

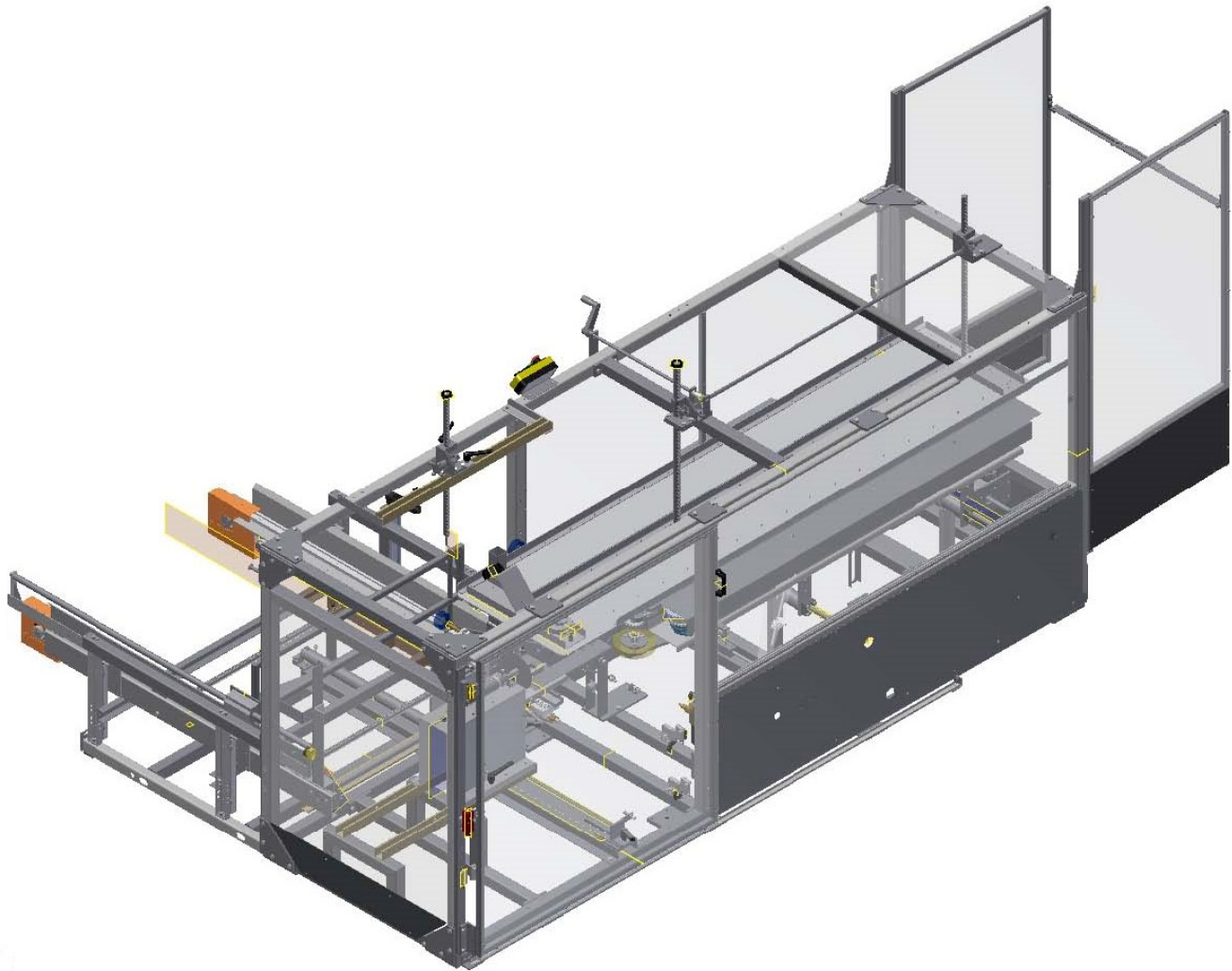


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Little David™ Case Erector

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## CF50T Case Erector



Version: E

# Operator's Manual

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# LOVESHAW

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## GENERAL SAFETY PRECAUTIONS

BEFORE INSTALLING, OPERATING, OR SERVICING THIS EQUIPMENT, READ THE FOLLOWING PRECAUTIONS CAREFULLY:

1. THIS MACHINE IS EQUIPPED WITH MOVING PARTS. DO NOT PLACE HANDS IN THE MACHINE WHEN PARTS ARE MOVING.
2. ALWAYS USE A ROLLER-TYPE EXIT CONVEYOR, AND ALWAYS REMOVE BOXES AFTER THEY CLEAR THE EXIT END OF THE MACHINE.
3. USE CAUTION WHEN NEAR CARTRIDGE KNIFE OR WHEN THREADING TAPE. KNIFE IS VERY SHARP, AUTOMATICALLY OPERATED AND LINKED TO THE WIPE-DOWN ROLLERS.
4. DO NOT ATTEMPT TO OPEN OR WORK ON ELECTRICAL BOX, JUNCTION BOXES, OR OTHER ELECTRICAL COMPONENTS WITHOUT FIRST DISCONNECTING POWER TO THE MACHINE. SHOCK HAZARD EXISTS IF POWER IS NOT DISCONNECTED.
5. DO NOT BYPASS ANY DESIGNED-IN SAFETY FEATURES SUCH AS INTERLOCKS, GUARDS OR SHIELDS.
6. DO NOT PLACE HANDS OR BODY INSIDE CONFINES OF MACHINE WHILE IT IS RUNNING.
7. ALWAYS DISCONNECT POWER SOURCE AND AIR SUPPLY (IF APPLICABLE) BEFORE SERVICING MACHINE.
8. SAFETY GLASSES SHOULD BE WORN WHEN WORKING ON OR AROUND MACHINE.

## MACHINE SPECIFICATIONS

MACHINE MODEL: CF50T

STANDARD DISCHARGE HEIGHT: 23"

### AMERICAN ELECTRICAL REQUIREMENTS:

PRIMARY VOLTAGE: 110 VOLTS, 1 PHASE, 60 HERTZ

CONTROL VOLTAGE: 110 VOLTS, 1 PHASE, 60 HERTZ

### EUROPEAN ELECTRICAL REQUIREMENTS:

PRIMARY VOLTAGE: 220 VOLTS, 1 PHASE, 50 HERTZ

CONTROL VOLTAGE: 220 VOLTS, 1 PHASE, 50 HERTZ

### CASE CAPACITY:

LENGTH: 7" (178mm) MIN. TO 24" (610mm) MAX.

WIDTH: 6" (152mm) MIN. TO 16" (406mm) MAX.

HEIGHT: 4" (102mm) MIN. TO 20" (508mm) MAX.

LUG DRIVE SPEED: 85 FEET/MIN.

MACHINE SPEED: STANDARD: 14 CASES/MIN.

OPTION: 20 CASES/MIN.

CLOSURE MATERIAL: 2" OR 3" PRESSURE SENSITIVE TAPE

MAXIMUM ROLL DIAMETER: 15"

AIR REQUIREMENTS: 15 C.F.M. AT 14 CASES PER MIN. AT 80 PSI

### MACHINE OPTIONS:

1. LOW TAPE ALARM
2. LOW HOPPER ALARM
3. CASTERS
4. LEVELING PADS
5. SELF CLEANING VACUUM SYSTEM
6. JAM DETECTION

## INSTALLATION PROCEDURE

1. EXERCISE CARE WHEN HANDLING THIS MACHINE. A SUDDEN JOLT OR JAR MAY CAUSE SERIOUS DAMAGE.
2. DO NOT REMOVE THE SHIPPING SKID UNTIL MACHINE HAS BEEN MOVED TO A POINT OF INSTALLATION. THE SKID IS DESIGNED FOR EASY AND SAFE HANDLING OF YOUR MACHINE.
3. RAISE OR LOWER THE MACHINE TO THE DESIRED OPERATING ELEVATION USING THE LEVELING JACK SCREWS AND LEVEL THE MACHINE.
4. A GREAT DEAL OF TROUBLE MAY BE CAUSED IF THE ELECTRICAL CURRENT IS SUPPLIED BY LINES WHICH ARE NOT HEAVY ENOUGH. IF THIS OCCURS, THE MOTOR AND CONTROLS CANNOT OPERATE AT THEIR FULL CAPACITY AND OVER HEATING MAY RESULT. A SIMILAR CONDITION WILL EXIST IF POOR ELECTRICAL CONNECTIONS ARE MADE. IT'S THEREFORE WORTHWHILE TO MAKE SURE THAT EVERYTHING IS ELECTRICALLY CORRECT.
5. ELECTRICAL POLARITY MUST BE SUPPLIED TO THE MACHINE EXACTLY AS SHOWN ON THE ELECTRICAL DIAGRAM. POWER MUST BE SUPPLIED TO (L1) SIDE OF THE CIRCUIT AND THE (L2) SIDE WILL BE NEUTRAL. IF THIS IS NOT CORRECT, THE CIRCUIT PROTECTORS (ECP 1) WILL TRIP OUT BECAUSE OF A SHORT CIRCUIT.
6. THE COMPRESSED AIR SUPPLIED TO THE MACHINE SHOULD BE CLEAN AND DRY, AS THE FILTER IS ONLY MEANT TO REMOVE MINOR PARTICLES OR SLIGHT AMOUNTS OF MOISTURE. DIRT OR MOISTURE IN THE AIR LINE CAN CAUSE THE ERRATIC OPERATION OF CONTROL VALVES.
7. CONNECT THE AIR SUPPLY TO AN AIR SOURCE WITH A MINIMUM LINE PRESSURE OF 80 PSI.
8. BEFORE STARTING THE MACHINE, LOAD THE TAPE CARTRIDGE WITH TAPE AND THREAD THE TAPE. SEE THREADING DIAGRAM ON TAPE UNIT.
9. FOR PROPER START-UP PROCEDURE, SEE THE START-UP PROCEDURE SECTION OF THIS MANUAL.
10. SAFETY GLASSES SHOULD BE WORN WHEN WORKING ON OR AROUND MACHINE.

## SEQUENCE OF OPERATION

### INITIAL CONDITIONS:

- A. MAIN AIR VALVE TURNED ON.
- B. POWER CORD CONNECTED.
- C. EMERGENCY STOP BUTTON IS PULLED OUT.
- D. SELECTOR SWITCH IS SET TO "AUTO".
- E. HOPPER HAS BLANKS PROPERLY LOADED.

