
TDC-Notcher

TDC Hydraulic Notcher

OPERATOR'S MANUAL INSTRUCTIONS AND PARTS DIAGRAM



CINCINNATI PRECISION MACHINERY 513-860-4133

LOCKFORMER

A PRODUCT OF

FORMTEK
More Productive Metalforming Solutions

WARNING

THIS EQUIPMENT IS DESIGNED TO BE OPERATED WITH ALL COVERS SECURED IN PLACE. OPERATION WITHOUT THESE SAFEGUARDS MAY RESULT IN CONDITIONS WHICH ARE HAZARDOUS TO THE OPERATOR AND OBSERVERS.

SAFETY GUIDELINES

Before operating the machine, study and follow the safety precautions in this section. These precautions are intended to prevent injury to you and your fellow workers. They cannot, however, cover all possible situations. Therefore, **EXERCISE EXTREME CAUTION** and use **COMMON SENSE** before performing any procedure or operation.

Safety Precautions BEFORE Starting The Machine(s)

Only one person should control the machine(s). Never allow anyone to operate the controls while you are operating or working on this equipment. In addition to disconnecting power **always use lock outs and tagouts** to prevent accidental start-up when performing maintenance procedures. Keep your hands away from internal workings of the machinery when starting, running or stopping. Keep your work area clean. Remove all scrap, oil spills, rags, tools and other loose items that could cause you to slip, trip and fall. When cleaning the machine or any of its components, do not use toxic or flammable substances. Do not perform any cleaning while the equipment is running. Never override or disable any safety switch or safety interlock. If so equipped, make sure that hydraulic and pneumatic pressures are at specified levels before operating this equipment.

Do not operate the Hydraulic Notcher unless all covers and guards are in place.

Be sure that this Instruction Manual is kept near the machine so the operator can refer to it when necessary. Keep this equipment properly maintained. Always turn off power to the machine(s) at the main disconnect before performing any maintenance or adjustments so accidental start-up or electrocution cannot occur.

Safety Precautions WHILE Operating The Machine(s)

Never leave the work area while the equipment is in operation. Never leave the machine unattended while it is under power or in operation. Always be alert while operating machinery. Be alert for loose, worn or broken parts. Do not attempt to operate any machinery with such parts present or if the machinery is making unusual noises or actions. Avoid skin contact, prolonged breathing, or eye exposure to any stock lubrication fluid being used. Be aware of the locations of the **Power Off** or **Emergency Stop** button in case of an emergency.

Be sure all guards and covers are in place.

Continually observe the rollforming process and related equipment. If any unusual condition develops, immediately stop and inspect the machine. Protect yourself ! Wear safety glasses. Do not wear loose clothing, neckties, or jewelry. If long sleeves must be worn, avoid loose cuffs and buttons. Tie back and contain long hair. Never adjust any roll feature or perform work near the rolls, gears or power take off while they are running.

General

-If any pneumatic or hydraulic feature is used, close the main hydraulic lock out valve, disconnect the main supply pressure and bleed the lines to prevent cycling on retained pressure before servicing. Always shut off the power at the main disconnect switch before entering the electrical control box.

-Do not use compressed air to clean the machines. Air pressure may drive dirt and small chips into the machine(s) bearing surfaces or cause bodily injury.

WARRANTY

Our warranty on the products we manufacture is limited to repair or replacement without charge, of any part found to be defective in materials or workmanship. This warranty is for a period of one year (unless otherwise specified) from the date of shipment from our factory, for all mechanical features of the machine except purchased components that carry the warranty of the original manufacturer. This warranty is conditioned on proper installation, maintenance and use of the equipment. The warranty will be void if the equipment is subjected to misuse or abused or if used beyond the standards in this manual, including material dimensions and gauge. Warranty parts and components will be shipped freight collect from FORMTEK. If the defective part has not been returned to FORMTEK within 15 working days after receiving the replacement part, your company will be responsible for the cost of replacement. The warranty provided in this clause is in lieu of all other warranties, express or implied, arising by law or otherwise, including the implied warranties of merchantability and fitness for a particular purpose which are hereby disclaimed by FORMTEK and excluded from this agreement. This warranty shall not be modified for any reason. In no event shall FORMTEK be liable for consequential or incidental damages, including the cost of assembly or disassembly, lost production or personal injury. The information in this document has been reviewed and is believed to be complete and accurate. No responsibility is assumed for minor inaccuracies or content not addressed in this manual. Furthermore, FORMTEK reserves the right to make changes to any products herein, at any time, to improve reliability, function, or design. FORMTEK does not assume any liabilities arising out of any use of any product described herein, nor does it convey any license under its trade secrets or patent rights nor the rights of others.



