Technical Services

Sealcup 60 (Release 5)

Operator's Manual

ITW Trans Tech: Complete Pad Printing Solutions

ITW TRANS TECH • *An Illinois Tool Works Company* • 475 North Gary Avenue • Carol Stream, IL 60188-4900
Phone: 630.752.4000 • **Fax:** 630.752.4489 • **Web Site:** www.itwtranstech.com

For best results when printing this file, set printer resolution to 300 dpi.

While every effort has been made to ensure the accuracy of this manual, Trans Tech cannot be held responsible for any errors or omissions. We reserve the right to make changes to technical specifications without prior notice.

ITW Trans Tech. *An Illinois Tool Works Company* • 475 North Gary Avenue • Carol Stream, IL 60188-4900
Phone: (630) 752-4000

Revised Apr. 2005

Contents

Safety 4
- Symbols and their Interpretations 4
- Liability 4
- General Warnings and Cautions 4
- Application Restrictions 4

Installation Instructions 5
- Warnings and Cautions 5
- Selecting the Location Temperature 5
- Leveling the Machine 5
- Connecting to Power 5

Operation 6
- The Operating Controls 7
- The Operating Controls (continued) 8
- The Setup Menu 8
- The Setup Menu (continued) 9
- Manual Operation 11
- Automatic Operation 12
- Special Functions 13
- Installation Functions 14

Preparing to Print 15
- The Ink Cup and Cliche 16
- Handling of the Ink Cup 16
- Installing the Ink Cup and Cliche 17
- Removal of the Ink Cup and Cliche 18

Technical Information 19

Machine Dimensions 20

Maintenance 21
- General Information 21
- Belt Tensioning 21
- Cam Follower Torque Values 21
- Preventative Maintenance Schedule 22
- Preventative Maintenance Schedule (continued) 22
- Lubrication Schedule 22
- Adjustment of the Cliche Slide Limit Stop 24
- Adjustment of Cliche Slide Cam Followers 24
- Automation Interface 25
- Machine Alarm Messages 26
- Troubleshooting Guide 27
- Electrical Schematics 28

Index 31

Safety

Symbols and their Interpretations

WARNING: Neglecting a safety instruction identified with the WARNING symbol may lead to personal injury.

CAUTION: Neglecting a safety instruction identified with the CAUTION symbol may lead to property damage.

POINTER: It is strongly recommended to observe instructions identified with a POINTER symbol.

Liability

- In no event will *ITW Trans Tech* be responsible or liable for indirect or consequential damages resulting from the use of this equipment.
- The information contained in this manual is subject to change due to improvements in design.
- Though this document has been checked for inaccuracies, *ITW Trans Tech* does not assume responsibility for any errors contained herein.
- This manual is provided as an aid when operating the Sealcup pad printing machine. Prior to operation, it is strongly advised that the user be thoroughly familiar with the Sealcup operating manual.
- *ITW Trans Tech* is not responsible or liable for any disadvantage occurred for not following the operating instructions.

- All operators must be adequately trained.

General Warnings and Cautions

- Switch off main disconnect switch prior to connecting/disconnecting power.
- Disconnect power prior to opening the electrical enclosure.

- Switch the main disconnect off and disconnect power prior to working on the electrical system.

Application Restrictions

- Any use other than described in this manual may cause damage to the equipment, personal injury or property damage.

Installation Instructions

Warnings and Cautions

The machine operates on 220 volts, single phase AC power.

Switch off main disconnect switch prior to connecting power.
Be alert and verify that safe start-up conditions exist prior to switching on the main disconnect switch.

Apply oil or a thin layer of grease to unprotected ferrous parts to prevent rusting, especially after cleaning with solvents.

Selecting the Location

Choose a well ventilated area away from direct sunlight to install your pad printing machine. The ideal conditions for the inks used in pad printing are approximately 20° C (68° F) and 40 - 60 % humidity. Make sure the machine is positioned away from walls and other obstructions and placed on a flat surface. The guards, operating panel and other machine openings must be accessible. Ensure adequate area for setup tooling and for storage of parts before and after printing.

Leveling the Machine

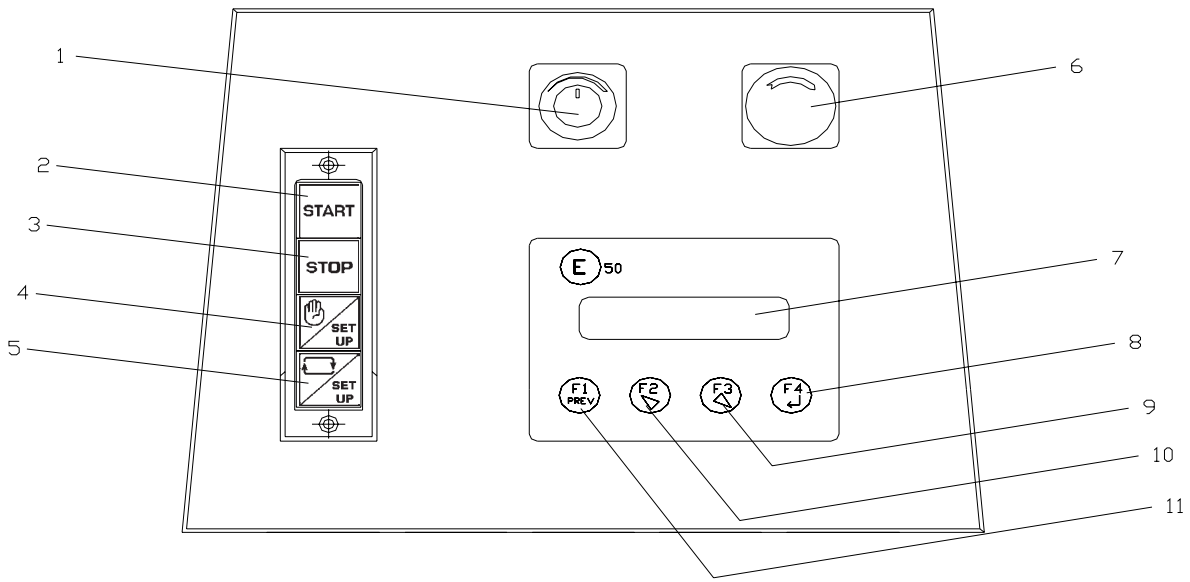
Before operation, the machine must be leveled. If equipped with a base, the level of the machine is adjusted by four (4) feet, one at each corner.

Level the machine (on base) as follows:
1. Loosen upper jam nuts.
2. Place bubble levels on machine base, one parallel to the long side of the base and another parallel to the short side of the base.
3. Adjust bottom nuts on left front and left rear screws until bubble level on the long side reads level. It may be necessary to ‘follow’ with the right rear to keep machine stable if big adjustments are required.
4. Adjust bottom nuts equally on right and left rear screws until bubble level on the short side reads level.
5. It may be necessary to repeat steps 3 and 4 several times until both levels read level and the weight is evenly distributed on the four feet.
6. Turn the upper jam nuts clockwise to tighten.

Connecting to Power

The machine is equipped with a power cord and supplied with a NEMA 6-15 plug. The machine requires 208 - 240 VAC, 4.5A, single phase power.

Operation



1 Cycle Speed control
2 Cycle Start button
3 Cycle Stop button
4 Manual Mode / Setup button
5 Continuous Cycle / Setup button
6 Emergency Stop button
7 Controller Display Window
8 F4 key
9 F3 key
10 F2 key
11 F1 key

The Operating Controls

The controls are active after main disconnect is turned on and E-Stop is reset. The Start button and Stop button indicator lamps will be illuminated.

START

Start Machine Cycle (2)

· Press the Start button begin a printing cycle.

Display Production Rate.

· While operating in Continuous Cycle, the current production rate may be viewed by pressing and holding the Start button. Release to return to normal display.

STOP

Stop Machine Cycle (3)

· Press the Stop button to initiate a cycle stop. The machine will not stop immediately. It will complete the active print cycle and stop in the home position. The indicator light will illuminate when the machine is in the home position.

· Used in Manual Mode to allow reverse jog to clear a cup jam. (see page 12)

The Operating Controls (continued)

Manual Mode / Setup (4)

Active when the button is in the pressed position (the indicator light is illuminated). When pressed, operation of the machine in Jog Mode is enabled.

- The external automation start pulse is disabled.
- The cycle counter will not count.
- The pad delay is disable.

Used with Continuous Cycle Button to enter the Setup Menu.

Continuous Cycle Mode / Setup (5)

Single Cycle

The button is in the released position (the indicator light is off). When released, the machine will print in Single Cycle Mode.

Continuous Cycle

The button is in the pressed position (the indicator light is illuminated). When pressed, the machine will print in Continuous Cycle Mode.

- The printer speed can be set with the speed control knob on the operating panel.
- The cycle counter is active.
- The pad print delay is enabled.

Used with Manual Mode button to enter the Setup Menu.