### GENERAL SEQUENCE:

1. PRESS THE "**START**" PUSH-BUTTON (PB1). MOTOR CONTACTOR (K1) IS ENERGIZED AND THE MOTOR STARTS.
2. NORMALLY OPEN CONTACT (K1) CLOSSES, PROGRAMMABLE CONTROLLER IS ENERGIZED, AND THE SEQUENCE STARTS.
3. THE CASE PUSHER (SOL 4) AND VACUUM TROLLEY (SOL 5) GO TO HOME POSITION.
4. AS SOON AS PROXIMITY SWITCHES 1 (TROLLEY) AND 3 (PUSHER) ARE ACTIVATED, AND PHOTOCELL 3 (HOPPER) IS BLOCKED, OUTPUT 2 ENERGIZES THE VACUUM VALVE (SOL 2) AND THE VACUUM TROLLEY (OUTPUT 1) MOVES FORWARD TO PICK UP A BLANK.
5. AT THE TROLLEY EXTENDED POSITION, PROXIMITY SWITCH 2 ACTIVATES (INPUT 1), ENERGIZING TIMER 4. AFTER A PRE-SET TIME, TIMER 4 TIMES OUT, DE-ENERGIZING THE VACUUM TROLLEY SOLENOID (OUTPUT 1).
6. THE VACUUM CUP TROLLEY THEN RETURNS TO THE HOME POSITION, ACTIVATING PROXIMITY SWITCH 1 (INPUT 0), ENERGIZING THE MINOR FLAP FOLDER (SOL 6, OUTPUT 3).
7. PROXIMITY SWITCH 1 ENERGIZES TIMER 3. AFTER A PRESET TIME, TIMER 3 TIMES OUT DE-ENERGIZING THE VACUUM VALVE (SOL 2, OUTPUT 2). THE FORMED CASE IS RELEASED, READY FOR TRANSFER.
8. AS THE CHAIN LUG IS DETECTED BY PHOTOCELL 1 (PC1), THE INTERNAL RELAY 1004 TURNS ON THE CASE PUSHER VALVE (SOL4, OUTPUT 5). THE FORMED CASE IS PUSHED INTO THE FEED ROLLERS, AND THEN ACCELERATED INTO THE CHAIN LUG DRIVE.

9. AT THE EXTENDED POSITION OF THE CASE PUSHER, PROXIMITY SWITCH 4 IS ACTIVATED, ENERGIZING THE INTERNAL RELAY 1003. THIS RELAY THEN DE-ENERGIZES THE CASE PUSHER VALVE (SOL4, OUTPUT 5), SENDING THE CASE PUSHER TO THE HOME POSITION.
10. AS OUTPUT 5 IS DE-ENERGIZED, TIMER 6 STARTS TIMING. WHEN TIMER 6 TIMES OUT, THE MINOR FLAP FOLDER (SOL 6, OUTPUT 3) IS DE-ACTIVATED. THE MACHINE IS NOW READY FOR THE NEXT CYCLE.
11. REPEAT SEQUENCE STARTING AT GENERAL SEQUENCE #4.

**NOTE 1:**

THE CASE-ON-DEMAND PHOTOCCELL (PC2) IS LOCATED DOWNSTREAM FROM THE MACHINE. IF THIS SWITCH IS BLOCKED, INPUT 8 IS ENERGIZED AND THE CASE PUSHER WILL NOT PUSH ANYMORE CASES INTO THE LUG DRIVE UNTIL THE PHOTOCCELL IS CLEARED.

**NOTE 2:**

GS1, GS2, OR GS3 OPEN IF THEIR RESPECTIVE SAFETY DOOR IS OPENED. THE MOTOR THEN STOPS AND THE MAIN AIR SUPPLY IS DUMPED (SOL1, OUTPUT 0). ALL THE AIR CYLINDERS WILL LOOSE AIR PRESSURE. **THE SAFETY DOORS MUST BE CLOSED TO RE-START THE MACHINE.**



## CONTROL DESCRIPTION

DEVICE	DESCRIPTION	PART NUMBER
GS1, GS2, GS3	SAFETY GATE SWITCHES	A195SG-TM1
PROX1	PROXIMITY SWITCH ACTIVATES WHEN TROLLEY IS HOME	302575
PROX2	PROXIMITY SWITCH ACTIVATES WHEN TROLLEY IS PICKING BOX	N597
PROX3	PROXIMITY SWITCH ACTIVATES WHEN CASE PUSHER IS RETRACTED	N597
PROX4	PROXIMITY SWITCH ACTIVATES WHEN CASE PUSHER IS EXTENDED	N597
PROX5	OPTIONAL – LOW HOPPER	
PROX6	OPTIONAL – CASE JAM (USED W/ PC5)	
PC1	CHAIN LUG DETECTOR	303526
PC2	CASE DEMAND	303528
PC3	HOPPER DEMAND	303526
PC4	OPTIONAL – LOW TAPE DETECTION	
PC5	OPTIONAL – CASE JAM (USED W/ PROX6)	
PC6	OPTIONAL – NO TAPE DETECTION	
PC7	OPTIONAL – CASE AT TAPE INSPECTION	
SOL 1	MAIN AIR SLOW START/DUMP VALVE	N402-100
SOL 2	CONTROLS VACUUM ON / OFF	N402-99
SOL 3	CONTROLS BLANK HOPPER DRIVE	N402-97
SOL 4	CONTROLS CASE PUSHER	N402-97
SOL 5	CONTROLS TROLLEY	N402-97
SOL 6	CONTROLS FLAP FOLDERS	N402-97
PB1	CYCLE START BUTTON	
PB2	E-STOP BUTTON	
PB3	STEP MODE PUSH BUTTON	
SS1	MANUAL/AUTO MODE SWITCH	

## SET UP and SIZE CHANGE OVER

**NOTES:     TURN POWER OFF BEFORE MAKING ANY ADJUSTMENTS  
   TO THIS MACHINE.  
   REFER TO ASSEMBLY DRAWINGS FOR ITEM I. D.**

### 1.     HOPPER WIDTH ADJUSTMENT:

**SET POINT:    WIDTH OF BLANK + 1/8"**

TO ADJUST HOPPER WIDTH, FIRST LOOSEN THE LOCKING CLAMP (ITEM # 19), THEN, TURN ADJUSTING RATCHET (ITEM # 20) UNTIL THE BLANK FITS LOOSELY (1/8" CLEARANCE) BETWEEN THE ADJUSTABLE BLANK GUIDE (ITEM # 14) AND THE FIXED BLANK GUIDE (ITEM # 23). TIGHTEN THE LOCKING CLAMP BEFORE STARTING MACHINE.

### 2.     HOPPER HEIGHT ADJUSTMENT:

**SET POINT:    1/2" THE WIDTH OF THE ERECTED BOX**

TO ADJUST HOPPER HEIGHT, ROTATE THE HANDLE ON THE TOP OF THE HYDRAULIC PUMP (ITEM # 10). CLOCKWISE TO RAISE AND COUNTERCLOCKWISE TO LOWER. YOU CAN SET THIS ADJUSTMENT USING THE SCALE ON THE SIDE OF THE HYDRAULIC CYLINDER (ITEM # 6) DIVIDE THE WIDTH OF THE CASE IN 2, AND SET THE POINTER (ITEM # 21) TO THAT POSITION ON THE SCALE. WHEN YOU ARE FINISHED ADJUSTING THIS ASSEMBLY, PUT THE HANDLE ON THE HYDRAULIC PUMP BACK INTO ITS LOCKED POSITION.

**EXAMPLE:**     IF THE CASE YOU ARE RUNNING IS 10" WIDE, YOU WOULD SET THE POINTER TO 5" ON THE SCALE.

### 3.     FINGER ASSEMBLIES:

**SET POINT:    CENTER OF SLOT, 1/4" DEEP**

THE TOP AND BOTTOM FINGERS MUST BE POSITIONED IN A MANNER AS TO SLIP THROUGH THE SLOTS OF THE KNOCK-DOWN CASE AT THE MANUFACTURERS JOINT AND SLIGHTLY HOLD THE INSIDE REAR PANEL AS THE VACUUM CUPS PULL THE CASE FROM THE HOPPER. FIRST, SET BOTH FINGERS SO THAT THEY ARE APPROXIMATELY 3/8" FROM THE FRONT FACE OF THE CASE. THIS IS ACCOMPLISHED BY LOOSENING AND ROTATING THE (2) SET SCREWS THAT HOLD THE FINGERS. ONCE SET, THIS ADJUSTMENT SHOULD NOT NEED TO BE CHANGED FOR DIFFERENT BOXES.

#### **TOP FINGER:**

SET THE HORIZONTAL POSITION OF THE FINGER SO THAT IT LIES IN THE CENTER OF THE SLOT. LOOSEN THE RATCHET HANDLE (ITEM # 23) AND SLIDE THE ASSEMBLY BY HAND THEN RE-TIGHTEN THE RATCHET HANDLE. SET THE VERTICAL POSITION OF THE FINGER SO THAT APPROXIMATELY 1/4" OF THE FINGER TIP IS IN THE SLOT. VERY WIDE BOXES MAY REQUIRE MORE FINGER AND VERY STIFF BOXES MAY REQUIRE LESS. MOVE THE FINGER UP OR DOWN BY LOOSENING THE RATCHET HANDLE WHILE HOLDING THE GEAR KNOB (ITEM # 13). TURN THE GEAR KNOB TO ACHIEVE THE PROPER SETTING AND RE-TIGHTEN THE RATCHET HANDLE.

#### **BOTTOM FINGER:**

THE BOTTOM FINGER REQUIRES THE SAME SET-UP AS THE TOP FINGER. HOWEVER, ONCE THE VERTICAL POSITION IS SET INITIALLY, IT SHOULD NOT NEED ADJUSTMENT FOR MOST OTHER BOXES BECAUSE THE BOTTOM OF THE CASE IS ALWAYS THE SAME DISTANCE FROM THE FINGER. THE HORIZONTAL POSITION IS SET BY LOOSENING THE CLAMP KNOB AND SLIDING THE FINGER BY HAND. RE-TIGHTEN THE CLAMP KNOB.

### **4. CASE PUSHER:**

#### **SET POINT: LENGTH OF ERECTED BOX**

THE CASE PUSHER/REAR FLAP FOLDER ASSEMBLY WILL BE SET SO THAT THE PUSHER PLATE (ITEM # 4) IS APPROXIMATELY 1/4" AWAY FROM THE REAR MINOR PANEL OF THE FORMED CARTON, AS IT SITS ERECTED ON THE BOTTOM FLAP FOLDERS. TO ACCOMPLISH THIS, LOOSEN THE (2) RATCHET HANDLES (ITEM # 22) AND SLIDE THE ASSEMBLY. ALIGN THE REAR EDGE OF THE CASE PUSHER FRAME TO THE SCALE EQUAL TO THE LENGTH OF THE CARTON. TIGHTEN RATCHET HANDLES BEFORE STARTING MACHINE.

**EXAMPLE:** IF THE CASE YOU ARE RUNNING IS 16" LONG, YOU WOULD ALIGN THE FRAME WITH 16" ON THE SCALE.

### **5. VACUUM TREE:**

#### **SET POINT: CENTER OF MAJOR PANEL**

#### **CASE LENGTH ADJUSTMENT:**

THE VACUUM TREE SHOULD BE POSITIONED HORIZONTALLY IN THE CENTER OF THE MAJOR PANEL (LENGTH OF THE BOX). TO SET, PUSH THE TROLLEY TOWARD THE HOPPER SO THAT IT IS NEAR THE BLANK. LOOSEN RATCHET HANDLE (ITEM # 39) AND SLIDE THE TREE TO THE MIDDLE OF THE MAJOR PANEL. RE-TIGHTEN RATCHET HANDLE.