CAUTION!

NEVER OPERATE THIS EQUIPMENT UNLESS ALL COVERS AND GUARDS ARE IN PLACE.

To provide clarity to points in question the illustrations and photos appearing in this manual are shown with covers and guards removed.

Common sense and **extreme** care must be used at all times during the operation and maintenance of this equipment. It is important that ALL personnel who will operate, maintain, or supervise the use of this equipment, read and understand the sections of this manual concerning **SAFETY** and the **OPERATION** of the equipment. The equipment described in this manual was designed and manufactured for a specific function. It should not be used for any other purpose or outside of the design specifications as this may result in damage to the equipment and/or injury to the operator. Modifications or additions to this equipment should not be made. Any such modifications or additions will void the warranty and may subject the operator to injury. Replacement and maintenance parts must be purchased from FORMTEK or the component original equipment manufacturer. Use of other parts may result in unsafe operation or failure of the machinery. If there is a question to the suitability of a part, proper personnel FORMTEK should be consulted.

In general, every piece of equipment must be treated with extreme care. While operating or maintaining this equipment, each individual must be aware of their own safety as well as the safety of all bystanders.

SAFETY FIRST

SAFETY SIGN-OFF SHEET

I verify that I have read and understand the safety and operation sections for this equipment:

It is the employer's responsibility to instruct all persons who may come in contact with this equipment on the safe operation and maintenance of this equipment. If a language barrier or other restriction limits understanding, this manual can be read to the individual with appropriate follow up questions to verify understanding. Have each individual sign below only after demonstrating their understanding of the safety practices described in this manual.

NAME	DATE	NAME	DATE

SAFETY GUIDELINES

Do not wear loose clothing, neckties, improper gloves, or jewelry while operating this machine. If long sleeves must be worn, avoid loose cuffs or buttons, Tie back or contain long hair. Wear proper gloves to prevent lacerations caused by sharp edges of stock as it travels through the forming operation. Never operate this equipment unless all covers and guards are properly installed. Be alert for loose, worn, or broken parts. Never operate this equipment unless it is in good working condition. As the stock enters the **notching dies** a pinch point is created. Keep hands clear of area and all pinch points!

Always disconnect the main power supply power and install lock outs using a lockout / tagout procedure when making adjustments or repairs. When transporting, take into consideration that the machine is top heavy and may suddenly tip over. The machine is designed for fixed installations and are not intended for portability.

You are **NOT** ready to operate this equipment if you have not read and understood all of the safety information in this manual.

! WARNING:

Remember that the information contained in this manual is only a portion of an adequate training program. It must be coupled with specific instructions for your application along with full information of national and local safety regulations that may apply.

IMPORTANT The information contained herein is to be use as a general guide only. For further safety information obtain and read the latest ANSI bulletins

CONTACT: American National Standards Institute
11 West 42nd Street
New York, New York 10036

SOUND PRESSURE INFORMATION (noise levels)

The Lockformer TDC-Notcher described in this manual has been tested for noise DB levels. At normal operating distance the machine should be no more then 85DB.

YEAR OF MANUFACTURE

INSTALLATION/SPECIFICATIONS

INTENDED PURPOSE of the TDC-NOTCHER

The intended purpose of the TDC-Notcher is to notch (punch thru) the edges of steel sheet metal. The notched profile is specific for TDC and TDF style duct work.

INSTALLATION

PRELIMINARY: After uncrating, locate unit, with or without base skid, to area of operation. Unbind foot switch cord and cylinder hoses.

