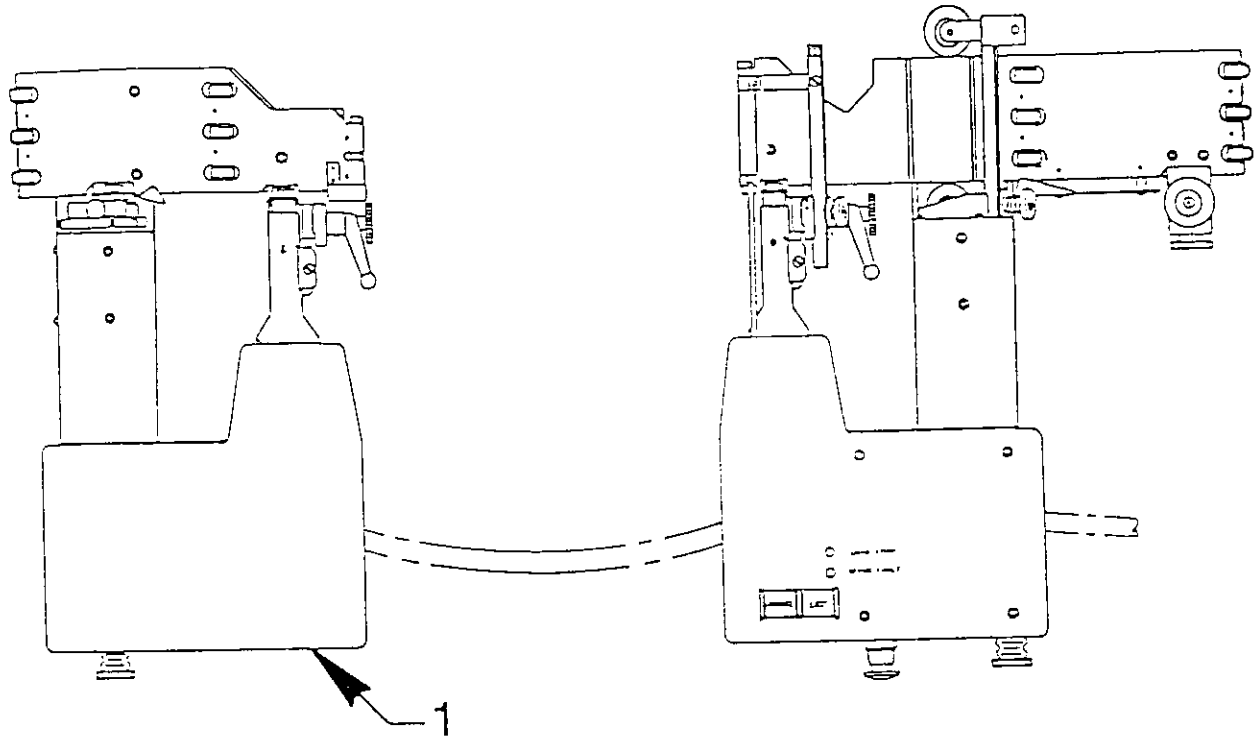


FIGURE 1-1

1.0 Installation

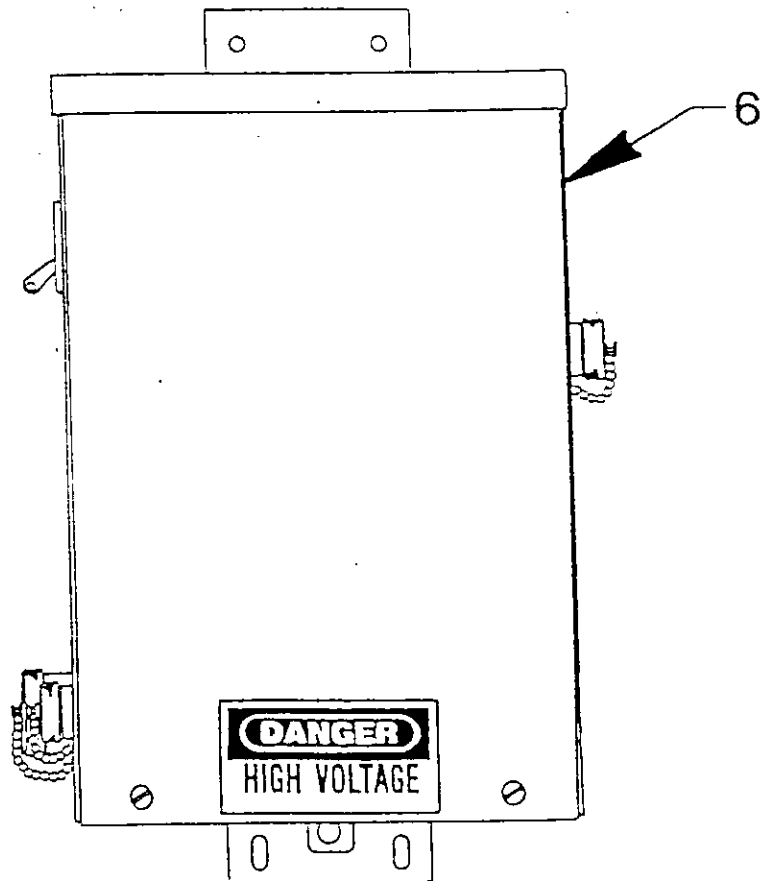
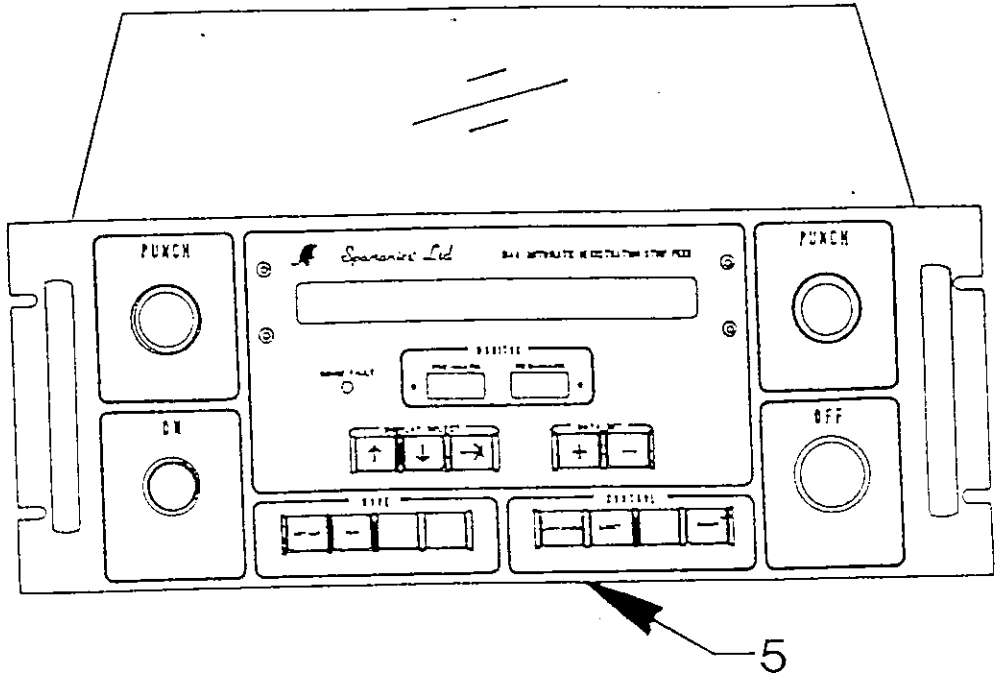