#### **VACUUM CUP POSITION:**

THE VACUUM CUPS SHOULD BE SET ON EACH CORNER OF THE MAJOR PANEL TO PROVIDE THE BEST SUPPORT. TRY NOT TO HAVE ANY CUPS LANDING OVER A SCORE LINE ON THE

BLANK. THE CUPS SHOULD BE OFFSET FROM THE EDGES BY ABOUT 1/4". WHENEVER POSSIBLE USE ALL FOUR CUPS TO RUN THE BOXES. TWO CUPS MAY BE USED IF THE MAJOR PANEL IS TOO SMALL. FOR TALL BOXES (OVER 10") THE VACUUM POST EXTENSION MAY BE USED. TO SET, LOOSEN THE CENTER KNOBS FOR VERTICAL POSITION. LOOSEN

THE OUTER KNOBS TO ALLOW THE ARMS TO SWEEP THROUGH THEIR ARC. THIS PROVIDES BOTH WIDTH AND HEIGHT ADJUSTMENT. BE SURE TO TIGHTEN ALL KNOBS WHEN FINISHED. TO REMOVE A SET OF CUPS (2), DISCONNECT THE HOSES AT THE QUICK RELEASE COUPLING, LOOSEN THE CENTER KNOB AND SLIDE THE BAR UP AND OFF THE POST.

**IMPORTANT!!!! BEFORE STARTING MACHINE, PUSH THE TROLLEY BY HAND BACK AND FORTH THROUGH THE FORMING AREA TO CHECK FOR INTERFERENCE WITH THE FLAP FOLDERS.**

## **6. TROLLEY STOP:**

**SET POINT: 1/2 THE WIDTH OF THE ERECTED BOX**

THE TROLLEY STOP SETTING IS BASED ON THE WIDTH OF THE BOX. IT ALIGNS THE ERECTED BOX WITH THE LUG DRIVE SYSTEM. THE STOP WILL BE SET TO HALF THE WIDTH OF THE BOX USING THE SCALE PROVIDED AND THE REAR EDGE OF THE STOP.

**EXAMPLE:** IF THE CASE YOU ARE RUNNING IS 10" WIDE, YOU WOULD SET THE STOP TO 5" ON THE SCALE.

## **7. LUG DRIVE WIDTH ADJUSTMENT:**

**SET POINT: 1/2 THE WIDTH OF THE ERECTED BOX**

TO SET, TURN THE HANDWHEEL ON THE OPERATORS SIDE OF THE MACHINE. TURNING THE HAND WHEEL CLOCKWISE WILL OPEN THE DRIVE, COUNTER-CLOCKWISE WILL CLOSE UP THE DRIVE. OPEN THE SLIDING GATES AND USE THE SCALE TO GET AN APPROXIMATE SET POINT. ALIGN THE EDGE OF THE DRIVE ANGLE WITH THE SCALE USING 1/2 THE WIDTH OF THE BOX AS THE PARAMETER.

**EXAMPLE:** IF THE CASE YOU ARE RUNNING IS 10" WIDE, YOU WOULD ALIGN THE EDGE WITH 5" ON THE SCALE. TO CHECK, PUT A FULLY FORMED CARTON INTO THE DRIVE SECTION AT DISCHARGE END. THERE SHOULD BE APPROXIMATELY 1/8" CLEARANCE ON EACH SIDE OF CARTON.

## **8. TOP SLED ADJUSTMENT:**

**SET POINT: HEIGHT OF ERECTED BOX + 1/16"**

TO SET, PUT A FULLY FORMED CARTON INTO THE DRIVE SECTION AT THE DISCHARGE END. USE THE CRANK HANDLE LOCATED NEAR THE OPERATOR'S STATION TO RAISE OR LOWER THE SLED UNTIL IT CONTACTS THE TOP OF THE BOX FLAPS. THE BOX SHOULD HAVE LIGHT PRESSURE ON IT, NOT BINDING. ALIGN THE SCALE TO THE TOP OF THE BRACKET AT A MEASUREMENT EQUAL TO THE HEIGHT OF THE BOX PLUS 1/2 THE WIDTH (IN INCHES).

## OTHER SET-UP CONSIDERATIONS:

- WHEN HANDLING SMALL CASES, ONLY TWO VACUUM CUPS WILL BE REQUIRED. REMOVE ONE OF THE VACUUM CUP BARS ALONG WITH THE VACUUM CUPS. DISCONNECT THE TWO HOSES USING THE QUICK RELEASE FITTINGS WHICH WILL AUTOMATICALLY SEAL OFF THE VACUUM SYSTEM.
- WHEN RUNNING A TALL BOX, USE THE VACUUM POST EXTENSION SO THE CUPS WILL REACH THE UPPER CORNERS OF THE MAJOR PANEL.
- TWO SETS OF FLAP FOLDING TOOLS ARE PROVIDED. THE SMALLER SET SHOULD BE USED FOR BOXES UP TO 12" IN LENGTH. THE LARGER SET SHOULD BE USED FOR BOXES LONGER THAN 12" IN LENGTH.
- TWO PUSHER DISKS ARE PROVIDED. THE SMALLER DISK SHOULD BE USED FOR BOXES UP TO 8" IN WIDTH. THE LARGER DISK SHOULD BE USED FOR BOXES OVER 8" WIDE.
- THE FORMING BAR, (ALONG WITH THE FINGERS) HELPS OPEN THE BLANK AS IT IS PULLED INTO THE FORMING AREA. IT SHOULD STRIKE THE CENTER OF THE MINOR PANEL AND CAUSE A GRADUAL OPENING. IT IS ADJUSTABLE IN TWO DIRECTIONS, TOWARD THE HOPPER AND TOWARD THE LUG DRIVE. FOR MOST BOXES, NO ADJUSTMENT WILL BE NECESSARY. IF YOU ARE HAVING DIFFICULTY OPENING A BOX, YOU CAN TRY ADJUSTING HOW SOON AND WHERE THE BAR STRIKES THE MINOR PANEL. MOST BOXES (PROVIDED THEY MEET THE CORRUGATED SPEC), WILL RUN SATISFACTORILY BY ADJUSTING THE FINGER DEPTH AND FORMING BAR POSITION.
- **IMPORTANT!!!!:** MAKE SURE TO TIGHTEN ALL FASTENERS AFTER CHANGING TOOLS OR MAKING ADJUSTMENTS BEFORE STARTING MACHINE.

## START UP PROCEDURE

***THIS MACHINE IS TO BE USED, AS DESCRIBED, BY PROPERLY TRAINED PERSONNEL.***

### **WARNING:**

***NEVER.....START THE MACHINE UNTIL ALL PERSONNEL ARE CLEAR.***

***NEVER.....LUBRICATE OR REPAIR THE MACHINE WHILE IT IS RUNNING.***

***NEVER.....PUT YOUR HANDS IN THE MACHINE WHILE IT IS RUNNING.***

***NEVER.....ALLOW ANY PART OF YOUR BODY TO COME IN CONTACT WITH MOVING PARTS OF THE MACHINE WHILE IT IS RUNNING.***

1. CLOSE THE SAFETY DOORS.
2. LOAD BLANKS INTO THE HOPPER.
3. RETURN BOX SUPPORT ANGLE TO THE TOP OF THE SLED. MAKE SURE THE ANGLE IS NOT HANGING OVER WHERE IT COULD GET CAUGHT BY A BLANK.
4. PULL OUT THE E-STOP BUTTON.
5. SET SELECTOR SWITCH TO MANUAL.
6. PRESS THE START BUTTON (LUG DRIVES SHOULD START).
7. PRESS THE STEP BUTTON TO ADVANCE THE MACHINE THROUGH A CYCLE. CHECK EACH STAGE TO MAKE SURE SET-UP IS CORRECT.
8. INSPECT INITIAL BOX FOR FORMING AND TAPING QUALITY.
9. SET SELECTOR SWITCH TO AUTO. MACHINE WILL START PROCESSING BOXES AUTOMATICALLY.

### ***IF MACHINE DOES NOT START, CHECK THE FOLLOWING:***

- SAFETY GATES ARE CLOSED.
- HOPPER DEMAND PHOTO EYE IS BLOCKED.  
(ORANGE INDICATOR SHOULD BE ON)
- DOWNSTREAM CASE-ON-DEMAND EYE IS NOT BLOCKED.  
(RED FLASHING INDICATOR SHOULD **NOT** BE ON)

## SHUT DOWN PROCEDURE

### EMERGENCY SHUT DOWN.

TO SHUT THE MACHINE DOWN IN AN EMERGENCY, PRESS THE E-STOP BUTTON OR OPEN A SAFETY GATE.

**NOTE:** YOU WILL HAVE TO CLEAR ANY CASES THAT WERE BEING FORMED BY THE MACHINE BEFORE YOU CAN RESTART THE MACHINE.

### NORMAL SHUT DOWN.

1. LET THE MACHINE FINISH THE CYCLE OF CASES BEING FORMED.
2. PRESS THE E-STOP BUTTON.

# **MAINTENANCE SCHEDULE**

## **TURN MACHINE OFF BEFORE PERFORMING ANY MAINTENANCE.**

### **ELECTRICAL**

#### **CHECK MONTHLY:**

1. INSPECT FOR LOOSE WIRES THROUGHOUT THE MACHINE AND INSIDE THE PANEL BOX.
2. INSPECT FOR MOISTURE INSIDE THE PANEL BOX.
3. CLEAN LENS ON PHOTOCELLS.

### **PNEUMATIC**

#### **CHECK DAILY:**

1. CHECK THAT THE REGULATOR IS SET TO 80 PSI.
2. CHECK FLOW CONTROL SETTINGS TO ENSURE CYLINDERS ARE NOT RUNNING HARDER THAN NECESSARY. IF THE CYLINDER SPEED IS NOT METERED PROPERLY, EXCESSIVE NOISE AND PREMATURE WEAR OF THE COMPONENTS WILL RESULT.

#### **CHECK WEEKLY:**

1. INSPECT AIR FILTER AND DRAIN IF NECESSARY. WATER IN THE AIR LINES WILL CAUSE THE MACHINE TO RUN ERRATICALLY AND WILL EVENTUALLY CAUSE THE SOLENOID VALVES TO FAIL.
2. INSPECT AND CLEAR THE VACUUM GENERATOR. CHECK THAT VACUUM LINES ARE FREE FROM DEBRIS.
3. INSPECT THE COMPONENTS AND THE AIR LINES FOR LEAKS. LOSS OF AIR MEANS LOSS OF SPEED AND EFFICIENCY.
4. INSPECT THE VACUUM CUPS FOR CRACKS OR TEARS.