&

Setup Menu (4 and 5)

To access the Setup Menu, the Manual Mode / Setup button and the Continuous Cycle / Setup button are in the pressed position (the indicator lights are illuminated).

- The ‘NUMBER OF PRINTS’ (1,2,3,4) can be preset.
- The ‘PAD DELAY’ function can be selected ‘ON/OFF.
- The ‘PAD DELAY’ time can be preset.
- The ‘SLOW PAD DELAY’ function can be selected ‘ON/OFF’.
- The ‘DELAYED PAD DELAY’ time can be preset.
- The ‘CYCLE DELAY’ can be selected ‘ON/OFF’.
- The ‘CYCLE DELA Y TIME’ can be preset.
- The ‘INDEX TABLE’ can be selected ‘ON/OFF’.
- The ‘TOTAL COUNT’ can be displayed.
- The ‘TOTAL COUNT’ cycle counter can be reset.
- The ‘BATCH COUNT’ function can be selected ‘ON/OFF’.
- The ‘BATCH’ count can be preset.
- The display can be set to continuously show the ‘CYCLE RATE’.
- The ‘PAD CLEAN’ function can be selected ‘ON/OFF. (optional)
- The ‘PAD CLEAN INTERVAL’ count can be preset. (optional)
- The ‘PAD CLEAN STROKE’ value can be preset. (optional)

The Operating Controls (continued)

F1 key (8)
- Return to previous screen, unless otherwise dispalyed.

F2 key (9)
- Manual Mode = Jog Forward.
- Setup Mode = Increase a value. One count per push, except for large values which will increase by holding down the key.
- All other = as displayed.

F3 key (10)
- Manual Mode = Jog Reverse.
- Setup Mode = Decrease a value. One count per push, except for large values which will decrease by holding down the key.
- All other = as displayed.

F4 key (11)
- Jump to next screen, unless otherwise dispalyed.
- Manual Mode = Jog index table.

Cycle Speed Control (1)
- Active during a printing cycle.
- The cycle speed can be adjusted when operating in the Single Cycle or Continuous Cycle modes. Rotate clockwise to increase speed. Rotate counterclockwise to decrease speed.

Emergency Stop Button (6)
- Turn the button clockwise to release.
- Pressing this button will immediately stop all machine motion. The button must be released and the Start button or the Foot Switch must be pressed to restart the machine (the active print cycle will be completed).

WARNING - The Emergency Stop button does not shut off the power to the machine or in the electrical drawer. Switch off the Main Disconnect Switch and disconnect the power cord before servicing the machine or working in the electrical drawer.

Foot Switch

The Foot Switch is used to:
- start the machine while in Single Cycle Mode. When started via the Foot Switch, the printer will cycle for the number of hits selected and then stop in the home position.
- start and stop the machine while in Continuous Cycle Mode. When started via the Foot Switch or Start button, the printer will operate until the Stop button or Foot Switch is pressed. If the Stop button is pressed, the machine will complete the active print cycle and stop in the home position. When a stop is initiated via the Foot Switch, the machine will stop instantly. Press the Foot Switch again to continue the interrupted continuous cycle or press the Start button to complete the active cycle and stop in the home position.

The Setup Menu

To access the Setup Menu, the Manual Mode and Continuous Cycle Buttons must both be in the pressed position. When pressed, the buttons are illuminated and the first two lines of the Setup Menu are displayed. To select or modify a feature or an option, place the cursor on the line to be changed (either line 1 or line 2) and press the F2 or F3 button. Press the F1 or F4 buttons to scroll through the Setup Menu. To exit the Setup Menu, either the Manual Mode Button, the Continuous Cycle Button or both must be in the released (up) position. The indicator lamp(s) will be off.

The Setup Menu (continued)

SET-UP MODE
F1=BACK F4=MORE

SET-UP MODE is displayed.

- Press the F1 PREV key to display the next screen.
- Press the F4 key to display previous screen.

 # - NUMBER OF PRINTS

The NUMBER OF PRINTS (1,2,3,4) can be preset.

- Press the F2 key to increase the number of hits (maximum 4 cycles).
- Press the F3 key to decrease the number of hits.

PAD DELAY= #--

PAD DELAY can be turned ON or OFF.

- Press the F2 key to turn PAD DELAY ON.
- Press the F3 key to turn PAD DELAY OFF.

PAD DELAY time= X.X SEC.

The PAD DELAY time can be preset from 0.1 to 4.0 seconds.

- Press the F2 key to increase the pad delay time
- Press the F3 key to decrease the pad delay time.

SLOW SPEED PAD DELAY = #--

The PAD DELAY can be set to cause the printer to jog instead of stopping during the pad delay.

- Press the F2 key to turn on slow speed.
- Press the F3 key to turn off slow speed.

DELAYED PAD DELAY = x.x SEC

The PAD DELAY option can be activated later in the cycle than the cam allows by increasing this timer value.

- Press the F2 key to turn the index table ON.
- Press the F3 key to turn the index table OFF.

CYCLE DELAY= #--

The CYCLE DELAY option can be turned ON or OFF. This pauses the printer at the end of the printing cycle until the CYCLE DELAY TIME has elapsed. This is only active in Continuous Mode.

- Press the F2 key to turn the CYCLE DELAY on.
- Press the F3 key to turn the CYCLE DELAY off.

CYCLE DELAY TIME= X.X SEC.

The CYCLE DELAY time can be preset from 0.1 to 9.9 seconds.

- Press the F2 key to increase the CYCLE DELAY time.
- Press the F3 key to decrease the CYCLE DELAY time.

INDEX TABLE= #--

The index table can be turned ON or OFF, if this option has been installed.

- Press the F2 key to turn the index table ON.
- Press the F3 key to turn the index table OFF.

The Setup Menu (continued)

#---- F2 - TOTAL COUNT RESET

The TOTAL CYCLE COUNTER can be reset to zero.

- Press the F2 key to reset the TOTAL CYCLE COUNTER.

BATCH COUNTER= #--

The BATCH COUNTER can be turned ON or OFF. The machine will not cycle if the BATCH COUNTER has been turned ON and the number of printed cycles equals the batch number. Turn the BATCH COUNTER OFF to allow normal cycling.

- Press the F2 key to turn the BATCH COUNTER ON.
- Press the F3 key to turn the BATCH COUNTER OFF.

BATCH COUNT OF #-----

The BATCH COUNTER value can be preset from 1 to 32000.

- Press the F2 key to increase the BATCH COUNT value.
- Press the F3 key to decrease the BATCH COUNT value.

RATE DISPLAY= #--

The RATE DISPLAY can be turned ON or OFF. This display will override the Single Cycle or Continuous Cycle displays

- Press the F2 key to turn ON the RATE DISPLAY.
- Press the F3 key to turn OFF the RATE DISPLAY.

PAD CLEANER= #--

PAD CLEAN can be turned ON or OFF. (PAD CLEAN is optional.)

- Press the F2 key to turn PAD CLEAN ON.
- Press the F3 key to turn PAD CLEAN OFF.

TAPE CLEAN INTERVAL= #--

The PAD CLEAN INTERVAL can be preset from 1 to 999.

- Press the F2 key to increase the TAPE CLEAN INTERVAL.
- Press the F3 key to decrease the TAPE CLEAN INTERVAL.

TAPE CLEAN STROKE= #--

The PAD CLEAN STROKE can be preset from 1 to 50. This determines the amount of time the printer will go in forward motion to compress the pad onto the tape at the predetermined speed.

- Press the F2 key to increase the TAPE CLEAN STROKE.
- Press the F3 key to decrease the TAPE CLEAN STROKE.

PLC PRG 9162#--- E50 PRG 9162000X

The PLC program version number is displayed.
The E50 LCD display program version number is displayed.

Manual Operation

Manual Mode Button

Before the machine will operate in Manual Mode, the main disconnect switch must be on, E-Stop must be reset, the machine cover and guard door must be closed and the ink cup and cliche must be clamped. To enable Manual Mode, the Manual Mode button must be in the pressed (down) position. The indicator lamp will be illuminated.

Manual Mode Display

```
FWD=F2  TABLE=F4
REV=F3  JOG MODE
```

The following functions are available when Manual Mode is selected.

- Jog machine forward
  - The printer will run forward while the F2 key is pressed and stop immediately when the key is released.
- Jog table (Index Table is optional)
  - The index table will complete one index cycle each time the F4 key is pressed.
- Jog machine reverse
  - The printer will run reverse while the F3 key is pressed and stop immediately when the key is released.

The printer runs at a fixed speed when in Manual Mode.

Limp Mode

```
LIMP MODE = #--
```

LIMP MODE can be turned ON or OFF. LIMP MODE will allow a printer to be cycled for a specific amount of time, regardless of the proximity switch faults, unless the proximity switches are operational and would cause a cycle stop.
The LIMP MODE screen is accessed through the Single Cycle screen.

Press the F2 key to jump to the LIMP MODE screen.

Press the F1 PREV key to return to the Single Cycle screen.