FIGURE 1-2

1.0 Installation

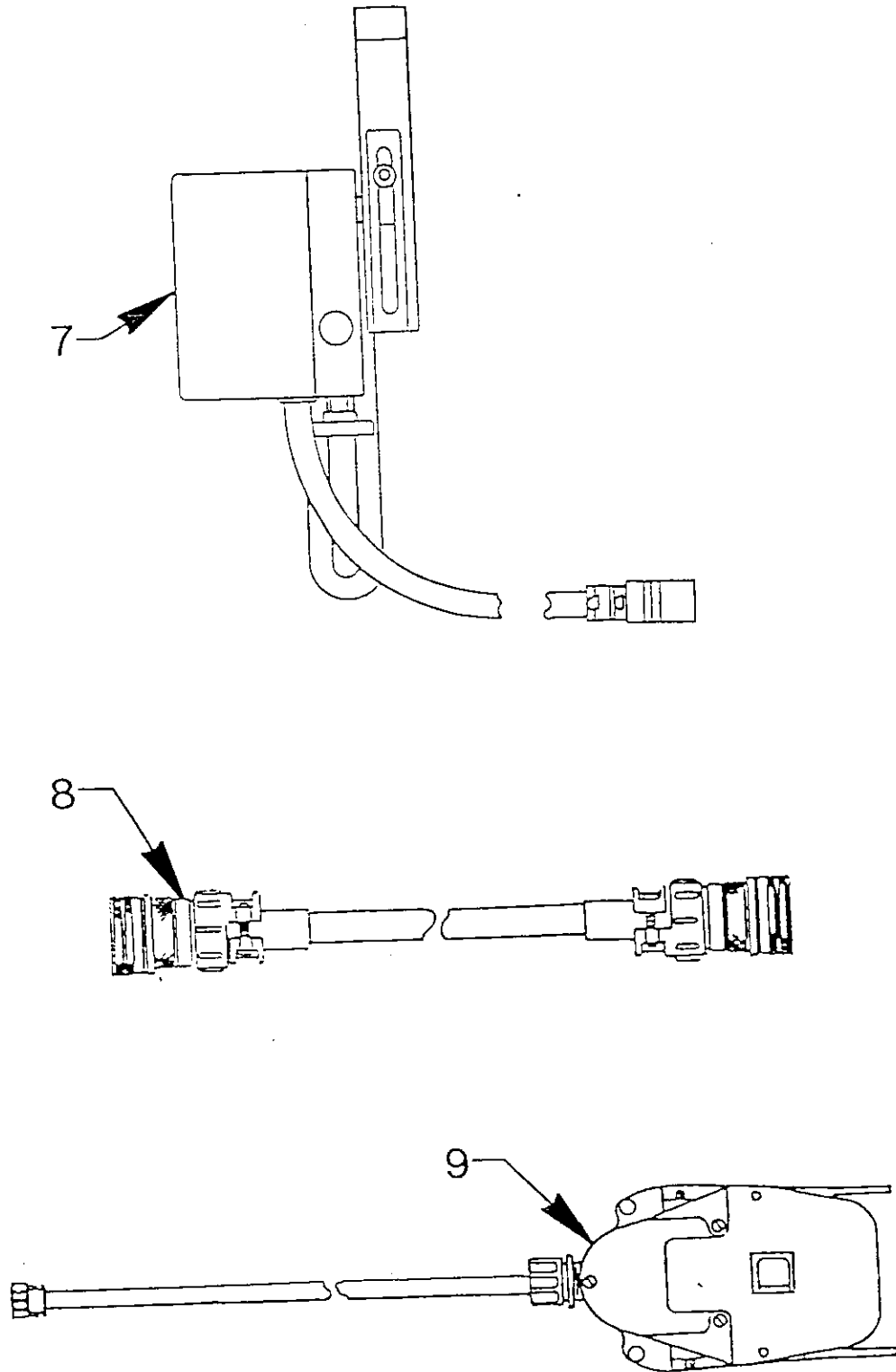


FIGURE 1-3

1.0 Installation

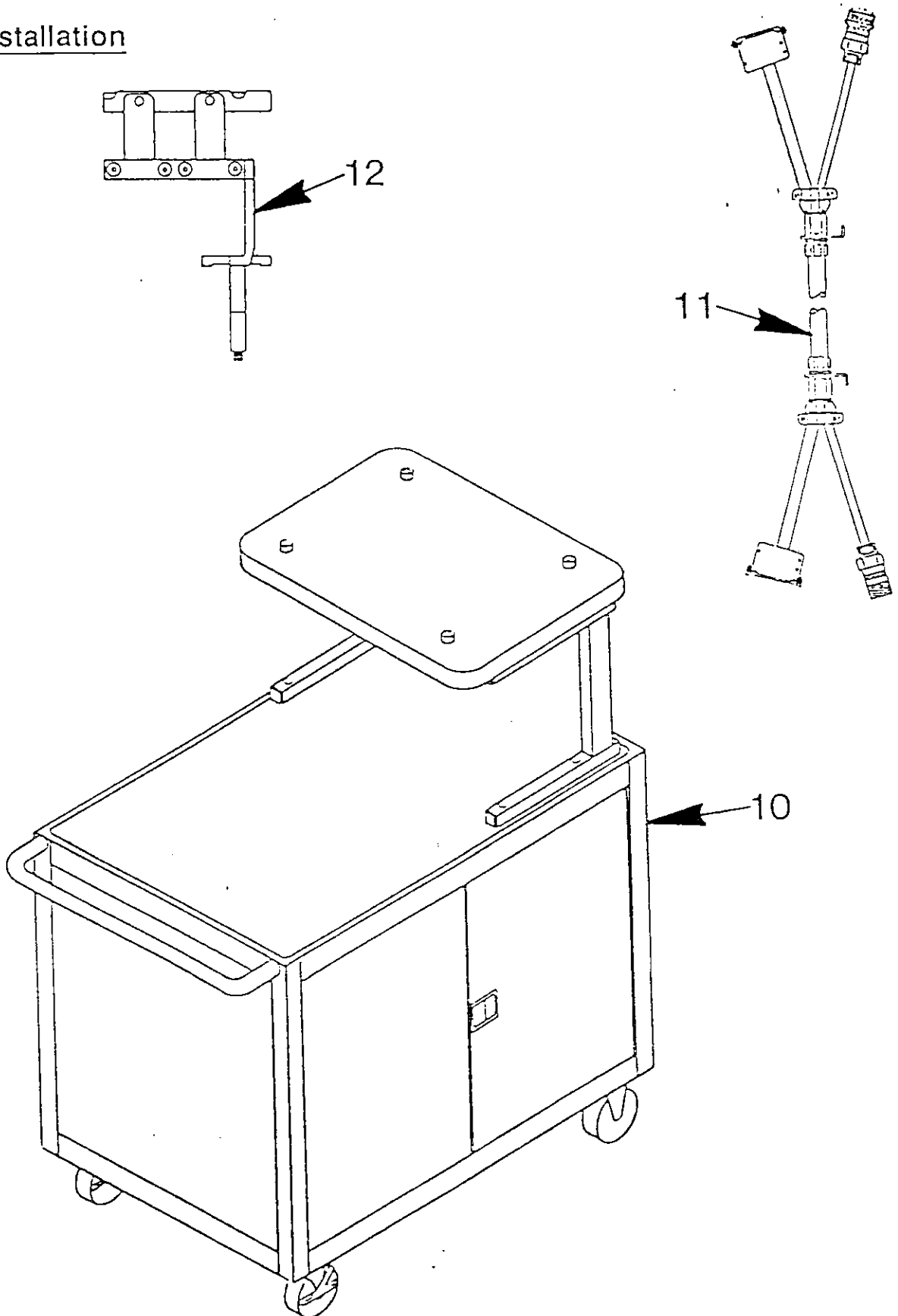


FIGURE 1-4

1.0 Installation

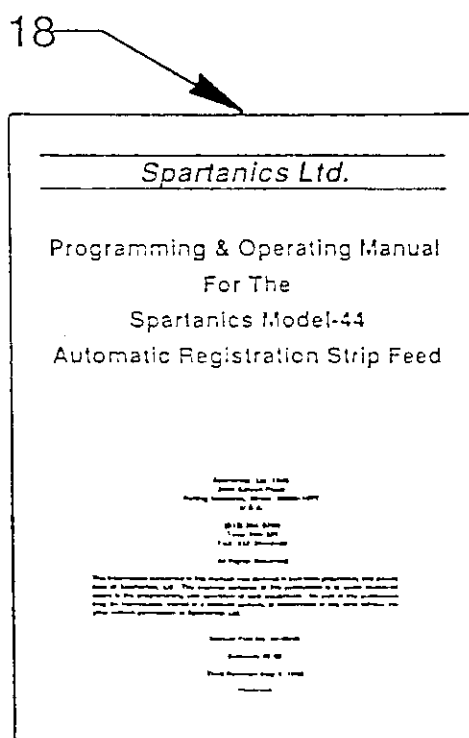
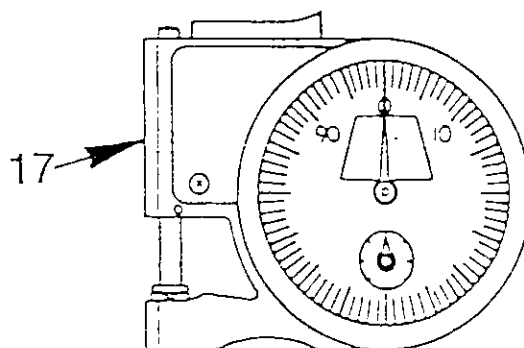
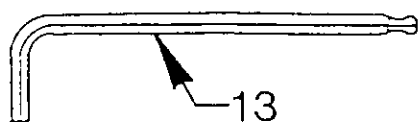


FIGURE 1-5

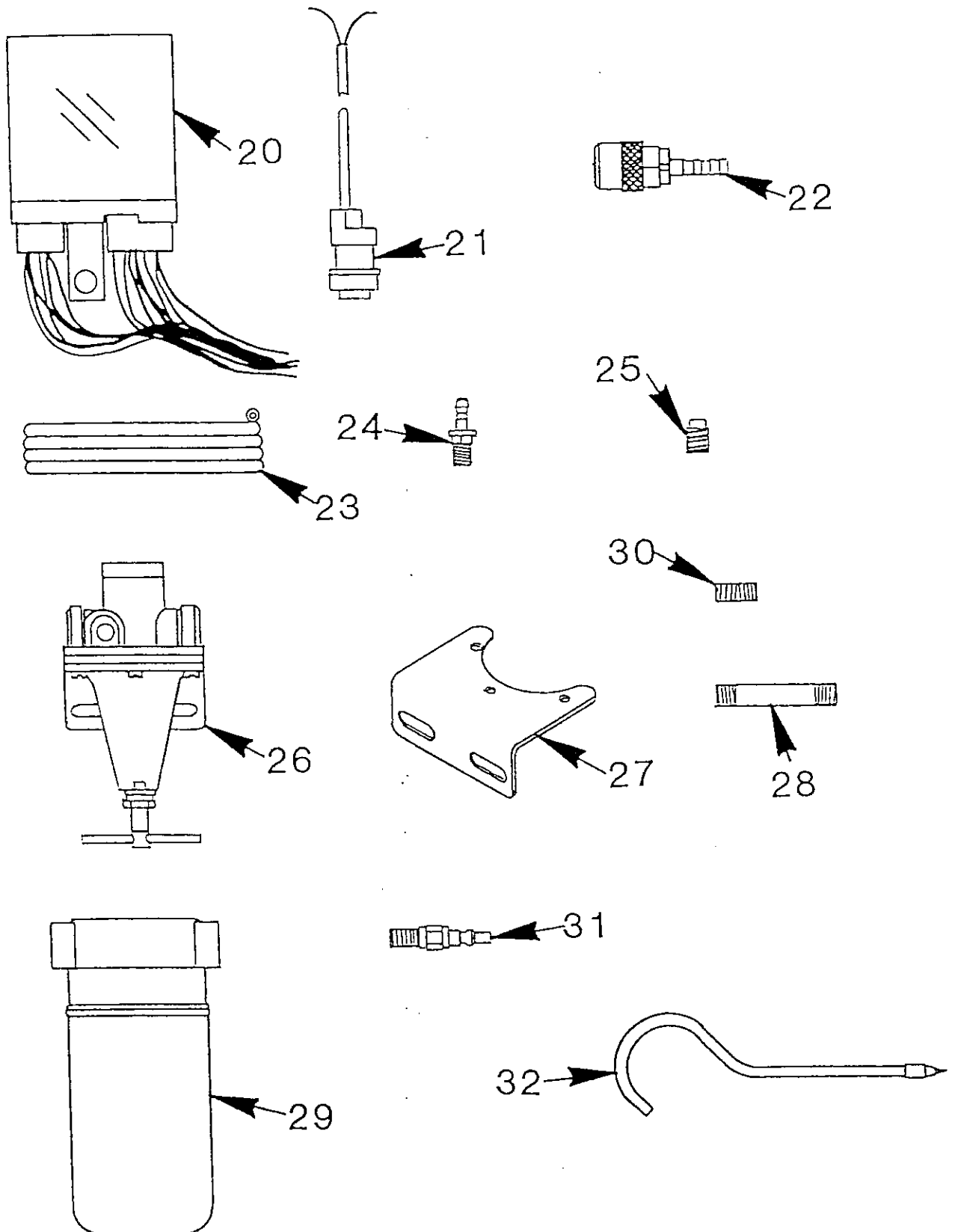
Illustrated Shipping List

Fig.#	Item #	Description	Quantity
1-1	1	Input and Output Modules	1
1-1	2	Mounting Bar	1
1-1	3	Test Stand	1
1-1	4	Mounting Bolts 5/16-18 X 1"	2
1-2	5	Electronics Package	1
1-2	6	Power Box	1
1-3	7	Die Switch	1
1-3	8	Power Cable	1
1-3	9	Foot Switch	1
1-4	*10	Cart Assembly	1
1-4	*11	Extension Cable	1
1-4	*12	Edge Guide	1
1-5	13	Ball Driver 1/4"	1
1-5	*14	Ball Driver 1/8"	1
1-5	15	Ball Driver 3/32"	1
1-5	16	Ball Driver 5/64"	1
1-5	17	In-Out Gage	1
1-5	18	Technical Manual (Programming & Operating)	1
1-5	19	Technical Manual (Installation)	1
1-6	*20	Relay Assembly	1
1-6	21	Solenoid Trip Cable	1
1-6	22	Socket Coupler	1
1-6	23	Hose	1
1-6	24	Fitting	1
1-6	25	Plug, Air Regulator (In Regulator Box)	2
1-6	26	Air Regulator	1
1-6	27	Bracket, Regulator	1
1-6	28	Nipple, 1/4" X 1 1/2"	1
1-6	29	Air Filter	1
1-6	30	Nipple, 1/4" X 7/8"	1
1-6	31	Nipple Coupler	1
1-6	32	Air Tubes & Nozzles	4

*NOTE: Part is optional and may not be included

Table 1

1.0 Installation



9.2 FIGURE 1-6

1.0 Installation

STEP 2: Place input and output modules on mounting bar as shown in Figure 1-7 and then finger tighten lock knobs.