#### **CHECK MONTHLY:**

1. INSPECT AIR CYLINDERS FOR BUSHING AND BUMPER WEAR.
2. INSPECT THE VACUUM HOSES FOR CRACKS OR CRIMPS.



## MECHANICAL

### CHECK WEEKLY:

1. INSPECT THE BOTTOM FLAP FOLDER ASSEMBLIES. CHECK FOR BEARING WEAR. LUBRICATE PIVOT BUSHINGS WITH A GREASE GUN AND A **MULTI-PURPOSE LITHIUM GREASE**. CHECK THE CLEVIS FOR WEAR AND LUBRICATE WITH A **TEFLON BASED SPRAY SUCH AS DUPONT TEFLON LUBRICANT WITH MOLY**. CHECK AIR CYLINDER MOUNTINGS FOR TIGHTNESS.
2. INSPECT ALL LEAD SCREWS AND CHAINS THROUGHOUT THE ENTIRE MACHINE. CLEAN AND LUBRICATE ALL SCREWS AND CHAINS WITH A TEFLON LUBRICANT.
3. INSPECT THE LUG CHAIN DRIVES. ADJUST CHAIN TENSION AND LUBRICATE WITH A TEFLON LUBRICANT AS NECESSARY. CHECK FOR CHAIN AND SPROCKET WEAR. CHECK SPROCKET ALIGNMENT. TIGHTEN ALL FASTENERS.
4. INSPECT THE MOTOR/REDUCER ASSEMBLY. CHECK OIL LEVEL IN REDUCER BY REMOVING THE BREATHER AND INSERTING A LONG THIN PIECE OF MATERIAL (A ZIP-TIE WORKS WELL) UNTIL IT TOUCHES THE FLOOR OF THE BOX. WITHDRAW THE PIECE AND CHECK THE DEPTH OF THE OIL. IT SHOULD BE APPROXIMATELY 1.25" DEEP. IF NECESSARY, ADD 90 WT. GEAR OIL SUCH AS **MOBILGEAR 600 XP 150**. ADJUST AND LUBRICATE THE DRIVE CHAIN WITH A TEFLON LUBRICANT.  
NOTE: RIGHT ANGLE GEAR BOXES (LUG DRIVE) ARE PERMANENTLY LUBRICATED AND MAINTENANCE FREE.
5. CHECK TAPE CARTRIDGE KNIFE FOR DEBRIS. CLEAN WITH AN OILY RAG. NEVER USE SHARP OBJECTS TO CLEAN KNIFE.

## HOW TO ORDER SPARE PARTS

FOR GENERAL INFORMATION AND ORDERING PARTS CONTACT:  
THE LOVESHAW CORPORATION  
2206 EASTON TURNPIKE, BOX 83  
SOUTH CANAAN, PA.  
18459

TEL: 1-800-572-3434

PLEASE HAVE YOUR MACHINE MODEL AND SERIAL NUMBER WHEN CALLING FOR PARTS OR SERVICE. THEY CAN BE FOUND ON THE LABEL LOCATED ON THE OUTSIDE OF THE ELECTRICAL PANEL BOX.

### WHEN CALLING LOVESHAW FOR PARTS:

- A. GIVE THE MACHINE MODEL AND SERIAL NUMBER.
- B. GIVE THE ASSEMBLY PART NUMBER AND DESCRIPTION.  
(I.E., .TSACF50/A - TOP SLED ASSEMBLY)
- C. GIVE ITEM NUMBER, PART NUMBER, AND DESCRIPTION.  
(I.E., ITEM # 7, 204330, 1/2" I.D. X 5/8" O.D. FLANGE BUSHING)

BY FOLLOWING THE PROCEDURE DESCRIBED ABOVE, YOU WILL ASSIST US IN SUPPLYING YOU WITH CORRECT PARTS FOR YOUR MACHINE AND ELIMINATE ANY MISUNDERSTANDING BETWEEN YOUR PURCHASING AGENT AND OUR PARTS DEPARTMENT.

SEE THE LIST OF SUGGESTED SPARE PARTS ON THE NEXT PAGE, BY STOCKING THESE PARTS, YOU WILL ELIMINATE EXCESSIVE DOWN TIME WAITING FOR SHIPMENT OF PARTS.

## RECOMMENDED SPARE PARTS KIT MODEL CF50T

PART #	QTY	DESCRIPTION
.CAC60 (*)	1	TAPE CARTRIDGE 2"
PSC11B60-4 (*)	4	KNIFE BLADE 2"
.CAC61 (**)	1	TAPE CARTRIDGE 3"
PS4117A60-4 (**)	4	KNIFE BLADE 3"
CF50-0103-4	2	WHEEL, POLYURETHANE
203214	2	THRUST WASHER
SPR-1037	2	SPRING, EXTENSION
204143	2	LINK, CHAIN
HC202	2	MASTER LINK
HC302	2	HALF LINK
200287	1	BUMPER
N401-245	1	CYLINDER, FLAP FOLDER
N531	1	ROD CLEVIS
202822-2	1	SPRING, HOPPER BACKSTOP
N576	1	VACUUM GENERATOR
N402-99	1	VALVE, VACUUM
N402-97	2	VALVE, STACK (SINGLE REPLACEMENT)
N596	1	SWITCH BAND
N597	2	REED SWITCH
N590	1	FLOW CONTROL
N600	1	FILTER ELEMENT
N400-46	1	FLOW CONTROL, QUICK EXHAUST
SHK-007	1	SHOCK ABSORBER
N594	1	ROD CLEVIS, TROLLEY CYLINDER
203075	1	ROD EYE BEARING
201816	2	KNOB, VACUUM ARM
203220A	4	VACUUM CUP (BLUE)
201863	2	SPRING
202146	1	KNOB
202669	1	RATCHET HANDLE, LOCKING
204823	1	RATCHET HANDLE, LIFTING
203354	2	BRUSH HOPPER 10"
A125SB-10-R	1	FUSE, 10 AMP
A125SB-2/10-312	1	FUSE, 2/10 AMP
303526	1	PHOTOELECTRIC SENSOR
302575	1	PROXIMITY SWITCH
A195SG-TM1	1	SWITCH, SAFETY GATE
A195SG-TM1 KEY	1	SWITCH KEY, SAFETY GATE
N401-242/R	1	SEAL KIT, 40 mm CYLINDER
N401-241/R	1	SEAL KIT, 50 mm CYLINDER

(\*) THESE COMPONENTS ARE FOR 2" MACHINE, (\*\*) THESE COMPONENTS ARE FOR 3" MACHINE.

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## TROUBLE SHOOTING

IF THE MACHINE WILL NOT START CYCLING OR STOPS IN MID-CYCLE. IT IS LIKELY A SENSOR OR SWITCH IS NOT IN THE CORRECT STATE. REFER TO THE "SEQUENCE OF OPERATION" SECTION AND CHECK EACH COMPONENT.

1. CHECK THE SAFETY GATES TO ENSURE THAT THEY ARE CLOSED.
2. CHECK THAT PROXIMITY SWITCHES AND PHOTOCELLS ARE BEING TRIPPED.
3. INSPECT WIRING FOR LOOSE CONNECTIONS.
4. INSPECT AIR LINES FOR LOOSE CONNECTIONS OR LEAKS.

### PROBLEM

### SOLUTION

1. VACUUM SYSTEM IS NOT OPERATIONAL.

A. SOLENOID VALVE MAY BE DEFECTIVE. PUSH MANUAL OVERRIDE TO SEE IF VALVE FUNCTIONS. IF SO, CHECK SOLENOID FOR CONTINUITY. REPLACE IF DEFECTIVE.

B. SPOOL IN VALVE MAY BE STUCK. DISASSEMBLE VALVE, CLEAN THOROUGHLY, REPLACE DEFECTIVE PARTS. REASSEMBLE.

C. SYSTEM MAY BE BLOCKED. CHECK SUPPLY LINES AND GENERATOR FOR BLOCKAGE. REMOVE OR REPLACE PART IF NECESSARY.

2. VACUUM TROLLEY WILL NOT MOVE TOWARD HOPPER TO PICK UP BLANK. (CYLINDER IN RETRACTED POSITION).

A. SOLENOID VALVE MAY BE DEFECTIVE. PUSH MANUAL OVERRIDE TO SEE IF VALVE FUNCTIONS. IF SO, CHECK SOLENOID FOR CONTINUITY. REPLACE IF DEFECTIVE.

B. SPOOL IN VALVE MAY BE STUCK. DISASSEMBLE VALVE, CLEAN THOROUGHLY, REPLACE DEFECTIVE PARTS. REASSEMBLE.

C. HOME POSITION PROXIMITY SWITCH (PROX 1) MAY BE DEFECTIVE OR OUT OF ADJUSTMENT. ADJUST POSITION SLIGHTLY UNTIL INDICATOR LIGHT TURNS ON. IF NOT, CHECK FOR CONTINUITY. IF DEFECTIVE, REPLACE.

## PROBLEM

3. VACUUM TROLLEY WILL NOT MOVE BACK FROM BLANK PICK UP POSITION (CYLINDER IN EXTENDED POSITION).

4. VACUUM CUPS WILL NOT PICK A BLANK OUT OF THE HOPPER.

## SOLUTION

A. SOLENOID VALVE MAY BE DEFECTIVE. PUSH MANUAL OVERRIDE TO SEE IF VALVE FUNCTIONS. IF SO, CHECK SOLENOID FOR CONTINUITY. REPLACE IF DEFECTIVE.

B. SPOOL IN VALVE MAY BE STUCK. DISASSEMBLE VALVE, CLEAN THOROUGHLY, REPLACE DEFECTIVE PARTS. REASSEMBLE.

C. PICK UP POSITION PROXIMITY SWITCH (PROX 2) MAY BE DEFECTIVE OR OUT OF ADJUSTMENT. ADJUST POSITION SLIGHTLY UNTIL INDICATOR LIGHT TURNS ON. IF NOT, CHECK FOR CONTINUITY. IF DEFECTIVE, REPLACE.

A. VACUUM PRESSURE MAY BE INSUFFICIENT. TEST BY PLACING A BLANK ON THE CUPS WITH THE VACUUM ON. YOU SHOULD NOT BE ABLE TO EASILY PULL THE BLANK OFF OF THE VACUUM CUPS. IF SO, CHECK FOR:

- CORRECT AIR PRESSURE AND SUPPLY (80 PSI, 10 CFM)
- DAMAGED OR WORN CUPS
- DAMAGED OR WORN HOSES
- CLOGGED SYSTEM COMPONENTS

B. HOPPER OUT OF ADJUSTMENT.

CHECK THE FOLLOWING SET-UPS:

- HOPPER RETAINER BAR AND BRUSH OVERLAP THE BLANK TOO FAR.
- TOO MUCH PRESSURE ON THE LEADING BLANK. MOVE HOPPER DEMAND PHOTO EYE BACK SLIGHTLY.
- OPEN HOPPER RAILS 1/8"
- MAKE SURE BLANK ISN'T HITTING TOP SLED ON THE WAY IN. IF SO, LOWER HOPPER AND RE-ADJUST TOP FINGER.
- TOO MUCH FINGER PRESSURE. SEE SET-UP SECTION FOR PROPER ADJUSTMENT.

## PROBLEM

## SOLUTION

5. MINOR FLAP FOLDERS WILL NOT EXTEND.

A. SOLENOID VALVE MAY BE DEFECTIVE. PUSH MANUAL OVERRIDE TO SEE IF VALVE FUNCTIONS. IF SO, CHECK SOLENOID FOR CONTINUITY. REPLACE IF DEFECTIVE.

B. SPOOL IN VALVE MAY BE STUCK. DISASSEMBLE VALVE, CLEAN THOROUGHLY, REPLACE DEFECTIVE PARTS. REASSEMBLE.

C. CHECK VACUUM TROLLEY HOME POSITION PROXIMITY SWITCH (PROX 1). THIS SWITCH MUST BE MADE FOR FLAPS TO EXTEND.

6. CASE PUSHER WILL NOT EXTEND TO PUSH A FORMED CASE INTO THE LUG DRIVE.

A. SOLENOID VALVE MAY BE DEFECTIVE. PUSH MANUAL OVERRIDE TO SEE IF VALVE FUNCTIONS. IF SO, CHECK SOLENOID FOR CONTINUITY. REPLACE IF DEFECTIVE.