Provide a clean, flat, well lighted installation site. Level the machine and anchor it to the floor. Inspect all hoses and hydraulic components for oil leakage. Remove any packing or other debris that may have accumulated during shipping. **Fill the reservoir with oil** per the information below.

OIL: READ THIS BEFORE ATTEMPTING TO OPERATE THE MACHINE!

Hydraulic oil is **not shipped with the machine**. The reservoir must be filled before starting the machine. The oil used in the reservoir is;

Hydraulic oil -- N46 or N68 oil or the equivalent of;
RANCO AW HYDR-46 HYDRAULIC OIL (TEXACO), AW-68 HYDRAULIC OIL (AMACO)
DTE #26 MOBILE

Volume - 10-12 US Gallons, (40-50 liters). Fill to mid level of tank site glass.

Do not operate the machine if signs of oil leakage appear.!

ELECTRICALS

Remove manual starter box cover and wire unit as per diagram illustrated on inside of cover. Normal electricals 220 volt, 60 cycle, 3 phase with overload protection in starter box. Motor furnished-5 H.P. x 1800 RPM.

Standard electrical motor: 5 HP (3.75KW) 220/460V.

Provide a grounded 220/460V power supply at the point of operation. If a 380V motor is ordered, install the power supply in compliance with the local and national electric codes. For further information contact a certified electrician or the proper Formtek/Lockformer personnel.

IMPORTANT: When starting unit check to see whether motor and pump rotation conforms to direction of arrows on motor and pump body. CAUTION: Jog unit until proper rotation is achieved. Severe damage to pump will result if run backward to rotation shown.

CAPACITY

Maximum capacity is 1.5mm (16 ga.) mild steel (metal) and galvanized steel.

NOTCHER CONFIGURATIONS

The standard notcher machines are normally configured with either 3 heads or 5 heads.

The 3 head configuration includes notch heads for; 1 (one) female seam corner (left side), 1 (one) male seam corner (right side) and 1 (one) slot notch die. The 3 head notcher can produce L-section ductwork. Add 2 Vee notch heads for the 5 head machine to produce wrap duct.

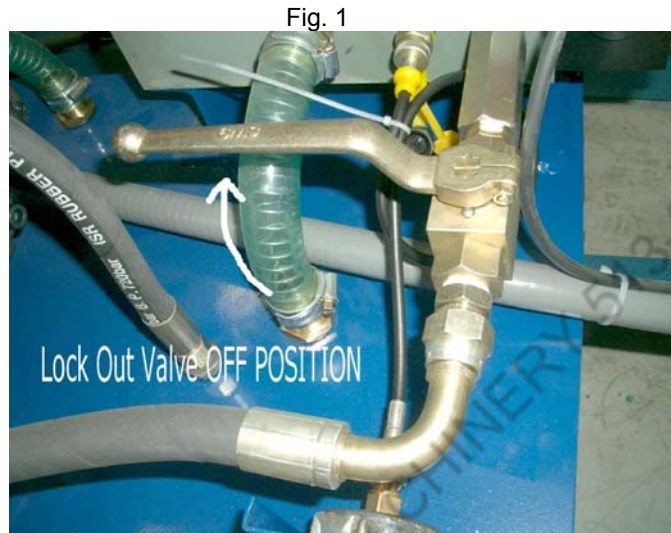
The 5 head notcher can produce L section and Wrap-Duct
Both the 3 head and the 5 head can produce 4 sided (4 piece duct)

OPERATING INSTRUCTIONS

⚠ DISCONNECT POWER BEFORE ATTEMPTING TO MAKE ANY ADJUSTMENTS ON THE MACHINE.

Install power lock outs to prevent accidental start-up while working on the machine!

The TDC NOTCHER has a Safety Lock-Out valve which is to be **CLOSED (OFF)** when ever the machine is serviced or adjusted. **The Valve is in the off position in FIG 1**



BASIC OPERATION

IMPORTANT: When starting the unit check to see whether motor and pump rotation conforms to direction of arrows on motor and pump body. **CAUTION:** Jog unit until proper rotation is achieved. damage to pump will result if run backward to rotation arrow.

