WELCOME TO THE weldotron FAMILY!

Weldotron is a recognized leader in the industrial packaging industry. Whether you own or lease your Weldotron packaging system, you are assured the highest quality in design, workmanship, and performance of any packaging system available.

The purpose of this manual is to familiarize you with the Model 7221C/7222C Shrink Tunnel and to provide instructions for the operation, maintenance and, if necessary, repair of the system. This manual also includes a complete set of parts lists and assembly drawings to facilitate maintenance and repair.

If certain unique installation requirements arise, or if there are any questions concerning your Weldotron packaging system which are not answered by this manual, one of our courteous Customer Service representatives will be happy to assist you.

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF FIGURES

1. INTRODUCTION

1.1 DESCRIPTION OF MACHINE

The Weldotron 7220 Series Shrink Tunnels are conveyor driven heat shrinking devices employing electric heating combined with a re-circulating air system, and a complete range of adjustments.

The package conveyor features live (i.e., rotating) rollers which are instantaneously adjustable to non-rotating for special product applications. The normal conveyor-roller spacing (with rollers spaced every 3 conveyor chain pin extension) is suitable for most packaging applications but the tunnel may be ordered with, or converted to a "high density" conveyor (with rollers spaced every 2 conveyor pin extension) for use with small packages, or to assure that narrow products will not fall between rollers to cause package or machine damage.

1.2 THE OPERATING AND MAINTENANCE MANUAL

This Operating and Maintenance Manual has been carefully prepared by our Technical Publications Department to provide all information necessary to properly install, operate, and maintain this Weldotron machine. Please read it carefully and refer to it for information on the use by production maintenance, and supervisory personnel. Although the design of these tunnels incorporates safeguards to protect personnel, care should be used in operating, adjusting, and servicing.

1.3 IMPORTANT WARRANTY NOTICE

Attention is directed to the Standard Weldotron Parts and Service Warranty which accompanies all new Weldotron machines. The terms and conditions of this warranty apply to only unmodified units. Any unauthorized modifications to the equipment automatically voids the warranty.

2. UNPACKING & INSTALLATION

2.1 UNPACKING

Remove shrink tunnel from shipping crate and inspect for possible damage. IF ANY DAMAGE IS NOTED, CONTACT CARRIER IMMEDIATELY. DO NOTHING FURTHER UNTIL CARRIER'S AGENT HAS MADE AN INSPECTION OF THE DAMAGE TO THE UNIT. If no damage is present, check for the presence of the following items:

1. Hole Plugs, 3/8" diameter (25 furnished).
2. Main Power fuses (F1, F2, F3) 50 amperes.
3. Blower Motor Fuses (F4, F5) 15 amperes.
4. Conveyor Motor Fuse (F6) 1-1/2 amperes.
5. One-half pint can Weldotron Thermolube, Part #LU-0855.
6. Lubricant applicator brush.

If any of these items are missing, contact the manufacturer immediately.

2.2 INSTALLATION

a. Locate the Shrink Tunnel in desired position with required electrical power source available. Make sure that wiring is adequate, to guard against low voltage. If the voltage is too low the power company can frequently adjust it to the proper level if the wiring capacity is adequate.

   In choosing a location for the Shrink Tunnel it is important to avoid a drafty area in the path of cooling of ventilating fans or air conditioning ducts, as heat may be unintentionally drawn from the tunnel and reduce its efficiency.

b. Shut off the in-house tunnel power-source and the tunnel's MAIN POWER switch.

c. Open the tunnel's MAIN POWER switch box and wire in the connections to the in-house power-source switch (knock out desired power connection holes in MAIN POWER switch box).

d. With the tunnel's MAIN POWER switch still in its OFF position, turn on the in-house power-source switch.

3. SPECIFICATION

3.1 MODEL 7221

Electrical Requirements: 230 volts, 42 amperes, 3 phase

Overall Dimensions: Tunnel Length (exclusive of conveyor 46"; width 26-1/2", height overall, from floor. 63"; chamber opening 8" high by 22" wide; conveyor length 69"; 28-3/4" max. width at chain guard; height 33".

Heater Bank: 14,000 watts

Temperature: Electronically controlled to 450 ° F (±2°F of nominal accuracy)

Conveyor: Silicone rubber covered rollers, chain driven package speed continuously variable from 0 to 125 FPM by means of solid state speed controller.

NOTE

High density roller conveyor (i.e., with 1/2" spacing between the sides of adjacent rollers) may be ordered, rather than the normal wider roller spacing, for use with very small of very thin packages to prevent the packages from falling between rollers.

Blower: 1 HP AC motor.

Controls: 3 phase line switch, blower switch, conveyor speed control, precision digital temperature controller, air velocity control, conveyor-roller rotation/non-rotation control, conveyor cooling fan on-off switch.

3.2 MODEL 7222

Specifications identical to paragraph 3.1, except as follows:

Electrical Requirements: 230 volts, 44 amperes, 3 phase

Heater Bank: 15,000 Watts

Height Overall From Floor: 69"

Chamber Opening: 14" high by 22" wide

3.3 MODEL 7221ST

Specifications identical to paragraph 3.1, except this model is constructed with a stainless steel frame and components.

4. OPERATION

Refer to Figure 4.1 at the end of this section for locations of controls and adjustments.

Be sure to read entire section before operation tunnel.

4.1 PRELIMINARY

a. Throw the MAIN POWER switch to its ON position.

b. Turn the MAIN BLOWER switch to its ON position.

c. Set the CONVEYOR SPEED CONTROL to about its mid-range setting on the scale until exact desired conveyor speed is determined later (based on package size and sealer speed). Note that the speed-control dial scale is in arbitrary units, not in feet-per-minute.

CAUTION

DO NOT OPERATE THE TUNNEL AT HIGH TEMPERATURE FOR MORE THAN 30 MINUTES WITH THE TOP COVER OPENED. IT MAY REDUCE LIFE CYCLE OF CERTAIN COMPONENTS.

4.2 OPERATION WITH ALL FILMS EXCEPT POLYETHYLENE

a. Turn the CONVEYOR COOLING FAN switch to its OFF position.

b. Set the VARIABLE VELOCITY control to HIGH position.

c. Set all ROTATING/NON-ROTATING ROLLER SELECTORS to their ROTATING positions. Note that all conveyor rollers are rotating as the conveyor runs.

d. Set the TEMPERATURE CONTROL to the temperature recommended by the film manufacturer. Approximate settings for several popular films area as follows:

PVC:	300 degrees F
Polypropylene:	400 degrees F
Polyolefin:	300 degrees F

These approximate temperature settings are, of course, affected by the conveyor speed selected, the film gauge, and the package size and configuration. The temperature settings should be modified, experimentally, for best shrink results.

When the proper shrink tunnel operating temperature has been reached within ±1.8°F range, the hi-low limit indicator will light only green LED light in the middle.

4.2 OPERATION WITH ALL FILMS EXCEPT POLYETHYLENE (cont'd)

e. Arrange the tunnel's heat-control hole plug pattern as follows:

1. At the bottom of the heat chamber under the conveyor rollers, there is a group of holes extending further than the rest of the tunnel's heat control holes toward the package entrance end of the tunnel. Generally, these holes should remain unplugged to provide pre-shrink action and to pull the film-seam downward, under the bottom of the package, for better appearance. However, these holes should be partially plugged, experimentally, if there is any film burning.

2. Arrange the rest of the tunnel's hole plug pattern to suit the package configuration. The chamber's top, bottom, and side holes may be plugged to minimize shrinkage, or unplugged to afford greater shrinkage. For low, flat packages with less 1-inch of side height (such as phonograph records, or reels of tape), the side holes should be completely plugged. For somewhat higher packages, the holes may be only partially plugged to admit side air-flow, as required. It if important to remember that, as top and bottom holes are plugged, air-flow is increased from the side air holes and vice versa.

f. Again, as a reminder, it is recommended that the setting of the temperature controller be varied, in small increments, for best shrink results.

4.3 OPERATION WITH POLYETHYLENE

a. Turn the CONVEYOR COOLING FAN switch to its ON position.

b. Set <u>all four</u> ROTATING/NON-ROTATING ROLLERS SELECTORS to their NON-ROTATING positions. Note that all conveyor rollers <u>are not</u> rotating as the conveyor runs.

c. Set the TEMPERATURE CONTROL to 450 °F (maximum heat).

d. Set the CONVEYOR SPEED CONTROL to a speed setting which is consistent with sealer speed and with production rate requirements.

e. Plug all the "pre-shrink" holes (mentioned in paragraph 4.2.e.1 above).

f. Arrange the rest of the hole plug pattern to suit the configuration of the package, as described in paragraph 4.2 e.2. above, except that the bottom holes should be plugged just sufficiently to prevent melting or sticking of the film (the more open holes the better, when using polyethylene).

4.3 OPERATION WITH POLYETHYLENE (cont'd)

g. Set the VARIABLE VELOCITY control, initially, to a point near its LOW position and, if required, advance in small increments toward the HIGH position, experimentally, for best shrink results. It is important to remember that if the hot air velocity is too great, billowing of the film may occur which can cause the film to fold over and stick to itself. A little care in determining the optimum setting will provide excellent results in the production shrinking of polyethylene film.

h. If desired, the out-feed curtains may be removed from the shrink chamber to prevent marring or sticking of the soft polyethylene film as it emerges from the tunnel in a semi-molten state. To remove the out-feed curtains, unscrew the two mounting screws at the top edge of each side of the curtains and supporting plates.

NOTE

When operating without the curtains, somewhat different settings of the various tunnel adjustments may be required (such as conveyor speed, and air velocity) to compensate for the heat-loss within the shrink chamber.

4.4 TUNNEL SHUT-DOWN

It is recommended that the tunnel be shut down in the following sequence to avoid overheating and possible damage to the covering of the conveyor rollers.

a. Set the CONVEYOR SPEED CONTROL to a moderate speed setting.

b. Set all four ROTATING/NON-ROTATING ROLLER SELECTORS to their ROTATING positions.

c. Turn the CONVEYOR COOLING FAN switch to its ON position.

d. Turn the MAIN BLOWER switch to its OFF position.

e. Allow tunnel to run (with above settings) for at least 10 minutes or until the temperature controller indicates about 250 °F.

f. After temperature has dropped to lower than 250 °F, throw the MAIN POWER switch to its OFF position. This completes the tunnel shut-down procedure.

4.5 REX-S900 TEMPERATURE CONTROLLER

Weldotron 7220 series tunnel is equipped with REX-S900 digital temperature controller as a standard unit. It's accuracy is well within ±2°F when set up correctly. Some may come with REX-C900 also. Refer to Section 4.6 and 7.9 for REX-C900 controller.

4.5.1 Description, Indicators

a. Temperature

During normal operation, this three digit numeric indicator displays running temperature and preset temperature depends on which display is selected by SET key, PV or SV

b. Present Value

This value is entered by an operator when PV(Present Value) is selected by SET key.

c. Set Value

This value is displayed when SV(Set Value) indicator light is selected by SET key.

d. Hi-Low Limit

Left arrow lights in RED when running temperature is 1.8°F lower than the set value. The square LED in the middle lights in GREEN within ±6°F of the set value. Right arrow lights in RED when temperature goes over 1.8°F higher than the set temperature.

e. Output "ON"

Turns on GREEN when output power is applied. Actual power is applied only when ALM indicator light is on RED.

f. Alarm Status

As explained in the Figure, RED light of this indicator implies the alarm circuit is armed. When alarm condition occurs, it turns off and heater power is disconnected.

4.5.2 Description, Control Keys

a. Set Button

During normal operation, this key is used to switch between Present Value and Set Value display mode. In parameter and code setup modes, it works as a data entry key to accept values.

b. Digit-1 Scroll Key

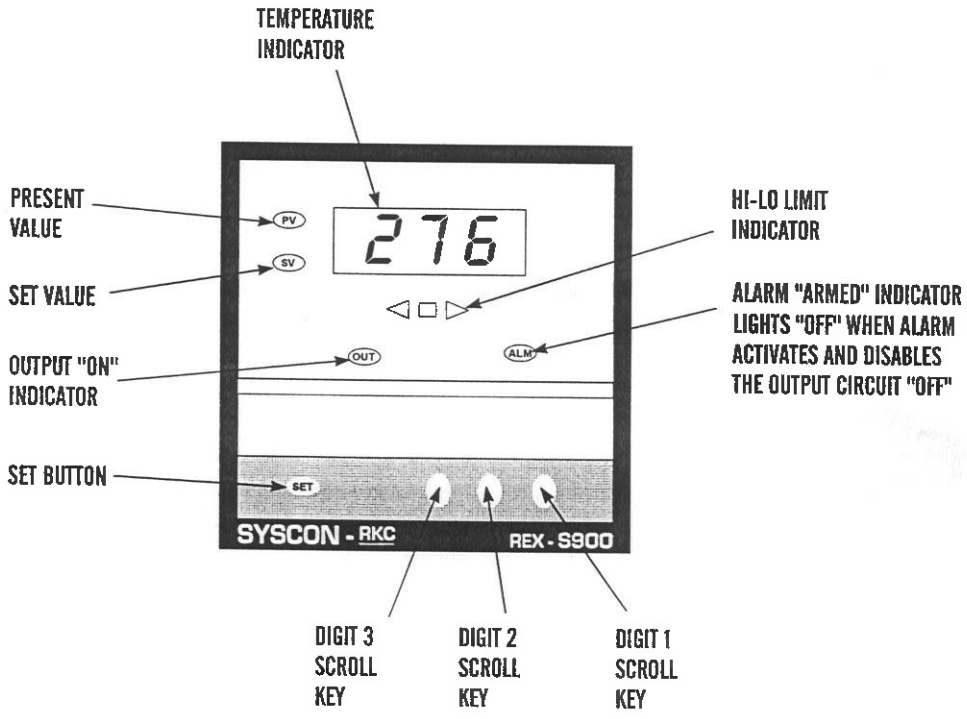
Increments the least significant digit value every time it's depressed.

c. Digit-2 Scroll Key

Increments the second significant digit value every time it's depressed.

d. Digit-3 Scroll Key

Increments the most significant digit value every time it's depressed.



4.5.3 PID Parameter Setting

This mode is entered by depressing and holding the SET key more than 5 seconds.

Alarm Set Temperature (AL 1)

With AL1 (Alarm #1) displayed, process alarm set temperature can be modified by Digit Scroll Keys. The value is factory preset for 450°F.

Proportional Band (P)

This is set for 6°F for faster reaction. This is optimized for high temperature settings. Changing this value to 10° will increase heat up time while eliminating temperature hunting at lower heat settings. When P is displayed, using Digit Scroll Keys allows the operator to change this value.

Integral Time (I)

This is factory set for 60 seconds.

Differential Time (d)

This is factory set for 1 second.

Anti-reset windup (AR)

This parameter prevents overshoot and/or undershoot caused by integral action. It is factory set for 60%. Increasing will de-sensitize the control at around the set point.

Proportional Cycle (C)

This is set for 1 second for fast reaction around the set point.

- For additional detail about different maintenance mode, see Chapter 7 Maintenance, Section 9.

4.6 REX-C900 TEMPERATURE CONTROLLER

Some Weldotron 7220 series tunnel comes with REX-C900 digital temperature controller. It's accuracy is well within ±2°F when set up correctly.

4.6.1 Description, Indicators

a. Temperature, Present Value Display

During normal operation, this three digit numeric indicator displays running temperature and preset temperature.

b. Temperature, Set Value

A three digit preset temperature value is displayed when SV(Set Value) indicator light is selected by SET key. It also displays four digit initial setup codes during setup mode.

c. Output "ON"

Turns on GREEN when output power is applied. Actual power is applied only when ALM indicator light is on RED.

d. Alarm Status

As explained in the Figure, RED light on this indicator implies the alarm circuit is armed. When alarm condition occurs, it turns off and heater power is disconnected.

4.6.2 Description, Control Keys

a. Set Button

During normal operation, this key is used to switch between Present Value and Set Value display mode. In parameter and code setup modes, it works as a data entry key to accept values.

b. Left Arrow

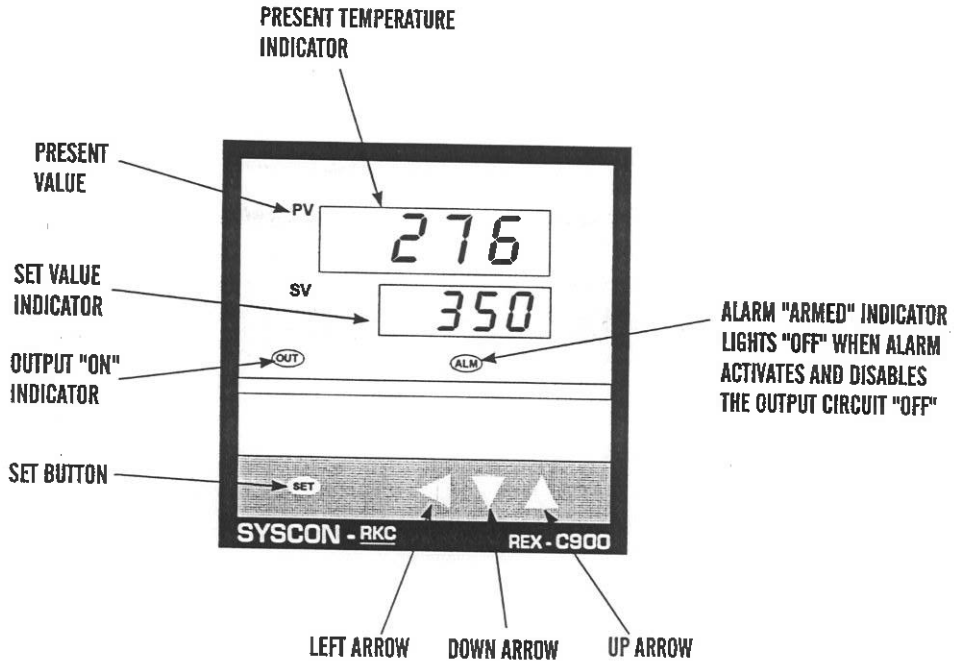
Moves cursor from right to left on SV display for setting values.

c. Down Arrow

Decrements SV values.

d. Up Arrow

Increments SV values.



4.6.3 PID Parameter Setting

This mode is entered and exited by depressing and holding the SET key for more than 5 seconds.

a. Alarm Set Temperature *(AL 1)*

With *AL1* (Alarm #1) displayed, process alarm set temperature can be modified by Up/Down Arrow Keys. The value is factory preset for 450°F.

b. Auto Tuning *(ATU)*

This feature is disabled by setting to 0 (Zero).

c. Proportional Band *(P)*

This is set for 6°F for faster reaction. This is optimized for high temperature settings. Changing this value to 10° will increase heat up time while eliminating temperature hunting at lower heat settings. When P is displayed, using Digit Scroll Keys allows the operator to change this value.

d. Integral Time *(I)*

This is factory set for 60 seconds.

e. Differential Time *(d)*

This is factory set for 1 second.

f. Anti-reset windup *(AT)*

This parameter prevents overshoot and/or undershoot caused by integral action. It is factory set for 60%. Increasing will de-sensitize the control at around the set point.

g. Proportional Cycle *(T)*

This is set for 1 second for fast reaction around the set point.

- For additional detail about different maintenance mode, see Chapter 7 Maintenance, Section 9.

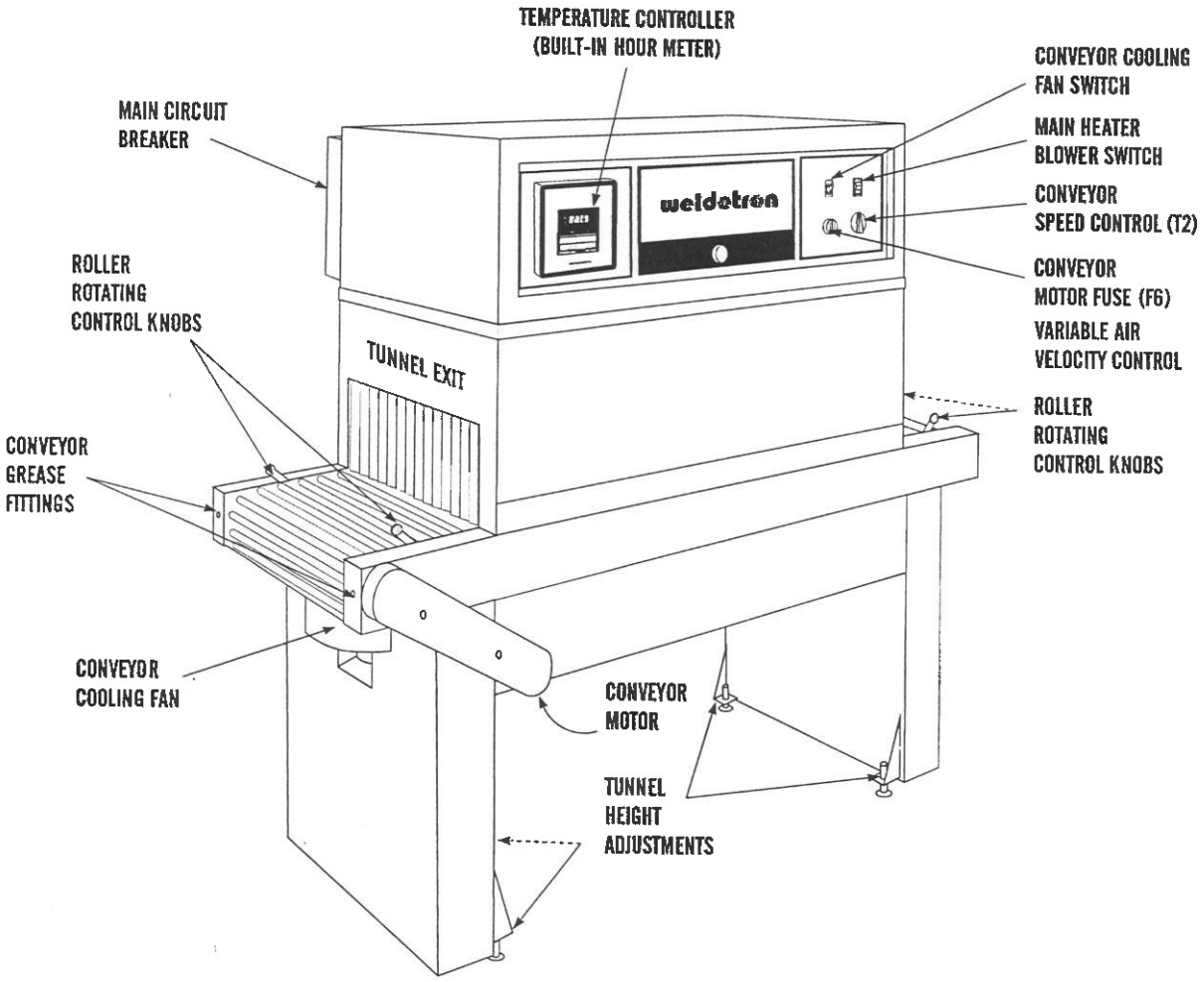


Figure 4.1 Location of Controls and Adjustments

5. CONVERSION TO HIGH DENSITY CONVEYOR ROLLER

If desired, the normal package conveyor roller spacing be converted to high density spacing (i.e., with 1/2-inch spacing between the sides of adjacent rollers) from the normal, wider roller spacing for use with very small or very thin packages to prevent the packages from falling between rollers. To make this conversion, proceed as follows:

a. At the package infeed end of the tunnel, unscrew and remove the knob from both of the rotating/non-rotating roller selector levers.

b. Unscrew and remove both chain-guard covers by lifting them up over the roller selector levers.

c. Loosen the conveyor chain tension adjustments (see Maintenance section of this manual) sufficiently to allow manual raising of the conveyor chains above the chain guard rails.

d. Remove the conveyor rollers and reinstall them on the chain pin extensions so that the roller spacing is set to every 2nd rather than every 3rd pin extension. Note that 45 additional rollers are required. With tunnel turned on, but with MAIN BLOWER switch turned off, run conveyor slowly, as required, for accessibility to rollers.

e. When the additional rollers have been installed, turn all four of the ROTATING/NON-ROTATING selector levers to the ROTATING position. Readjust conveyor chain tension (see paragraph 4.3) so that both of the chains may be manually lifted about 4-inches at a point 12-inches from the sprockets, at the package-infeed end of the tunnel.

f. Replace the chain guard covers, and replace the knobs which had been removed in step a. above.