B. SPOOL IN VALVE MAY BE STUCK. DISASSEMBLE VALVE, CLEAN THOROUGHLY, REPLACE DEFECTIVE PARTS. REASSEMBLE.

C. PUSHER RETRACTED POSITION PROXIMITY SWITCH (PROX 3) MAY BE DEFECTIVE OR OUT OF ADJUSTMENT. SEE SOLUTION 2C.

7. CASE PUSHER WILL NOT RETRACT.

A. SOLENOID VALVE MAY BE DEFECTIVE. PUSH MANUAL OVERRIDE TO SEE IF VALVE FUNCTIONS. IF SO, CHECK SOLENOID FOR CONTINUITY. REPLACE IF DEFECTIVE.

B. SPOOL IN VALVE MAY BE STUCK. DISASSEMBLE VALVE, CLEAN THOROUGHLY, REPLACE DEFECTIVE PARTS. REASSEMBLE.

C. PUSHER EXTEND POSITION PROXIMITY SWITCH (PROX 4) MAY BE DEFECTIVE OR OUT OF ADJUSTMENT. SEE SOLUTION 2C.

## PROBLEM

## SOLUTION

8. CASE IS NOT SQUARE AT DISCHARGE.

A. PUSHER LUGS OUT OF ALIGNMENT.  
TO CORRECT:

- DISCONNECT ELECTRICAL SUPPLY.
- REMOVE OPERATOR SIDE CHAIN DRIVE COVER.
- LOOSEN TAPERED BUSHING IN SPROCKET AT DISCHARGE END BY REMOVING CAP SCREWS AND PUTTING THEM IN THE JACKING HOLES.
- USING A SQUARE, ALIGN THE LUGS.
- RETIGHTEN TAPERED BUSHING MAKING SURE CHAIN SYSTEM IS ALIGNED VERTICALLY.
- REPLACE LUG DRIVE COVER.

9. MACHINE SHUTS OFF SUDDENLY WHILE PUSHING A CASE THROUGH THE LUG DRIVE.

A. CHECK THE OVER CURRENT RELAY (OCR1) LOCATED IN THE PANEL BOX. IF IT IS TRIPPING OUT UNDER NORMAL (NON-JAM) CONDITIONS, ADJUST IT AS FOLLOWS:

- SET CURRENT (I) TO 10-15% OVER NORMAL CURRENT OF THE MOTOR.
- SET THE TIME DELAY TO 1-2 SECONDS.

**Little David®** Warranty  
**For:** CASE FORMER MODELS  
CF20T, CF30T, CF40T, CF40TXL, CF50T MODELS

**1 YEAR WARRANTY ON DRIVE MOTOR**  
**1 YEAR WARRANTY ON GEAR REDUCER**  
**3 YEAR WARRANTY ON TAPE CARTRIDGE**

(EXCEPT FOR MOVING PARTS THAT ARE SUBJECT TO NORMAL WEAR, TEAR AND REPLACEMENT, WHICH ARE WARRANTED ONLY TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP.)

**1 YEAR ON PLC**  
**1 YEAR ALL OTHER PARTS**

(EXCEPT FOR WEAR AND MOVING PARTS.)

**For:** CASE FORMER MODEL  
CF5

**1 YEAR ON PLC**  
**1 YEAR ALL OTHER PARTS**

(EXCEPT FOR WEAR AND MOVING PARTS.)

\*LIMITED WARRANTY – **LOVESHAW**, (HEREIN AFTER “**LOVESHAW**”) WARRANTS ONLY THAT THE GOODS SOLD BY IT SHALL BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP, UNDER PROPER AND NORMAL USE AND MAINTENANCE, AS FOLLOWS:

<u>DRIVE MOTOR</u> -	1 YEAR
<u>GEAR REDUCER</u> -	1 YEAR
<u>TAPE CARTRIDGE</u> -	3 YEARS

(EXCEPT FOR MOVING PARTS THAT ARE SUBJECT TO NORMAL WEAR, TEAR, AND REPLACEMENT, WHICH ARE WARRANTED ONLY TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP.)

<u>PLC</u> -	1 YEAR
<u>ALL OTHER PARTS</u> -	1 YEAR

(EXCEPT FOR MOVING PARTS THAT ARE SUBJECT TO NORMAL WEAR, TEAR, AND REPLACEMENT, WHICH ARE WARRANTED ONLY TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP.)

THE WARRANTY PERIOD SHALL COMMENCE AS OF THE DATE OF DELIVERY TO THE PURCHASER. THE OBLIGATION OF LOVESHAW UNDER THIS WARRANTY IS STRICTLY LIMITED TO THE COST OF REPAIRING OR REPLACING, AS LOVESHAW MAY ELECT, ANY PART OR PARTS THAT PROVE IN LOVESHAW'S JUDGMENT TO HAVE BEEN DEFECTIVE IN MATERIAL OR WORKMANSHIP AT THE TIME THE GOODS WERE SHIPPED FROM LOVESHAW'S PLANT. ANY WARRANTY CLAIM NOT MADE IN WRITING TO LOVESHAW AT ITS HOME OFFICE WITHIN THE APPLICABLE WARRANTY PERIOD AND WITHIN 10 DAYS OF FAILURE WILL NOT BE VALID. THIS IS THE SOLE AND EXCLUSIVE REMEDY AVAILABLE UNDER THIS WARRANTY. UNDER NO CIRCUMSTANCES WILL LOVESHAW BE LIABLE FOR INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES.

IF REQUESTED BY LOVESHAW, PURCHASER SHALL RETURN ANY DEFECTIVE PART OR PARTS TO LOVESHAW'S PLANT, FREIGHT PREPAID. ALL WARRANTY PART REPLACEMENTS AND REPAIRS MUST BE MADE BY LOVESHAW OR A LOVESHAW AUTHORIZED TO HANDLE THE GOODS COVERED BY THIS WARRANTY. ANY OUTSIDE WORK OR ALTERATIONS DONE WITHOUT LOVESHAW'S PRIOR WRITTEN APPROVAL WILL RENDER THIS WARRANTY VOID. **LOVESHAW**, WILL NOT ASSUME ANY EXPENSE OR LIABILITY FOR ANY REPAIRS MADE TO ITS GOODS OUTSIDE ITS WORKS WITHOUT ITS PRIOR WRITTEN CONSENT. THIS WARRANTY SHALL NOT APPLY TO ANY ITEM THAT HAS NOT BEEN USED, OPERATED, AND MAINTAINED IN ACCORDANCE WITH LOVESHAW'S RECOMMENDED PROCEDURES LOVESHAW SHALL HAVE NO LIABILITY WHATSOEVER WHERE THE GOODS HAVE BEEN ALTERED, MISUSED, ABUSED OR INVOLVED IN AN ACCIDENT.

NO PERSON IS AUTHORIZED TO MAKE ANY WARRANTY OR TO CREATE ANY LIABILITY BINDING UPON LOVESHAW. WHICH IS NOT STATED IN THIS WARRANTY. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES OF ANY KIND, EXPRESSED OR IMPLIED, WHICH ARE HEREBY EXCLUDED. IN PARTICULAR, THE IMPLIED WARRANTY OF MERCHANTABILITY, AS WELL AS THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY EXCLUDED.