CYLINDER SHUT OFF VALVES: Each individual cylinder has a valve connected to the hydraulic hose. This valve can be turned on or off to activate or deactivate a particular notch head as required.

OPERATION: Loosen left hand notching head and slide to zero mark on Back Scale, clamp into position. Move VEE NOTCHING heads to required spacing by locating left side of heads to required measurement from zero on scale.

EXAMPLE: 4"inch x 12"inch DUCT in L duct (2 piece rectangular construction)

PROCEDURE:

- (1) Left forming head set at zero. **NOTE:** seam depth of notch required for Pittsburgh Lock (Small Pittsburgh) is 1"inch (25mm). Large Pittsburgh is 1 3/8"inch (35mm) (see section below **ADJUSTING THE NOTCH DEPTH**)
- (2) Move first VEE NOTCHING head to 4"inch on the tape and secure.
- (3) Move right hand notching head to required notch depth of 1/4"inch for right angle flange (small Pittsburgh).
- (4) Place proper width of material onto gauge support table and square duct to gauge pins. {Material width is 17-1/4"inch for 4"inch x12"inch L-duct using Small Pittsburgh Lock and 1/4"inch (6mm) 90 ° Flange}
- (5) Activate notching heads by depressing foot switch until notching is completed. Release foot switch and remove completely notched duct sheet.

- ⚠ **CAUTION:** Release foot switch immediately after cutting is completed. If foot switch is kept depressed oil pressure will be at maximum setting of relief valve and will cause unnecessary heating of oil and possible damage to pump.

Notching heads will notch the equivalent of 16 ga. Material (.062),

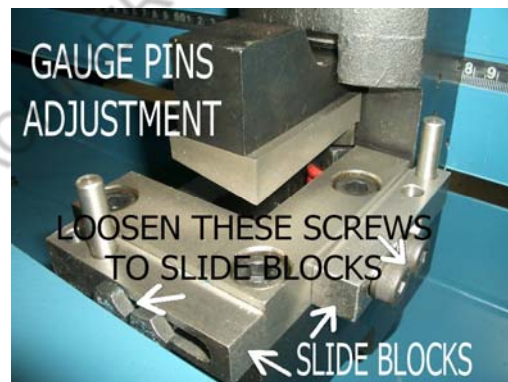
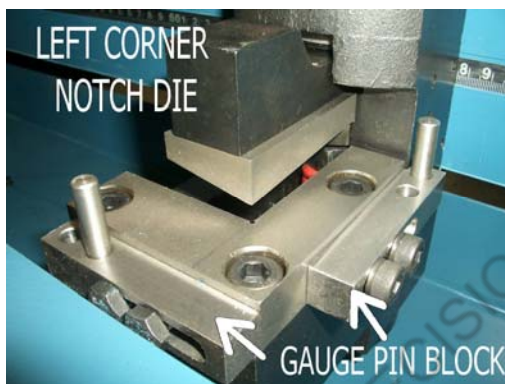
NOTE: Notching heads not required can be quickly deactivated by closing the valve at the notch head. This makes heads not required inoperative.

ADJUSTING THE NOTCH DEPTH

The notch depth can be adjusted by moving the gauge pin blocks or moving the pin to the next hole.

1. Move the pin to the next hole. Moving the pin over should allow for either SMALL PITTSBURGH or LARGE PITTSBURGH Notches.
2. Fine tuning the notch depth can be accomplished by loosening the screws that hold the blocks and sliding the blocks in the desired direction to either add notch depth or subtract notch depth.

The gauge pin blocks are slotted for this purpose.



TDC NOTCH DEPTH - 2 7/16"inch (62mm)

TDF NOTCH DEPTH - 2/9/16inch (65mm)

MAINTENANCE

⚠ DISCONNECT POWER BEFORE ATTEMPTING TO MAKE ANY ADJUSTMENTS ON THE MACHINE.

Install power lock outs to prevent accidental start-up while working on the machine!

For proper maintenance of the hydraulic system, the oil should be kept clean and free of dirt or other foreign matter. The system should be changed after approximately one year's operation. This is accomplished by removing drain plug at bottom of reservoir. Replace and fill with clean filtered oil. A ruler inserted to bottom of reservoir will indicate 7" when proper oil level is reached. Volume - 10-12 US Gallons, (40-50 liters). Fill to middle of level site on the back of machine.