6. LOCKOUT/TAG-OUT PROCEDURE (OSHA Standard 1910.147)

(The control of Hazardous Energy)

WARNING

This standard covers the servicing and maintenance of machines and equipment in which the unexpected energizing or start-up of the machines or equipment, or release of stored energy could cause injury to employees. This standard establishes minimum performance requirements for the control of such hazardous energy.

APPLICATION

This standard applies to the control of all energy during servicing and/or maintenance of Weldotron machines and equipment.

PURPOSE

This procedure establishes the minimum requirement for the lockout or tag-out of energy isolating devices. It shall be used to ensure that the machine or equipment is isolated from all potentially hazardous energy and locked out or tagged out before employees perform any servicing or maintenance activities.

RESPONSIBILITY

Appropriate employees (Maintenance employees and Machine set-up employees) must be instructed in the safety significance of the lockout (tag-out) procedure. Each person transferred or newly hired into such positions shall be trained at time of hire or transfer.

PREPARATION FOR LOCKOUT OR TAG-OUT

Identify all isolating devices to be certain which switches, valves, or other energy isolating devices apply to the equipment to be locked out tagged out.

1. Electrical boxes - Power off remove fuses.
2. Air - disconnect air.
3. Placing a tag on machine, indicates the machine is disconnected from power and out of service.

SEQUENCE OF LOCK-OUT OR TAG-OUT PROCEDURE

1. Notify all affected employees that a lock-out or tag-out system is going to be utilized and the reason therefore, i.e.: Foreman and operator.
2. Shut down equipment by normal stopping procedure.
3. Open switch, disconnect air, and unplug equipment isolating it from its energy source. Stored energy (such as that in springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas or water pressure, etc.) must be dissipated or restrained by methods such as repositioning, blocking bleeding down, etc.
4. Lockout and/or tag-out the energy isolating devices with assigned individual locks or tags. In the case of a disconnect switch tag-out and/or lockout. In the case of a plug, unplug, and tag-out.
5. After ensuring that no personnel are exposed and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate.

CAUTION

MAKE SURE TO RETURN OPERATING CONTROLS TO "NEUTRAL" OR "OFF" POSITION AFTER TEST.

6. The equipment is now in a lockout and/or tag-out condition.

RESTORING MACHINES OR EQUIPMENT TO NORMAL PRODUCTION OPERATIONS

1. After servicing and/or maintenance is complete and equipment is ready for normal use, check the area around the machine or equipment to ensure that no one is exposed.
2. After all tools have been removed from the machine or equipment, guards have been re-installed and employees are in the clear, remove all lockout or tag-out devices. Re-install fuses and undo any other energy isolating devices to restore energy to the machine or equipment.

PROCEDURE INVOLVING MORE THAT ONE PERSON

In the preceding steps, if more than one person is required to lockout or tag-out equipment, each shall place his or her own personal lockout device or tag-out device on the energy isolating device. Maintenance personnel will use multiple locks. When mechanic and electrician work together, each will tag-out the plug and no one but the person installing the tag can remove it and equipment is not to be plugged in with any tag-out on it.

BASIC RULES FOR USING LOCKOUT OR TAG-OUT SYTEM PROCEDURE

All equipment must be locked out or tagged out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy isolating device where it is locked or tagged out.

7. MAINTENANCE

These shrink tunnels are rugged, trouble-free units, designed for many years of satisfactory service. To help maintaining high reliability of the units, the following maintenance should be provided.

7.1 LUBRICATION

7.1.1 Conveyor Drive Shaft Bearings

Refer to Figure 4.1. The conveyor drive shaft bearings are packed with high temperature grease. Lubricate both conveyor grease fittings every 3 months with Lubrico M24M, or an equivalent high temperature grease.

7.1.2 Conveyor Motor Gear Box

The conveyor motor is located under the package conveyor (see Figure 4.1). To lubricate the motor's reduction gear box, remove the breather cap from the gear box elbow and fill box with SAE 90 gear oil (non-detergent). Check and refill if necessary every 2 months. For continuous service, drain and flush gear box once a year.

CAUTION

DO NOT MIX GEAR OILS OF DIFFERENT MANUFACTURERS. IF THE SAME OIL IS NOT AVAILABLE TO REPLENISH THE OIL LEVEL, DRAIN AND FLUSH BEFORE ADDING A DIFFERENT OIL.

7.1.3 Package Conveyor Chains

The package conveyor chains should be lubricated once every 40 operating hours with Weldotron Thermolube LU-0855. The lubricant should be applied liberally, with a brush, the chains with the conveyor running slowly. It is extremely important to use only Weldotron Thermolube LU-0855, as this lubricant has been especially formulated to withstand the high temperature encountered within the shrink chamber.

7.1.4 Conveyor Drive Chain

The drive chain from the conveyor motor gear box to the package conveyor (see Figure 4.1 for location) should be lubricated every three months with SAE 10 motor oil, or Thermolube LU-0855 may be used. Remove the safety cover for access and apply the lubricant with a brush to the slowly running chain. Replace the safety cover.

7.1 LUBRICATION (cont'd)

7.1.5 Main Blower Bearings

Refer to Figure 7.1. Under conditions of continuous operation (26 hours/day), add 2 teaspoons of SAE 10 motor oil after removing oil plugs, once very 6 months to both oil cups. Access to the motor is gained by removing the tunnel's top cover plate by turning the 6 retaining screws counter-clockwise.

7.1.6 Main Blower Cooling Fan Motor Bearings

Refer to Figure 7.1. Under conditions of continuous operation (16 hours/day), add a small amount of light machine oil to the two oil holes on the motor once every 6 months.

7.2 TENSION ADJUSTMENT OF CONVEYOR DRIVE CHAIN

Refer to Figure 4.1. Proper tension adjustment is obtained by loosening the drive motor mounting bolts and repositioning the motor forward or backward to adjust chain tension. Remove drive chain safety cover to observe effect of motor repositioning. Tension should be moderate to avoid excessive wear on bearings. Correct tension is achieved when it is possible to deflect the chain inward about 3/4-inch at the center of the chain on either the top or the bottom sides of the chain. When proper tension has been obtained, tighten motor mounting bolts securely and replace chain safety cover.

A7.3 TENSION ADJUSTMENT OF PACKAGE CONVEYOR CHAINS

The adjustment of package conveyor chain tension should be checked occasionally to insure that it is not excessive as this would cause unnecessary wear of the sprockets and idler shafts upon which the sprockets are mounted. To check or adjust the tension, remove the four chain guard covers (2 at each end of the conveyor) by first unscrewing all 4 of the knobs from the rotating/non-rotating roller selector levers, then removing the sheet metal screws from each cover. With the conveyor stopped, proceed as follows:

a. Set all four of the tunnel's "Rotating/Non-Rotating" roller selector levers to the "Non-Rotating" position.

b. It should be possible to manually raise the chains to a height of about 4 inches at a point from either end of the conveyor. Both chains should have the same tension, to avoid uneven wear or the possibility that, due to uneven tension, conveyor rollers could become disengaged from the chain pins.

7.3 TENSION ADJUSTMENT OF PACKAGE CONVEYOR CHAINS

c. If chain tension is incorrect, or uneven, adjustment is required. Refer to Figure 7.2. Using an open-end wrench, loosen the locking jam nut. Adjust tension by means of the tension adjustment nut until correct tension is achieved. Tighten locking jam nut. (Access for adjustments is from underneath).

d. Replace chain guard covers and knobs.

7.4 CLEANING OF PACKAGE CONVEYOR ROLLER COVERS

The silicone rubber covering on the conveyor rollers should be inspected regularly to assure that no scrap pieces of film are wrapped around the rollers to cause sticking or marring of packages. Use a cloth and a household detergent, such as Mr. Clean, and wipe the rollers thoroughly. Use a clean dry cloth to dry the rollers.

If the rollers have accumulated an excessive amount of film scrap which cannot be removed by the use of the detergent, carefully scrape the film residue from the rollers using a dull, blunt-edged tool to prevent damage to the roller covering.

CAUTION

DO NOT USE A SHARP INSTRUMENT, SUCH AS A RAZOR BLADE OR SCREWDRIVER BLADE, AS NICKING OR SPLITTING OF THE SILICONE RUBBER MAY RESULT, REQUIRING REPLACEMENT OF THE ROLLER COVERING.

7.5 REPLACEMENT OF PACKAGE CONVEYOR ROLLER COVERS

Using conditions of heavy, continuous use, the silicone rubber covering of the conveyor rollers may eventually require replacement. To replace this covering proceed as follows:

a. To remove the rollers from the tunnel, loosen the conveyor tension adjustments, as shown in Figure 7.2 and as described in Section 7.3 (removing the roller selector knobs and chain guard covers from the package in-feed end of the tunnel only).

b. Pull up on each roller and spread the conveyor chains to remove each roller. Run conveyor slowly, as required, for access to all others.

c. Remove the old roller-covering rubber tubing from each roller and discard. If necessary, carefully slit tubing to remove, being careful not to score the roller.

d. Thoroughly clean all rollers, use fine steel wool if necessary. Make sure all rollers are completely smooth and free of residue and burrs.

7.5 REPLACEMENT OF PACKAGE CONVEYOR ROLLER COVERS (cont'd)

e. Fit the new silicone rubber tubing onto each roller and work on, by hand, at least a half-inch. At the opposite end of the tubing fit on and hold, by hand, and air-supply hose of moderate pressure. While the tubing onto the roller and work it into final position on the roller.

f. Replace rollers on the conveyor chain pins, running conveyor slowly, as required, for access. Adjust conveyor tension, using the procedure described in Section 7.3.

7.6 CONVEYOR MOTOR BRUSH REPLACEMENT

Refer to Figure 4.1 for motor location. Motor brushes should be inspected periodically and should be replaced before their lengths are reduced to less than 1/4-inch. To gain access for inspection or replacement, unscrew the brush caps and withdraw the brushes and their compression springs.

7.7 CONVEYOR MOTOR POWER SUPPLY DIODE REPLACEMENT

If the package conveyor will not run, note if the Conveyor Motor Fuse (F6) holder is illuminated signifying that the fuse has blown (holder is located on the tunnel's front panel). If the fuse has blown, replace it with a good one. If the fuse blows again, perform the checks and tests listed in trouble number 3 of Section 8, Troubleshooting Chart. If this does not clear up the trouble, the probable cause is the encapsulated power supply diode unit(s) are defective. To check the condition of the diode units, proceed as follows:

a. Shut off the tunnel's MAIN POWER switch. To gain access to the diode units, remove the tunnel's top cover plate by turning the 6 captive retaining screws a quarter-turn counterclockwise. Refer to Figure 7.1 for locations of REC1 and REC2 (units are marked with the part number TR-1778).

b. On each diode unit, disconnect one AC wire from its terminal and either the plus (+) or the minus (-) wire from its terminal. Let the wire hand free near their terminals without touching the terminals or any nearby items.

c. Using a volt-ohmmeter (such as a Simpson Model 260 or equivalent), set to its R x 1 scale, connect the meter's minus (-) lead to the diode's plus (+) terminal, and connect the meter's (=) lead to the diode's minus (-) terminal. If the diode assembly is good, a meter reading of between 50 to 70 (approximately) ohms should be obtained. If , however, a reading of either approximately 12 ohms or 100 of higher ohms is obtained, the diode unit is defective and should be replaced. This test applies to both of the diode units.

7.7 CONVEYOR MOTOR POWER SUPPLY DIODE REPLACEMENT (cont'd)

d. If a diode unit is defective, note the wire numbers of the wires running to each terminal and remove and replace the diode unit with a new one. Replace the wires to the proper terminals.

e. Replace the tunnel's top cover plate and secure by turning the captive screw clockwise a quarter-turn.

7.8 HEATER BANK REPLACEMENT

If the shrink tunnel will not develop or maintain proper operating temperature, one or more of the three sections of the heater bank may be defective. Before replacing the heater bank, however, the following tests should be made.

Refer to Figure 7.1 for component locations, and to Chapter 9 for circuit schematic. Remove the tunnel's top cover plate.

a. Check that in-house power, on all 3 power phases is on.

b. Check that main power fuse F1, F2, and F3 are good.

c. Using an Amprobe (or equivalent clamp-on type ammeter) around each of the three heater-power cables for contactor CR1 to the heater bank, a reading of 30 (nominal) amperes should be indicated, as read, in turn, from each of the three cables. If substantially lower readings, or no readings are obtained from any one of the cables, a heater bank section is open or defective, and should be replaced.

NOTE

Before assuming that a heater section is defective, however, be sure to check for the presence of proper voltage through contactor CR1 contacts (thus checking the contactor contacts or operating coil). Be sure, also, that the Digital Temperature Control (TT1) is set to a high enough temperature and is operating properly, before assuming that the heater bank is defective.

7.8 HEATER BANK REPLACEMENT (cont'd)

d. Make sure, also, that fuses F4 and F5, and Main Blower Switch (MCS1) are not defective, thus preventing operation of contactor CR1.

CAUTION

DISCONNECT POWER TO TUNNEL.

e. If it has been determined that the heater bank is defective and must be replaced, remove the shrink tunnel's left-side heater bank access cover by unscrewing the retaining screws (cover visible within the shrink chamber from the outfeed side). Remove the sheet-metal screws on the cover of the connection box of the heater bank and remove the cover.

f. Unscrew the terminal lugs and cables to the heater banks. Pull the cables out of the entrance holes.

g. Pull the heater bank out of the tunnel.

h. Push in the new heater bank and make sure to orient the same way as the old heater bank.

i. Reconnect the heater bank cables.

j. Replace the sheet-metal heater bank cover, and replace the tunnel's left-side access cover.

7.9 Temperature Controller

7.9.1 Replacement

The temperature controller can easily be removed by unlocking the latch at the bottom of front panel without any tools. Slide in a new unit and program it according to following procedures.

7.9.2 Initial configuration, REX-S900 Model

Performing this mode of operation is recommended only for field service technician who replaces the control unit and installs for the first time. No operator accessible parameter is available.

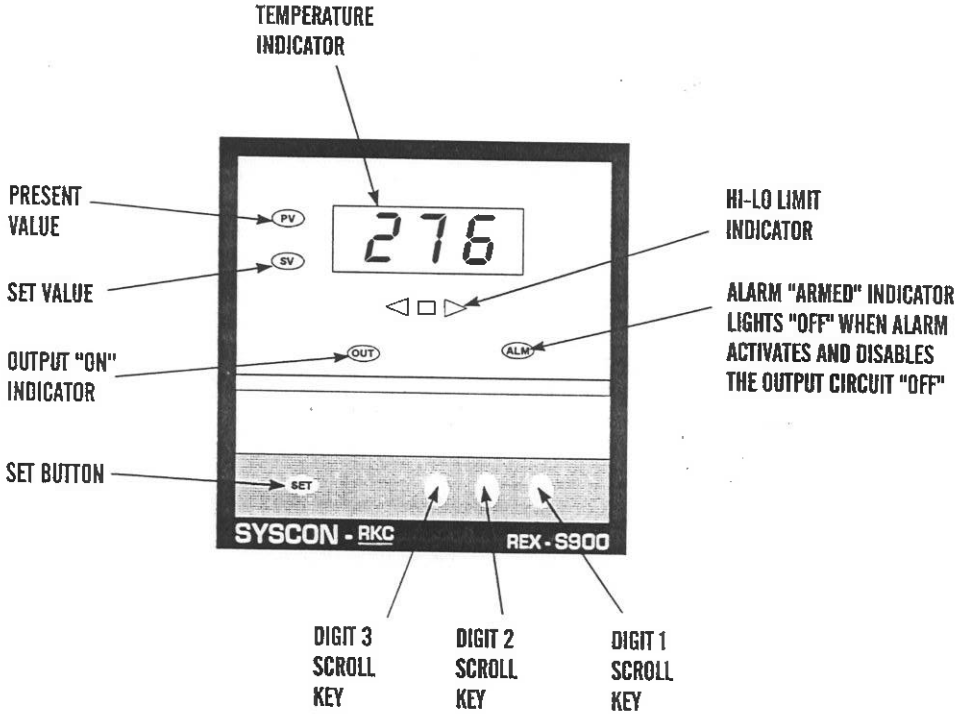
When first power up after installing a new unit, following procedure should be followed.

Step 1.

When first powered up, *RL1* starts flashing on the Temperature Indicator.

Pressing SET key, will light up "PV" PRESENT VALUE, and show current temperature.

Pressing SET key one more time lights up "SV" SET VALUE, and the Temperature Indicator shows "0" value. By depressing the Digit-3 Scroll Key 4 times, set the temperature value to 300 °F.



Step 2. Code Set 0 (This step is identical to the section 4.5)

Step	Display	Action
1	300	Depress "SET" key for more than 5 seconds.
2	AL 1	Hit Digit-1 Scroll Key. The digit #1, right hand side number, brightens.
3	050	Hit Digit-3 Scroll Key. The digit #3, left hand side number, brightens.
4	050	Hit Digit-3 Scroll Key once more.
5	150	Repeat until 450 is displayed.
6	450	Press "SET" key to accept the value.
7	ATU	Press "SET" key to accept the value.
8	P	Press Digit-1 Scroll Key.
9	030	By using Digit-2 and Digit-1 key, change the value to 6.
10	006	Press "SET" key to accept the value.
11	I	Press Digit-3 Scroll Key.
12	240	Set to 60 seconds by using same manner as above, i.e. using Digit-2 & 3 Scroll keys.
13	060	Continue setting following values.
14	d	1 second
15	AF	60%
16	r	1 second
17	LCK	Level 2
18		Depress SET key for more than 5 seconds.

Step 2. Code Set 2

Depress "SET" key and the Digit-1 Scroll Key simultaneously for more than 5 seconds. This works only when *LCK* is set to 2 in Code Set 0 setup.

Step	Display	Action
1	*Cod*	Use Digit-1 Scroll Key to set to 002.
2	*SL 1*	Accept default value 001 by hitting "SET" key.
3	*SL2*	Accept default value 001 by hitting "SET" key.
4	*SL3*	Accept default value 001 by hitting "SET" key.
5	*SL4*	Accept default value 000 by hitting "SET" key.
6	*SL5*	Use Digit-1 Scroll Key and changed to 007.
7	*SL6*	Accept default value 000 by hitting "SET" key.
8	*SL7*	Accept default value 001 by hitting "SET" key.
9	*SL8*	Accept default value 000 by hitting "SET" key.
10	*SL9*	Accept default value 015 by hitting "SET" key.
11	*SLA*	Accept default value 003 by hitting "SET" key.
12	*SLB*	Accept default value 000 by hitting "SET" key.
13	*SLC*	Change to 002.
14		Depress "SET" key and Digit-1 Scroll Key for 5 seconds or more.
15		Depress "SET" key 5 seconds or more.
16	*AL 1*	Continue hitting "SET" till LCK displays.
17	*LCK*	Change the value to "0" by using Digit-1 Scroll Key.
18	*001*	Press "SET" key for more than 5 seconds.

Now, the initial setup is complete. Every time when "SET" key is pressed, the display scans 'Present Value', 'Set Value' and *AL1*. For more details of each codes and parameters, see operator's manual.

7.9.3 Hour meter

The temperature controller is equipped with built-in hour meter. Maximum up to 100,000 hours can be monitored and then rolls over.

Monitoring Procedure

a. Depress and hold SET key more than 5 seconds.

b. When display changes to *AL1*, repeatedly press SET key to display *LCK*.

c. By using Digit-1 Scroll Key, set the lock level to 2 and hit one more SET key to accept it.

d. At this point, depress and hold both SET key and Digit-1 Scroll Key simultaneously for more than 5 seconds until " *Cod* " is displayed.

e. Then press Digit-1 Scroll Key twice to set the code value to 1 and accept with SET key again.

f. Repeatedly pressing SET key until *OFFH* is displayed. Pressing Digit Scroll Keys will display upper 3 digit of hour meter.

g. Depressing SET key one more time will display *OFFL*. When Digit Scroll Key is hit, lower three digit value of the hour meter will show on the temperature indicator. Every tunnel will have minimum of 8 to 10 hours of burn-in time before the shipping.

h. After checking the hour meter press and hold both SET key and Digit-1 Scroll Key for 5 seconds or more to get back to normal operating mode.

i. Make sure to change back *LCK* level to 0 in order to prevent unauthorized access to the Code Set 2.

7.9.4 Initial configuration, REX-C900 Model

Performing this mode of operation is recommended only for field service technician who replaces the control unit and installs for the first time. No operator accessible parameter is available.