- Press the F2 key to turn the LIMP MODE ON.
- Press the F3 key to turn the LIMP MODE OFF.

Motor Speed Display

```
MOTOR SPEED
PARTS/MIN=#--
```

The motor speed display can be turned ON or OFF. This will show the current speed of the motor disregarding number of prints selected.
The MOTOR SPEED screen is accessed through the Rate Display screen.
Press the F4 key to jump to the MOTOR SPEED screen.

Press the F1 PREV key to return to the Rate Display screen.

Automatic Operation

Before the machine will operate in **Automatic Mode**, the main disconnect switch must be on, E-Stop must be reset, the machine cover and guard door must be closed and the ink cup and cliche must be clamped. To enable Automatic Mode, the Manual Mode button must be in the released (up) position. The indicator lamp will be off.

· If the guard door is opened while the machine is running, the machine will stop immediately. The guard door must be closed before machine operation can resume.
· If a machine or automation error is detected, the machine will stop immediately. The fault is indicated in the Display Window (see *Machine Alarm Messages and Troubleshooting Guide* page 26). The fault condition must be corrected before machine operation can resume.

SET UP

SINGLE CYCLE
TOTAL CNT. 999999

Single Cycle is selected by placing the Continuous Cycle button in the released (up) position (the indicator lamp is off). Press the Start button to begin a single print cycle.
· The machine will stop in the home position after completing the selected number of hits (1-4).
· The index table output is enabled if selected.
· The cycle counter will count.
· The batch count function will operate if enabled.
· The pad delay will function if enabled.
· The pad cleaner will operate if installed and enabled.

SET UP

CONTINUOUS CYCLE
TOTAL CNT. 999999

Continuous Cycle is selected by placing the Continuous Cycle button in the pressed (down) position (the indicator lamp is on). Press the Start button to begin continuous print cycles.
· The machine will continuously print until Cycle Stop button or the foot switch is pressed or until the Continuous Cycle button is switched to the released (up) position.
· The total cycle counter and batch counter will increase by 1 at the completion of each print cycle.
· The index table output is enabled if selected.
· The batch count function will operate if enabled.
· The pad delay will function if enabled.
· The pad cleaner will operate if installed and enabled.
· If the batch count function is enabled, the machine will cycle until the counter reaches the preset value and stop in the home position at the end of the last print cycle.

ON COUNT BATCH
XXXXX BATCH

Reset the Batch Count
When the batch counter has reached its preset value, it must be reset before printing can be resumed. To reset the batch counter, the Batch Count function must be turned OFF then turned back ON. Enter the Setup Menu by placing the Manual Mode and Continuous Cycle buttons in the pressed (down) position (see page 8). Scroll to the COUNT BATCH line in the menu and:
· press the F3 key to turn Batch Count OFF, then
· press the F2 key to turn Batch Count ON.

Special Functions

START

```
PRODUCTION RATE
PARTS/MIN  XXX
```

During continuous printing, the current **Production Rate** can be temporarily displayed by pressing and holding the Start button. When the button is released, the screen returns to its previous display.

```
PRODUCTION RATE
PARTS/MIN  XXX
```

If **Display Rate** is set to ON, the display window will dynamically display the current Production Rate.

```
BATCH CNT     XXXXX
COMPLETED     XXXXX
```

If **Display Batch** is set to ON, the display window will show the batch counter preset value and dynamically display the current batch counter value.

```
CODE #------
#-  F4 TO STORE
```

This screen allows a 2 digit number to be entered into the PLC via the operator interface for an as yet unspecified purpose. The code can be ENABLED by accessing the Code screen as described in the Installation Functions. This screen is accessed through the Single Cycle screen.

- Press the F4 key to jump to the screen.
- Press the F2 key to increment the value.
- Press the F4 key to store the value.
- Press the F1 PREV key to return to the previous screen.

WARNING: The following section describes a special error recovery procedure. The normal machine interlocks are bypassed during this procedure, and therefore should only be performed by trained and authorized personnel.

```
GUARD CLOSED?
CUP LOCKED?
```

If the cup becomes jammed, it is possible to jog the machine in the reverse direction while the alarm condition exists (Stop button indicator lamp is blinking).

STOP & F3

```
#--CLEAR CUP JAM
F3 =  JOG REVERSE
```

- Enable Manual Mode (see page 10).
- Press and hold the Stop button.
- Press the F3 key to jog the machine in the reverse direction until the jam can be cleared.

Installation Functions

The following special functions are used to tell the printer what kinds of accessories have been installed on the printer. This is so that the control knows to check for certain input proximity switch combinations.

These special functions can only be accessed by the following:

Switch off the main disconnect.
Remove the four corner screws on the rear lower electrical sliding drawer and pull it out to access the PLC.
Flip the PLC Run/Stop switch near the communication cable down to Stop.
Switch on the main disconnect.
Now the screen will display:

```
SEALCUP x0    v
PLC PRG=9162xxxx
```

Push the F4 key to jump to the next screen.

The F2 key will turn on the feature of the following screens.

The F3 key will turn off the feature of the following screens.

The F4 key will jump to the next screen.

The F1 PREV key will jump to the previous screen.

```
DIAL TABLE
INSTALLED? NO
```

```
PAD CLEANER
INSTALLED? NO
```

```
AIR TABLE
INSTALLED? NO
```

```
CODE NO. XX
STATUS    LOCKED
```

Preparing to Print

Following is a general guideline for setting up and operating your Sealcup pad printing machine. Your application may require a different procedure. Please contact ITW Trans Tech to arrange specific training.

Turn the Main Disconnect Switch to the On position.
- Power is applied to the controls.
- The Start and Stop buttons will illuminate.

If the Emergency Stop button is pressed or a fault condition exists, the Stop button will flash.
- Release the Emergency Stop button (turn clockwise to release) or eliminate the fault condition.
- Power is applied to the controls.
- The Start and Stop buttons will illuminate.

Check the general condition of the machine and ensure proper operation of the safety guard. Repair or replace any components found to be defective.

Prepare and install the ink cup and cliche (see page 16).

Install a suitable pad, if not already installed, and close the safety guard.

Select Manual Mode, press the Jog Forward arrow and verify that the cup is cleaning the cliche and not leaking. To check the doctored image, release the Jog Forward arrow when the cliche is in the extended position.

Loosen the pad spindle lock screw. Jog the machine to pick up an image from the cliche. Adjust the pad up or down as required (by rotating the spindle) until the pad is compressed just enough to pick up the entire image. Tighten the lock screw (see illustration on page 16).

Adjust the height of the part support to compress the pad on the workpiece just enough to release the entire image.

Adjust the position of the part to place the image in the proper location on the workpiece.

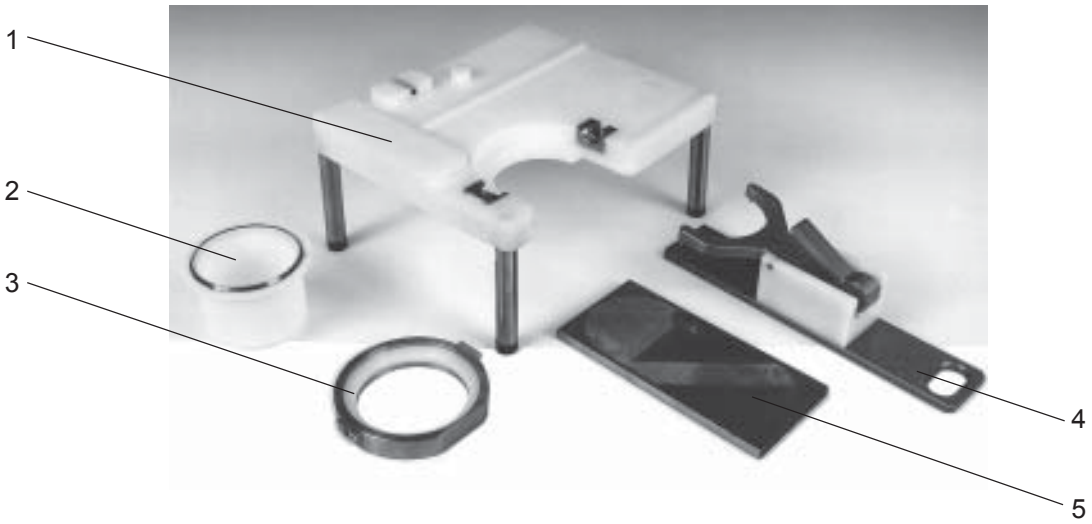
Select the desired features and options (see page 9) and ensure that Single Cycle Mode is selected (the Continuous Cycle button is released).

Press the Start button to transfer an image to the workpiece.

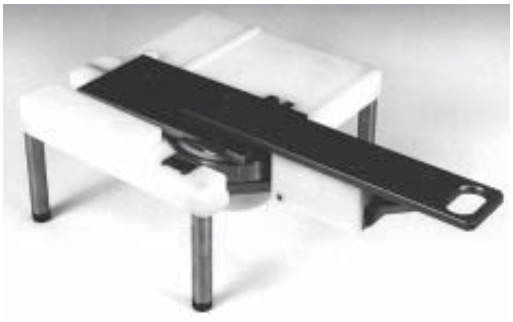
Adjust the printing process as required to obtain the desired print quality.