DIE CARE AND MAINTENANCE: Punch and dies are manufactured of high carbon high chrome tool steel for maximum cutting service. When die cutting surfaces become worn it will be necessary to sharpen.

NOTE: When punch and dies are to be sharpened in the field, grind flat top surface of die and lower cutting surface of punch. You will note punch has rake angle. This rake angle must be maintained.

A LIGHT OIL SHOULD BE APPLIED OCCASIONALLY TO CUTTING SURFACE OF PUNCH AND DIE TO PROLONG DIE LIFE.

NOTE: A slight clearance, not to exceed 0.003"inch (0.7mm), should be set between punch and die on SLOT-NOTCH by placing a 0.003"inch (0.7mm) to 0.0025" (6.5mm) spacer shim on both sides of cutting edge of dies.

. For CORNER NOTCH punch and dies, the clearance should be 0.005" (1.3mm).

Setting the clearances is accomplished by adjusting the gibs in the back of the notcher head.

OIL PRESSURE

During the operation of the machine while the foot switch is depressed and the notchers have stopped in the down position, the oil pressure should attain a maximum pressure of 1700-1800PSI (12BAR)

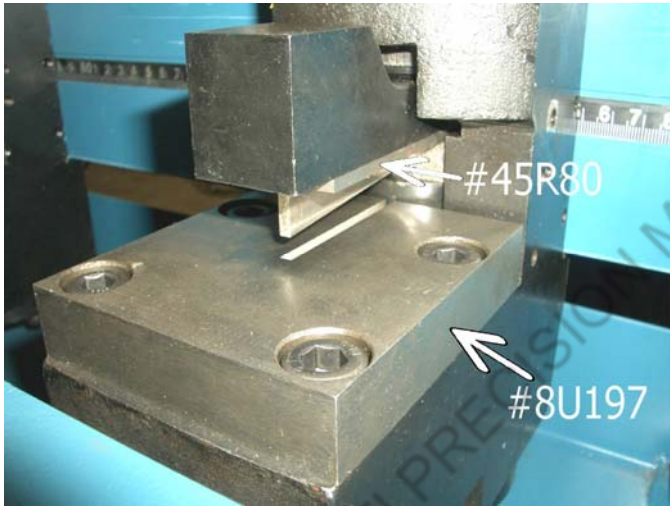
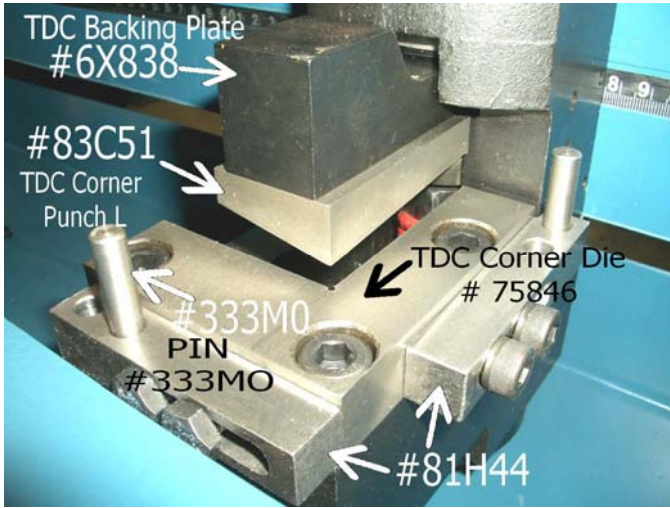