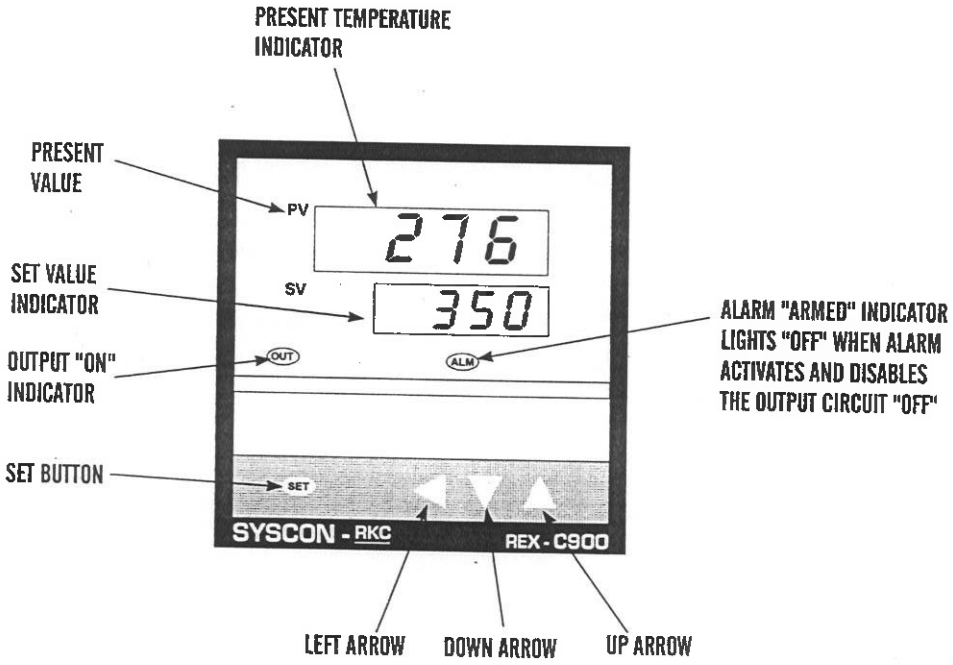
When first power up after installing a new unit, following procedure should be followed.

Step 1.

When first powered up, type of input (J type TC) and unit of measure (°F) is displayed momentarily.

The Temperature Indicator will show current temperature.

Pressing SET key one more time lights up "SV" SET VALUE, and the Temperature Indicator shows "0" value. By depressing the Left Arrow Key twice and Up Arrow Key, set the temperature value to 300 °F.



Step 2. Code Set 0 (This step is identical to the section 4.5)

Step	PV Display	SV Display	Action
1	78	300	Depress SET key for more than 5 seconds.
2	AL 1	050	Press Left Arrow Key twice to move cursor.
4	AL 1	450	Press Up Arrow Key four times to change the value to 4.
5	AL 1	450	Press SET key to accept the value.
3	ATU	0001	Press "SET" key to accept the value 0, zero.
4	P	0030	Use Left Arrow Key to move cursor.
9	P	0006	By using Up/Down Arrow keys, change the value to 6.
10	P	0006	Press "SET" key to accept the value.
11	I	0240	Press Digit-3 Scroll Key.
12	I	0060	Set to 60 seconds by using same manner as above.
13	I	0060	Continue setting following values.
14	d	0001	1 second
15	AT	0060	60 per cent
16	r	0001	1 second
17	LCK	0000	Level 0

* Depress SET key for more than 5 seconds to get out of the mode.

Step 3. Code Set 2

Depress "SET" key and the Left Arrow Key simultaneously for more than 5 seconds. This works only when *LCK* is set to 0 in Code Set 0 setup.

Step	Display	Values to Set To
1	*SL 1*	0001
3	*SL2*	0001
4	*SL3*	0000
5	*SL4*	0111
6	*SL5*	0000
7	*L6*	0001
8	*SL7*	0000
9	*SL8*	0000
10	*PB*	0000
11	*OH*	0002
12	*AH1*	0002
13	*SLH*	0450
14	*SLL*	0000
Depress "SET" key and Left Arrow Key for 5 seconds or more.		
15	*78*	Depress "SET" key 5 seconds or more.
16	*AL 1*	Continue hitting "SET" till LCK displays.
17	*LCK*	Change to "0110" by using Left Arrow and Up/Down keys.
18	*0110*	Press "SET" key for more than 5 seconds.

Now, the initial setup is complete. For more details of each codes and parameters, see operator's manual.

7.9.5 Hour meter : The model REX-C900 does not have this feature.

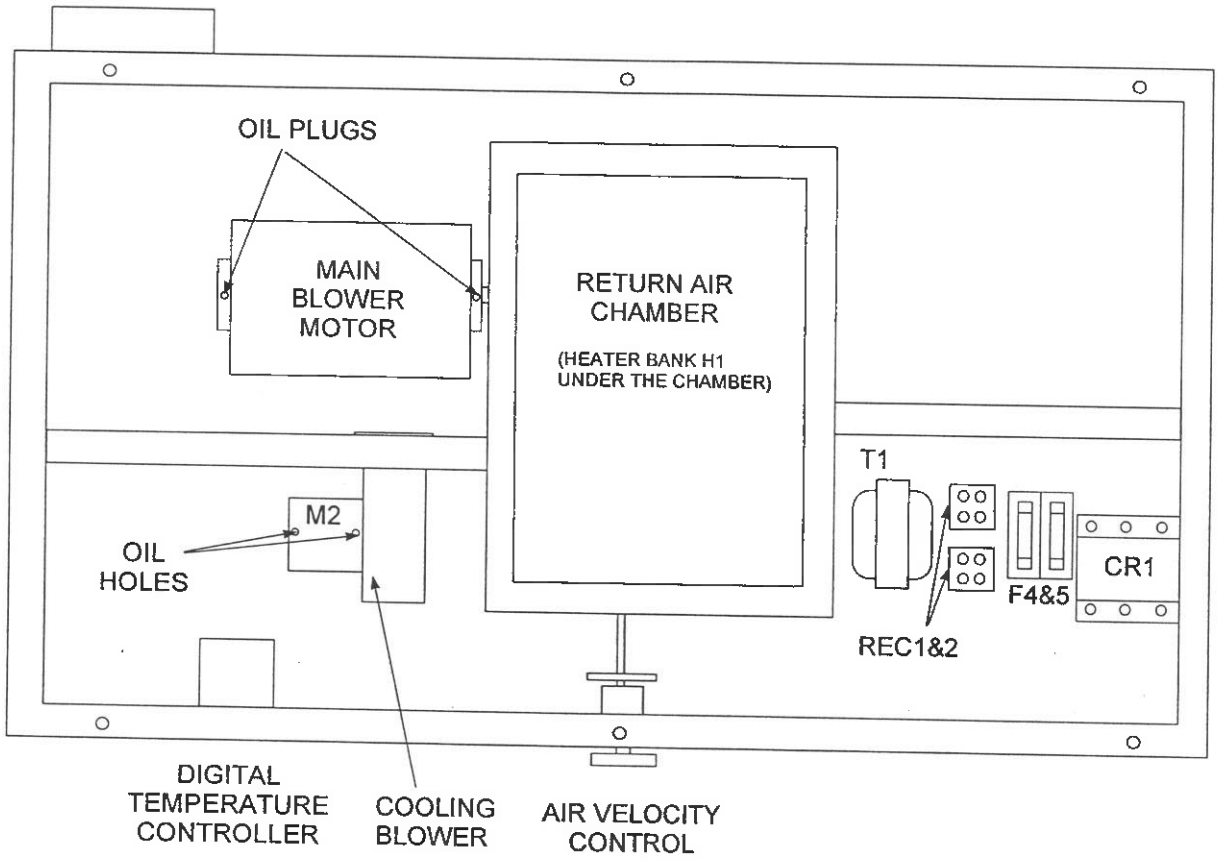


Figure 7.1 Location of Components

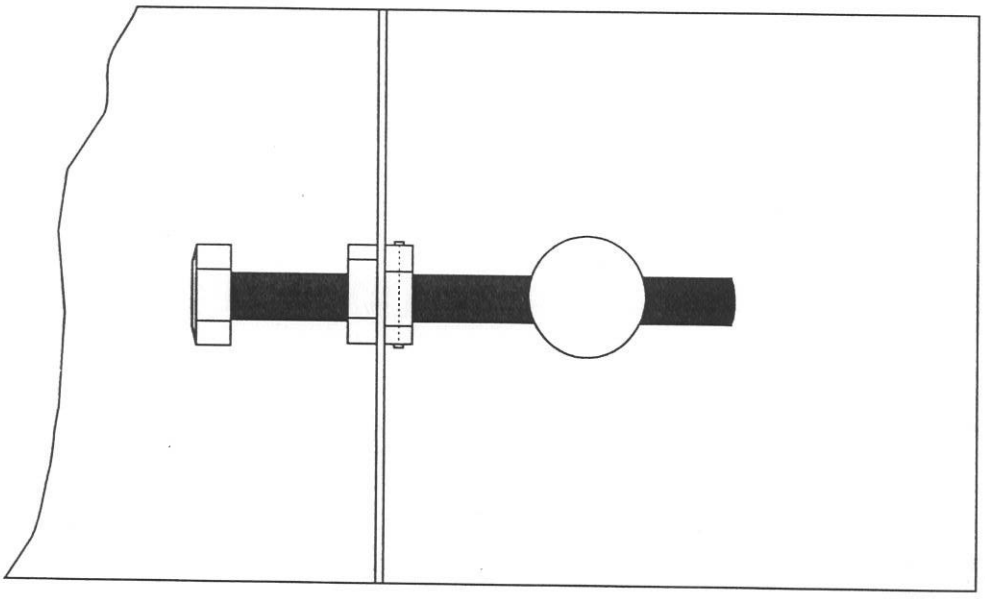


Figure 7.2 Package Conveyor Chain Tension Adjustment

8. TROUBLE SHOOTING

The following trouble shooting chart is provided to aid in determining the source of any troubles which may be encountered. For checking any electrical troubles the use of test equipment such as a small volt-ohmmeter, and an Am-probe (or equivalent clamp-on type ammeter is required.

In performing the tests and checks which follow, carefully inspect for loose components, wires touching moving parts, broken cables or wires, poor connections, et cetera, while testing the transformers, switches, motors, and so on. Refer to Figure 4.1 for locations of controls and adjustments, Figure 7.1 for interior component locations, and Chapter 9 for the electrical schematic diagram.

CAUTION

IN PERFORMING THE TROUBLE SHOOTING TESTS AND CHECKS WHICH FOLLOW, USE CAUTION TO AVOID CONTACT WITH THE VOLTAGES AND THE MOVING PARTS OF THE SHRINK TUNNEL. ELECTRICAL POWER SHOULD BE TURNED ON ONLY WHEN NEEDED FOR TESTING. OHMMETER OR ELECTRICAL CONTINUITY TESTS OF WIRING OR COMPONENTS SHOULD, OF COURSE, BE DONE ONLY WITH THE POWER TURNED OFF. CAUTION SHOULD ALSO BE OBSERVED TO AVOID CONTACT WITH HOT SURFACES AND COMPONENTS OF THE TUNNEL.

TROUBLE	PROCEDURE
1. Inadequate film shrinkage.	a. Check that tunnel is not in windy location near fans or other drafts which would draw heat from the tunnel, (see paragraph 5).
	b. Check for adequate 230V power supply to tunnel.
	c. Check that all adj. are as in pertinent sections of Section 7.
	d. Check conveyor speed. May be too high for particular film and package. Also, temperature setting may be too low.
	e. Check for lack of heat, or defective heater bank, (see paragraph 7.9).
2. Excessive film shrinkage with splitting of packages.	a. Check for proper film type, gauge and film condition.
	b. Check that all adjustments are as in pertinent sections of Section 7.
	c. Check conveyor speed. May be too low for particular film and package.
	d. Poor film seal. Check quality of film seal prior to tunnel entry.
	e. Conveyor rollers not revolving properly. Check tension adjustment as per paragraph 7.3.
	f. Make sure conveyor roller covers are clean, as in paragraph 7.4, as film residue particles could cause film to stick and become cloudy if package movement through heat were erratic due to sticking to dirty rollers.

8. TROUBLE SHOOTING (cont'd)

TROUBLE	PROCEDURE
3. Conveyor speed erratic or too slow (with or without blowing of conveyor motor fuse F6 on control panel).	a. Refer to Section 7.2 and completely loosen and remove conveyor drive chain. Pull package conveyor by hand. Conveyor should move very freely. If not, check for presence of foreign object jamming conveyor or chains or rollers. Readjust drive chain tension as per Section 7.2.
	b. Check lubrication as in paragraphs 7.1.1 - 7.1.4.
	c. Check conveyor drive chain tension, as per Section 7.2.
	d. Check package conveyor tension, as per Section 7.3.
	e. Check condition of conveyor drive motor brushes, as per Section 7.6.
	f. Check tension of brush spring on package conveyor speed control transformer T2, (location shown in Figure 4.1). Remove tunnel's top cover for access.
4. Package conveyor does not run and/or blows conveyor drive motor fuse F6 (on control panel).	a. Check all of item 3 troubles above.
	b. Check for defective conveyor or DC power supply diodes REC1 and REC2, as per Section 7.7.
	c. Check fuses F4 and F5.
	d. Check for nominal 115V AC output from secondary of conveyor system transformer T1.
	e. Check for continuity and nominal 20 ohm resistance through RES1.
	f. Check for open windings of conveyor drive motor M4.
5. No tunnel heat, or low tunnel heat, with air blowing.	a. Check fuses F4 and F5.
	b. Check for electrical continuity through contacts of indicating temperature controller TT1, (making sure unit is set for high enough temperature).
	c. Check that contactor CR1 operates. If not, check coil and wiring continuity.
	d. Check for presence of 230 volts to heater bank from output side of contactor CR1.
	e. Check condition of contactor CR1. If required, clean and/or replace as per Section 7.8.
	f. Check for adequate electric power voltage to tunnel. Should be nominal 230 volts for best heat results.
	g. Check for open or partially open heater bank, as per Section 7.9.

9. OPTIONS AND CUSTOMER MODIFICATIONS

PART NO.	DESCRIPTION

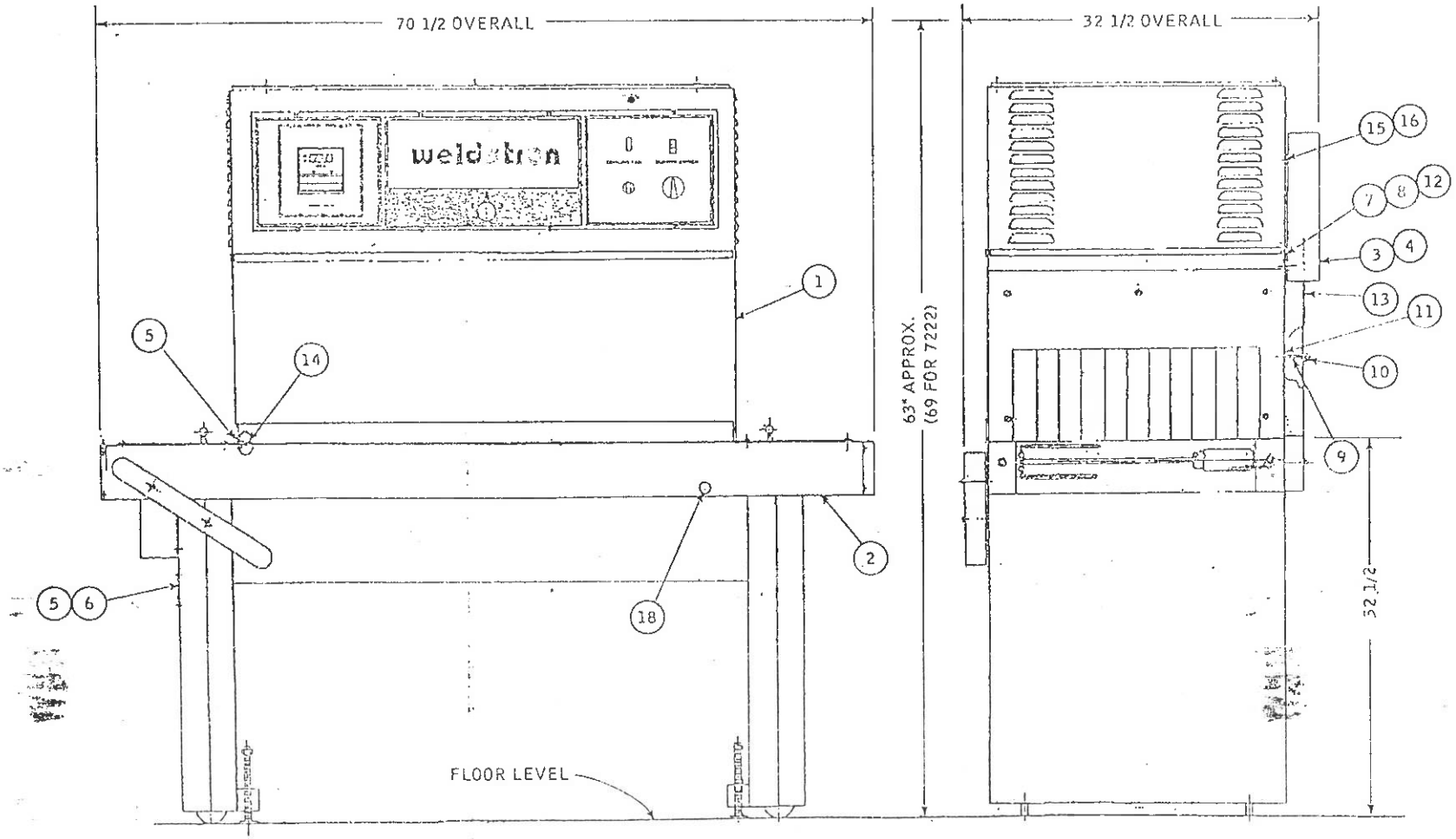
REVISED FOR F.W.O.

ASSEMBLY DRAWINGS DESCRIPTION AND PARTS LIST

DESCRIPTION	PARTS LIST NO.
TUNNEL ASSEMBLY	7222C0001
TUNNEL SUB-ASSEMBLY	72220021
BLOWER & MOTOR ASSEMBLY	72210250P1
END COVER & CURTAIN ASSY	72210220P2
HEATER BOX ASSEMBLY	72210200P1
UNIVERSAL CONNECTOR ASSY 7 1/2"	70000808P2
UNIVERSAL CONNECTOR ASSY 3 1/2"	70000808P1
UNIVERSAL CONN ASSY 96"	70000808P4
DAMPER ACTUATOR ASSEMBLY	72210232P1
CONTROL PANEL ASSEMBLY	72210210
CONTROL PANEL, TEMPERATURE	72210219
MOUNTING PLATE TEMP CONTRO LLER	72210801
CONTROLLER, TEMPERATURE	CO22042
RELAY, SOLID STATE, 480V/90A	SW22044
CHASSIS ASSEMBLY	72210231P2
DAMPER CONTROL ASSY	72210233P1
CONVEYOR ASSEMBLY	72210030P1
LEVELING PAD ASSY	72210305
IDLER SPKT ASSY	71420319
DRIVE SHAFT ASSEMBLY	72210712
START-UP KIT	72210111
MANUAL, 7221/7222	TD4162

PART NO: 7222C0001 REV: 09/03/96
DESCRIPTION: TUNNEL ASSEMBLY ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV ACT	MD
1	72220021	TUNNEL SUB-ASSEMBLY	1.0	EA		AS
2	72210030P1	CONVEYOR ASSEMBLY	1.0	EA	30	AS
3	CU20453	CKT BKR 60A,100A,230V FRAME	1.0	EA		
4	71421000	ENCLOSURE (EN7391)	1.0	EA	01	
5	SS2780	ABQ,6-20X0.500LG SCREW PAN HD POZIDRIVE	8.0	EA		
6	LB1817	SPEC.& PATENT NAMEPLATE	1.0	EA	08	
7	71422002	SPACER,CIRCUIT BREAKER ENCL	4.0	EA	01	
8	SS1028	AAG,10-32X1.000 LG SCR BIND HD MACH CP	4.0	EA		
9	72213072	MOUNTING STUD, WIRE GUARD	4.0	EA		
10	NT2800	AAE,10-32 NUT CLOSED END CP ACORN	4.0	EA		
11	NT0287	AAA,10-32 NUT HEX CAD PL	2.0	EA		
12	WA2223	AAA,10 WASHER FLAT CP	4.0	EA		
13	72212050	WIREGUARD COVER	1.0	EA		
14	IS1559	KADWOOL ROPE .250 DIAX53FT TO LB	23.0	FT		
15	FG20531	AHE,FITTING,NIPPLE 1 1/4" I PS 2" LG	1.0	EA		
16	CD20535	LOCK NUT 1 1/4"IPS	2.0	EA		
17	72210111	START-UP KIT	1.0	EA	02	AS
18	PG19653	HOLE PLUG FOR 1 DIA HOLE ST NICKEL PLATE	1.0	EA		
19	TD4162	MANUAL, 7221/7222	1.0	EA		AS
20	SS0300	AAQ,4X0.250 LG SCR SHT MTL PAN HD CAD	4.0	EA		
9000	DWG7221C0001	DWG, TUNNEL ASSY	1.0	EA		A
9001	72218004	SCHEMATIC, ELECTRICAL 7221/ 7222	1.0	EA	01	A
9002	72218002	SCHEMATIC 7221/7222 - 480V, 3PH,60HZ	1.0	EA	01	C

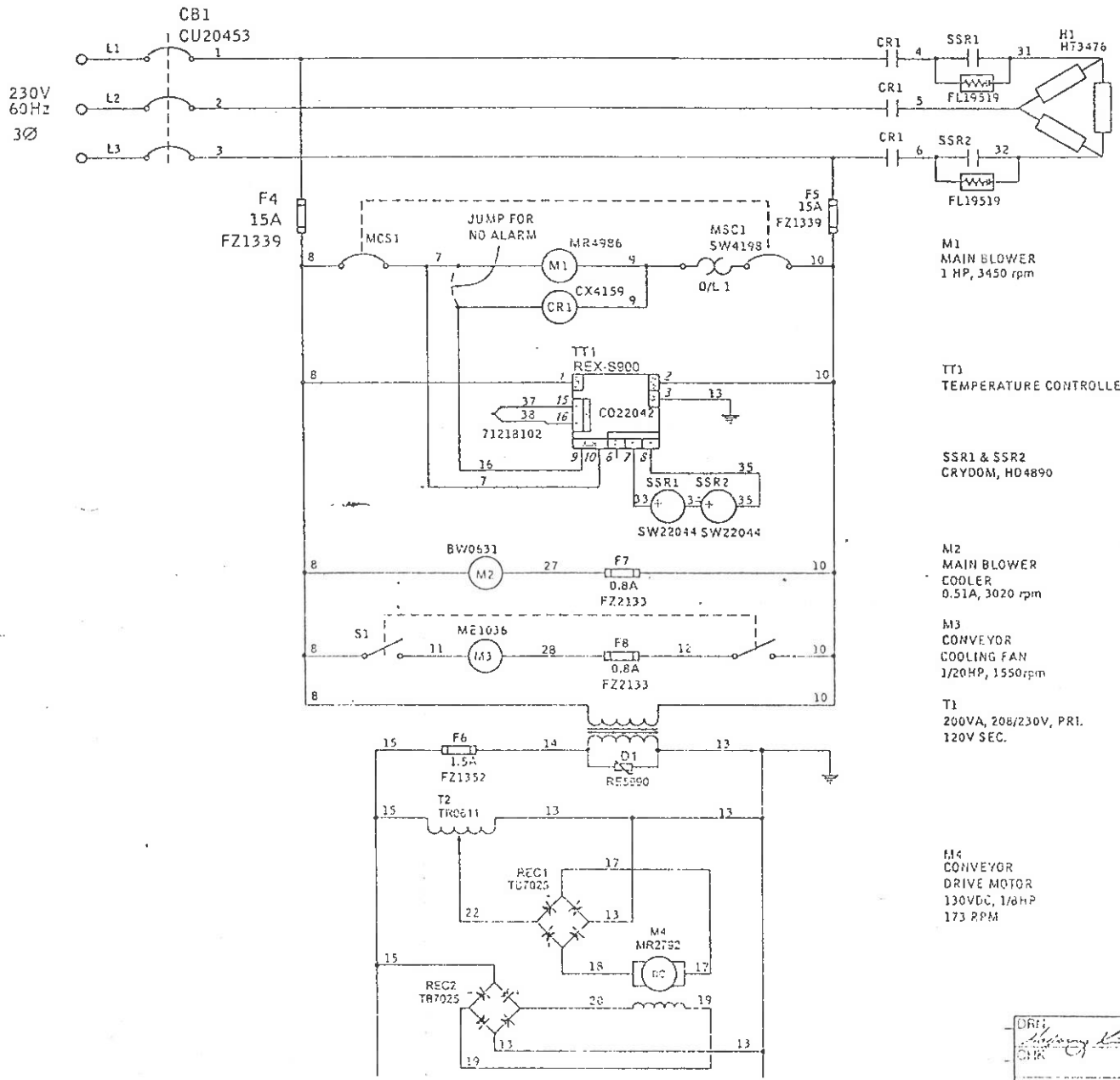


-	New release for digital temperature controller.	6662	6/9/96 H. Kim	
SYMBOL	DESCRIPTION	ECO NO.	DATE/BY	
	REVISION			

DRN	DATE 8/9/96	weldotron corporation
CHK	DATE	
APP	DATE	TITLE
MAT'L		TUNNEL ASSEMBLLY, 7221/7222
FINISH		

TOL. UNLESS SPECIFIED
FRA ±1/64 DEC. ±.005 ANGLE ±1/2°

SCALE	SIZE	PART NO.	REV
NONE	A	7221C0001	0



M1
MAIN BLOWER
1 HP, 3450 rpm

TT1
TEMPERATURE CONTROLLER

SSR1 & SSR2
CRYDOM, HD4890

M2
MAIN BLOWER
COOLER
0.51A, 3020 rpm

M3
CONVEYOR
COOLING FAN
1/20HP, 1550rpm

T1
200VA, 208/230V, PRI.
120V SEC.