Select Single or Continuous Cylce Mode and press the Start button or Foot Switch to begin production.

The Ink Cup and Cliche



Item	Description	Part Number
1	Setup Table	10911000
2	Ink Cup	905605000
3	Hold Down Ring	10931001
4	Clamping Tool	10921000
5	Cliche	



Ink cup assembled on setup table.

Handling of the Ink Cup

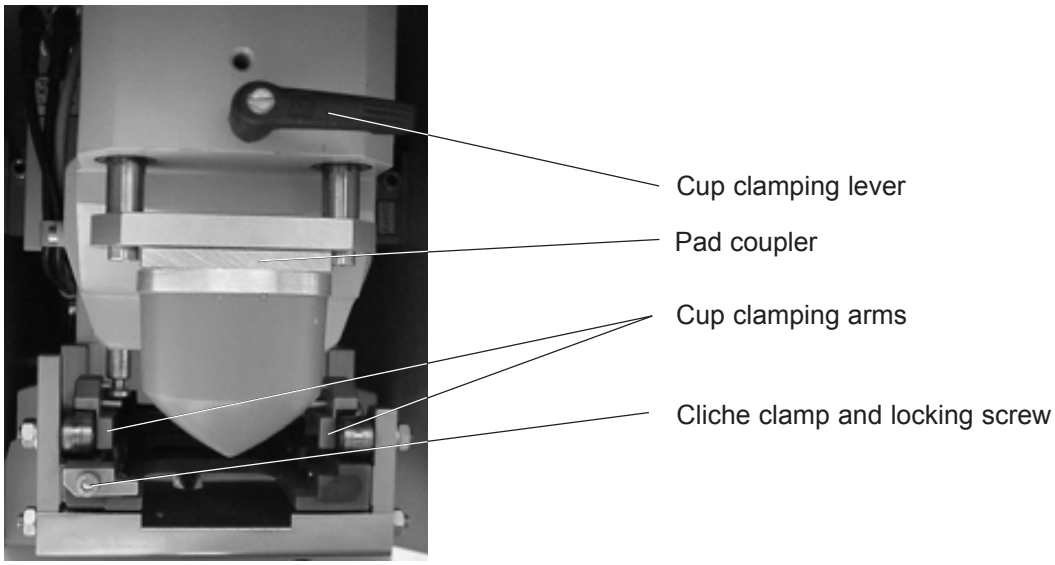
!

- Always protect the doctor ring in the ink cup from being damaged.
- When not in use, store assembled cup, cliche and clamping tool on the setup table as shown.
- If stored separately, place the ink cup in the protective plastic shipping container.
- Rotate the cup frequently (steel cliche 2 hrs., polymer cliche 1 hr.) while in operation.

WARNING

The doctor ring has a very sharp edge that may cause personal injury if improperly handled.
PLEASE HANDLE WITH CAUTION!

Installing the Ink Cup and Cliche



When preparing the ink cup and cliche for printing, proceed as follows:

1. Place the hold down ring, top down (part number towards operator) into the setup table with the pivot blocks engaged in the receiver pockets.
2. Place the ink cup (with the opening up) in the hold down ring (make sure vent is closed).
3. Fill the ink cup with ink to the desired fill level.
4. Set the cliche carefully onto the ink cup with the image facing down and over the ink cup.
5. Slide the cliche back and left until it is located firmly against the back and side stops on the setup table.
6. Place the open clamping tool over the ink cup and cliche assembly with the flat bottom resting on the cliche.
7. Close the clamping tool by turning the clamping lever on the fork to the locked position. The clamping tool must be fully against the cliche and the pins in the fork must be in the holes in the hold down ring.
8. Open the machine guard. Remove the pad, if installed. Verify that the cup clamping arms are up (in the unclamped position). If not, rotate the cup clamping lever clockwise to raise the arms.
9. Lift the ink cup and cliche assembly from the setup table and carefully turn the assembly over (the cliche is now on the bottom).
10. Slide the assembly onto the cliche slide.
11. Close the cup clamping lever to lower the arms and lock the ink cup. Verify that the clamping arms are fully seated on the hold down ring pivot blocks and that pressure is applied to the ink cup.
12. Open the clamping tool and remove.
13. Raise the cliche clamp and loosely secure the locking screw.
14. Snug the positioning screw (right side of cliche slide).
15. Tighten the cliche locking screw. This will draw the cliche tightly into position.
16. Open the ink cup vent plug 1/2 turn.
17. Reinstall pad, if removed.
18. Close machine guard.

See Preparing to Print on page 15.

Removal of the Ink Cup and Cliche

When removing the ink cup and cliche from the machine, proceed as follows:
(see illustration on page 16)

1. Stop the printer via the Stop button.
2. Open the machine guard and remove the pad.
3. Close the ink cup vent plug.
4. Loosen the cliche locking screw and lower the cliche clamp to clear the cliche.
5. Loosen the cliche positioning screw (right side of cliche slide).
6. Slide the open clamping tool with the fork upward over the ink cup and cliche. The flat bottom plate should be located under the cliche and the fork should be located on top of the hold down ring.
7. Close the clamping tool by turning the clamping lever on the fork to the locked position. The clamping tool must be fully against the cliche and the pins in the fork must be in the holes in the hold down ring.
8. Turn the cup clamping lever counterclockwise to raise the clamping arms.

If the ink cup and cliche have been in the machine for an extended period of time, accumulation of ink may inhibit the removal of the cliche. This may cause the ink cup to pull free from the cliche and the ink to spill. Verify that the cliche and ink cup slide out together!

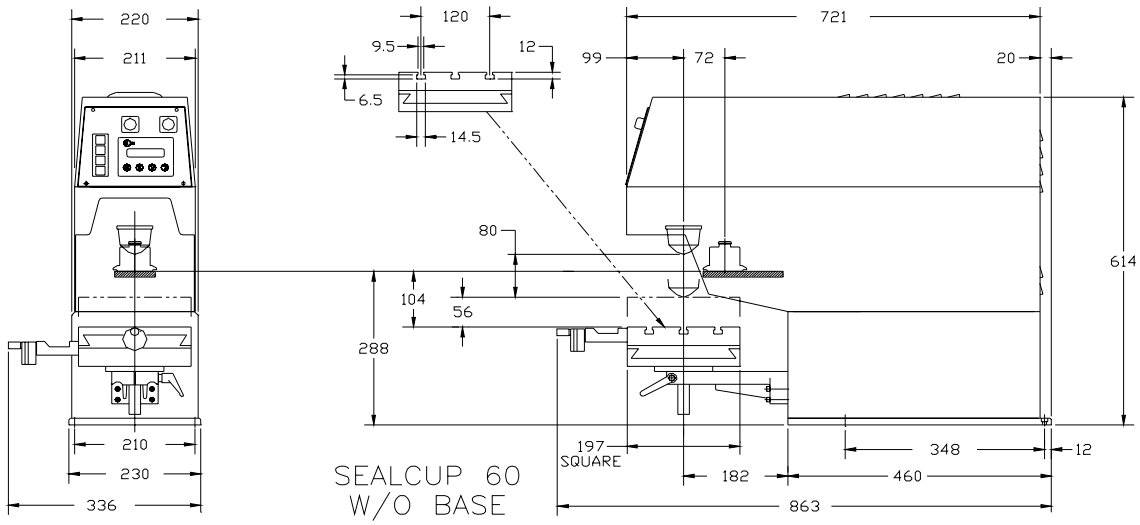
9. Draw the ink cup and cliche assembly out of the cliche slide and carefully turn the assembly over (the cliche is now on top).
10. Set assembly into the setup table with the hold down ring pivot blocks engaged in the receiver pockets.
11. Open and remove the clamping tool.
12. Slide the cliche off the ink cup. The ink remaining on the cliche will be stripped off.