**LOVESHAW**

2206 EASTON TURNPIKE SOUTH CANAAN, PA 18459  
TEL: 570.937.4921 - 800.572.3434 - FAX: 570.937.3229



# ILLUSTRATED MACHINE ASSEMBLIES

FRAME ASSEMBLY

MAIN DRIVE ASSEMBLY

DRIVE CHAIN ASSEMBLY

HOPPER FRAME ASSEMBLY

HOPPER DRIVE ASSEMBLY  
BOTTOM FINGER ASSEMBLY

HOPPER GATE ASSEMBLY

TOP FINGER ASSEMBLY

VACUUM TROLLEY ASSEMBLY

VACUUM BAR ASSEMBLY

VACUUM CUP ASSEMBLY

FRONT FLAP FOLDER ASSEMBLY

REAR FLAP FOLDER ASSEMBLY

TOP SLED ASSEMBLY

PLOW BAR ASSEMBLY

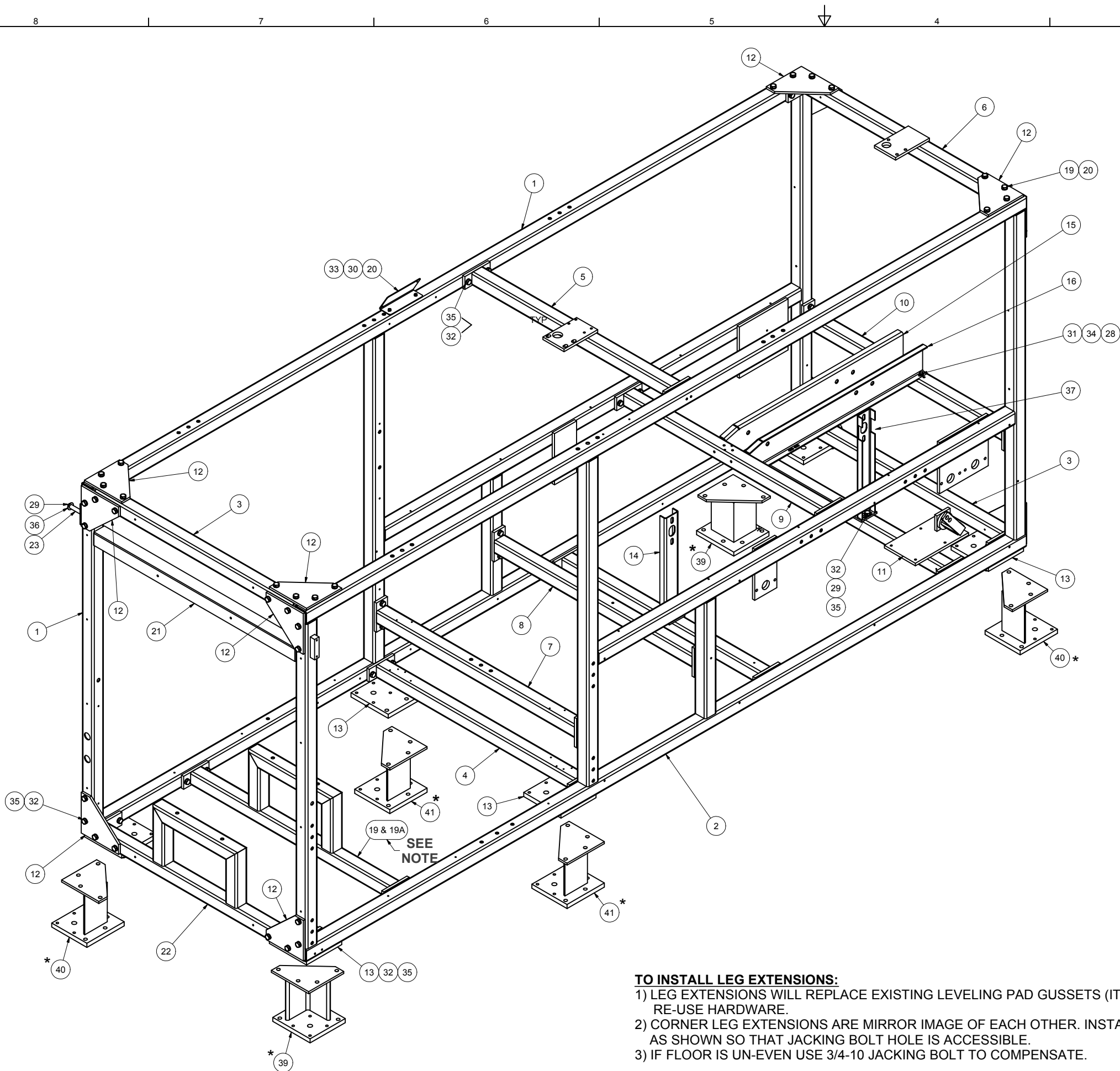
SAFETY GUARD ASSEMBLY

PNEUMATIC COMPONENTS

PNEUMATIC SCHEMATIC

ELECTRICAL

REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
A	RELEASED	10/20/2005	RM



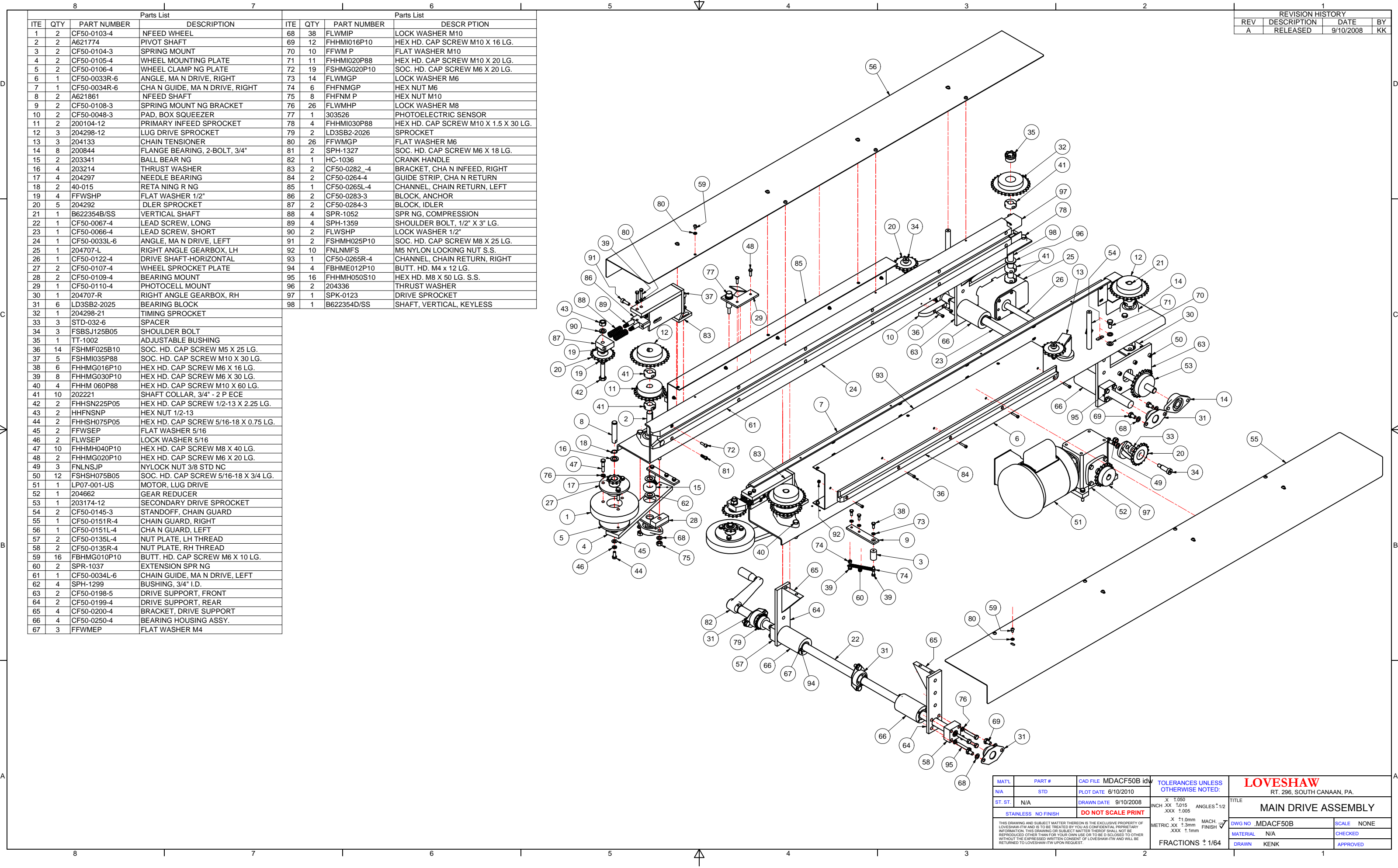
Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CF50-0008L-6	FRAME, LEFT SIDE
2	1	CF50-0008R-6	FRAME, RIGHT SIDE
3	2	CF50-0010-4	CROSSMEMBER, END
4	1	CF50-0011-4	CROSSMEMBER, M D
5	1	CF50-0013-4	SLED SUPPORT
6	1	CF50-0014-4	END SLED SUPPORT
7	1	CF50-0016-4	CROSSMEMBER, FRONT FLAP FOLDER
8	1	CF50-0017-4	FOLDING BAR SUPPORT
9	1	CF50-0018-5	CARTRIDGE SUPPORT REAR
10	1	CF50-0019-4	CARTRIDGE SUPPORT FRONT
11	1	CF50-0020-4	CROSSMEMBER, BEARING SUPPORT
12	12	CF50-0021-4	GUSSET, FRAME
13	6	CF50-0022-4	GUSSET, LEVELING PAD
14	1	CF50-0068-4	SUPPORT, LEAD SCREW
15	1	CF50-0113L-5	CARTRIDGE SUPPORT, LEFT
16	1	CF50-0113R-5	CARTRIDGE SUPPORT, RIGHT
19	1	CF50-0131-4	CROSSMEMBER, BOX PUSHER
19A	1	CF50-0131A-4	CROSSMEMBER, BOX PUSHER ( LBO )
20	1	CF50-0150-4	BRACKET, OPERATOR STATION
21	1	CF50-0154-4	REAR GUARD SUPPORT
22	1	CF50-0157-5	CROSSMEMBER, END
23	1	CF50-0185-3	HOOK, HOPPER GATE
27	1	CF50-0196-4	CROSSMEMBER, DRIVE SUPPORT
28	2	FFWMGP	FLAT WASHER M6
29	2	FFWMIP	FLAT WASHER M10
30	2	FHHMF010P10	HHCS M5 X 0.8 X 10 LG.
31	4	FHHMG030P10	HHCS M6 X 30
32	104	FHHM 030P88	HHCS M10 X 30
33	2	FLWMFP	LOCK WASHER M5
34	6	FLWMGP	LOCK WASHER M6
35	118	FLWMIP	LOCK WASHER M10
36	1	SPH-1286	FENDER WASHER, 8MM
37	1	CF50-0447-4	SUPPORT, LEAD SCREW, NBO
38	1	204133	CHAIN TENSIONER
39	2	CF50-0191R_-5	LEG EXTENSION, RIGHT
40	2	CF50-0191_L/R-5	LEG EXTENSION, CORNER
41	2	CF50-0190_-5	LEG EXTENSION, CENTER

**NOTE:**  
Part #19 used on standard frame assembly.  
Part # 19 used on LONG BOX OPTION.

- TO INSTALL LEG EXTENSIONS:**  
1) LEG EXTENSIONS WILL REPLACE EXISTING LEVELING PAD GUSSETS (ITEM 13). RE-USE HARDWARE.  
2) CORNER LEG EXTENSIONS ARE MIRROR IMAGE OF EACH OTHER. INSTALL AS SHOWN SO THAT JACKING BOLT HOLE IS ACCESSIBLE.  
3) IF FLOOR IS UN-EVEN USE 3/4-10 JACKING BOLT TO COMPENSATE.

**\* OPTIONAL LEG EXTENSION**

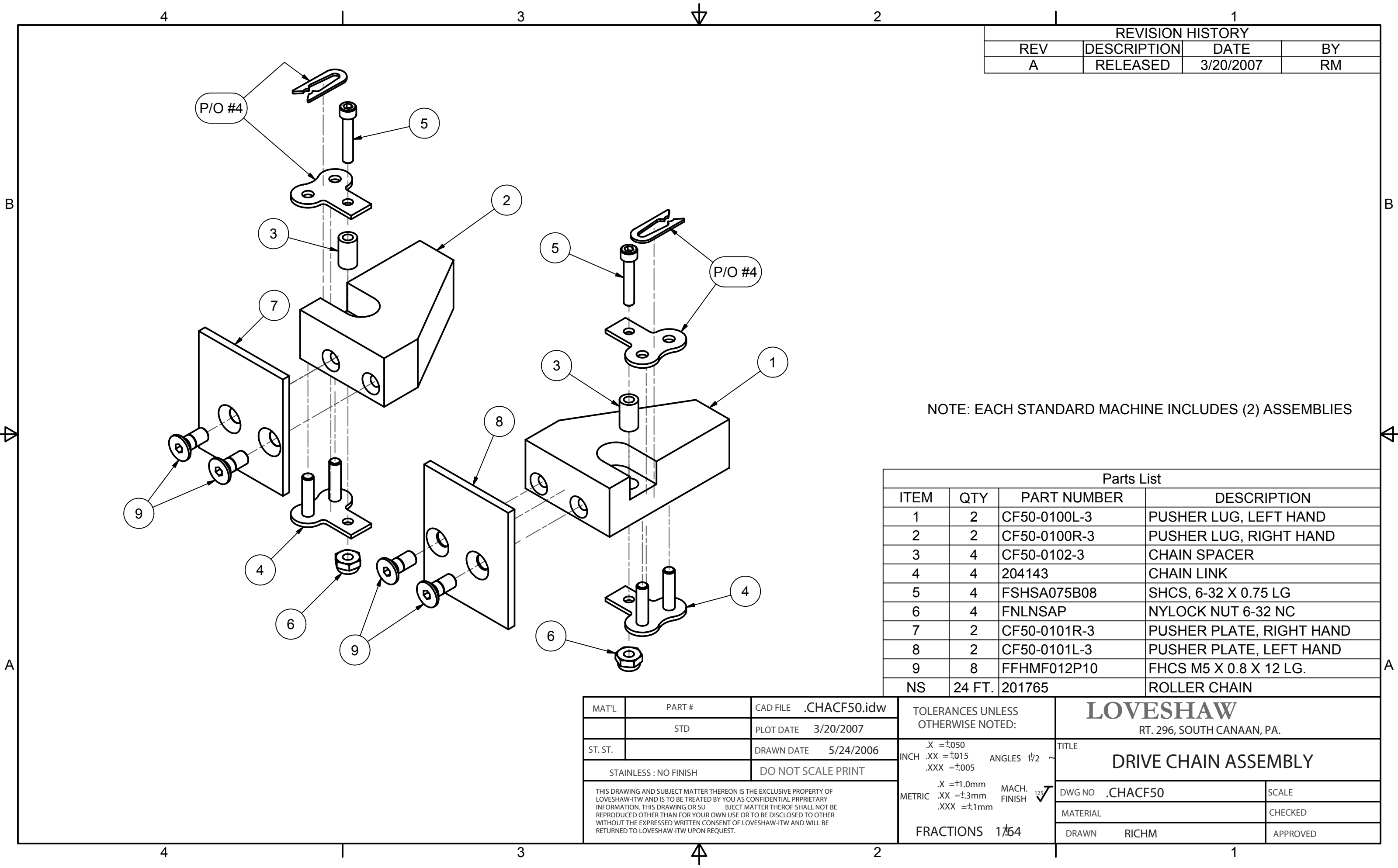
MATL	PART #	CAD FILE	FRACF50.idw	TOLERANCES UNLESS OTHERWISE NOTED:	LOVESHAW an ITW Company RT. 296, SOUTH CANAAN, PA.	
ST. ST.	STD	PLOT DATE	1/31/2007	X ±.050 INCH .XX ±.015 XXX ±.005	TITLE FRAME ASSEMBLY	
STAINLESS	NO FINISH	DRAWN DATE	10/20/2005	ANGLES ±1/2° X ±.0mm METRIC .XX ±.3mm XXX ±.1mm	DWG NO.	FRACF50
THIS DRAWING AND SUBJECT MATTER THEREON IS THE EXCLUSIVE PROPERTY OF LOVESHAW-ITW AND IS TO BE TREATED BY YOU AS CONFIDENTIAL PROPRIETARY INFORMATION. THIS DRAWING OR SUBJECT MATTER THEREOF SHALL NOT BE REPRODUCED OTHER THAN FOR YOUR OWN USE OR TO BE LOANED TO OTHER WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOVESHAW-ITW AND WILL BE RETURNED TO LOVESHAW-ITW UPON REQUEST.				MACH. FINISH	SCALE	5/32:1
FRACTIONS ± 1/64				DRAWN	RICHM	CHECKED
						APPROVED