M4
CONVEYOR
DRIVE MOTOR
130VDC, 1/8HP
173 RPM

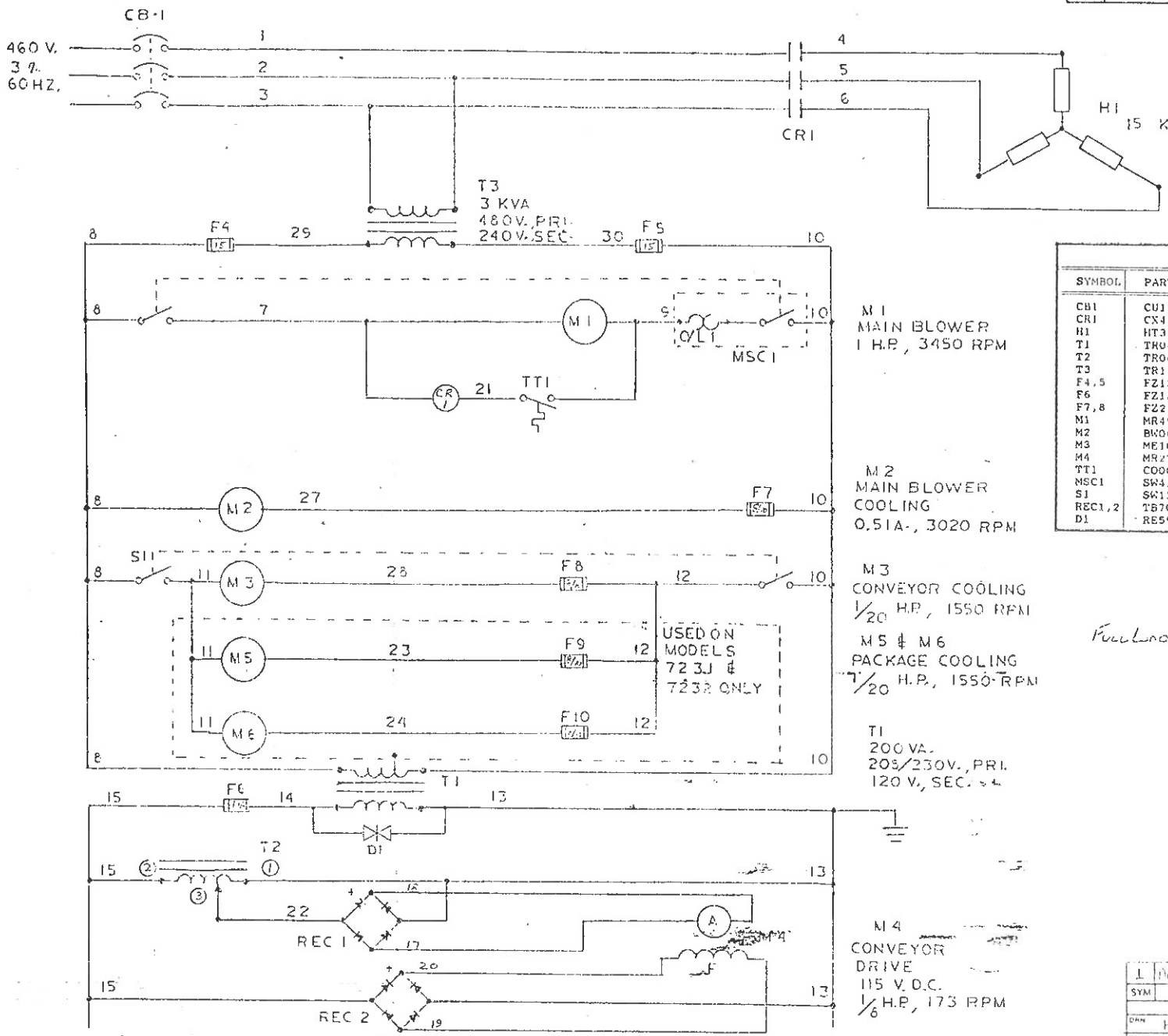
SYMBOL	DESCRIPTION / REVISION	NO.	DATE/BY
1	Alarm ckt added, F4 & F5 moved from wire #4&6 to 1&3.	6670	8/28/96 H.Kim
—	New release for digital temperature controller.	6662	8/13/96 H. Kim

DRN	DATE 8/6/96	weldotron corporation
CHK	DATE	
APP	DATE	
MATL		TITLE: SCHEMATIC, MODEL 7200 SERIES
FINISH		

TOL. UNLESS SPECIFIED: FRA ±1/64, DEC. ±.005, ANGLE ±1/2°

SCALE	SIZE	PART NO.	REV
NONE	A	722180C	1

PARTS LIST		
ITEM NO	NOMENCLATURE	NO REQ



M1
MAIN BLOWER
1 H.P., 3450 RPM

M2
MAIN BLOWER
COOLING
0.51A., 3020 RPM

M3
CONVEYOR COOLING
1/20 H.P., 1550 RPM

M5 & M6
PACKAGE COOLING
1/20 H.P., 1550 RPM

T1
200 VA.
208/230V., PRI.
120 V., SEC.

M4
CONVEYOR
DRIVE
115 V.D.C.
1/6 H.P., 173 RPM

Full Load Current: 25 Amps

SYMBOL LIST		
SYMBOL	PART NUM	DESCRIPTION
CB1	CU11322	CIRCUIT BREAKER, 3P 30AMP
CR1	CX4159	CONTACTOR, 3P 63AMP
H1	HT3476	HEATER BANK, 460V 3P 15KW
T1	TR0403	TRANSFORMER, 208/230-120 200VA
T2	TR0611	TRANSFORMER, VARIABLE
T3	TR1109	TRANSFORMER, 480-240 3KVA
F4,5	FZ1339	FUSE, 250V 15AMP
F6	FZ1352	FUSE, 250V 1.5AMP SLOW-BLOW
F7,8	FZ2133	FUSE, 250V 0.8AMP SLOW-BLOW
M1	MR4986	MOTOR, 1HP 115/230V 3450RPM
M2	BW0631	BLOWER, 230V 80W 140CFM
M3	ME1036	MOTOR, CONV COOLING 1/20HP 1550RPM
M4	MR2792	MOTOR, 115VDC 1/8HP 173RPM
TT1	CO0075	TEMPERATURE CONTROLLER
MSC1	SW4198	MOTOR STARTER W/OL
S1	SW1304	DPST TOGGLE SWITCH
REC1,2	TB7025	RECTIFIER
D1	RE5990	VARISTOR

SYM	DESCRIPTION	ECONO	DATE/BY
1	Made Symbol List		

REVISIONS

DWN	H.T.G.	DATE	1-31-92
CHK		DATE	
APP		DATE	
MATL			
FINISH			

weldotron corporation

TITLE SCHEMATIC
MODEL 7200 SERIES
460V., 3 Ø., 60HZ.

TOL UNLESS SPECIFIED: FRA ± 1/64, DEC ± .005, ANGLE ± 1/2°

PART NO	MODEL NO	NEXT ASSEMBLY	NO REQD PER ASSEM.

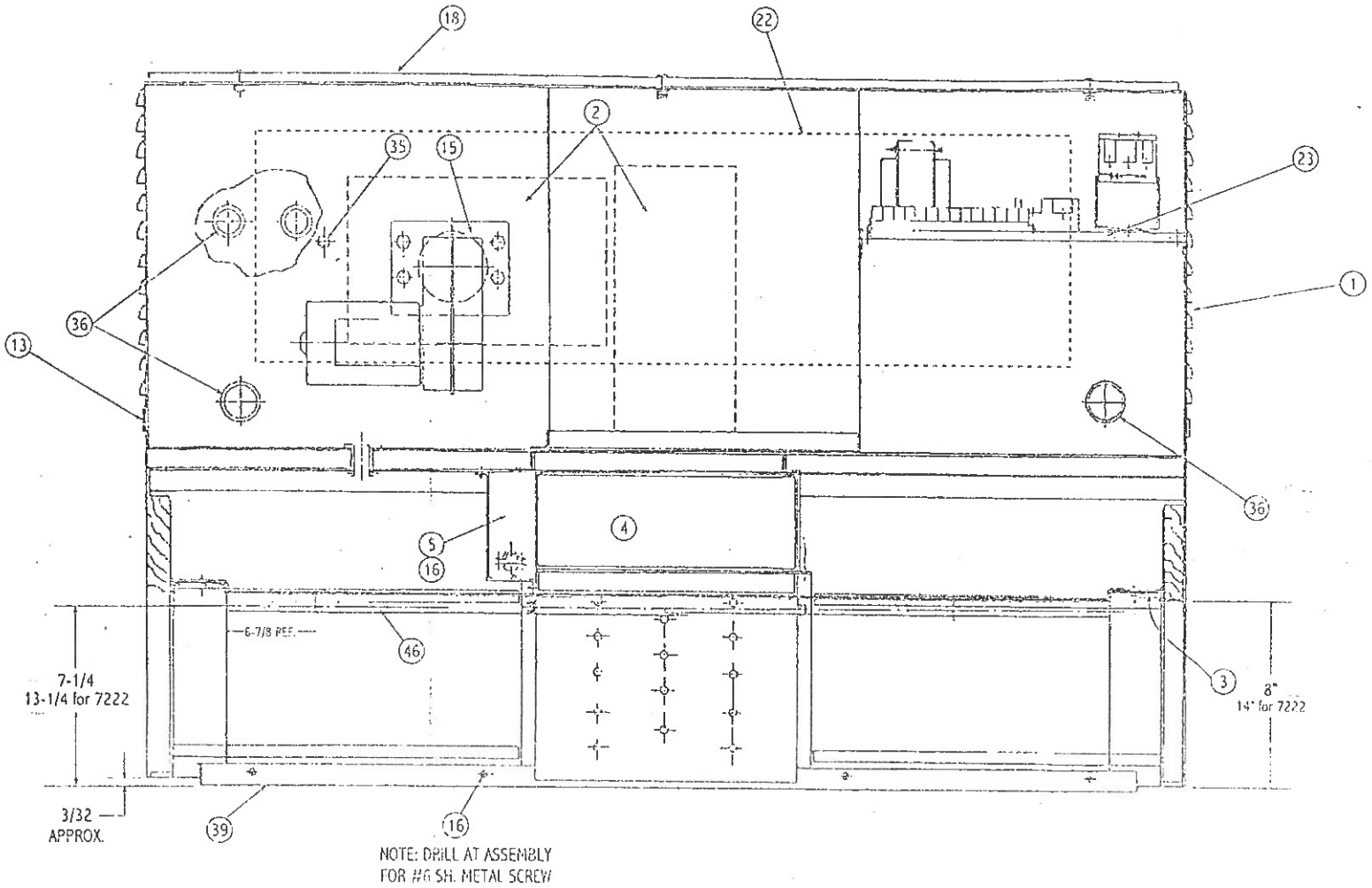
SCALE	SIZE	PART NO	REV
	C	7221-8002	1

PART NO: 72220021 REV:02 03/25/97
DESCRIPTION: TUNNEL SUB-ASSEMBLY ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV	ACT	MD
1	72210223P2	TUNNEL WELDMENT ASSEMBLY	1.0	EA	05		
2	72210250P1	BLOWER & MOTOR ASSEMBLY	1.0	EA	02		AS
3	72210220P2	END COVER & CURTAIN ASSY	2.0	EA			AS
4	72210200P1	HEATER BOX ASSEMBLY	1.0	EA			AS
5	72212095	BACK COVER HEATER BOX	1.0	EA	01		
6	72210245	BLOWER TOP W/L ASSY	1.0	EA			
7	72212031	DAMPER SUB SHAFT	1.0	EA	02		
8	72212012	DAMPER SHAFT COUPLE	1.0	EA			
10	72212085	TOP COVER	1.0	EA			
12	SS0987	AAI,10-32X0.250 LG SCR SOC HD CONE PT CP	2.0	EA			
14	72210232P1	DAMPER ACTUATOR ASSEMBLY	1.0	EA			AS
15	BW0631	BLOWER COOL 230V 80W 140CFM	1.0	EA			
16	SS2780	ABQ,6-20X0.500LG SCREW PAN HD POZIDRIVE	20.0	EA			
17	SS2130	AAI,6-32X0.250 LG SCREW SOC CUP PT CP	4.0	EA			
18	FN2631	STUD ASSY 1/4 TURN	6.0	EA		3	
19	FN2632	RECEPTACLES 1/4 TURN	6.0	EA		3	
20	FN2633	RECEPTACLE NUT 1/4 TURN	6.0	EA		3	
21	FN2634	WASHER	6.0	EA			
22	72210210	CONTROL PANEL ASSEMBLY	1.0	EA			AS
23	72210231P2	CHASSIS ASSEMBLY	1.0	EA	01		AS
24	72210233P1	DAMPER CONTROL ASSY	1.0	EA			AS
25	CQ4259	EMT SET SCREW CONN	1.0	EA			
26	SS1170	ABQ,10-24X0.500LG SCR SWAGE FORM SHT MTL	4.0	EA			
27	NT0287	AAA,10-32 NUT HEX CAD PL	4.0	EA			
28	WA2223	AAA,10 WASHER FLAT CP	10.0	EA			
29	SS2113	AAG,10-32X0.500 LG SCR BIND HD MA CAD PL	14.0	EA			
30	SS7293	ACA,10-32X0.500 LG SCR HEX HD SST	4.0	EA			

PART NO: 72220021 REV:02 03/25/97
DESCRIPTION: TUNNEL SUB-ASSEMBLY ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV	ACT	MD
31	TL0774	SPLICE WIRE	4.0	EA			
32	LB1696	LABEL,WIRE MARKERS VINYL CLOTH	20.0	EA			
33	WE3290	TY-RAP WIRE	20.0	EA			
34	CQ0778	CONN-WIRE JOINT INSULATED	2.0	EA			
35	BU0153	AGG,0.500 OD SNAP LOCK	1.0	EA			
36	GM1177	GROMMET AS PER MI	6.0	EA			
37	WE4552	WIRE,10AWG ANTI-FRAY,600V 450C UL & CSA	12.0	FT			
38	LG4469	LUG,NICK 1200 F 10-12GA 10 STUD	3.0	EA			
39	72212089	CHAIN HOLD DOWN	2.0	EA			
40	KB1101	KNOB	1.0	EA			
41	SS0738	AAG,6-32X0.375 LG SCR BIND HD MCH CAD PL	6.0	EA			
42	NT0198	AAA,6-32 NUT HEX CAD PL	6.0	EA			
43	WA1292	AAA,6 WASHER PLAIN CP	6.0	EA			
44	AH0635	ADHESIVE LOCTITE RED 10CC	1.0	EA			
45	72212900	SCREEN	1.0	EA			
46	72212901	SCREEN SUPPORT	2.0	EA			
47	SS1676	ABQ,6X0.500 LG SCR SHT MTL	4.0	EA			
9000	DWG72210021	DWG, TUNNEL SUBASSEMBLY	1.0	EA			A



DRN		DATE	8/13/96
CHK		DATE	
APP		DATE	
MAT'L			
FINISH			

TOL. UNLESS SPECIFIED
FRA ±1/64 DEC. ±.005 ANGLE ±1/2°

weldotron corporation

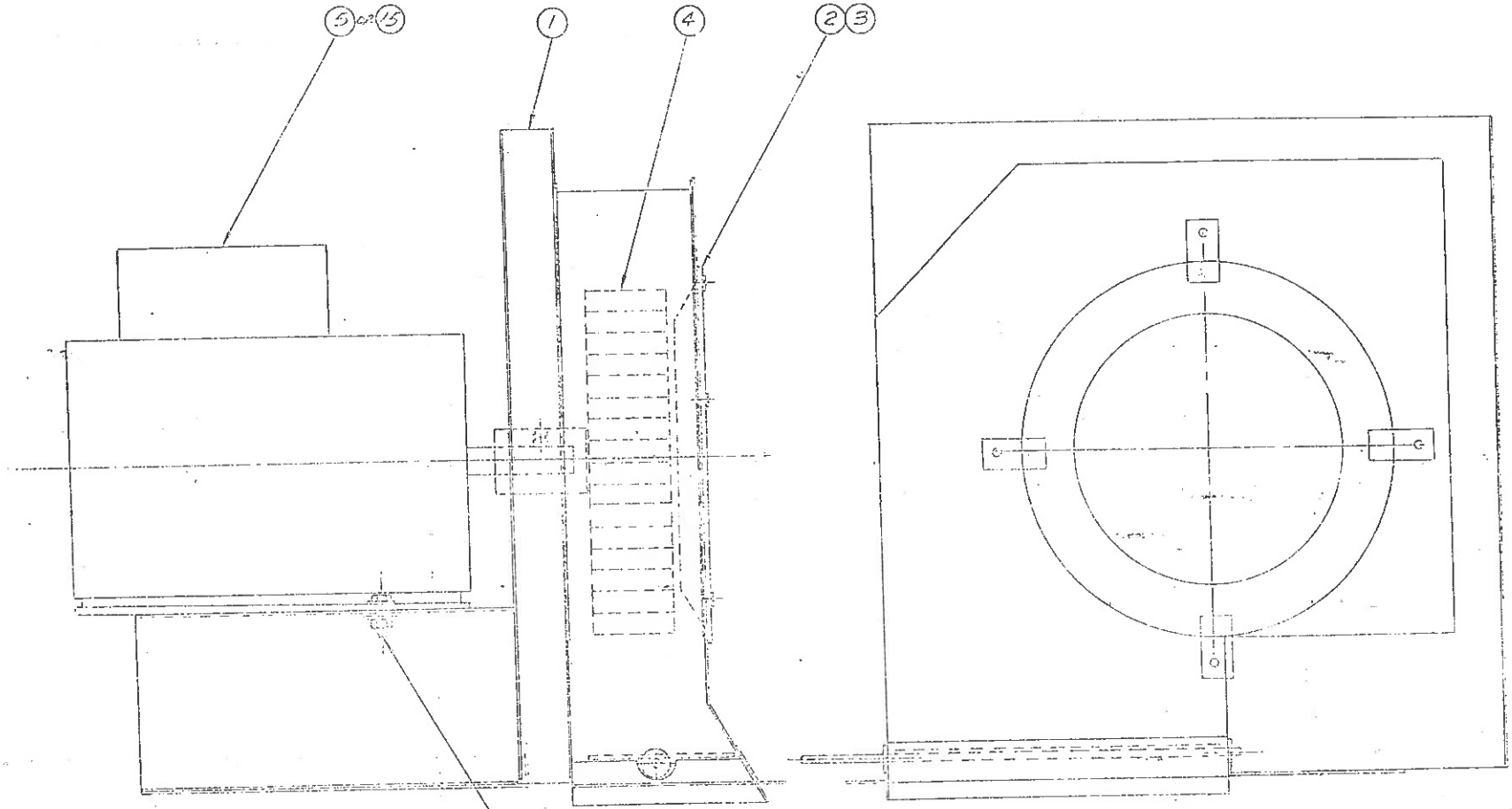
TITLE: TUNNEL SUBASSEMBLY, 7221

SCALE	SIZE	PART NO.	REV
NONE	A	72210021	0

SYMBOL	DESCRIPTION	ECO NO.	DATE/BY
	REVISION		
-	New release for digital temperature controller.	6662	6/13/96 H. Kim

PART NO: 72210250P1 REV:02 07/12/91
DESCRIPTION: BLOWER & MOTOR ASSEMBLY ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV	ACT	MD
1	72210248	BLOWER HOUSING &MTR MTG WELD	1.0	EA			
2	72210252	INLET RING WELDMENT	1.0	EA			
3	SS0072	AAQ,6X0.500 LG SCR SHT MTL PAN HD A	4.0	EA			
4	BW2636	BLOWER WHEEL	1.0	EA			
5	MR4986	MR,1HP,3450RPM,115/230V 56F OPEN DRIP *	1.0	EA	01		
6	SS0194	AAA,0.312-18X1.000LG SCREW HEX HD CAP CP	4.0	EA			
7	NT0199	AAA,0.312-18 NUT HEX CAD PL	4.0	EA			
8	WA2225	AAA,0.312 WASHER FLAT CP	4.0	EA			
9	WA2232	AAB,0.312 WASHER LOCK CP	4.0	EA			
10	72212032	DAMPER SHAFT (NON FARMOUT)	1.0	EA			
11	72212013	DAMPER BLADE	1.0	EA			
12	SS1383	AAB,6-32X0.250 LG SCREW RD HD MACH CP	2.0	EA			
13	WA2228	AAB,6 WASHER LOCK CP	2.0	EA			
14	NT1015	AAD,0.250 NUT	2.0	EA			
9000	DWG72210250	DWG,BLOWER & MOTOR ASSEMBLY	1.0	EA	01		C



SIZE	DWG NO.	REV.
C		

SYM	DESCRIPTION	ECO NO.	DATE/BY
1	CHANGED PICTURE OF ITEM # 2.		