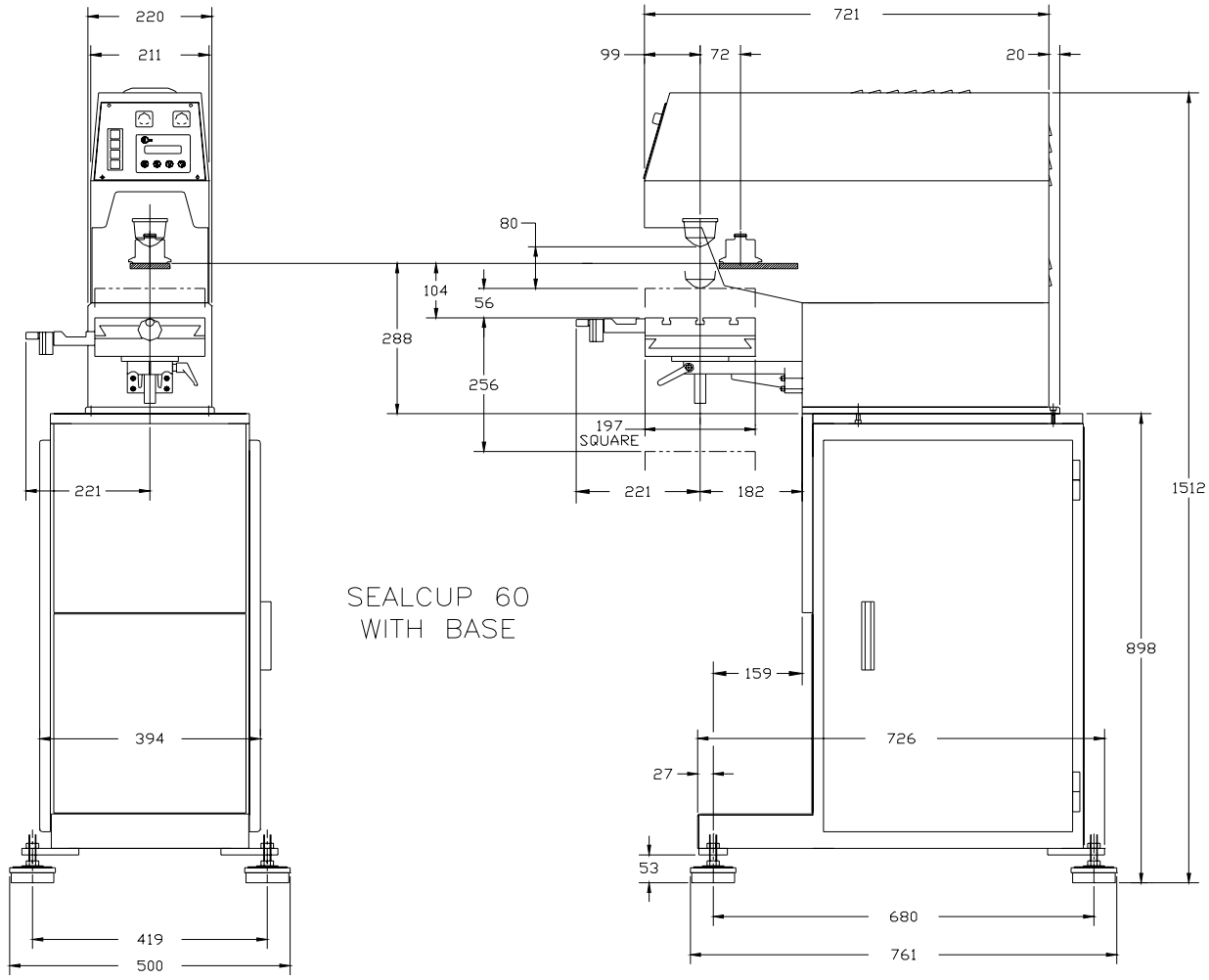
If the cup and cliche assembly will be taken out of operation for an extended time, single component ink can remain in the cup without deterioration of the ink.

Technical Information

Single Cycle	Yes
Multiple Hits	Yes 2,3,4
Continuous Cycle	Yes
Parts Counter	Up-count 6 Digit / Reset
Machine Cycle Rate Indicator	Parts/Min
Infinitely Variable Speed	Yes (600 - 4200 cycles per hour)
Ink Cup Diameter	60 mm
Maximum Print Diameter	50 mm
Cliché Size	70 X 140 mm
Cycles per Hour	600 min. (continuous without pad delay)
	4200 max. (continuous without pad delay)
Pad Print Delay	0.1 to 4 sec.
Pad Pressure	70 pounds of force max.
Drive	Electro-mechanical
Power	220VAC, 1∅, 4.5A
Control Voltage	24VDC
Control System	Programmable Logic Controller
Machine Weight (with out base)	150 lbs.

Machine Dimensions



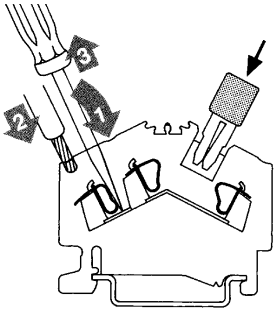


Go to index

Maintenance

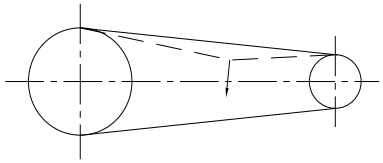
General Information

Wire Termination
The machine is equipped with screwless wire terminals. When connecting or disconnecting wires, please reference the illustrated instructions below.



Wire Insertion/removal Diagrams

Belt Tensioning



Belt Tensioning Diagram

For the Sealcup 90, adjust the belt to achieve a deflection of 0.200” when a force of 5 to 6.5 lbs is applied.

Cam Follower Torque Values

To achieve maximum performance and life of the cam followers, tighten to the following values:

Cam Follower Type	Torque Value Nm	Torque Value ft/lbs
KR 19	8 Nm	5.9 ft/lbs
KR 22	15 Nm	11 ft/lbs
KR 26	15 Nm	11 ft/lbs

Preventative Maintenance Schedule

Description	Maintenance required:	Frequency
Doctor cup	Inspect doctor ring for damage · Minor nicks or scratches on the ring can be corrected by re-lapping the cup. If major damage (chipping) has occurred, send the cup to TTA for replacement of the doctor ring.	Every 8 hours of operation.
Safety Guards	Test for proper function · When the guard is raised, the machine should stop immediately. · The Stop button indicator lamp should flash.	Every 8 hours of operation.
E-Stop	Test for proper operation · When the E-Stop button is pressed, the machine should stop immediately. · The Stop button indicator lamp should flash. · All machine functions are disabled.	Every 8 hours of operation.
Controls	Test for proper functions · Test all buttons for proper machine functions. · Adjust speed control through full range and check for continuous speed adjustment.	Every 8 hours of operation
Cliche slide	Clean slide of all ink and other residue · Ink build up in the area of the cliche rollers may lead to excessive friction and premature failure. · Ink build up in the cliche area may lead to improper seating of the cliche upon cliche change. Inspect guide rails for wear · Grease guide rails · Lubricate guide rail on left side with oil via access hole.	Every 8 hours of operation Every 50 hours of operation
Cliche rollers	Inspect all cliche rollers (cam followers) for smooth rolling motion. · While the machine is running and the slide and rollers are clean, all rollers should roll with the slide motion. · Erratic or no motion may indicate a damaged or dirty cam follower bearing. · Check bearing adjustment - adjust if required. · If still erratic, replace bearing. Inspect rollers for proper tension · With the machine stopped, the rollers should slip on the slide when rotated by hand. If roller is too loose or too tight, adjust roller via eccentric bolt to proper tensioning.	Every 50 hours of operation Every 200 hours of operation
Pad slide	Inspect pad ram guide rods · Remove ink and other residue if needed. · After cleaning the guide rods, they must be lubricated.	Every 200 hours of operation
Positive stop for cliche slide	Check for wear and proper adjustment · Check condition of urethane bumper - replace if required. · Check adjustment of stop screw .	Every 1000 hours of operation

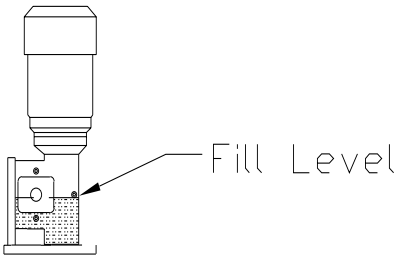
Go to index

Preventative Maintenance Schedule (continued)

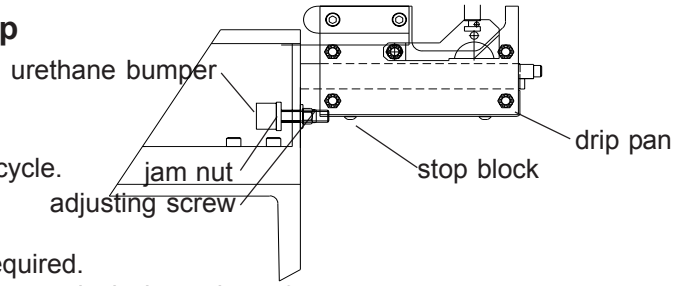
Description	Maintenance required:	Frequency
Drive cam	Clean and inspect cam tracks · The cam tracks must be clear of foreign matter. · After cleaning the cam tracks, they must be lubricated.	Every 200 hours of operation.
Drive belt	Inspect for wear and/or damage · Replace worn and/or damaged belt Inspect for proper tensioning · Only proper tensioning assures maximum life of drive belt.	Every 200 hours of operation.
Gear box	Inspect for leaks · Find cause of leak and repair as required. · Check oil level. Add oil when needed. Flush and replace gearbox oil	Every 50 hours of operation. Every 5000 hours of operation.