**HYDRAULIC
PRESSURE
ADJUSTMENT**

OIL: The oil used in the reservoir is a commercial hydraulic

N46 or N68 oil.
RANDO AW HYDR-46 HYDRAULIC OIL (TEXACO), AW-68 HYDRAULIC OIL (AMACO)
DTE #26 MOBILE

TDC-Notcher PARTS



CYLINDER CAP #1K083



CAP O-RING #94115K326

BOTTOM CAP #6X513



GUIDE PIN #84C44



CLAMP HANDLE
#4V456



Gauge Pin
#333M0

Gauge Pin Block
#81H44



Clamp Plate
#57F03



Back Clamp Plate
#1D235



GIB #3T878



GIB #41V91



CYLINDER BODY
#71D73



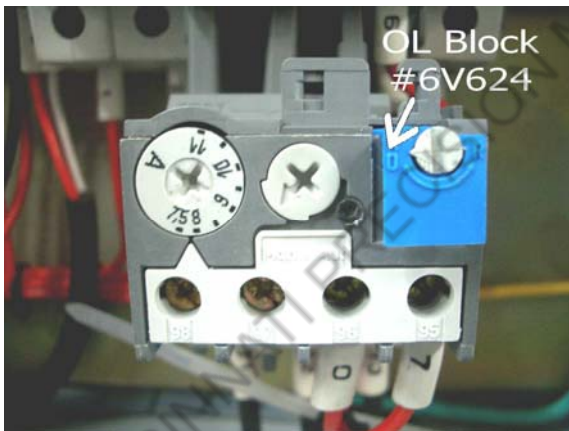
Splitt Pin
#91610A624

Threaded
#8U975



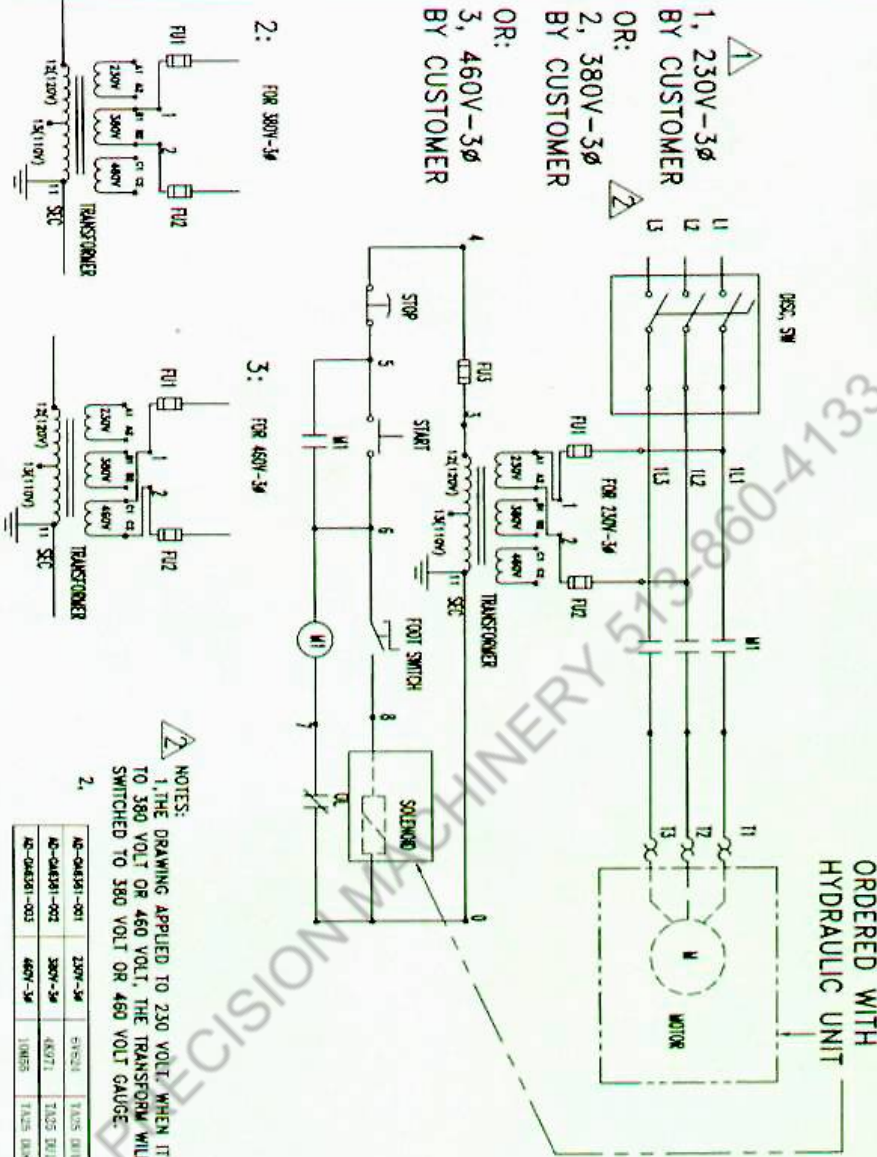
RETURN SPRING
#6E765





REV	DESCRIPTION	DATE	DRAWN
1	230 VOLT 3 PHASE 1	11-28-03	FRANK
2	PLUS TWO APPLICATIONS 380V 3P, 480V 3P AND CHANGED THE DRAWING NUMBER ACCORDING TO THE ISO 14224	03-23-04	FRANK

1. 230V-3Ø
BY CUSTOMER
- OR:
2. 380V-3Ø
BY CUSTOMER
- OR:
3. 460V-3Ø
BY CUSTOMER



NOTES:
1. THE DRAWING APPLIED TO 230 VOLT, WHEN IT BE APPLIED TO 380 VOLT OR 460 VOLT, THE TRANSFORMER WILL BE SWITCHED TO 380 VOLT OR 460 VOLT GAUGE.

AP-0A6361-001	230V-3Ø	5V/2.5	TA05 001A
AP-0A6361-002	380V-3Ø	4K/0.71	TA05 001A
AP-0A6361-003	460V-3Ø	10M/55	TA05 001A

APPROVED FOR CONSTRUCTION 12-20-05

FORMTEK
ONE PIECE PLACE SUITE 400E
TALLAHASSEE, FL 32310
PHONE 850-285-1800
FAX 850-285-1799



- NOTES:
- 1) ALL DIMENSIONS IN METRIC UNLESS SPECIFIED IN BRACKETS
 - 2) QUANTITIES ALL UNLESS OTHERWISE SPECIFIED
 - 3) REPORT ALL SHARP EDGES AND ROUNDS
 - 4) ALL DIMENSIONS IN PARTICULARS PRECEDENT UNLESS NOTED

HEAT TREATMENT	MATERIAL	TITLE BLOCK
COATING	SS304	DESIGNED BY: FRANK
	TOLERANCES UNLESS OTHERWISE SPECIFIED	CHECKED BY: GATE
	FORMED ANGLES ± 1.1°	SCALE: A
	MACHINED ANGLES ± 1.5°	SHEET 1 OF 1

DESCRIPTION
WIRING DIAGRAM FOR NOTCHER

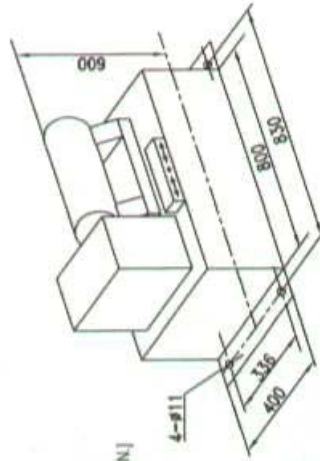
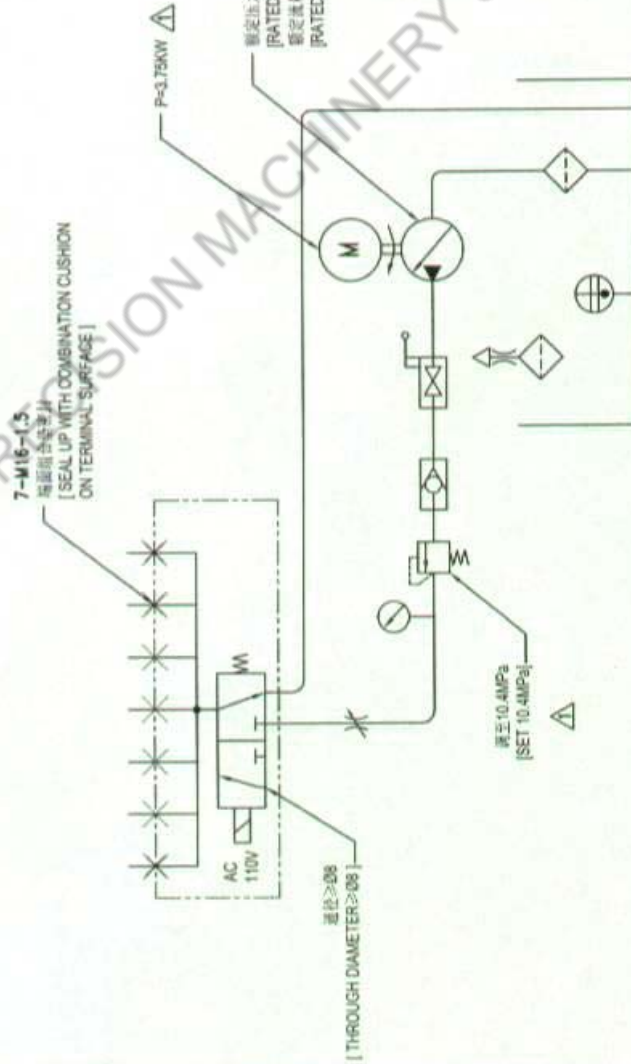
DWG. NO./NAME
AD-0A6361-000