REVISIONS

DRAWN	DATE 5-3-71	TITLE BLOWER, MOTOR & MOTOR MOUNT ASSEMBLY
CHECKED	DATE	
APP.	DATE	
MATERIAL		
FINISH		

WELDOTRON Corporation
NEWARK, N.J.

SCALE	SIZE	PART NO.	REV.
1/2	C	7221-0250	1

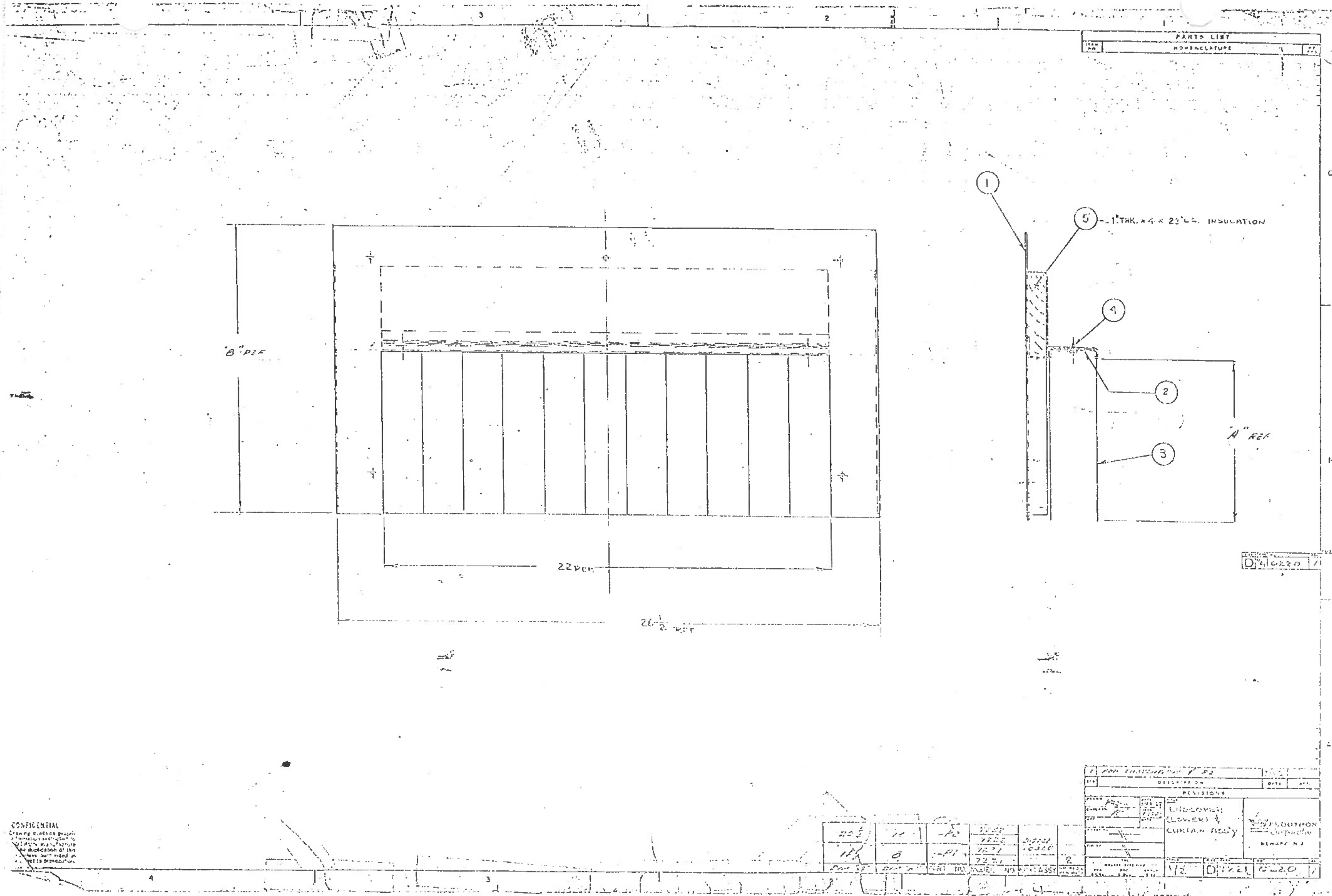
TOL. UNLESS SPECIFIED: FRA. ± 1/64, DEC. ± .005, ANGLE ± 30'

PART NO.	MODEL NO.	NEXT ASSEMBLY	NO. REQ'D PER MACH.
2	760.5	0020	1
1	7221	0020	1

PART NO: 72210220P2
DESCRIPTION: END COVER & CURTAIN ASSY

REV: 08/23/80
ACT: ROUTE: 1

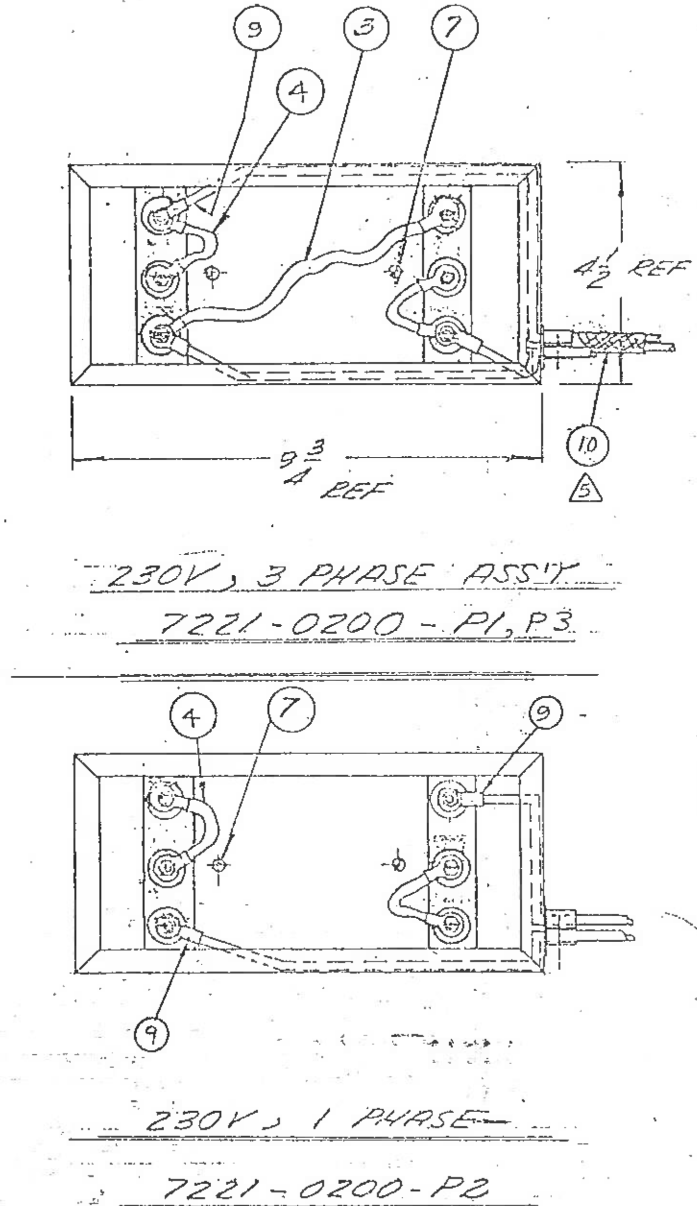
ITEM	P/N	DESCRIPTION	QTY	U/M	RV	ACT	MD
1	72210218P2	LOWER END COVER	1.0	EA			
2	72212022	CURTAIN HOLDER	1.0	EA			
3	72212061P2	CURTAIN (SH1864)	1.0	EA			
4	SS0072	AAQ,6X0.500 LG SCR SHT MTL PAN HD A	3.0	EA			
5	IS3739	SPIN-GLASS BOARD	1.0	SF			
9000	DWG72210220	DWG,CURTAIN ASSY	1.0	EA	01		D

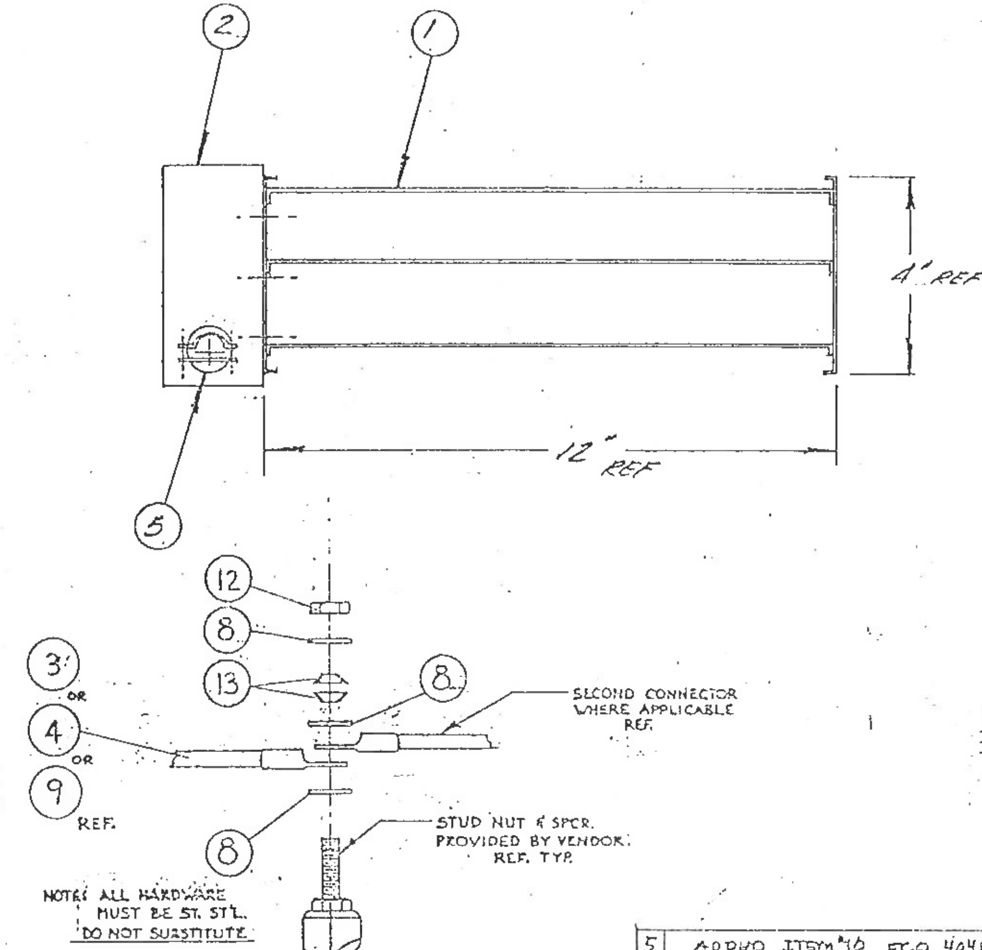

PARTS LIST
NOMENCLATURE
1" THK. x 4 x 23" LG. INSULATION
"A" REF
"B" REF
22 REF
26 1/2 REF
CONFIDENTIAL
REVISIONS
DESCRIPTION
CURTAIN ASSY
NEWARK N.J.

PART NO: 72210200P1
DESCRIPTION: HEATER BOX ASSEMBLY

REV: 08/23/80
ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV	ACT	MD
1	HT2782	HEATER BANK,15KW,230V,3PH	1.0	EA			
2	72210240	WELD HTR BOX	1.0	EA	04		
3	70000808P2	UNIVERSAL CONNECTOR ASSY 7 1/2"	1.0	EA	01		AS
4	70000808P1	UNIVERSAL CONNECTOR ASSY 3 1/2"	2.0	EA	01		AS
5	CQ0052	CONNECTOR 3/8" SCREW	1.0	EA			
7	SS0995	ABQ,4-40X0.375 LG SCREW SHT MTL RD HD	2.0	EA			
8	WA2372	ACA,10 WASHER PLAIN ST STL	18.0	EA			
9	70000808P4	UNIVERSAL CONN ASSY 96"	3.0	EA	01		AS
10	SV0447	SLVG VARGLAS 7/16 I.D. CLR NATL TYPE H	0.5	FT			
12	NT2380	ACA,10-32 NUT HEX ST STL	6.0	EA			
13	WA16087	ACC,#10 WASHER SST	12.0	EA			
9000	DWG72210200	DWG,HEATER BOX ASSEMBLY	1.0	EA	05		C





TERMINAL DETAIL
TYP.

ITM	DESCRIPTION	DATE	APP.
5	ADDED ITEM #10 ECO 4048		
4	ADDED TERMINAL DETAIL, ELIMINATED ... ECO 3776		
3	ADDED: SECT. B-B, C-C & ITEM 13, 14 & 15; CORRECTED PICTURE TO AGREE WITH ...		
2	SILVER SOLDERED TERMS P3, ADDED ECO 1184		
1	REDESIGNED SEE ECO # 862		

REVISIONS

TITLE: HEATER BOX ASSEMBLY

WELDOTRON Corporation
NEWARK, N.J.

	PART NO.	MODEL NO.	NEXT ASSY	NO. REQ'D PER MACH.
230V, 3 PHASE	-P3	7232	7221-0200	1
230V, 1 PHASE	-P2			
230V, 3 PHASE	-P1			

C 7221-0200 2

7221-0200

CONFIDENTIAL -
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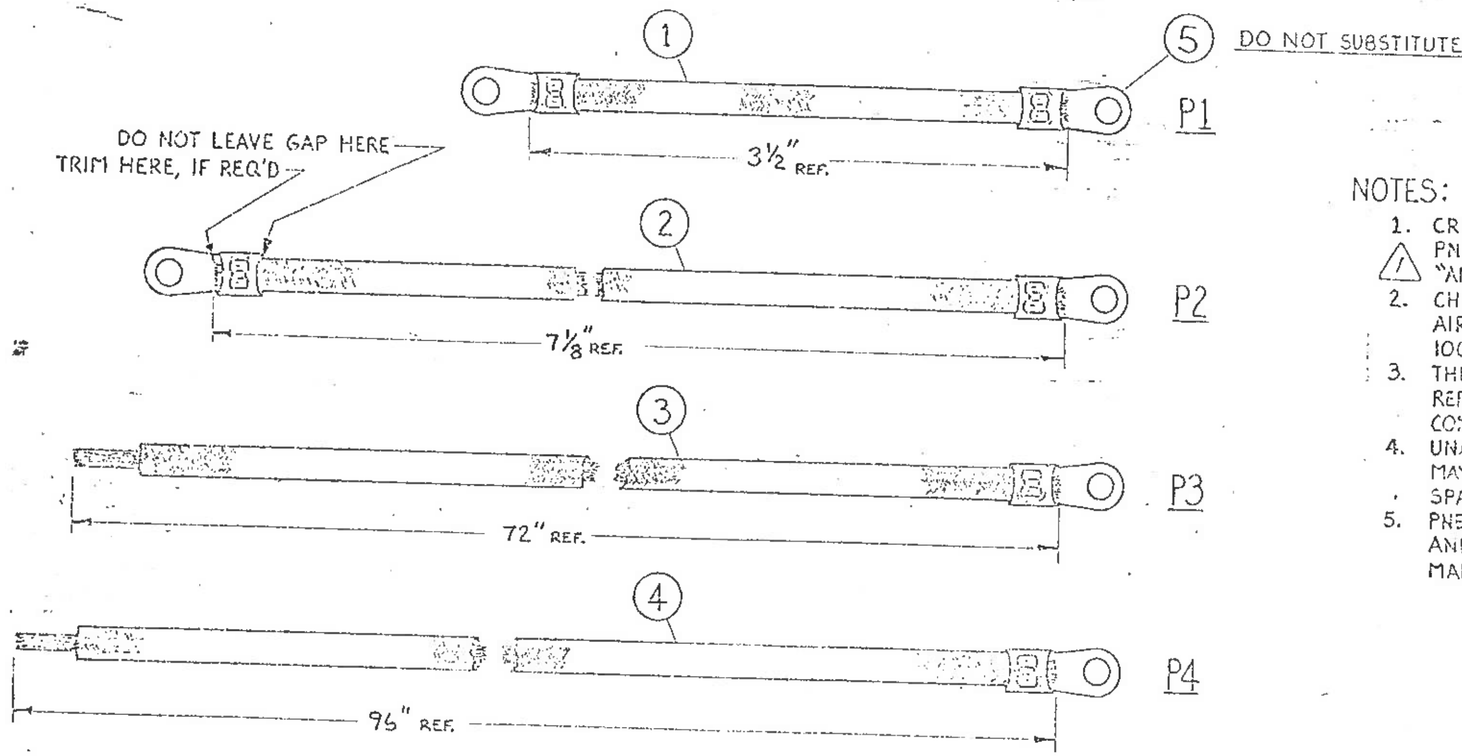
PART NO: 70000808P2 REV:01 02/20/85
DESCRIPTION: UNIVERSAL CONNECTOR ASSY 7 1/2" ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV	ACT	MD
2	70008081P2	WIRE 7-1/8 LG	1.0	EA			
5	LG4469	LUG,NICK 1200 F 10-12GA 10 STUD	2.0	EA			
9000	DWG70000808	DWG,ASSY,UNIVERSAL CONN	1.0	EA	01		B

ITEM NO.	PARTS LIST NOMENCLATURE	NO. REQ



NOTES:

1. CRIMPING TO BE DONE WITH "AMP PNEUMATIC CRIMPER #69010" WITH "AMP #46448 DIE" ONLY. (△ 1)
2. CHECK CRIMPER AIR SUPPLY PRIOR TO USE. AIR PRESSURE MUST BE 85 PSIG MINIMUM, 100 PSIG MAXIMUM.
3. THESE CONNCTOR ASSEMBLIES ARE EXACT REPLACEMENTS FOR WIRE AND STRAP CONNECTORS PREVIOUSLY USED.
4. UNASSEMBLED COMPONENTS OF THESE PARTS MAY NOT BE SUPPLIED AS REPLACEMENTS OR SPARE PARTS.
5. PNEUMATIC CRIMPER MUST BE INSPECTED AND MAINTAINED REGULARLY PER MANUFACTURER'S INSTRUCTIONS.

CRIMP TERMINAL FROM TOP ONLY

SYM	DESCRIPTION	ECO NO.	DATE
1	CHANGED AMP DIE NUMBER		

REVISIONS

DRN. C. HOLATA	DATE 3-21-84	weldotron corporation
CHK.	DATE	
APP.	DATE	
MAT'L SEE P/L		TITLE ASS'Y, UNIVERSAL CONNECTOR, TUNNEL HEATER BANK
FINISH NONE		
TOL. UNLESS SPECIFIED FRA ±1/64 DEC. ±.XX6 ANGLE ±1/2°	SCALE FULL / SIZE B	PART NO. 7000-0808 / REV. 1

SEE HEATER BANK ASS'Y DWG FOR USAGE.

PART NO.	MODEL NO.	NEXT ASSEMBLY	NO PER TO PER ASSEM.