Lubrication Schedule

First Change or Application	Consecutive Changes or Applications	Recommended Lubricant Manufacturer:	Brand name: (or equivalent)
Gear Box: The gear box is filled with SYNTHETIC OIL MOBIL SHC 629 to the bottom of the center hole.			
500 hr. of operation	5000 hr. of operation	Mobil Oil Corp.	SHC 629
Cam followers: The cam followers are permanently lubricated at the factory and sealed. Additional lubrication is not required.			
Cliche slide guide rail: The cliche slide guide rail is lubricated with light machine oil through the access hole on the left side.			
50 hr. of operation	50 hr. of operation	Mobil Oil Corp.	DTE 25
Cliche slide: The cliche slide is lubricated with lithium grease			
50 hr. of operation	50 hr. of operation	Mobil Oil Corp.	Mobilux 2
Pad ram guide rods: The pad ram guide rods are lubricated with light machine oil			
1000 hr. of operation	2000 hr. of operation	Mobil Oil Corp.	DTE 25
Drive cam tracks: The drive cam tracks are lubricated with a high pressure lithium grease			
200 hr. of operation	200 hr. of operation	Mobil Oil Corp.	Mobilux EP2



Adjustment of the Cliche Slide Limit Stop



- Jog the machine to home position or run to end of cycle.
- Switch off Main Disconnect Switch.
- Remove the drip tray.
- Check condition of urethane bumper. Replace if required.
- Loosen the jam nut and turn the adjusting screw counterclockwise at least 3 turns.
- Switch on Main Disconnect Switch.
- Jog the machine until the pad and cliche slides are fully extended
- Switch off Main Disconnect Switch.
- Adjust the limit screw by turning clockwise until the stop screw makes contact with the support, then turn an additional 1/4 turn.
- Switch on Main Disconnect Switch.
- Jog the machine to home position.
- Switch off Main Disconnect Switch.
- Without moving the adjusting screw, tighten the jam nut.
- Replace the drip tray.
- Switch on Main Disconnect Switch.
- Adjustment is completed.

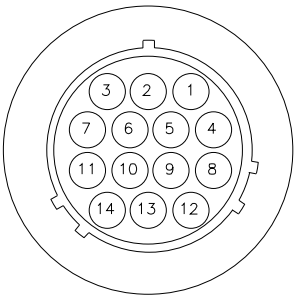
Adjustment of Cliche Slide Cam Followers

- Switch off Main Disconnect Switch.
- Disconnect the cliche slide from the arm.
- Loosen and raise the four upper eccentric bearings to their full height so they do not interfere with the adjustments of the bottom cam followers.
- Check the cliche slide wear strips fpr excessive clearance. If required, grind the left side cam follower mounting plate to achieve a clearance between 0.01 mm (0.0004”) and 0.025 mm (0.001”).
- Loosen and lower the right rear eccentric bearing to its lowest possible position.
- Position the slide on the bottom three bearings so the back edge is just over the rear bearings.
- Apply enough pressure to the slide by hand to prevent the slide from rocking. Bring up the right rear bearing until it touches the slide (paying attention not to raise the slide off of the three fixed bearings). The adjustment may be checked with an indicator if desired. Set up the indicator on the outside edge of the slide. Rock the slide and adjust the bearing until the measurable rock is less than 0.0005”. After positioning the bearing, lock the jam nut, being careful not to change the position of the bearing. Remove indicator, if used.
- Lower the upper left side bearings until they both make contact with the slide.
- Adjust the front left bearing until it cannot be easily rotated by hand when the slide is held stationary. Tighten the jam nut and verify smooth movement of the slide when moved in and out.
- Adjust the right front bearing following the procedure above.
- Adjust the right rear bearing following the procedure above.
- Adjust the left rear bearing following the procedure above.
- Verify that all the bearings still have a preload (cannot be easily rotated by hand when the slide is held stationary). If not, adjust again.
- Connect the slide arm to the slide.
- Switch on Main Disconnect Switch.
- Adjustment is completed.

Automation Interface

The machine controls can be interfaced to additional equipment (automation).

The following listed machine functions can be accessed via a receptacle on the back panel. The following standard signals are available:



Automation interface connector X10.

PIN NUMBER	WIRE NUMBER	FUNCTION	DESCRIPTION
1	+24	+24 VDC (before E-Stop)	to external devices
2	19	E-Stop chain (start)	Input to printer
3	GND	Earth ground	to external devices
4	21	E-Stop chain (end)	Input to printer
5	22	Master control relay (MCR)	Input to printer
6	X0	Printer start	Input to printer
7	X2	Manual Mode	Input to printer
8	4L1	220VAC after MCR	to external devices
9	4L2	220VAC after MCR	to external devices
10	Y10	Printer Fault	to external devices
11	Y6	Printer cycle end	to external devices
12	X6	Automation in position	Input to printer
13	Y7	Automation start	to external devices
14	NEG	0 VDC (power reference)	to external devices

An applicable mating plug configuration to this printer is:

Plug - AMP 206044-1 (14 pin, use male pins)
Plug cover - AMP 206070-1
Male pins - AMP 66103-20 (20-24 ga.)

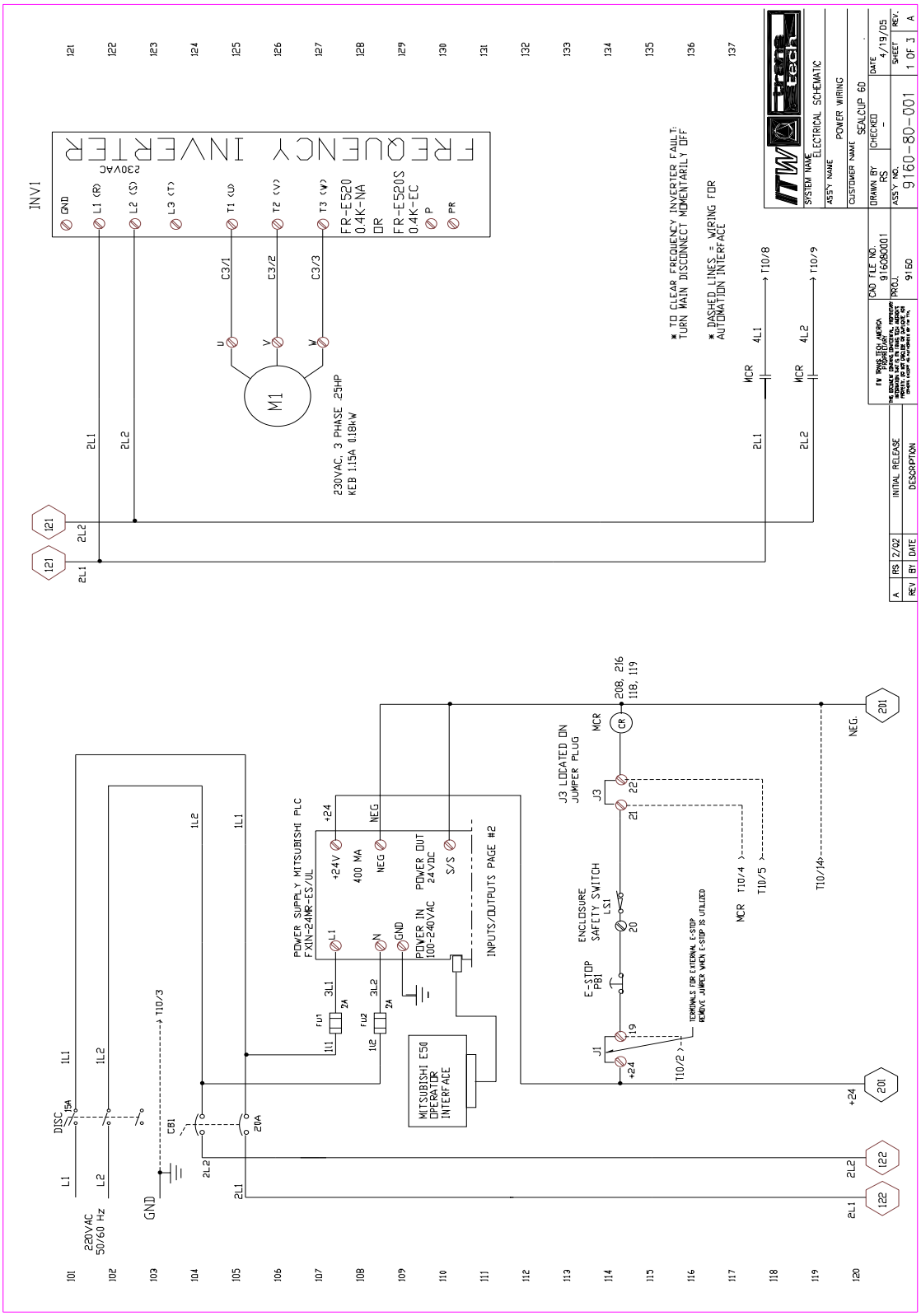
Machine Alarm Messages and Troubleshooting Guide