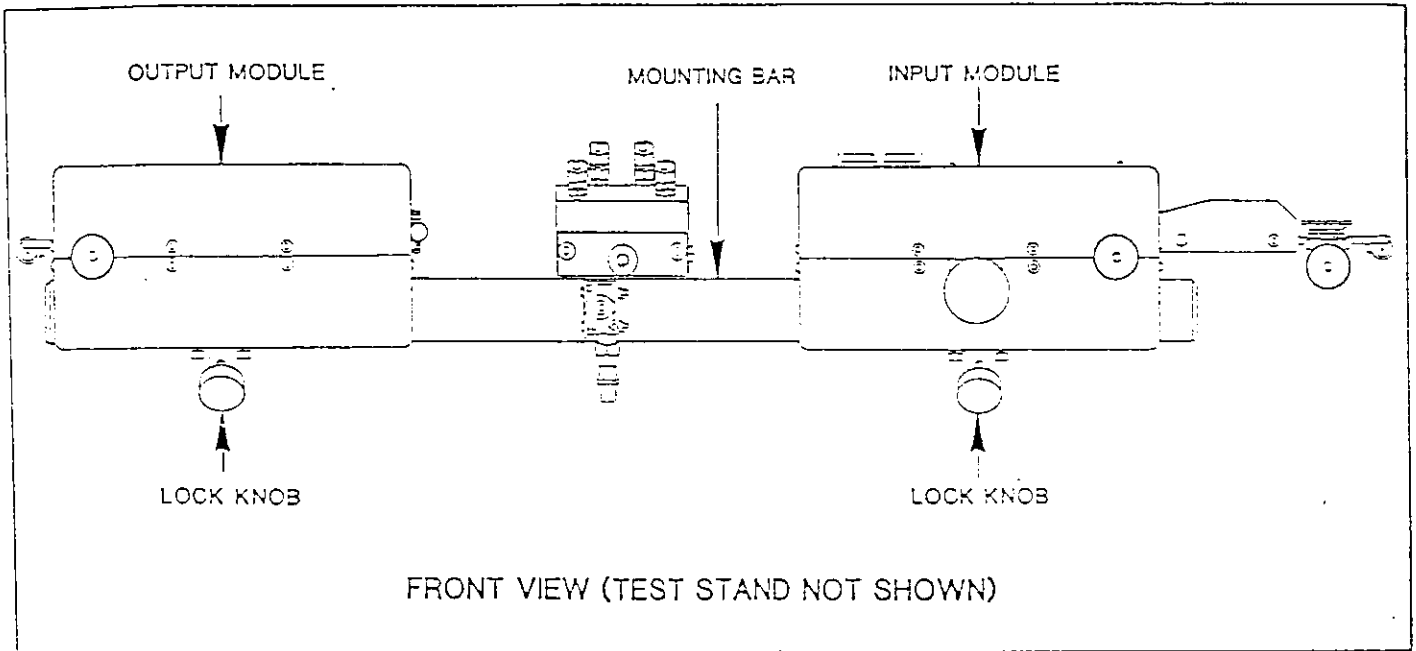


Figure 1-7

STEP 3: Connect air solenoid cable from input module to air solenoid as shown in Figure 1-8.

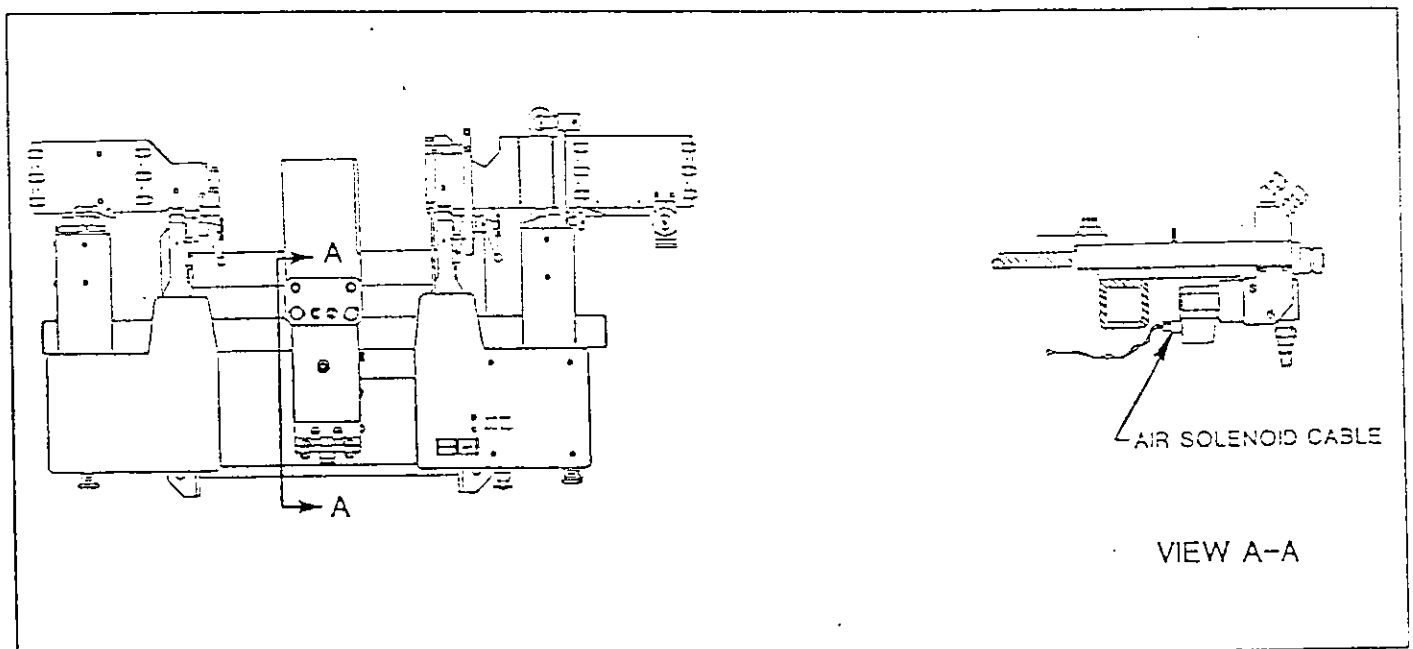


Figure 1-8

1.0 Installation

STEP 4: Install die switch on strip feed as shown in Figure 1-8. Tighten base screw with the 1/4" ball driver (driver is included with strip feed).

STEP 5: Connect die switch cable connector to input module as shown in Figure 1-9.