SIZE	PART NO	REV.
B	7000-0808	1

CONFIDENTIAL

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PART NO: 70000808P1
DESCRIPTION: UNIVERSAL CONNECTOR ASSY 3 1/2"

REV:01 02/20/85
ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV	ACT	MD
1	70008081P1	WIRE,3-1/2 LG	1.0	EA			
5	LG4469	LUG,NICK 1200 F 10-12GA 10 STUD	2.0	EA			
9000	DWG70000808	DWG,ASSY,UNIVERSAL CONN	1.0	EA	01		B

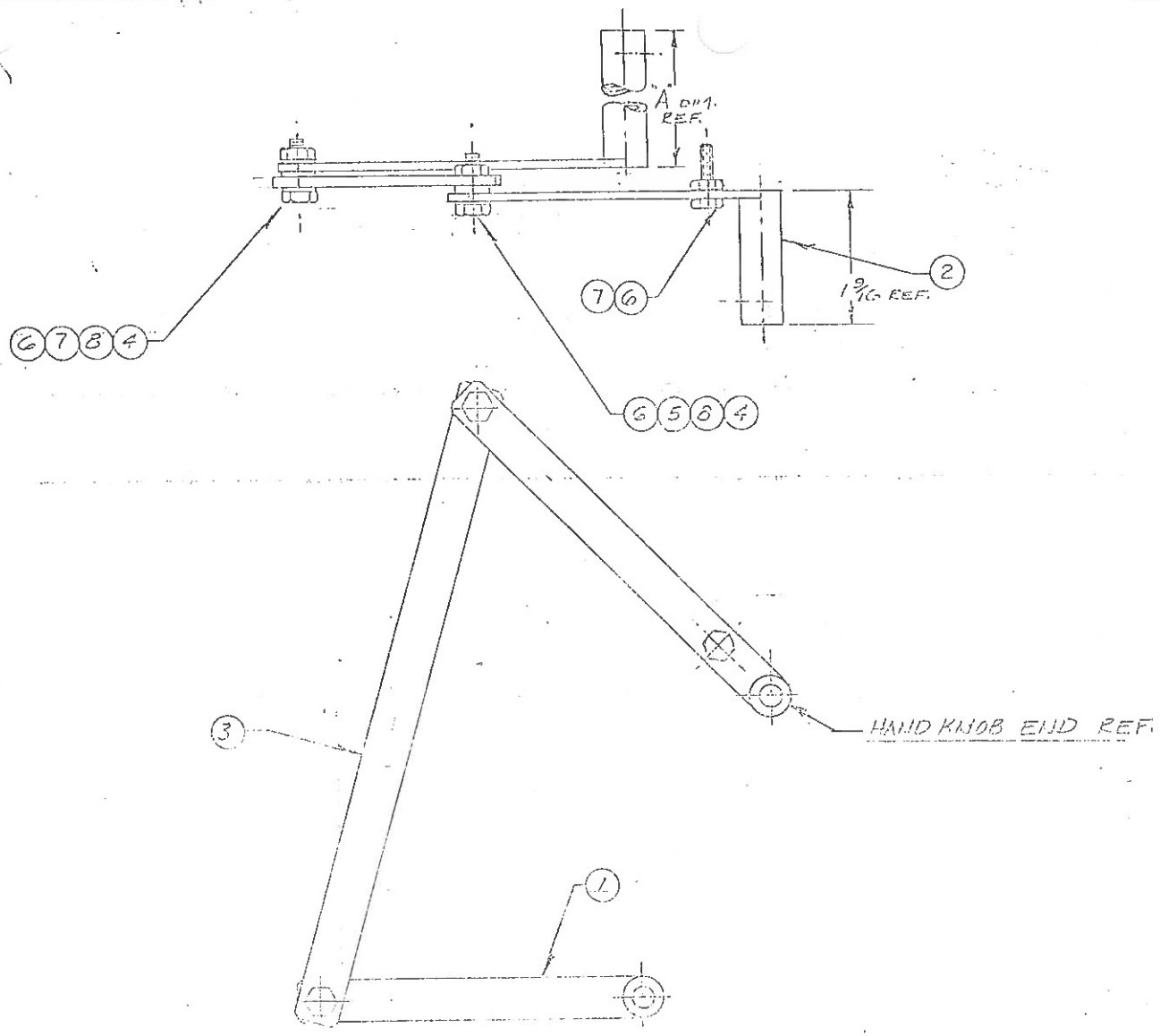
PART NO: 70000808P4
DESCRIPTION: UNIVERSAL CONN ASSY 96"

REV:01 02/20/85
ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV	ACT	MD
4	70008081P4	WIRE 96 LG (WE4552)	1.0	EA			
5	LG4469	LUG,NICK 1200 F 10-12GA 10 STUD	1.0	EA			
9000	DWG70000808	DWG,ASSY,UNIVERSAL CONN	1.0	EA	01		B

PART NO: 72210232P1 REV: 08/23/80
DESCRIPTION: DAMPER ACTUATOR ASSEMBLY ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV	ACT	MD
1	72210212P1	DAMPER ACT SUB-SFT LINK	1.0	EA			
2	72210228	DAMPER ACT KB LINK WLDMT	1.0	EA			
3	72212025	CROSS LINK DAMPER ACT	1.0	EA			
4	AH0635	ADHESIVE LOCTITE RED 10CC	1.0	EA			
5	SS7293	ACA,10-32X0.500 LG SCR HEX HD SST	2.0	EA			
6	NT0287	AAA,10-32 NUT HEX CAD PL	3.0	EA			
7	SS0960	AAA,10-32X0.750LG SCREW HEX HD CP	1.0	EA			
8	WA0351	ABA,10 WASHER	4.0	EA			
9000	DWG72210232	DWG,DAMPER ACTUATOR ASSY	1.0	EA			C



SIZE	DWG NO.	REV
C	7221-0232	1

NOTE: LINKINGS MUST MOVE FREELY BEFORE LOCKTITE IS APPLIED

DESCRIPTION	ECO NO.	DATE/BY
REVISIONS		

DRAWN		DATE 5-17-83
CHECKED		DATE
APP		DATE
MATERIAL		
FINISH		

DAMPER ACTUATOR ASSEMBLY

WELDOTRON Corporation
NEWARK, N.J.

"A" DIM.	PART NO.	MODEL NO.	NEXT ASSEMBLY	NO. REQ'D PER MODEL
1 9/16	P1	7221	7221-0020	1

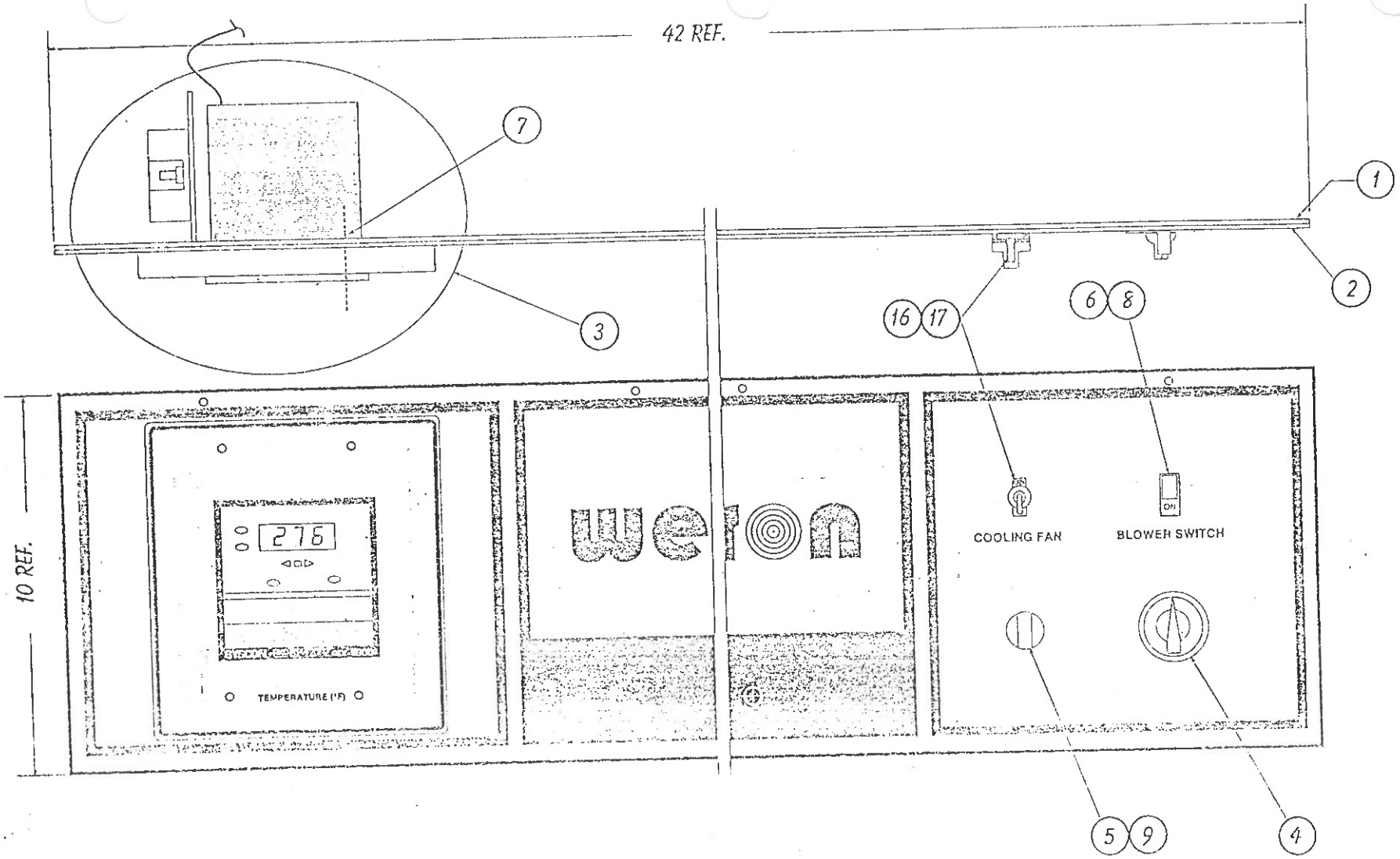
TOL. UNLESS SPECIFIED: FRA ± 1/64, DEC ± .005, ANGLE ± 30'

SCALE	SIZE	PART NO.
FULL	C	7221-0232

PART NO: 72210210
DESCRIPTION: CONTROL PANEL ASSEMBLY

REV: 08/14/96
ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV	ACT	MD
1	72212056	CONTROL PANEL	1.0	EA	07		
2	LB2531	NAME PLATES SHTS 1 & 2 ART WORK CHG 40//	1.0	EA	05		
3	72210219	CONTROL PANEL, TEMPERATURE	1.0	EA			AS
4	TR0611	TRANSFORMER	1.0	EA			
5	FZ1352	FUSE,SLOW-BLOW,1.5A	1.0	EA			
6	SW4198	MOTOR STARTER WITH ALL OVER LOAD	1.0	EA			
7	SS0334	AAE,8-32X0.375 LG SCR FILL HD SLOT CP	4.0	EA			
8	SS0738	AAG,6-32X0.375 LG SCR BIND HD MCH CAD PL	2.0	EA			
9	FZ0176	LITTLE FUSE MIN POST	1.0	EA			
10	CQ0778	CONN-WIRE JOINT INSULATED	2.0	EA			
11	LB1696	LABEL,WIRE MARKERS VINYL CLOTH	20.0	EA			
12	WE3290	TY-RAP WIRE	20.0	EA			
13	LG0775	TERM FORK INSULATED	6.0	EA			
14	LG1053	LUG FORK #8 INSULATED	5.0	EA			
15	TL0774	SPLICE WIRE	3.0	EA			
16	SW1304	SWITCH TOGGLE DPST 2 X 467	1.0	EA			
17	SW1345	SWITCH TOGGLE SWITCH PLATE ON-OFF 2 X 6*	1.0	EA			
9000	DWG72210210	DWG, CONTROL PANEL ASSEMBLY	1.0	EA			A
9001	DWG72218004	SCHEMATIC, ELECTRICAL,7221/ 7222	1.0	EA			A
9002	72213046	WIRING DIAGRAM 7221/7222	1.0	EA			A



SYMBOL	DESCRIPTION / REVISION	ECO NO.	DATE/BY
—	New release for digital temperature controller.	6662	8/9/96/H.KIM

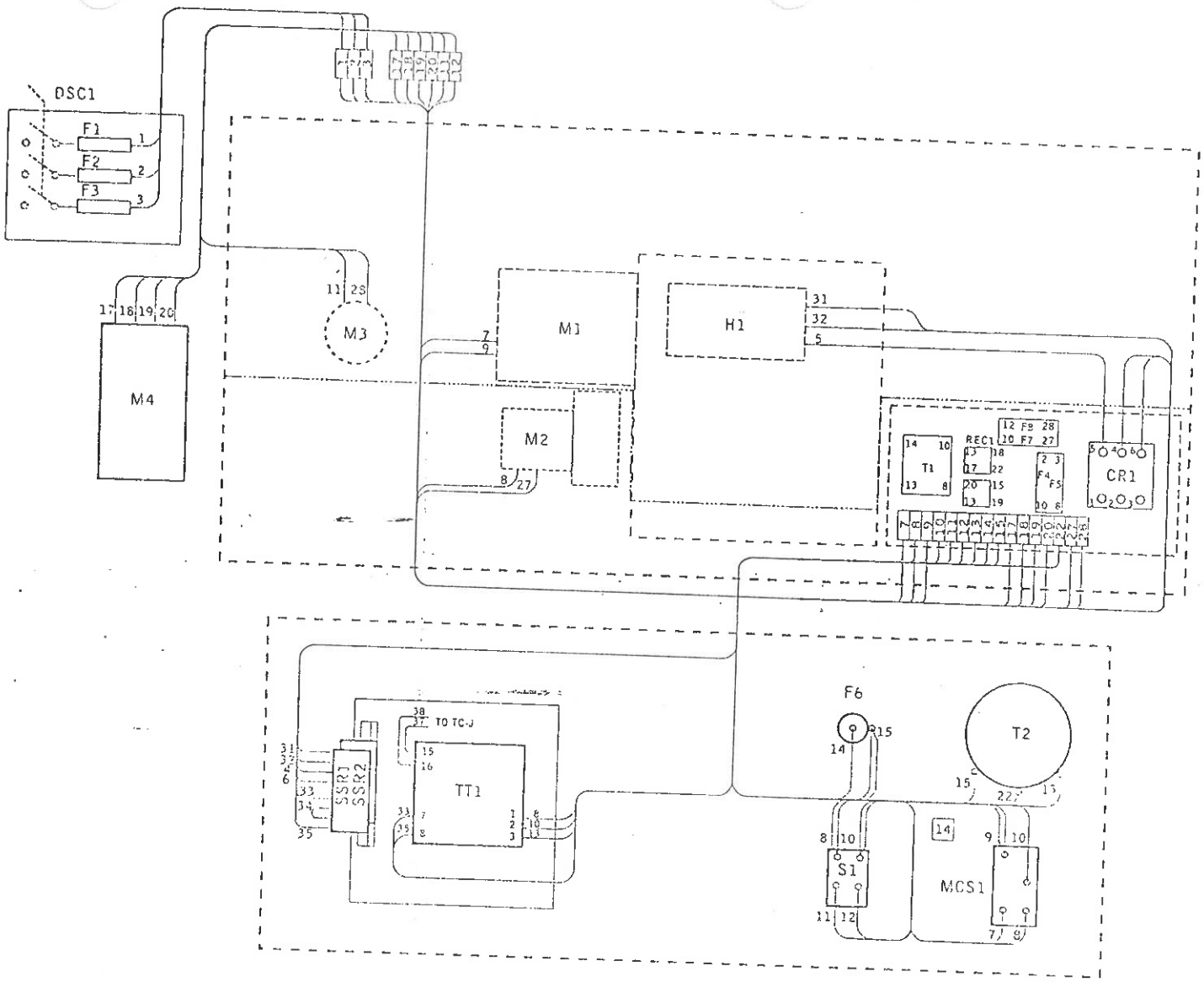
DRN. [illegible] DATE 8/7/96
CHK [illegible] DATE
APP DATE
MAT'L
FINISH

TOL. UNLESS SPECIFIED
FRA ±1/64 DEC. ±.005 ANGLE ±1/2°

weldotron corporation

TITLE
CONTROL PANEL ASSEMBLY

SCALE	SIZE	PART NO.	REV
NONE	A	72210210	0



SYMBOL	DESCRIPTION / REVISION	ECO NO.	DATE/BY
—	New release for digital temperature controller.	6662	8/9/96 H.KIM

DRN		DATE 8/9/96
CHK		DATE
APP		DATE
MAT'L		
FINISH		

TOL. UNLESS SPECIFIED: FRA ±1/64, DEC. ±.005, ANGLE ±1/2°

watlow corporation

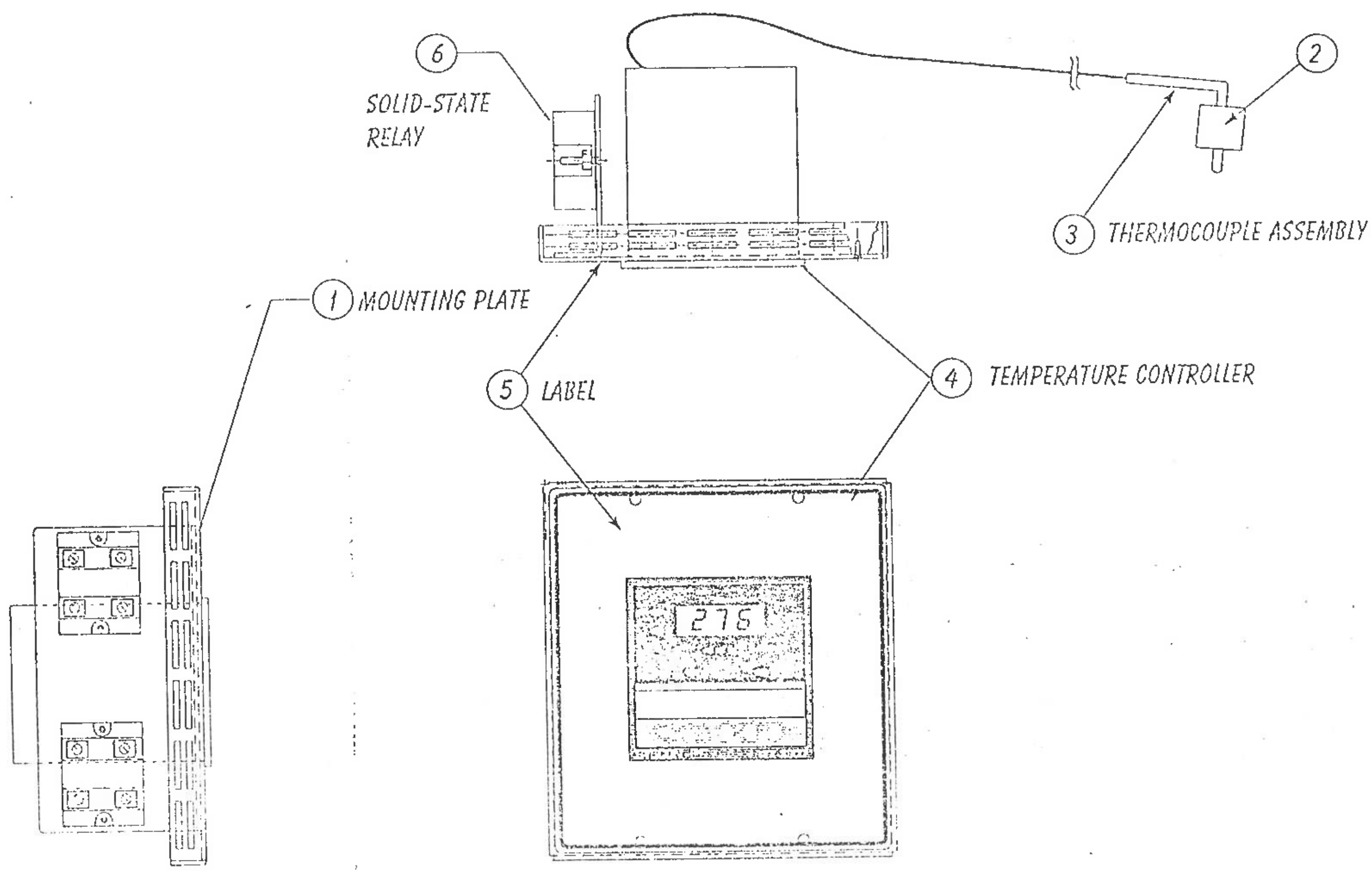
TITLE: WIRING DIAGRAM, 7221

SCALE	SIZE	PART NO.	REV
NONE	A	72213046	0

PART NO: 72210219
DESCRIPTION: CONTROL PANEL, TEMPERATURE

REV: 08/14/96
ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV ACT	MD
1	72210801	MOUNTING PLATE TEMP CONTROLLER	1.0	EA		AS
2	71218101	MOUNTING BLOCK	1.0	EA		
3	71218102	THERMOCOUPLE MODIF(TP22010)	1.0	EA		
4	CO22042	CONTROLLER, TEMPERATURE	1.0	EA		PC
5	LB22043	LABEL, CONTROL PANEL	1.0	EA		
6	SW22044	RELAY, SOLID STATE, 480V/90A	2.0	EA		PC
9000	DWG72210219	DWG, CONTROL PANEL, TEMPERATURE	1.0	EA		A



SYMBOL	DESCRIPTION	ECO NO.	DATE/BY
-	New release for digital temperature controller.	6662	8/9/96 H. Kim

REVISION

DRN	DATE 8/9/96		
CHK	DATE		
APP	DATE		
MAT'L			
FINISH			
TOL. UNLESS SPECIFIED			
FRA ±1/64	DEC. ±.005	ANGLE ±1/2°	

weldotron corporation

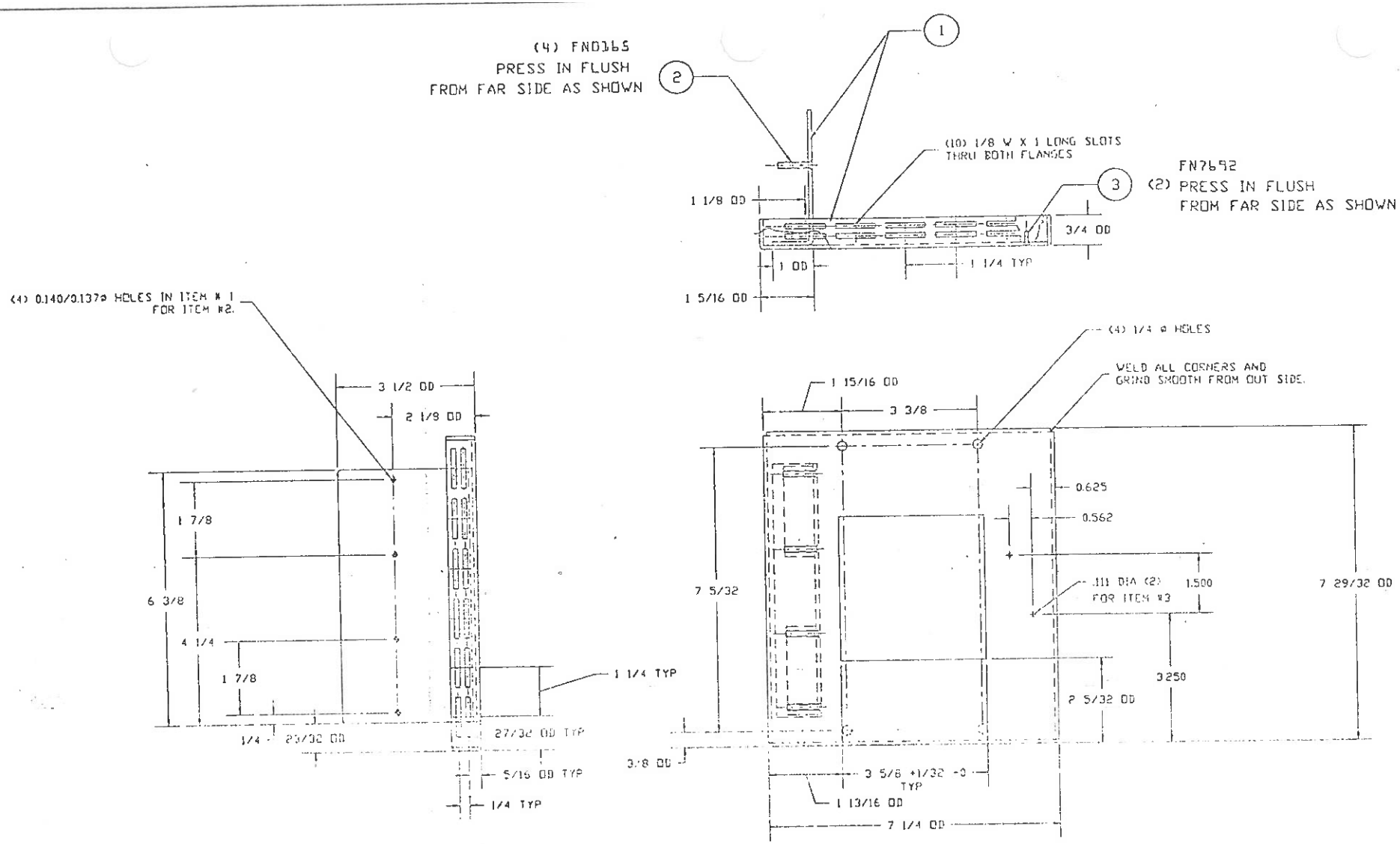
TITLE CONTROL PANEL ASSEMBLY

SCALE	SIZE	PART NO.	REV
NONE	A	72210219	0

PART NO: 72210801
DESCRIPTION: MOUNTING PLATE TEMP CONTRO LLER

REV: 08/14/96
ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV	ACT	MD
1	RM0130	SS,13 GA.089X48X96 COMM QLT Y CRS	0.8	SF			
2	SS22041	SCREW, AB, #6-32X.75 PEM# FH632-12	4.0	EA			
9000	DWG72210801	DWG, MOUNTING PLATE TEMP CONTROLLER	1.0	EA			A