MESSAGE	POSSIBLE CAUSE	RECOMMENDED ACTION
UNLOCK EMERGENCY OFF	The Emergency Stop switch is pressed. Machine cover not closed. The Emergency Stop circuit is interrupted.	Unlock the Emergency Stop switch. Close the machine cover. Check the Emergency Stop circuit for open line.
GUARD CLOSED? INK CUP LOCKED?	The guard door is open. The ink cup is not locked.	Check the guard doors. Lock the ink cup. Check the limit switches to verify
MOTOR INVERTER FAULT	A frequency inverter fault has occurred.	Turn main disconnect off, wait 15 seconds, then turn it on. If problem persists, call ITW Trans Tech
X11 X12 X13 PROX STUCK ON/OFF FAULT	One of the proximity switches is either stuck on or stuck off. Proximity switch is too far away from cam segment.	Verify proximity switch operation via PLC inputs. Replace if defective. Move proximity switch closer to cam segment.
PAD CLEANER EXT. X4 PROX. FAULT	The pad cleaner is not fully in under the pad for cleaning. The “pad cleaner in at pad” proximity switch is not on. The proximity switch is defective. The pad cleaner is selected as installed in the installation screens, but is not installed on the printer.	Check that the pad cleaner is fully under the printing pad. Check mechanical linkages and air pressure. Adjust the proximity switch clearance to the rotary actuator cam. Replace the proximity switch. Deselect the pad cleaner in the installation screens.
PAD CLEANER RET. X5 PROX. FAULT	The pad cleaner is not fully out and away from the pad when not cleaning. The “pad cleaner out and away” from pad proximity switch is not on. The proximity switch is defective. The pad cleaner is selected as installed in the installation screens, but is not installed on the printer.	Check that the pad cleaner is fully out and away from the printing pad. Check mechanical linkages and air pressure. Adjust the proximity switch clearance to the rotary actuator cam. Replace the proximity switch. Deselect the pad cleaner in the installation screens.
PAD SAFETY - TABLE NOT HOME	The dial table or other accessory is not in the home or printable position when the printer needs to complete its cycle. The dial table or other accessory switch is not on. The dial indexer is selected as installed in the installation screens, but is not installed on the printer.	Check if the dial table or other accessory is locked in the print position. Check the dial table or other accessory “In Position” switch is signalling to input X6. Deselect the dial table in the installation screens.
PAD CLEANING NOW MAN,CONT,SRT-RES	The pad cleaner is running its cycle.	No action neccesary unless printer is not moving. Check air pressure and printer motor/ inverter if not moving.

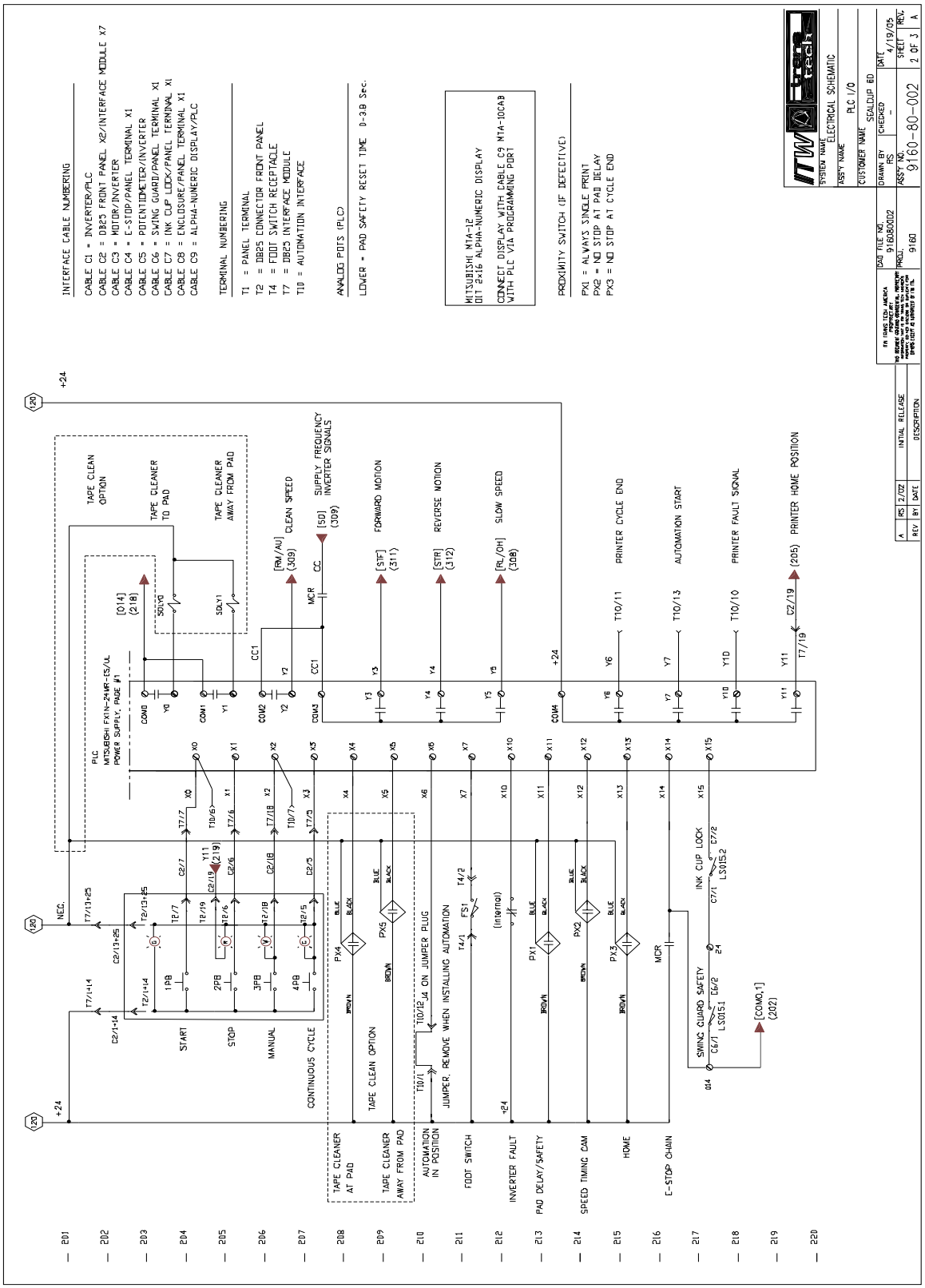
Machine Alarm Messages and Troubleshooting Guide, Con't

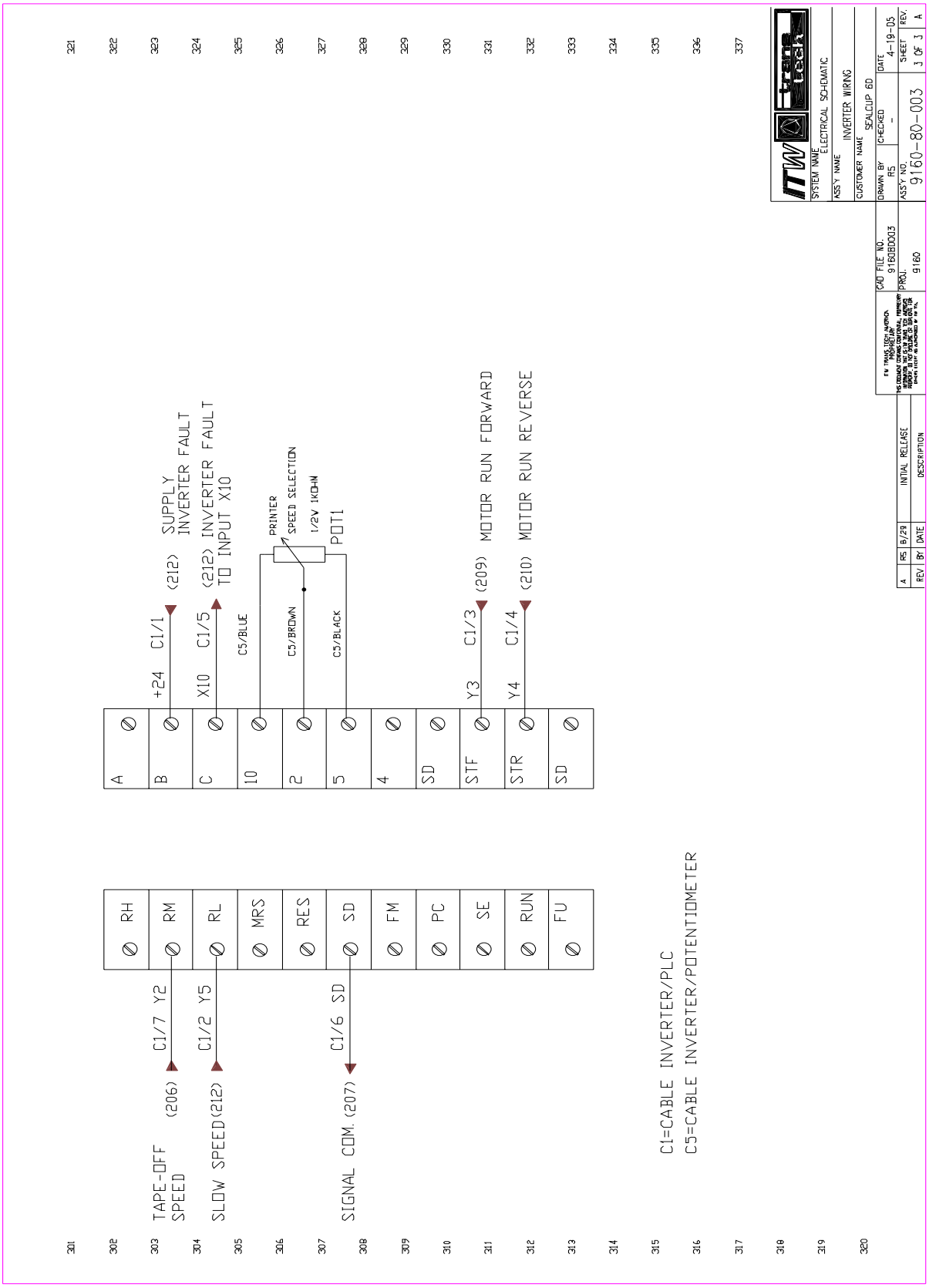
SYMPTOM	POSSIBLE CAUSE	RECOMMENDED ACTION
No multiple hits	Multiple print set on 1X. Proximity switch PX1 defective.	Select multiprint from Setup Mode. Check proper air gap (1mm) between switch and cam segment. Check input X11 for proper operation.
No pad delay	Pad delay not selected. Proximity switch PX2 defective.	Select pad delay from Setup Mode. Check proper air gap (1mm) between switch and cam segment. Check input X12 for proper operation.
No stop at end of cycle	Proximity switch PX3 defective.	Check proper air gap (1mm) between switch and cam segment. Check input X13 for proper operation.
Machine will not cycle - no fault message	Defective PLC output. Defective motor inverter. Defective MCR relay contact. Defective Start button. Defective Stop button.	Check PLC output Y3. Check motor inverter, jumper SD to RL on inverter to test. Check inverter run circuit. Check Start button PLC input X0. Check Stop button PLC input X1- should be off.
No display or lights	Main disconnect is off. Circuit breaker tripped. Fuse blown.	Switch on main disconnect. Reset circuit breaker. Replace blown fuse.