REV.
02

ITEM	P/N	QTY	DESCRIPTION
START	18799	1	CONTACT N.O.
STOP	29691	1	CONTACT BELIEVE
RESET	60311	1	LEADON P11 START
SOLENOID	11080	1	POSITION-TRIST TO RELEASE-RET
STARTER (M1)	87177	1	CONTACT N/C
TRM	30293	7	CONTACT BELIEVE
DISC. SW	43095	1	CONTACT BELIEVE
BLACK PLATE	33183	1	CONTACT BELIEVE
FOOT SWITCH	00751	1	CONTACT BELIEVE

NOTE: UNIT TO BE FURNISHED COMPLETE WITH MOTOR, PUMP, TANK, FILTER, SIGHT GAUGE, PRESSURE RELIEFING FILL COVER, MANUAL SHUT-OFF VALVE, CHECK VALVE, PRESSURE RELIEF VALVE, PRESSURE GAGE, NEEDLE VALVE, SOLENOID VALVE AND MANIFOLD. THE SEVEN (7) MANIFOLD PORTS ARE TO BE PLUGGED WITH SEALED FITTINGS THE UNIT TO BE COMPLETELY PIPED.

1. 液压站最大外形尺寸 [MAXIMUM SIZE OF HYDRAULIC POWER SUPPLY]:
860 × 400 × 600MM.
2. 液压站安装尺寸 [INSTALLATION SIZE]:
336 × 830mm (M10).
3. 7个供油孔尽可能放在长度方向一侧的中央。
[7 FEED HOLES ARE PUT AT INTERMEDIATE SEAT]
4. 公称单缸工作流量: 2.0L / 次。
[NOMINAL FLOW FOR WORK: 2.0L / EACH]



APPROVED FOR CONSTRUCTION 24-10-05

		ONE PIERCE PLACE, SUITE 4 ITASCA, IL 60143 PHONE: 630-285-1000 FAX: 630-285-1208
TITLE BLOCK: C FABRICATED DRAWN BY: CJE TXW CHECK BY: EJE X PAPER: EJE X SCALE: 1:1	DATE: 07-01-05 DATE: 03-03-05 DATE: 07-01-05	DESCRIPTION: #8 HYDRAULIC POWER SUPPLY DWG. NO./NAME: 2Y487-01-CN
SHEET 1 OF 1		液压系统原理 REV: 01

Due to continuous improvements, FORMTEK reserves the right to modify the product design and specifications contained herein without notice. Please contact your Lockformer sales representative for the most current specification information. Use, publication, or sale of any images or content without the expressed written consent of FORMTEK is strictly prohibited.

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www.lockformer.com
or www.formtekinc.com

USA

Formtek Inc, 182 Northwest Industrial Cr.
Bridgeton, MO 630441

China

Formtek Machinery (Beijing) Co., Ltd. Beiqijia High-Tech Industrial Park,
Changping, Beijing 102209

CINCINNATI PRECISION MACHINERY 513-860-4133