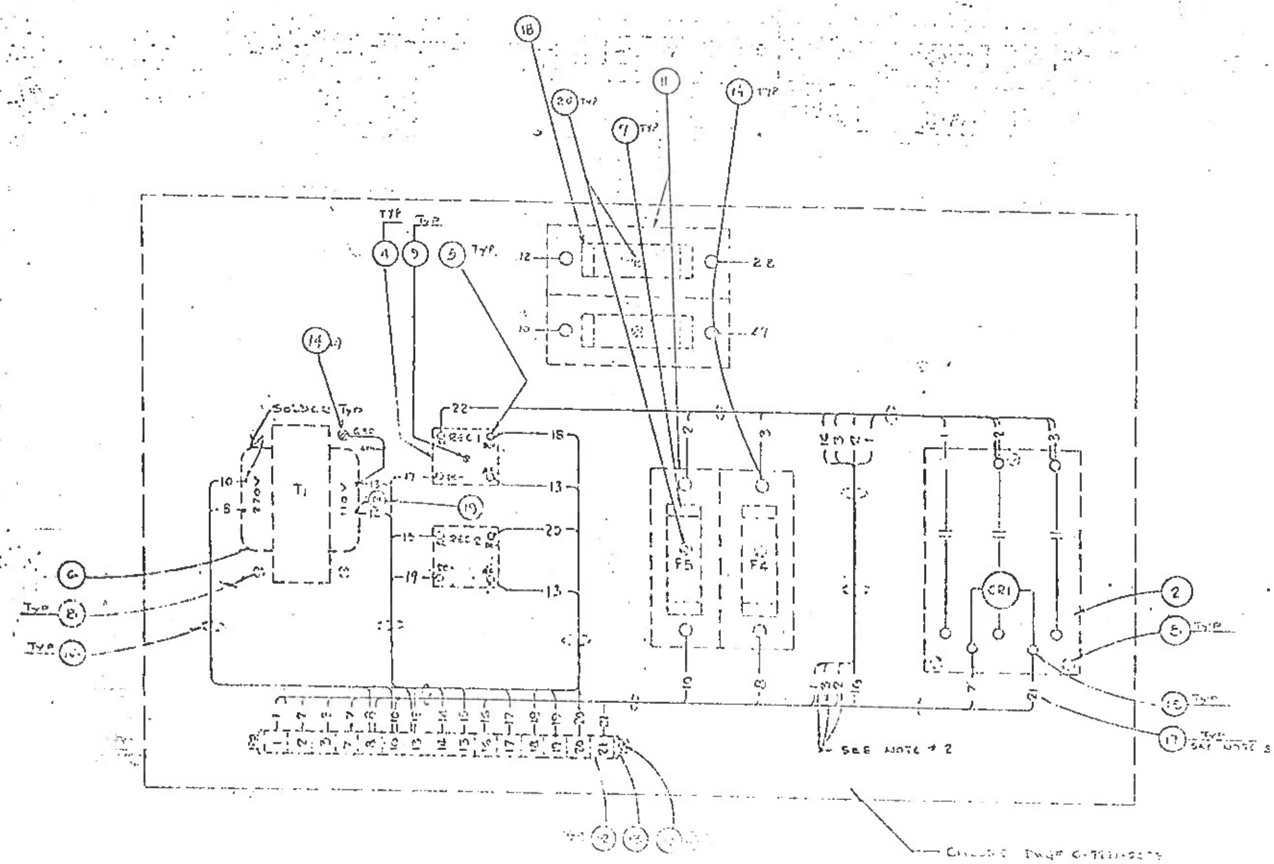


DRN	Satish B.	DATE	8/2/96	weldotron corporation
CHK	H. Kim	DATE	8/7/96	
APP		DATE		
MAT'L	COM'L CRS. # 13 GA. SHT.			TITLE: MOUNTING PLATE TEMP. CONT.
FINISH	PAINT POLANE T			
TOL. UNLESS SPECIFIED	FRA ±1/64	DEC. ±.005	ANGLE ±1/2°	SCALE: NONE / SIZE: A / PART NO.: 72210801 / REV: 0

SYMBOL	DESCRIPTION / REVISION	ECO NO.	DATE/BY
—	NEW RELEASE	6662	8/9/96 H.KIM

PART NO: 72210231P1 REV:02 12/19/96
DESCRIPTION: CHASSIS ASSEMBLY ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV ACT	MD
1	72212079	CHASSIS WELDMENT ASSY	1.0	EA	02	
2	CX4159	CONTACTR,3POLE,63AMP	1.0	EA		
4	TB7025	BRIDGE RECTIFIER,35AMP,PRV 1000VOLTS	2.0	EA		
5	LG1054	LUG,250A,FLAG	8.0	EA		
6	TR0403	XFMR,208/230V PRI,120V SEC 200VA	1.0	EA	04	
7	FZ1339	FUSE,250V,15A	2.0	EA		
8	SS0917	ADG,10-32X0.500LG SCR BIND HD MACH BRASS	7.0	EA		
9	SS1002	AAG,6-32X0.875 LG SCR BIND HD MACH CAD	2.0	EA		
10	SS0738	AAG,6-32X0.375 LG SCR BIND HD MCH CAD PL	4.0	EA		
11	FZ0983	FUSE HOLDER,250V,30A	2.0	EA		
12	TL0752	TERMINAL BLOCK	15.0	EA		
13	TL0753	MOUNT END	1.0	EA		
14	LG0776	LUG FORKED #10 TERM INSUL	8.0	EA		
15	LG0775	TERM FORK INSULATED	2.0	EA		
16	WE3290	TY-RAP WIRE	20.0	EA		
17	LB1696	LABEL,WIRE MARKERS VINYL CLOTH	20.0	EA		
18	FZ2133	FUSE,SLOW-BLOW,250V,.8A	2.0	EA		
19	RE5990	VARISTOR	1.0	EA		
20	SS0335	AAG,8-32X0.500 LG SCR BIND HD MS PL	4.0	EA		
21	LG22079	LUG, RING, GROUND FOR #8 WIRE, #10 STD	1.0	EA		
9000	DWG72210231	DWG,CHASSIS ASSY	1.0	EA		D



NOTES:

1) ALL WIRE SHALL BE [illegible], TYPE TEW, 105°C, STRANDED COPPER, BLACK, EXCEPT AS NOTED.
2) WIRES [illegible] 1, 2 & 3 SHALL BE # [illegible] AWG, TYPE TEW, 105°C, STRANDED COPPER, BLACK (FROM TERM. BLOCK TO CONTACTOR ONLY)
3) LABEL ALL WIRES WITH NUMBERS AS SHOWN
4) REFER TO SCHEMATIC DWG # [illegible]-7221-5004
5) REFER TO PARTS LIST # 7221-0251 FOR ITEM IDENTIFICATION

CONFIDENTIAL

REVISIONS

WIRING DIAGRAM CHASSIS

MODEL 7225 Series

Corporation
NEWARK, N.J.

D 7221-0251

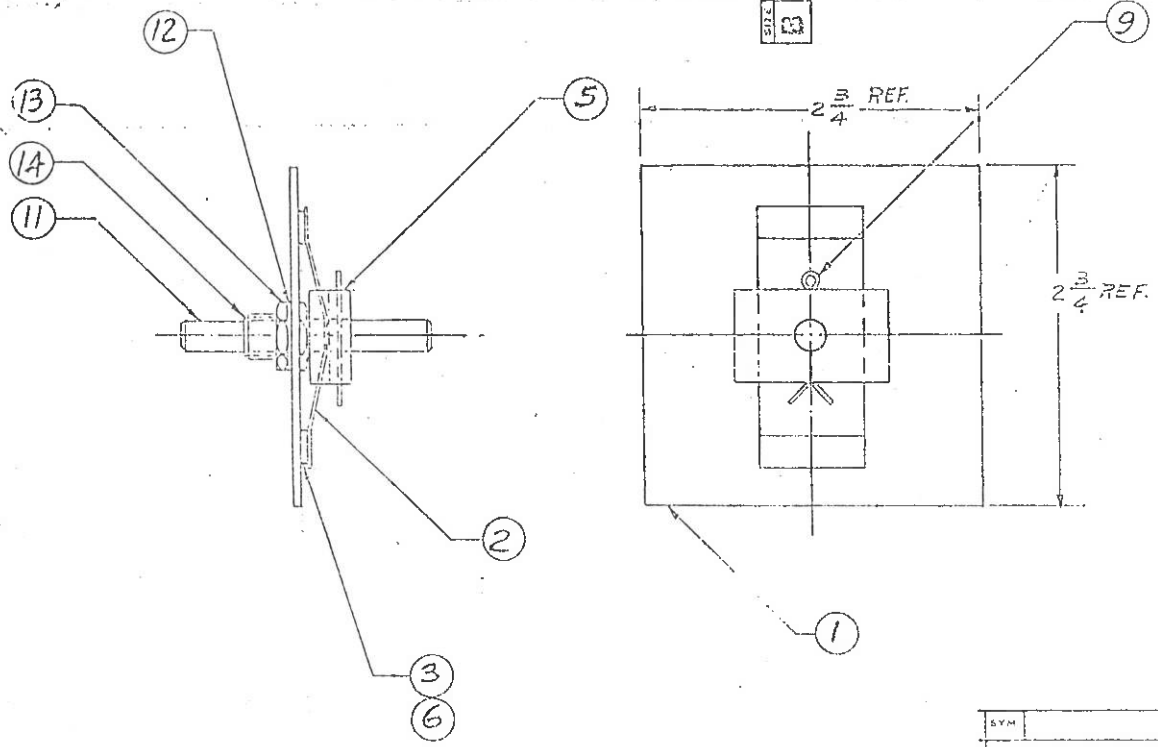
F-1

PART NO: 72210233P1
DESCRIPTION: DAMPER CONTROL ASSY

REV: 08/23/80
ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV	ACT	MD
1	73000537	PLATE W/L ASSY	1.0	EA			
2	SG2167	SPRING FLAT .020TK STEEL	1.0	EA	02		
3	73000699	PAD-CLUTCH	2.0	EA			
5	73000535	RETAINER SPRING	1.0	EA			
6	AH0444	ADHESIVE PLIOBOND #3	1.0	EA			
9	PN1803	ABE,0.062 DIA X1.250 LG PIN COTTER	1.0	EA			
11	73000704	SHAFT MODIFIED PANEL (BG1430A)	1.0	EA			
15	BG1430	ABH,BEAR PANEL ASSEM #HX-1	1.0	EA			
9000	DWG72210233	DWG,DAMPER CONTROL ASSY	1.0	EA			B

SIZE	PART NO.	REV.
B	7221-0233	



NOTE:
1. CEMENT ITEM 3 TO ITEM 2 USING ITEM 6
2. CONNECT ITEM 15 AFTER INSTALLATION OF OTHER DAMPER CONTROL ASS'Y COMPONENTS INTO TUNNEL ASS'Y.

SYM	DESCRIPTION	ECO NO.	DATE/BY
REVISIONS			

DRAWN A.L.	DATE 5-27-63	TITLE DAMPER CONTROL ASS'Y	WELDOTRON Corporation NEWARK, N.J.
CHECKED [illegible]	DATE 7-25-61		
APP.	DATE		
MATERIAL			
FINISH			

PART NO.	MODEL NO.	NEXT ASSEMBLY	NO REQ'D PER MACH	TOL. UNLESS SPECIFIED FRA ± 1/64 DEC ± .005 ANGLE ± 30'	SCALE FULL	SIZE B	PART NO. 7221-0233	SHEET
	7221	7221-0020	1					

PART NO: 72210030P1
DESCRIPTION: CONVEYOR ASSEMBLY

REV:30 07/25/94
ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV	ACT	MD
1	72210300P1	CONVEYOR WELDMENT ASSY	1.0	EA	10		
2	72210311	LEG WELDMENT	2.0	EA	01		
5	72210305	LEVELING PAD ASSY	4.0	EA			AS
6	72213000	CONVEYOR TAKEUP SCREW WELD	2.0	EA			
11	72213006P1	LEG TIE	1.0	EA	07		
14	72213008P1	MOTOR DRIVE LEG TIE	1.0	EA	06		
15	72213009P1	SIDE RAIL BOTTOM	1.0	EA			
16	72213009P3	SIDE RAIL BOTTOM	1.0	EA			
18	72210326	CHAIN GUARD WELDMENT	1.0	EA			
20	72213024P1	TOP RAIL	2.0	EA			
21	72213059P1	RAIL BOTTOM	2.0	EA			
23	FZ1094	FUSE,250V,50A	3.0	EA			
24	GM1177	GROMMET AS PER MI	1.0	EA			
25	MR2792	MTR,1/8MP 173RPM 115VDC 2" SHAFT OPP	1.0	EA			
26	72213079	SPROCKET (SK0684)	1.0	EA			
27	73000571P1	ROLLER, CONVEYOR	94.0	EA			
28	73000646P1	SHAFT	1.0	EA	03		
29	73000662P5	GUARD FOR TAKE-UP SHAFT	1.0	EA			
31	BG0441	ABA,0.625B BALL BRG UNIT 2 HOLE MTG	2.0	EA			
33	71420319	IDLER SPKT ASSY	2.0	EA			AS
34	72213078	SPROCKET 41B18 (SK0204)	1.0	EA			
35	CH1233	CHAIN	23.5	FT	02		
36	CH0125	CHAIN #41 1/2	3.0	FT			
37	72213066P1	LEVER ARM RH	2.0	EA			
38	KB1807	KNOB W/10-32 TAPPED HOLE	4.0	EA			
39	72213066P2	LEVER ARM LH	2.0	EA			
40	SG1741	COMPRESSION SPRING	4.0	EA			

PART NO: 72210030P1
DESCRIPTION: CONVEYOR ASSEMBLY

REV:30 07/25/94
ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV ACT MD
41	73001047	FAN, PANEL COOLING (BW1047)	1.0	EA	01
42	ME1036	MTR,1/20HP 230V 5/16 SHAFT	1.0	EA	
43	SS0067	AAA,0.250-20X0.750 LG SCREW HEX HD CP	26.0	EA	
44	SS0072	AAQ,6X0.500 LG SCR SHT MTL PAN HD A	20.0	EA	
45	CQ0778	CONN-WIRE JOINT INSULATED	2.0	EA	
46	LB1696	LABEL,WIRE MARKERS VINYL CLOTH	20.0	EA	
47	NT0627	AAA,0.250-20 NUT HEX CAD	12.0	EA	
48	NT0287	AAA,10-32 NUT HEX CAD PL	29.0	EA	
50	WA2224	AAA,0.250 WASHER FLAT CP	20.0	EA	
51	WA0619	ABB,0.250 WASHER	12.0	EA	
52	WA0351	ABA,10 WASHER	16.0	EA	
53	SS1282	ABB,6-32X0.500 LG SCREW RD HD MACH	8.0	EA	
54	SQ0486	SOCKET, 300 SERIES	1.0	EA	
55	TL0752	TERMINAL BLOCK	6.0	EA	
56	TL0753	MOUNT END	1.0	EA	
58	NT0198	AAA,6-32 NUT HEX CAD PL	8.0	EA	
59	NT0356	AAA,8-32 NUT HEX CAD PL	8.0	EA	
60	TL0774	SPLICE WIRE	3.0	EA	
62	WE3290	TY-RAP WIRE	20.0	EA	
63	WA2221	AAA,6 WASHER FLAT CP	8.0	EA	
64	WA2222	AAA,8 WASHER FLAT CP	16.0	EA	
68	SS0292	AAA,0.250-20X1.250 LG SCREW HEX HD CP	12.0	EA	
69	SS0188	AAA,0.250-20X0.500LG SCREW HEX HD CAP CP	20.0	EA	
70	SS2419	ABG,10-32X0.375 LG SCR BIND HD SLOT	16.0	EA	
72	SS0333	AAG,8-32X0.375 LG SCR BIND HD MACH CAD	8.0	EA	
74	SS2013	ACG,10-32X2.500 LG SCR BIND HD SST	2.0	EA	
75	SS1795	ACA,10-32X0.375 LG SCR HEX HD MACH SST	2.0	EA	

PART NO: 72210030P1
DESCRIPTION: CONVEYOR ASSEMBLY

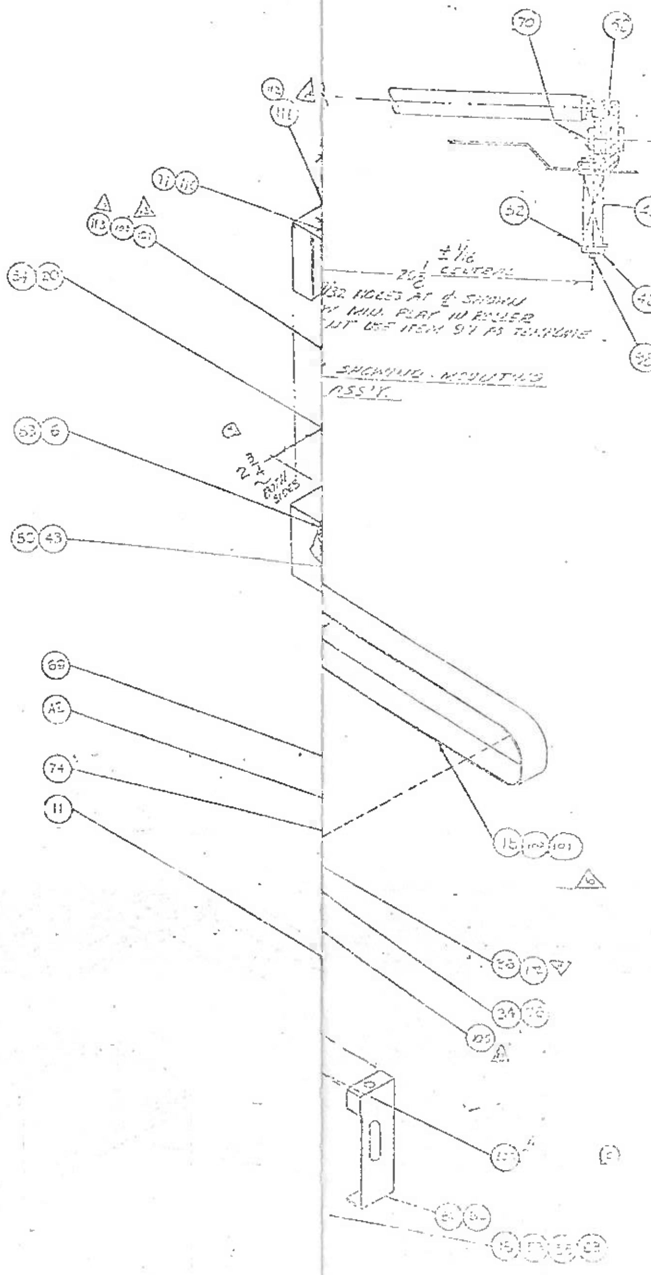
REV:30 07/25/94
ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV	ACT	MD
76	SS2357	ACR,0.250-20X0.500LG SCR NY LOC SOC CP PT	1.0	EA			
77	SS0184	AAG,8-32X0.750LG SCREW BIND HD MACH CP	8.0	EA			
79	SS2361	ACR,0.250-20X0.250 LG SCREW NYLOC SOC*	1.0	EA			
80	SS1386	ABB,8-32X0.375 LG SCREW RD HD MACH	4.0	EA			
83	PN2014	ABA,0.062 DIA X0.500 LG PIN ROLL	1.0	EA			
84	SS1372	AAQ,8-32X0.500 LG SCREW SHT MET PAN HD F	8.0	EA			
86	WA2223	AAA,10 WASHER FLAT CP	12.0	EA			
88	CH1233A	CONN LINK FOR DIAMOND CHAIN	2.0	EA			
95	72210356	MOTOR SUPPORT WELDMENT	1.0	EA	01		
96	72213057P1	RAIL SADDLE	2.0	EA			
97	72210309	SIDE ANGLE RAIL WELDMENT	2.0	EA	01		
98	SS0719	AAG,10-32X1.500 LG SCREW BH MS STL CP	4.0	EA			
100	72213051	STUD ADJUST 10-32	2.0	EA			
101	NT2800	AAE,10-32 NUT CLOSED END CP ACORN	2.0	EA			
102	CH0493	CONNECTING LINKS CHAIN #41	1.0	EA			
103	LB1365	LABELS "LUBRICATE CHAIN"	2.0	EA			
104	71420303	GUARD,COOLING FAN	1.0	EA			
105	72210712	DRIVE SHAFT ASSEMBLY	1.0	EA			AS
106	72213166	DEAD PAN EXTENSION	2.0	EA	02		
107	WA0361	AAA,0.250 WASHER FLAT SAE PLAIN CP	4.0	EA			
108	SS0575	ACB,0.250-20X0.500 LG SCREW RD HD CAD PL	4.0	EA			
109	72213080	ROLLER LIFT LEVER CAP LT HD	2.0	EA			
110	72213081	ROLLER LIFT LEVER CAP RT HD	2.0	EA			
111	72213082	END COVER	2.0	EA			
112	SS3056	ABQ,12X0.750 LG SCR SHT MTL POZIDRIVE	6.0	EA			
113	WA2231	AAB,0.250 WASHER LOCK CP	4.0	EA			
114	SB21225	STANDOFF,ZC PL BR,#10IDX3/8 OD X 3/16LG	12.0	EA			

PART NO: 72210030P1
DESCRIPTION: CONVEYOR ASSEMBLY

REV:30 07/25/94
ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV ACT	MD
115	71423991	KEY 3/16" X 1"	1.0	EA		
9000	DWG72210030	DWG,CONVEYOR ASSY	1.0	EA	15	R
9001	72213044	SCHEMATIC DIAGRAM, CONVEYOR ASSEMBLY	1.0	EA		B
9002	72213046	WIRING DIAGRAM 7221/7222	1.0	EA		A