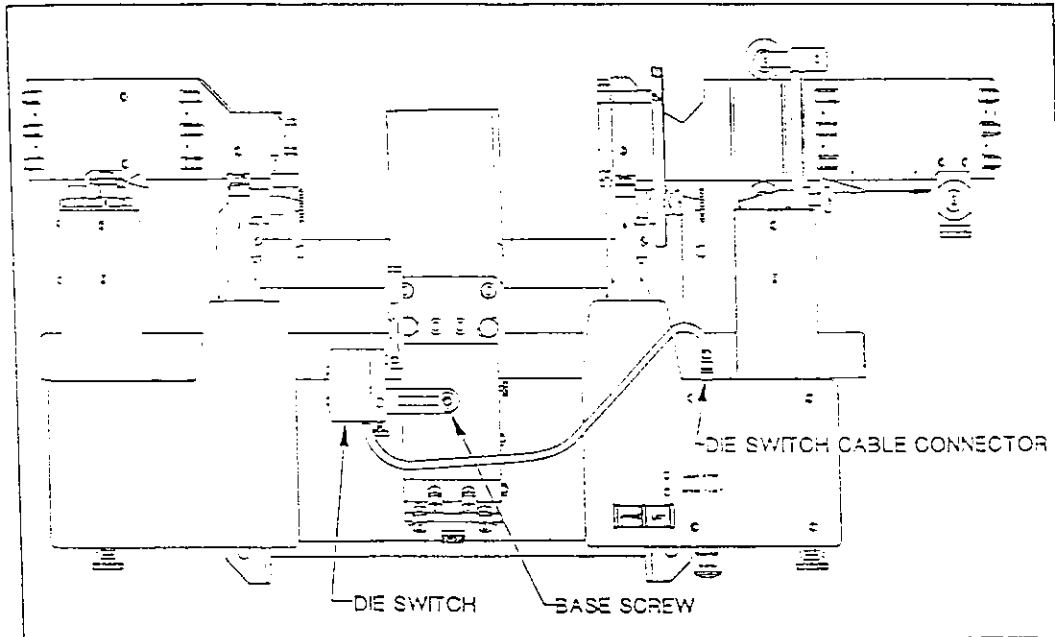


Figure 1-9.

STEP 6: Use Figure 1-10 as a guide on bolting angle iron to lower die shoe.

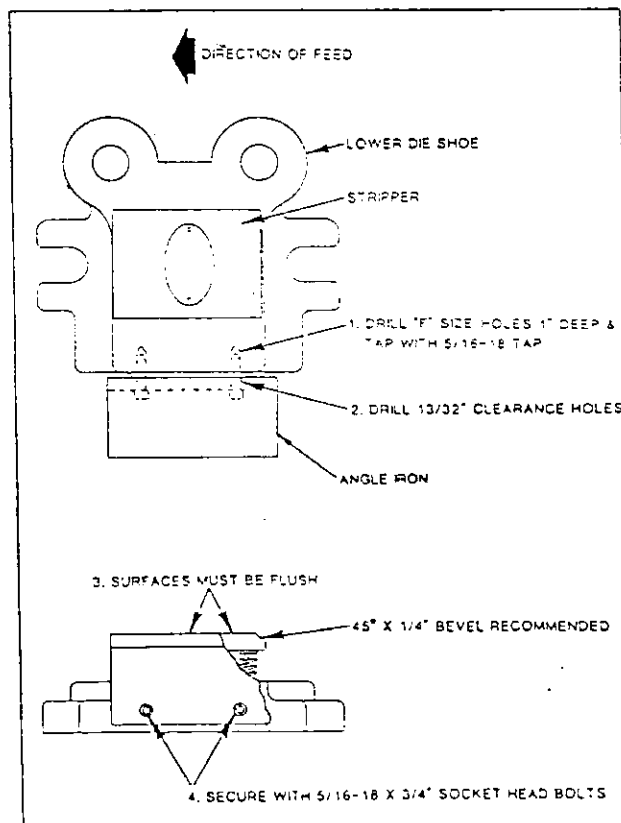


Figure 1-10

1.0 Installation

STEP 7: Place a strip of material over die as if strip were going to be punched. See Figure 1-11. Try to position strip as accurately as possible with your eye. You may want to bend or cut strip through the middle of a part to aid in positioning the strip.

STEP 8: Scribe a line $5/8" \pm 1/64"$ away from edge of angle iron as shown in Figure 1-12. This line must be $3" \pm 3/8"$ away from edge of strip positioned over die. If it is not, shim angle iron with $5/8"$ I.D., $1"$ O.D. flat washers until it is.