Electrical Schematics



Go to index


INTERFACE CABLE NUMBERING
CABLE C1 = INVERTER/PLC
CABLE C2 = DB25 FRONT PANEL X2/INTERFACE MODULE X7
CABLE C3 = MOTOR/INVERTER
CABLE C4 = E-STOP/PANEL TERMINAL X1
CABLE C5 = POTENTIOMETER/INVERTER
CABLE C6 = SWING GUARD/PANEL TERMINAL X1
CABLE C7 = INK CUP LOCK/PANEL TERMINAL X1
CABLE C8 = ENCLOSURE/PANEL TERMINAL X1
CABLE C9 = ALPHA-NUMERIC DISPLAY/PLC
TERMINAL NUMBERING
T1 = PANEL TERMINAL
T2 = DB25 CONNECTOR FRONT PANEL
T4 = FOOT SWITCH RECEPTACLE
T7 = DB25 INTERFACE MODULE
T10 = AUTOMATION INTERFACE
ANALOG POTS (PLC)
LOWER = PAD SAFETY RESET TIME 0-3.8 Sec.
MITSUBISHI M14-12
DIT 2x16 ALPHA-NUMERIC DISPLAY
CONNECT DISPLAY WITH CABLE C9 M14-10CAB
WITH PLC V1A PROGRAMMING PORT
PROXIMITY SWITCH (IF DEFECTIVE)
PX1 = ALWAYS SINGLE PRINT
PX2 = NO STOP AT PAD DELAY
PX3 = NO STOP AT CYCLE END
SYSTEM NAME ELECTRICAL SCHEMATIC
ASSY NAME PLC I/O
CUSTOMER NAME SEALCUP BD
DRAWN BY RS
CHECKED -
DATE 4/19/05
ASSY NO. 9160-80-002
SHEET 2 OF 3
REV. A
CAD FILE NO. 916080002
PROJ. 9160
REV BY DATE DESCRIPTION
A RS 2/02 INITIAL RELEASE
PLC
MITSUBISHI FX1N-24MR-ES/UL
POWER SUPPLY, PAGE #1
TAPE CLEAN OPTION
TAPE CLEANER TO PAD
TAPE CLEANER AWAY FROM PAD
CLEAN SPEED
SUPPLY FREQUENCY INVERTER SIGNALS
FORWARD MOTION
REVERSE MOTION
SLOW SPEED
PRINTER CYCLE END
AUTOMATION START
PRINTER FAULT SIGNAL
PRINTER HOME POSITION
START
STOP
MANUAL
CONTINUOUS CYCLE
TAPE CLEAN OPTION
JUMPER, REMOVE WHEN INSTALLING AUTOMATION
J4 ON JUMPER PLUG
INK CUP LOCK
SWING GUARD SAFETY
TAPE CLEANER AT PAD
TAPE CLEANER AWAY FROM PAD
AUTOMATION IN POSITION
FOOT SWITCH
INVERTER FAULT
PAD DELAY/SAFETY
SPEED TIMING CAM
HOME
E-STOP CHAIN


A
B
C
10
2
5
4
SD
STF
STR
SD
+24
C1/1
(212)
SUPPLY
INVERTER FAULT
X10
C1/5
(212)
INVERTER FAULT
TO INPUT X10
C5/BLUE
PRINTER
SPEED SELECTION
1/2W 1KOHM
POT1
C5/BROWN
C5/BLACK
Y3
C1/3
(209)
MOTOR RUN FORWARD
Y4
C1/4
(210)
MOTOR RUN REVERSE
RH
RM
RL
MRS
RES
SD
FM
PC
SE
RUN
FU
C1/7 Y2
(206)
TAPE-OFF
SPEED
C1/2 Y5
(212)
SLOW SPEED
C1/6 SD
(207)
SIGNAL COM.
C1=CABLE INVERTER/PLC
C5=CABLE INVERTER/POTENTIOMETER
SYSTEM NAME ELECTRICAL SCHEMATIC
ASSY NAME INVERTER WIRING
CUSTOMER NAME SEALCUP 6D
DRAWN BY RS
CHECKED -
DATE 4-19-05
ASSY NO. 9160-80-003
SHEET 3 OF 3
REV. A
CAD FILE NO. 9160B0003
PROJ. 9160
A RS 8/29 INTIAL RELEASE
REV BY DATE DESCRIPTION

Go to index

Index

A

Adjustment of cliche slide cam followers 24
Adjustment of the cliche slide limit stop 24
Automatic Operation 12
Automation Interface 25

B

Batch Counter, 10
Belt tensioning 21

C

Cautions 4
Cliche clamp 17
Cliche positioning screw 17
Connecting to power 5
Contact ITW Trans Tech 15
Continuous Cycle 12
Continuous Cycle / Setup button 7
Continuous Cycle Mode 7
Controller display window 6
Cup clamping arms 16
Cup clamping lever 16
Cup jam 13
Cycle Speed Control 6, 8
Cycle Start button 6
Cycle Stop button 6
Cycles per Hour 19

D

Decrease value 8
Display Rate 10

E

Eccentric bearing 24
Electrical Schematics 28
Emergency Stop Button 6, 8

F

Foot Switch 8

G

Grooved bearing 24

H

Handling of the ink cup 16
Humidity 5

I

Increase value 8
Increase/Decrease Value, 8
Index Table 9
Ink Cup and Cliche 16
Installation Instructions 5
Installing the Ink Cup and Cliche 17

J

Jog Forward 8
Jog Index Table 8
Jog Reverse 8

L

Leveling the Machine 5
Liability 4
Limit stop 24
Locking screw 17
Lubrication Schedule 23

M

Machine Alarm Messages 26
Machine Dimensions 20
Machine Weight 19
Maintenance 21
Manual Mode 7
Manual Mode / Setup button 6

N

Number of Prints 9

O

Operating Controls 6
Options ON/OFF 8

P

Pad Clean 10
Pad Clean Count 10
Pad Clean Stroke 10
Pad Delay 9
Pad Pressure 19
Pad spindle 17
Preparing to Print 15
Preventative Maintenance Schedule 22
Production Rate 10

R

Removal of the Ink Cup and Cliche 18
Reset the Batch Count 10

S

Safety 4
Select OFF 8
Select ON 8
Selecting the Location 5
Setup 7
Setup Menu 7,8
Single Cycle 7
Special Functions 13
Spindle lock screw 17
Start Machine Cycle 6
Stop Machine Cycle 6
Symbols 4

T

Technical Information 19
Temperature 5
Torque Values 21
Total Cycle Counter 10
Troubleshooting Guide 26

U

Urethane bumper 24

W

Warnings 4
Wire Termination 21