-P2	7222 / 7231	D-7221-0001	1
-P1	7222 / 7221		
		MODEL	NEXT ASSEMBLY	

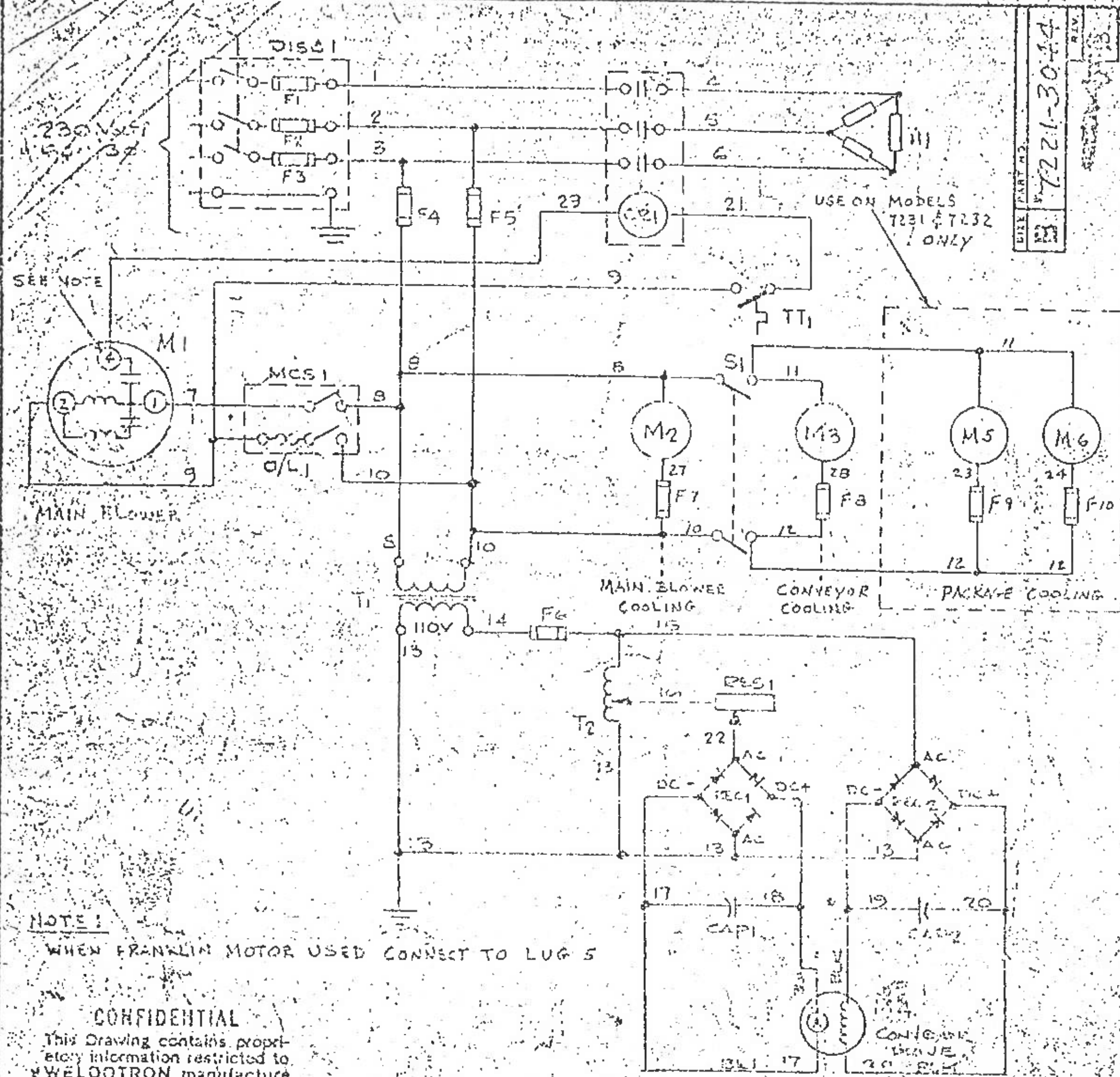
10	ADDED ITEMS 110, 111	2772	
9	[illegible] RAIL SECTION [illegible] NEW DESIGN [illegible]	1633	
7	ADD [illegible] RAIL SECTION		
5	ADD ITEMS 81, 82, 83 & 84		
2		616	
1	ADD [illegible]		
SYM	DESCRIPTION	CHANGE	DATE

weldotron

CONVEYOR ASSEMBLY

7221-0080

1/5



NOTE 1: WHEN FRANKLIN MOTOR USED CONNECT TO LUG 5

WELDOTRON PART NO.	ITEM	DESCRIPTION	QTY
SW 0992	DISC 1	DISCONNECT SWITCH - MAIN	1
SW 1304	S1	TOGGLE SWITCH - CONVEYOR COOLING	1
CX 0314	CR1	CONTACTOR - HEATER CONTROL	1
CO 0075	TT1	TEMP. CONTROL - HEATER CONTROL	1
RE 2547	RES 1	RESISTOR, VARIABLE - CONVEYOR SYS	1
TB 1776	REC 1,2	D.C. POWER SUPPLY - CONVEYOR SYS	2
CC 2302	CAP 1,2	CAPACITOR - CONVEYOR SYS	2
TR 0403	T1	X'FORMER - CONVEYOR SYS	1
TR 0211	T2	X'FORMER, VARIABLE - CONVEYOR SPEED CONTROL	1
———	F1,2,3	FUSE - MAIN (SEE TABULATION)	3
FZ 1370	F4,5	FUSE - CONTROL CKT. (15 AMP)	2
FZ 1216	F6	FUSE - CONVEYOR CKT	1
MR 2701	M1	MOTOR MAIN BLOWER	1
SW 0031	M2	MOTOR - MAIN BLOWER COOLING	1
MR 1032	M3,5,6	MOTOR - CONVEYOR COOLING, PACKAGE COOLING	3
MR 2792	M4	MOTOR - CONVEYOR DRIVE	1
SW 1272	MCS 1	MOTOR STARTER SW. MAIN BLOWER	1
SW 2544	O/L 1	OVERLOAD - MOTOR STARTER	1
FZ 2134	F7-10	FUSE - PACKAGE COOLING, MAIN BLOWER COOLING	[illegible]

	MODEL	HI-HEATER BANK		FUSE (F1,2,3)	CURRENT RATING
HT 2548	7221, 7231	HT 2548	14 KW	FZ 1094 (50A)	42 AMPS
HT 2782	7222, 7232	HT 2782	18 KW	FZ 1072 (63A)	52 AMPS

SYM	DESCRIPTION		
3	SEE ECO 896	[illegible]	[illegible]
2	SEE E.C.O.	[illegible]	[illegible]
1	SEE E.C.O.	[illegible]	[illegible]

REVISIONS

DRAWN [illegible] DATE 6/16/[illegible]
CHECKED
[illegible] DATE [illegible]
MATERIAL
FINISH

TITLE: SCHEMATIC DIAGRAM
MODEL 7200 SERIES
230V, 60~, 3Ø

[illegible] Corporation

PART NO. | MODEL NO. | NEXT ASSEMBLY | NO. REQ'D PER MACH.

SCALE [illegible] SIZE B PART NO. 7221-3044

B 7221-3044

PART NO: 72210305
DESCRIPTION: LEVELING PAD ASSY

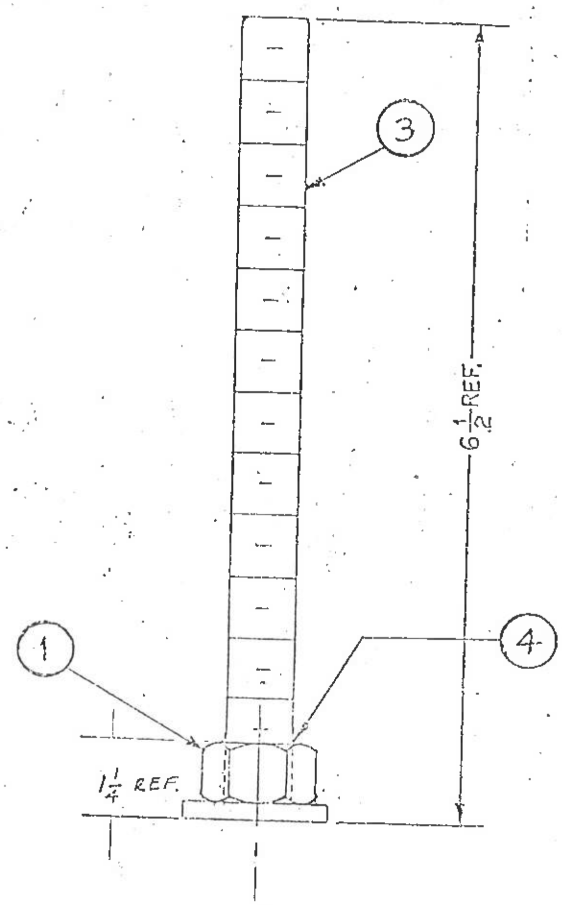
REV: 01/27/88
ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV	ACT	MD
1	MP4431	PAD, SWIVEL	1.0	EA			
3	72213040	STUD LEVELING PAD	1.0	EA	04		
4	AH13922	ADHESIVE RED HIGH STRENGTH	0.0	EA			
9000	DWG72210305	DWG,LEVELING PAD ASSY	1.0	EA	03		B

B 7221-0305

PARTS LIST

ITEM NO.	NOMENCLATURE	NO. REQ.



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PART NO.	MODEL NO.	NEXT ASSEMBLY	NO REQ'D PER ASSEM.
	7400	7400-0133	4
	5872	5872-0100	1
	7100 SERIES	7121-0001	4
	7010	7010-0205	–
	7200 SERIES	7221-0030	4

REVISIONS

SYM	DESCRIPTION	ECO NO.	DATE/BY
3	DELETED ITEM #2 & TACK WELD'G & ADDED ITEM #4 DELETED. P/N WAS CAD. PL.	3422	J.D.
2	ADDED SWIVEL NUT ASSY.	1105	
1	ADD 7100 & 7010 MODEL NOS.	850	

DRN.		DATE 3-5-63
CHK.		DATE
APP.		DATE
MAT'L	~	
FINISH	NONE	
TOL. UNLESS SPECIFIED	FRA ±1/64 DEC. ±.005 ANGLE ±1/2°	

weldotron corporation

TITLE: LEVELING PAD ASSEMBLY

SCALE	SIZE	PART NO.	REV.
1/1	B	7221-0305	3

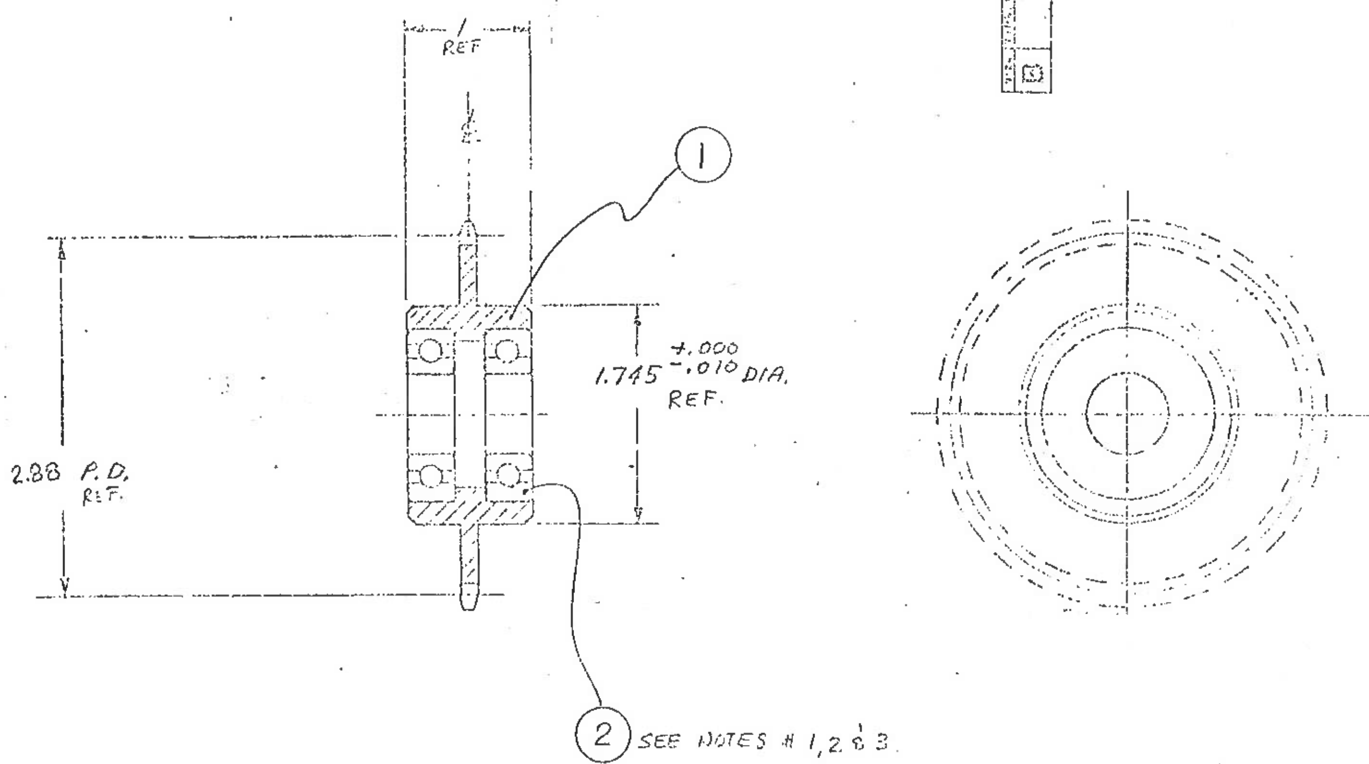
PART NO: 71420319
DESCRIPTION: IDLER SPKT ASSY

REV: 07/25/86
ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV	ACT	MD
1	SK1819	SPROCKET PER DWG.	1.0	EA	04		
2	BG11716	ABB,BEARING	2.0	EA			
9000	DWG71420319	DWG,IDLER SPKT ASSY	1.0	EA			B

PARTS LIST		
ITEM NO.	NOMENCLATURE	REQ.

NOTES:
1. PRESS ITEM # 2 INTO # 1.
2. BORES OF ITEM # 2 MUST BE INLINE AND CONCENTRIC TO EACH OTHER WITHIN .001 TIR.
3. ITEM # 2 MUST BE FLUSH WITH ITEM # 1.



	7221	7221-0030	2
	7152	7152-0030	2
	7142	7142-0030	2
PART NO.			

REVISION

Jatich 4-25-86

IDLER SPROCKET ASS'Y.

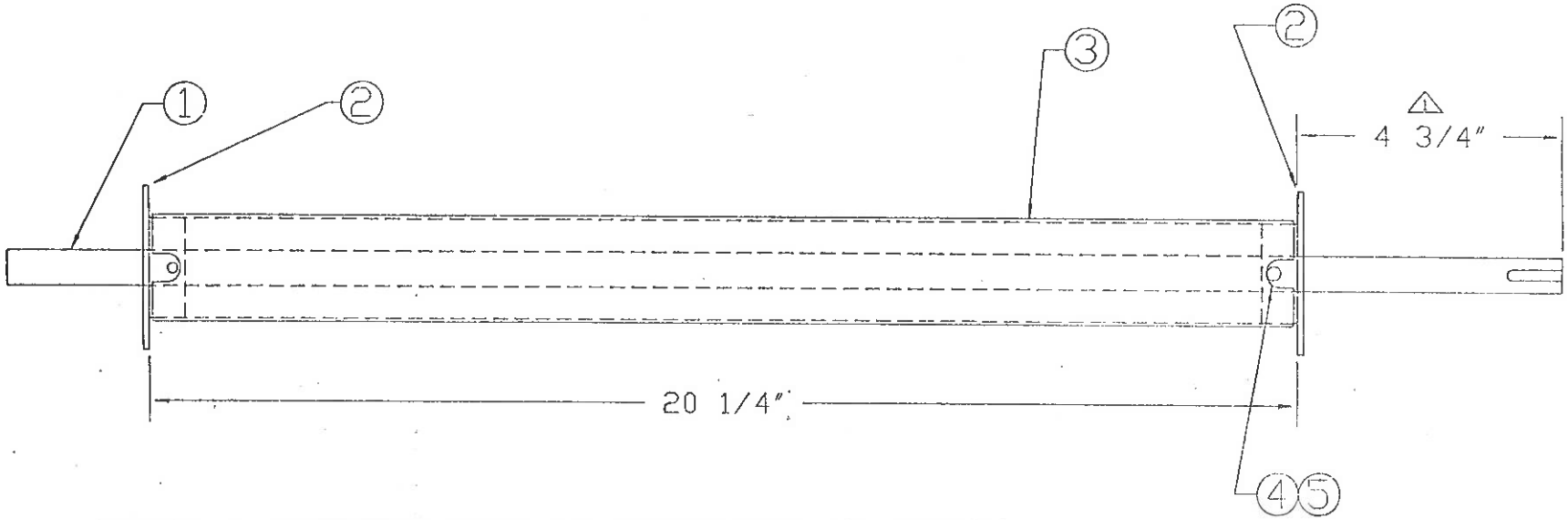
FULL 7142-0319

H5

PART NO: 72210712
DESCRIPTION: DRIVE SHAFT ASSEMBLY

REV: 04/16/91
ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV ACT	MD
1	72213012	SHAFT CONV DRIVE(NON-FARMOUT)	1.0	EA	02	
2	SK20755	SPROCKET CONVEYOR DRIVE	2.0	EA	01	
3	73000662P1	GUARD FOR DRIVE SHAFT	1.0	EA		
4	PN10750	ABC,0.125DIA X 1.000LG PIN GROOVE TYPE A	2.0	EA		
5	SS2357	ACR,0.250-20X0.500LG SCR NY LOC SOC CP PT	2.0	EA		
9000	DWG72210712	DWG,DRIVE SHAFT ASSY	1.0	EA	01	B



NOTES: 1. POSITION ITEM #2 SPROCKETS AS SHOWN AND WITH TEETH IN LINE WITH EACH OTHER WITHIN .005 TIR.
2. DRILL THRU AND PIN SECURELY.

SYM	DESCRIPTION	ECO NO.	DATE/BY
1	4 3/4" WAS 4 5/8" AND ON OUTSIDE SPK	5903	9-27-96

REVISIONS

DRN. JSG	DATE 9-27-96	
CHK	DATE	
APP.	DATE	
MAT'L		
FINISH		

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TITLE: DRIVE SHAFT ASSY

TOL UNLESS SPECIFIED: FRA ± 1/64, DEC ± .005, ANGLE ± 1/2°

SCALE	SIZE	PART NO.	REV.
1=2	B	7221-0712	1

PART NO.	MODEL NO.	NEXT ASSEMBLY	NO REQ'D PER ASSEM.
0712	7221B	P-7221-0030P1	1

FILENAME: 72210712

PART NO: 72210111
DESCRIPTION: START-UP KIT

REV:02 06/10/96
ACT: ROUTE: 1

ITEM	P/N	DESCRIPTION	QTY	U/M	RV	ACT	MD
1	CX4159	CONTACTR,3POLE,63AMP	1.0	EA			
2	FZ1339	FUSE,250V,15A	6.0	EA			
3	FZ1352	FUSE,SLOW-BLOW,1.5A	6.0	EA			
4	FZ2133	FUSE,SLOW-BLOW,250V,.8A	6.0	EA			

LIMITED WARRANTY AND DISCLAIMER

WELDOTRON CORPORATION warrants to the original Buyer that, except as to expendable items such as elements, tapes, fuses, etc., all equipment and parts manufactured by WELDOTRON shall be free from defects in material of workmanship for a period of one year (1) from the date of shipment (the "warranty period"). The extent of WELDOTRON'S liability under this warranty is limited solely to the repair or replacement of any such defective part at no charge to Buyer, except for the costs of freight and installation which shall be borne by Buyer and provided that Buyer shall, if Weldotron so requests, return any such defective part to WELDOTRON, freight prepaid, for inspection and determination by WELDOTRON as to the nature of the defect.

Notwithstanding the foregoing, WELDOTRON shall be relieved of all liability and obligations under the warranty set forth herein if:

a. The equipment is used, operated or maintained in any manner other than in accordance with Weldotron's instructions and recommended maintenance procedures as set forth in the operating manual which shall be shipped with the equipment;

b. The equipment is misused, abused or neglected in any way;

c. The equipment is altered, modified or changed, or any additional part is installed, unless WELDOTRON shall have previously consented in writing to such alteration, modification, change or installation;

d. The equipment is operated with any additional accessory or part, whether or not WELDOTRON is the manufacturer thereof unless WELDOTRON shall have previously consented in writing to the operation of the equipment with such accessory or part;

e. Any materials, packages, containers, pallets or loads which are to be conveyed and/or wrapped are not in a condition to permit their being properly handled by the equipment.

f. The equipment is serviced or repaired by any person not previously approved by WELDOTRON in writing or,

g. The Buyer fails to notify WELDOTRON in writing of any defect, breakdown, accident or malfunction of the equipment within seven (7) days of the discovery of such defect or the occurrence of such breakdown, accident or malfunction.

THE FOREGOING WARRANTY IS APPLICABLE SOLELY TO PARTS AND/OR EQUIPMENT MANUFACTURED BY WELDOTRON. WITH RESPECT TO COMPONENT PARTS NOT MANUFACTURED BY WELDOTRON AND AS TO WHICH WELDOTRON IS THE BENEFICIARY OF ANY WARRANTY, BUYER SHALL HAVE, FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF SHIPMENT OF THE EQUIPMENT TO BUYER, WHATEVER RIGHTS AND REMEDIES, IF ANY, THAT ARE AVAILABLE TO WELDOTRON WITH RESPECT TO SUCH WARRANTY, PROVIDED THAT BUYER SHALL FULLY REIMBURSE WELDOTRON FOR ALL COSTS OF ENFORCING SUCH WARRANTY.

Except for the express warranty set forth above that the equipment shall be free of any defects in material or workmanship during the warranty period:

a. No affirmation of fact or promise by WELDOTRON with respect to the capacity, suitability or performance of the equipment, whether or not such affirmation or promise is set forth herein, shall constitute any type of warranty as to the equipment, and

b. THERE ARE NO ADDITIONAL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTIES OF MERCHANT ABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

Except as specified by WELDOTRON in writing, WELDOTRON does not warrant that the equipment, as manufactured, conforms to any particular insurance regulations or electrical codes or that the equipment contains any particular safety features. Buyer assumes full responsibility for compliance with all applicable statutes, codes and regulations, whether federal, state or local.

Under no circumstances shall WELDOTRON have any liability for any type of incidental or consequential damages arising from the use, loss of use or defective performance of the equipment. WELDOTRON'S liability is expressly limited to the repair or replacement of defective parts.

The Limited Warranty extends only to the original buyer and is not transferable to subsequent owners, purchasers or possessors of the equipment.

weldotron
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