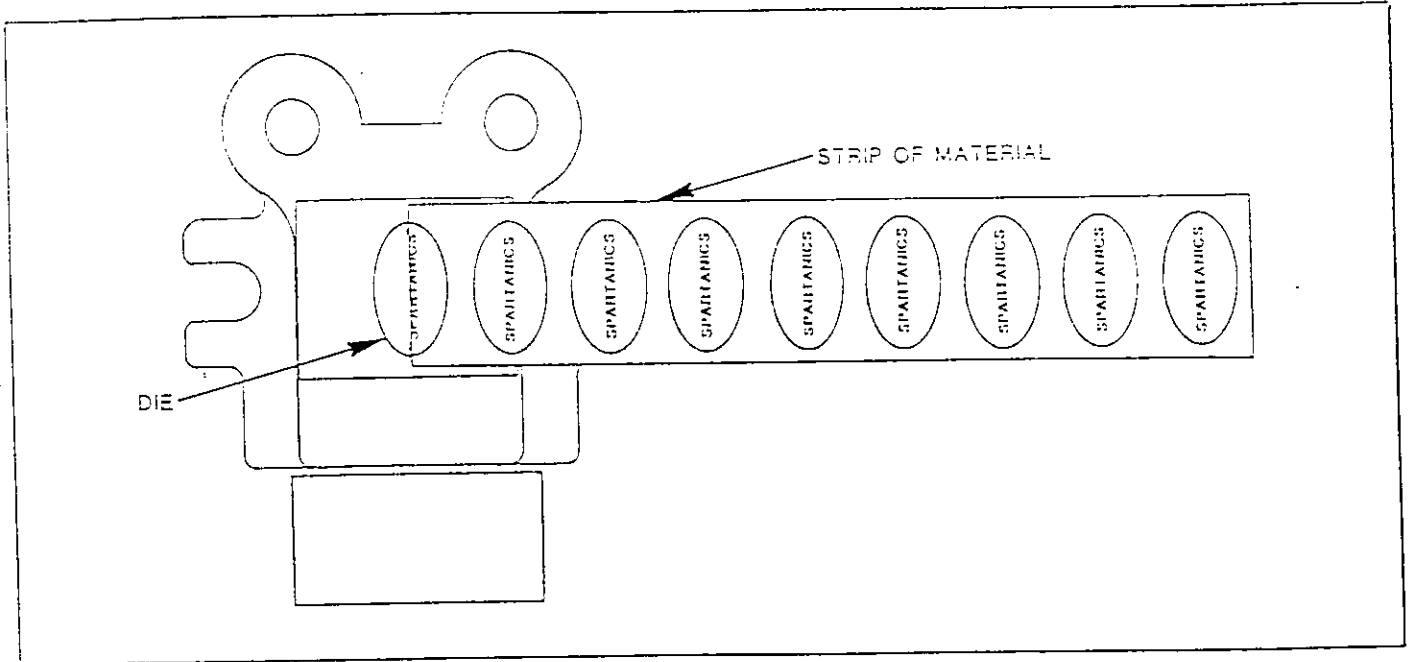


Figure 1-11

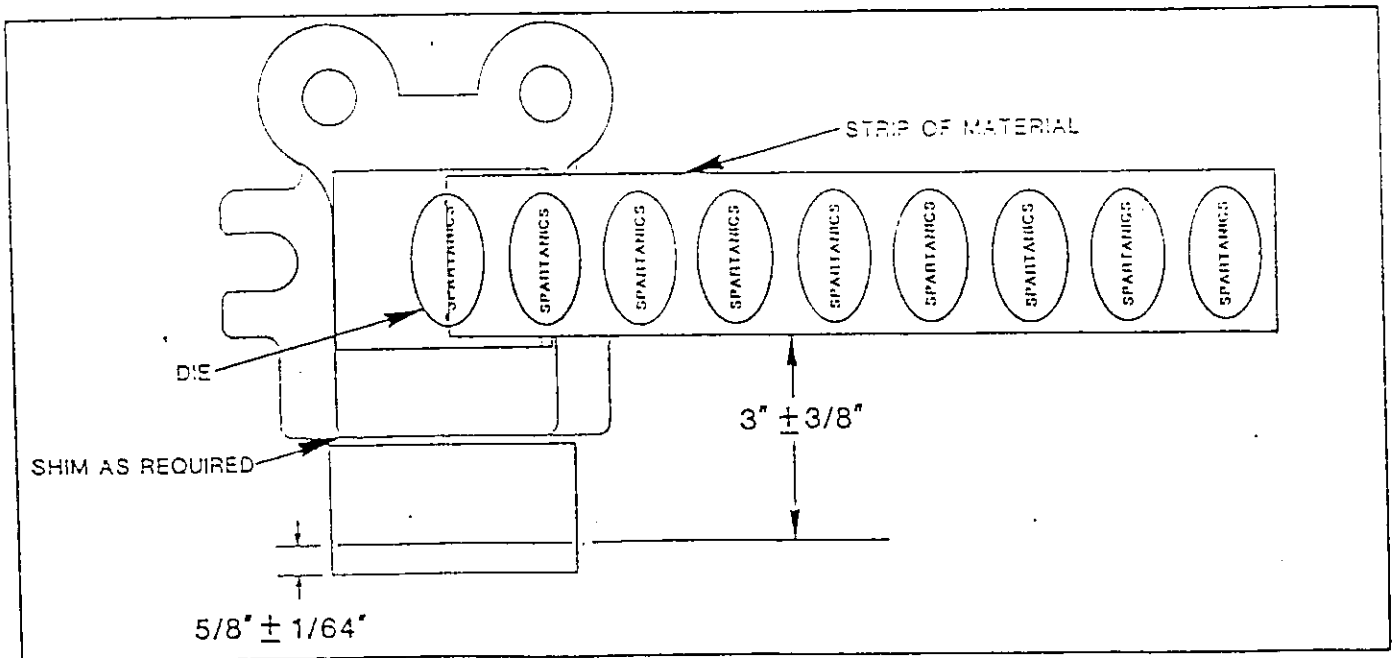


Figure 1-12

1.0 Installation

STEP 9: Scribe a line through center of angle iron as shown in Figure 1-13.

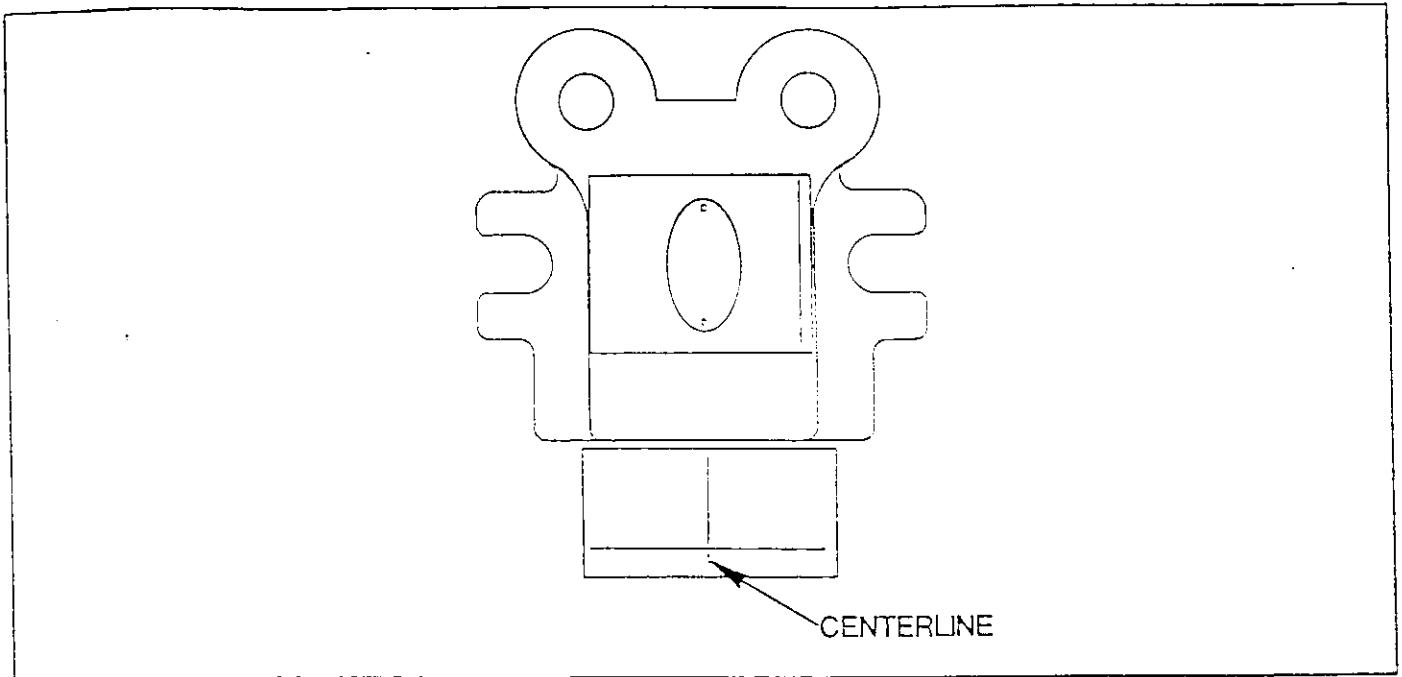


Figure 1-13

STEP 10: Measure distance between centerlines of two adjacent parts on a strip of material. See Figure 1-14.

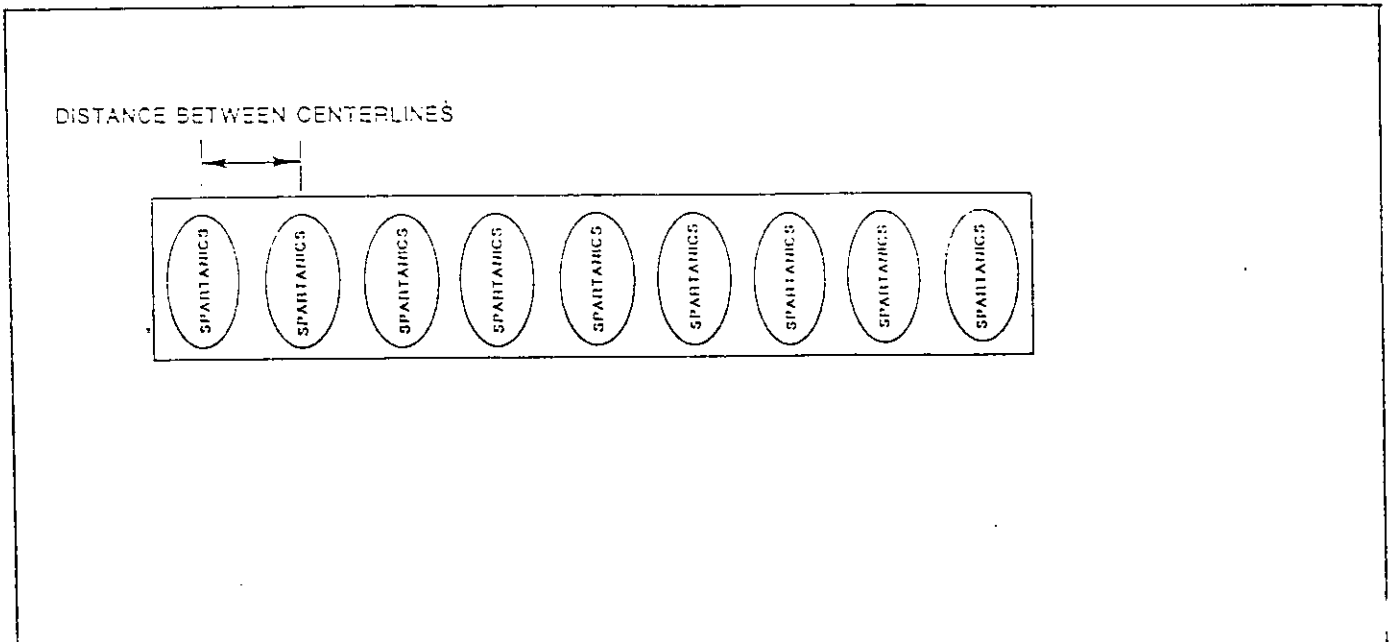


Figure 1-14

1.0 Installation

STEP 11: If distance measured in STEP 10 is less than 7", scribe two lines $1\frac{1}{4} \pm \frac{1}{64}$ " away from centerline scribed in STEP 9. See Figure 1-15. If distance measured in STEP 10 is more the 7", centerline scribed in STEP 9 must be moved rightward the distance over 7". For example, if the distance measured in STEP 10 is 8", then the centerline scribed in STEP 9 has to be moved 1" rightward. . After scribing new centerline, scribe two lines $1\frac{1}{4} \pm \frac{1}{64}$ " away from new centerline.

STEP 12: Drill and tap two $\frac{5}{16}$ -18 holes in positions shown in Figure 1-15.

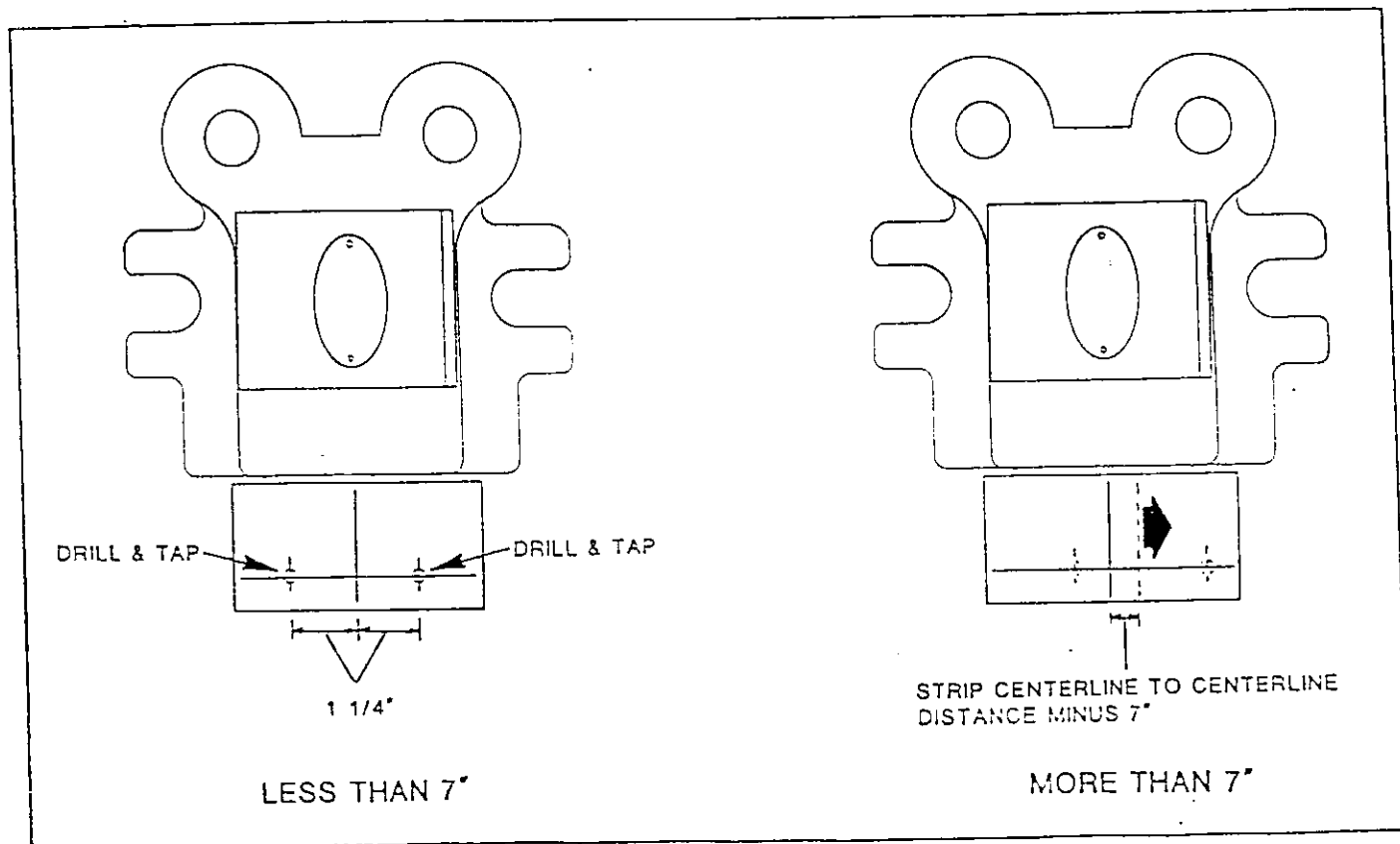


Figure 1-15

1.0 Installation

WARNING!
Make sure that press motor is turned off before doing the following steps or you may get seriously injured.

STEP 13: Mount die set on press as you normally would. Leave angle iron on lower die shoe.

STEP 14: Remove strip feed from test stand, mount strip feed on lower die shoe, and secure it in place with 5/16"-18 bolts from test stand. Do not tighten bolts yet. See Figure 1-16.

STEP 15: Using a square, adjust position of strip feed so that it is square and true to lower die. Then tighten mounting bolts with 1/4" ball driver.

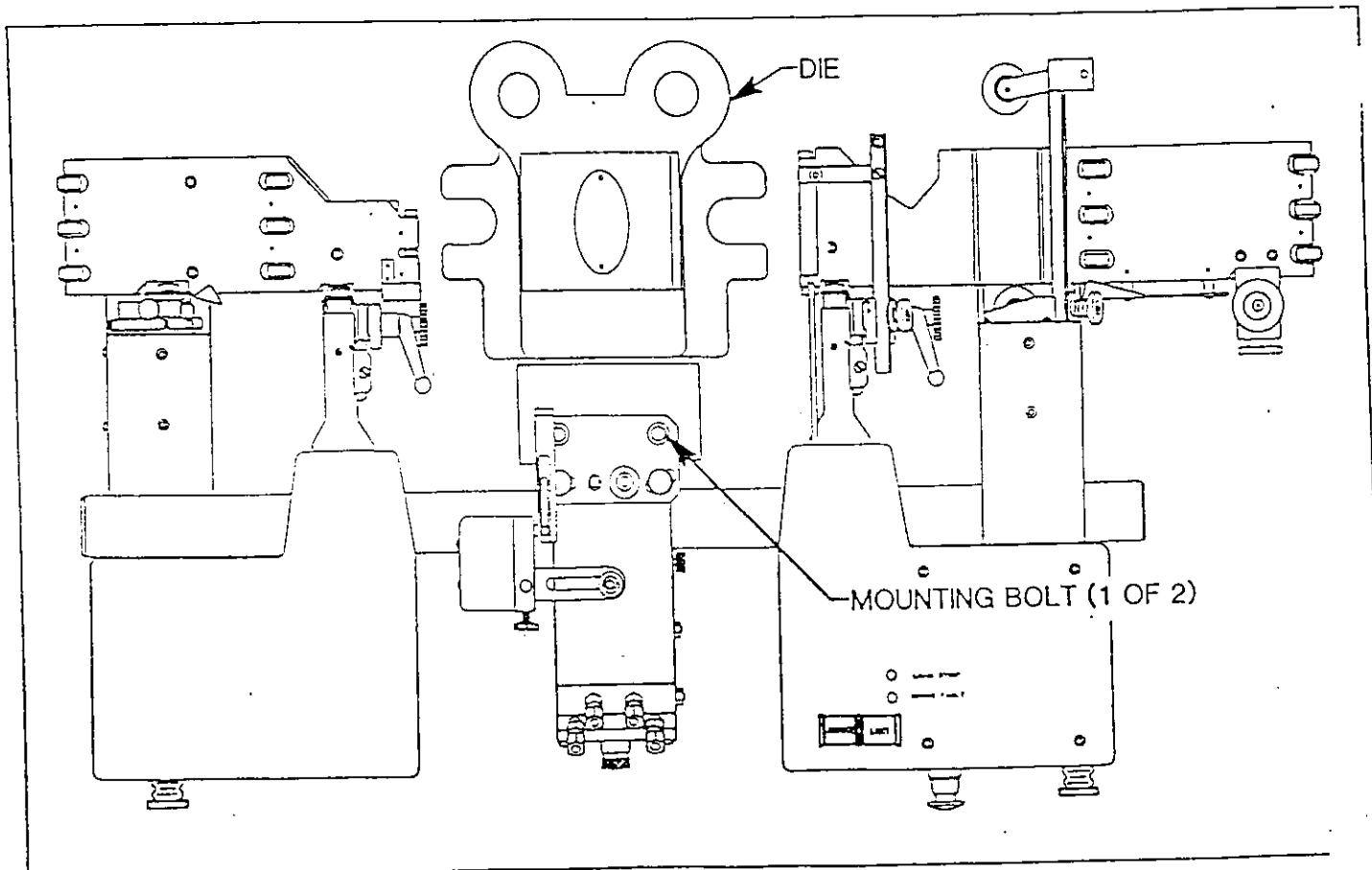


Figure 1-16

1.0 Installation

STEP 16: If parts ejection system on strip feed *will not* be used, go to STEP 27. Otherwise, do the following steps.

STEP 17: Unscrew brass fitting nuts from mounting bar assembly. See Figure 1-17. Under each nut is a brass ferrule (ring). Remove ferrules.

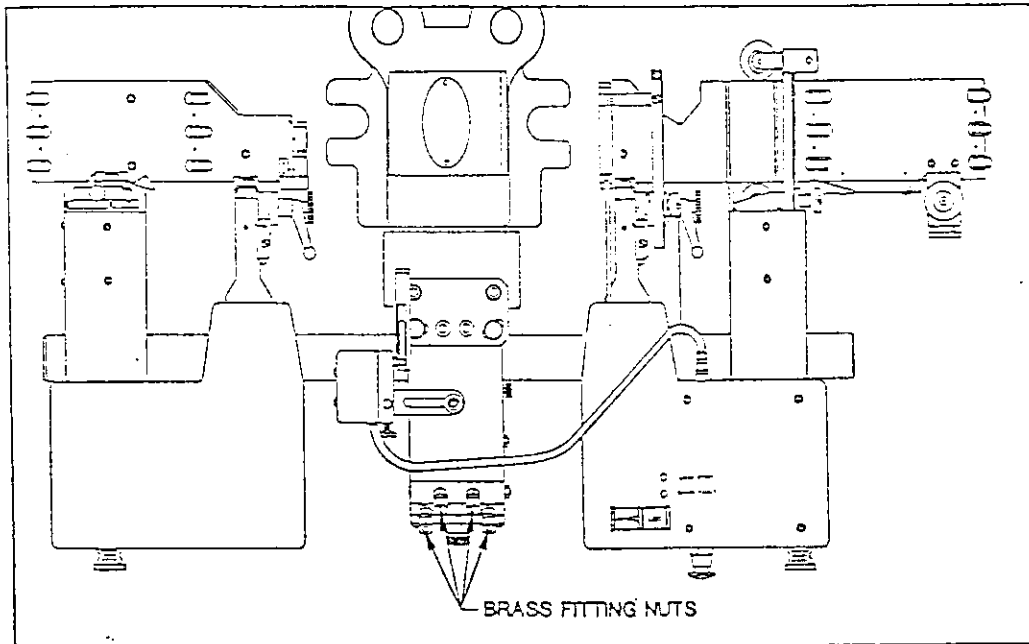


Figure 1-17

STEP 18: Install brass ferrules and nuts on air nozzles as shown in Figure 1-18.

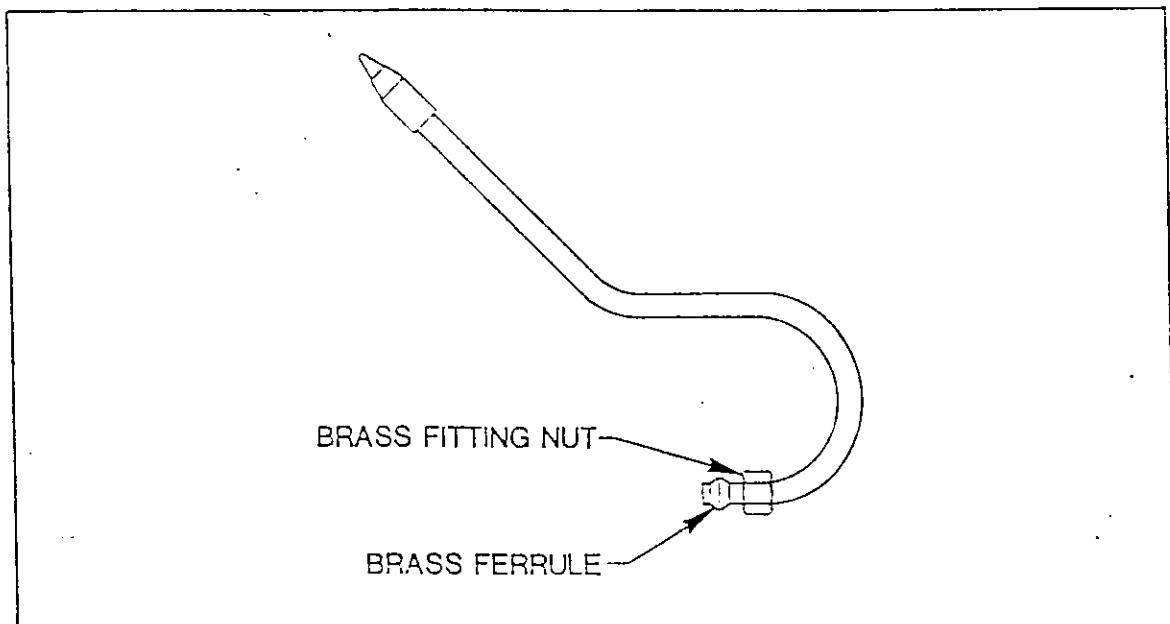


Figure 1-18