Parts List				Parts List			
ITE	QTY	PART NUMBER	DESCRIPTION	ITE	QTY	PART NUMBER	DESCR PTION
1	2	CF50-0103-4	NFEED WHEEL	68	38	FLWMIP	LOCK WASHER M10
2	2	A621774	PIVOT SHAFT	69	12	FHHMI016P10	HEX HD. CAP SCREW M10 X 16 LG.
3	2	CF50-0104-3	SPRING MOUNT	70	10	FFWM P	FLAT WASHER M10
4	2	CF50-0105-4	WHEEL MOUNTING PLATE	71	11	FHHMI020P88	HEX HD. CAP SCREW M10 X 20 LG.
5	2	CF50-0106-4	WHEEL CLAMP NG PLATE	72	19	FSHMG020P10	SOC. HD. CAP SCREW M6 X 20 LG.
6	1	CF50-0033R-6	ANGLE, MA N DRIVE, RIGHT	73	14	FLWMGP	LOCK WASHER M6
7	1	CF50-0034R-6	CHA N GUIDE, MA N DRIVE, RIGHT	74	6	FHFNMGP	HEX NUT M6
8	2	A621861	NFEED SHAFT	75	8	FHFNM P	HEX NUT M10
9	2	CF50-0108-3	SPRING MOUNT NG BRACKET	76	26	FLWMHP	LOCK WASHER M8
10	2	CF50-0048-3	PAD, BOX SQUEEZER	77	1	303526	PHOTOELECTRIC SENSOR
11	2	200104-12	PRIMARY INFEED SPROCKET	78	4	FHHMI030P88	HEX HD. CAP SCREW M10 X 1.5 X 30 LG.
12	3	204298-12	LUG DRIVE SPROCKET	79	2	LD3SB2-2026	SPROCKET
13	3	204133	CHAIN TENSIONER	80	26	FFWMGP	FLAT WASHER M6
14	8	200844	FLANGE BEARING, 2-BOLT, 3/4"	81	2	SPH-1327	SOC. HD. CAP SCREW M6 X 18 LG.
15	2	203341	BALL BEAR NG	82	1	HC-1036	CRANK HANDLE
16	4	203214	THRUST WASHER	83	2	CF50-0282 -4	BRACKET, CHA N INFEED, RIGHT
17	4	204297	NEEDLE BEARING	84	2	CF50-0264-4	GUIDE STRIP, CHA N RETURN
18	2	40-015	RETA NING R NG	85	1	CF50-0265L-4	CHANNEL, CHAIN RETURN, LEFT
19	4	FFWSHP	FLAT WASHER 1/2"	86	2	CF50-0283-3	BLOCK, ANCHOR
20	5	204292	DLER SPROCKET	87	2	CF50-0284-3	BLOCK, IDLER
21	1	B622354B/SS	VERTICAL SHAFT	88	4	SPR-1052	SPR NG, COMPRESSION
22	1	CF50-0067-4	LEAD SCREW, LONG	89	4	SPH-1359	SHOULDER BOLT, 1/2" X 3" LG.
23	1	CF50-0066-4	LEAD SCREW, SHORT	90	2	FLWSHP	LOCK WASHER 1/2"
24	1	CF50-0033L-6	ANGLE, MA N DRIVE, LEFT	91	2	FSHMH025P10	SOC. HD. CAP SCREW M8 X 25 LG.
25	1	204707-L	RIGHT ANGLE GEARBOX, LH	92	10	FNLNMFS	M5 NYLON LOCKING NUT S.S.
26	1	CF50-0122-4	DRIVE SHAFT-HORIZONTAL	93	1	CF50-0265R-4	CHANNEL, CHAIN RETURN, RIGHT
27	2	CF50-0107-4	WHEEL SPROCKET PLATE	94	4	FBHME012P10	BUTT. HD. M4 x 12 LG.
28	2	CF50-0109-4	BEARING MOUNT	95	16	FHHMH050S10	HEX HD. M8 X 50 LG. S.S.
29	1	CF50-0110-4	PHOTOCELL MOUNT	96	2	204336	THRUST WASHER
30	1	204707-R	RIGHT ANGLE GEARBOX, RH	97	1	SPK-0123	DRIVE SPROCKET
31	6	LD3SB2-2025	BEARING BLOCK	98	1	B622354D/SS	SHAFT, VERTICAL, KEYLESS
32	1	204298-21	TIMING SPROCKET				
33	3	STD-032-6	SPACER				
34	3	FSBSJ125B05	SHOULDER BOLT				
35	1	TT-1002	ADJUSTABLE BUSHING				
36	14	FSHMF025B10	SOC. HD. CAP SCREW M5 X 25 LG.				
37	5	FSHMI035P88	SOC. HD. CAP SCREW M10 X 30 LG.				
38	6	FHHMG016P10	HEX HD. CAP SCREW M6 X 16 LG.				
39	8	FHHMG030P10	HEX HD. CAP SCREW M6 X 30 LG.				
40	4	FHHM 060P88	HEX HD. CAP SCREW M10 X 60 LG.				
41	10	202221	SHAFT COLLAR, 3/4" - 2 P ECE				
42	2	FHHSN225P05	HEX HD. CAP SCREW 1/2-13 X 2.25 LG.				
43	2	HHFNSNP	HEX NUT 1/2-13				
44	2	FHHSH075P05	HEX HD. CAP SCREW 5/16-18 X 0.75 LG.				
45	2	FFWSEP	FLAT WASHER 5/16				
46	2	FLWSEP	LOCK WASHER 5/16				
47	10	FHHMH040P10	HEX HD. CAP SCREW M8 X 40 LG.				
48	2	FHHMG020P10	HEX HD. CAP SCREW M6 X 20 LG.				
49	3	FNLNSJP	NYLOCK NUT 3/8 STD NC				
50	12	FSHSH075B05	SOC. HD. CAP SCREW 5/16-18 X 3/4 LG.				
51	1	LP07-001-US	MOTOR, LUG DRIVE				
52	1	204662	GEAR REDUCER				
53	1	203174-12	SECONDARY DRIVE SPROCKET				
54	2	CF50-0145-3	STANDOFF, CHAIN GUARD				
55	1	CF50-0151R-4	CHAIN GUARD, RIGHT				
56	1	CF50-0151L-4	CHA N GUARD, LEFT				
57	2	CF50-0135L-4	NUT PLATE, LH THREAD				
58	2	CF50-0135R-4	NUT PLATE, RH THREAD				
59	16	FBHMG010P10	BUTT. HD. CAP SCREW M6 X 10 LG.				
60	2	SPR-1037	EXTENSION SPR NG				
61	1	CF50-0034L-6	CHAIN GUIDE, MA N DRIVE, LEFT				
62	4	SPH-1299	BUSHING, 3/4" I.D.				
63	2	CF50-0198-5	DRIVE SUPPORT, FRONT				
64	2	CF50-0199-4	DRIVE SUPPORT, REAR				
65	4	CF50-0200-4	BRACKET, DRIVE SUPPORT				
66	4	CF50-0250-4	BEARING HOUSING ASSY.				
67	3	FFWMEP	FLAT WASHER M4				

REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
A	RELEASED	9/10/2008	KK

MATL	PART #	CAD FILE MDACF50B idw	TOLERANCES UNLESS OTHERWISE NOTED:	LOVESHAW RT. 296, SOUTH CANAAN, PA.	
N/A	STD	PLOT DATE 6/10/2010	X ±.050 INCH .XX ±.015 XXX ±.005	TITLE MAIN DRIVE ASSEMBLY	
ST. ST.	N/A	DRAWN DATE 9/10/2008	ANGLES ±1/2	DWG NO. MDACF50B	
STAINLESS NO FINISH		DO NOT SCALE PRINT	MACH. FINISH	SCALE	NONE
THIS DRAWING AND SUBJECT MATTER THEREON IS THE EXCLUSIVE PROPERTY OF LOVESHAW-ITW AND IS TO BE TREATED BY YOU AS CONFIDENTIAL PROPRIETARY INFORMATION. THIS DRAWING OR SUBJECT MATTER THEREOF SHALL NOT BE REPRODUCED OTHER THAN FOR YOUR OWN USE OR TO BE DISCLOSED TO OTHER WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOVESHAW-ITW AND WILL BE RETURNED TO LOVESHAW-ITW UPON REQUEST.			FRACTIONS ± 1/64	MATERIAL	N/A
				DRAWN	KENK
				CHECKED	
				APPROVED	



REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
A	RELEASED	3/20/2007	RM

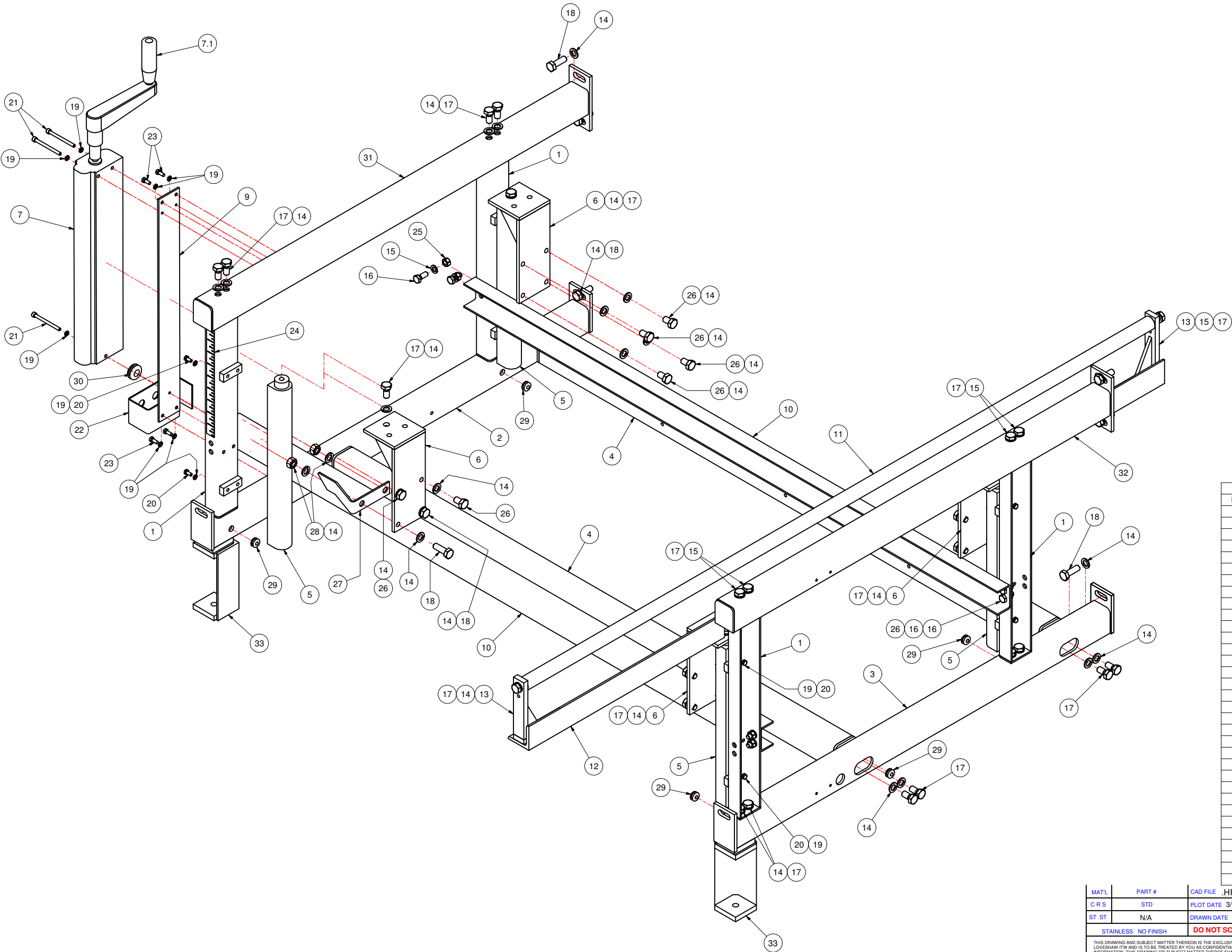
NOTE: EACH STANDARD MACHINE INCLUDES (2) ASSEMBLIES

Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	CF50-0100L-3	PUSHER LUG, LEFT HAND
2	2	CF50-0100R-3	PUSHER LUG, RIGHT HAND
3	4	CF50-0102-3	CHAIN SPACER
4	4	204143	CHAIN LINK
5	4	FSHSA075B08	SHCS, 6-32 X 0.75 LG
6	4	FNLNSAP	NYLOCK NUT 6-32 NC
7	2	CF50-0101R-3	PUSHER PLATE, RIGHT HAND
8	2	CF50-0101L-3	PUSHER PLATE, LEFT HAND
9	8	FFHMF012P10	FHCS M5 X 0.8 X 12 LG.
NS	24 FT.	201765	ROLLER CHAIN

MAT'L	PART #	CAD FILE .CHACF50.idw	TOLERANCES UNLESS OTHERWISE NOTED:		LOVESHAW RT. 296, SOUTH CANAAN, PA.	
	STD	PLOT DATE 3/20/2007				
ST. ST.		DRAWN DATE 5/24/2006	.X =±.050 INCH .XX =±.015 ANGLES 1/2 .XXX =±.005  .X =±1.0mm METRIC .XX =±.3mm MACH. FINISH 125 .XXX =±1mm		TITLE DRIVE CHAIN ASSEMBLY	
STAINLESS : NO FINISH		DO NOT SCALE PRINT			DWG NO .CHACF50	SCALE
THIS DRAWING AND SUBJECT MATTER THEREON IS THE EXCLUSIVE PROPERTY OF LOVESHAW-ITW AND IS TO BE TREATED BY YOU AS CONFIDENTIAL PROPRIETARY INFORMATION. THIS DRAWING OR SUBJECT MATTER THEREOF SHALL NOT BE REPRODUCED OTHER THAN FOR YOUR OWN USE OR TO BE DISCLOSED TO OTHER WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOVESHAW-ITW AND WILL BE RETURNED TO LOVESHAW-ITW UPON REQUEST.			FRACTIONS 1/64		MATERIAL	CHECKED
					DRAWN RICHM	APPROVED

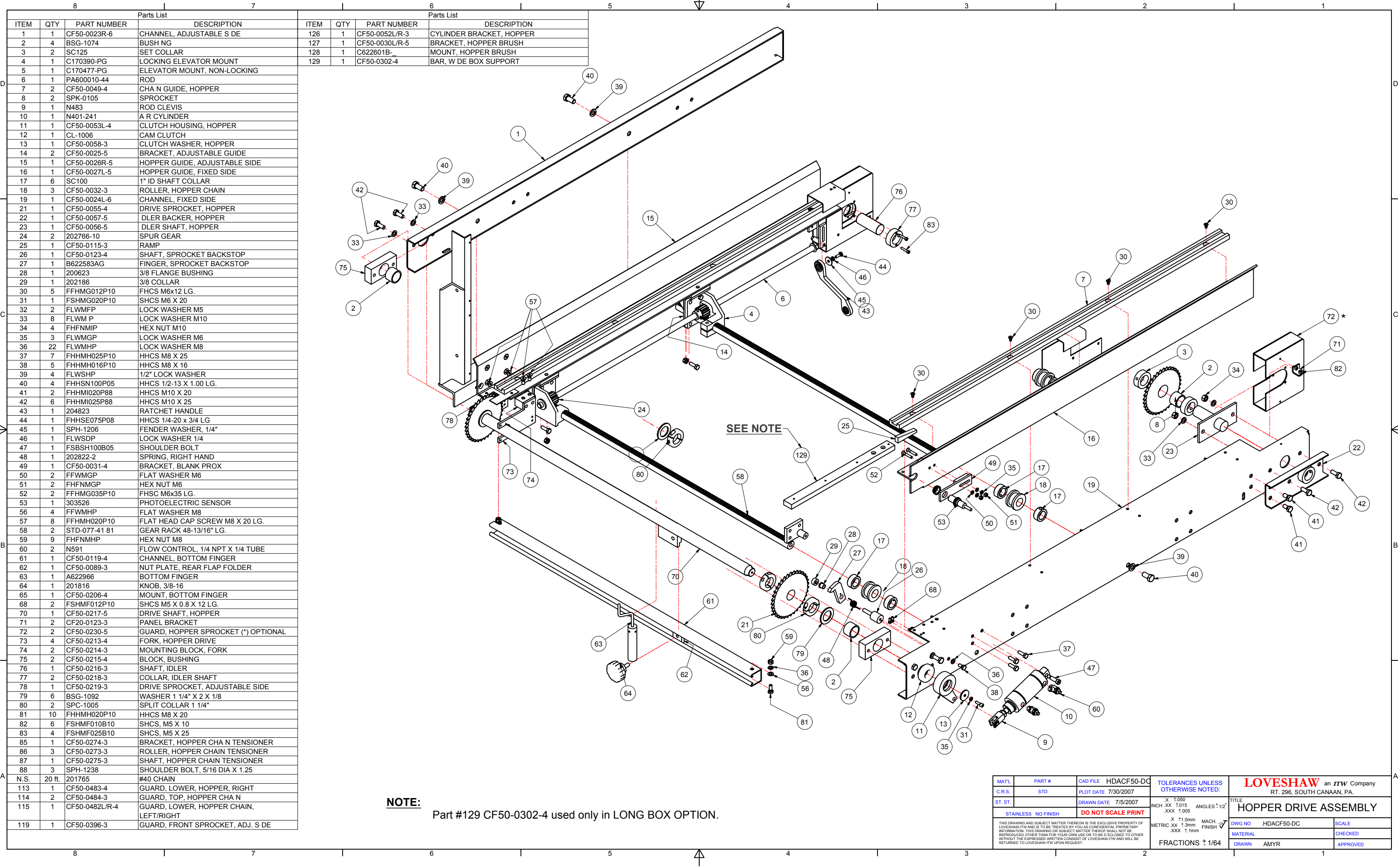


REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
A	RELEASED	3/23/2006	AMYR



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	4	CF50-0059-4	SIDE MEMBER, HOPPER FRAME
2	1	CF50-0060L-5	BOTTOM RAIL, HOPPER FRAME LEFT
3	1	CF50-0060R-5	BOTTOM RAIL, HOPPER FRAME RIGHT
4	2	CF50-0064-4	CROSS MEMBER, HOPPER
5	4	204738-2	HYDRAULIC CYLINDER
6	4	CF50-0062-5	BRACKET, HOPPER LIFT
7	1	204738-1	HYDRAULIC PUMP
8	1	204738-1/H	HYDRAULIC PUMP HANDLE
9	1	CF50-0065-4	MOUNTING PLATE, HOPPER JACK
10	2	CF50-0061-4	TIE BAR, HOPPER FRAME
11	1	CF50-0118-4	SHAFT, HOPPER GATE
12	1	CF50-0117R-4	ANGLE, HOPPER RAIL
13	2	CF50-0116-4	BRACKET, HOPPER RAIL
14	62	FLWMIP	LOCK WASHER M10
15	8	FLWMHP	LOCK WASHER M8
16	8	FHHMH020P10	HHCS M8 X 20
17	38	FHHMI020P88	HHCS M10 X 20
18	8	FHHMI030P88	HHCS M10 X 1.5 X 30 LG.
19	23	FLWMFP	LOCK WASHER M5
20	16	FHHMF010P10	HHCS M5 X 0.8 X 10 LG.
21	3	FSHM060B08	SHCS M5 X 60
22	1	CF50-0124-4	HOSE GUARD
23	4	FHHMF012910	HHCS M5 X 12
24	1	40-026	SCALE
25	8	FHFNMHP	HEX NUT, M8
26	14	FHHMI016P10	HHCS M10 X 16
27	1	CF50-0170-4	POINTER, HOPPER
28	2	FHFNMIP	HEX NUT M10
29	6	SPH-1259	GROMMET, RUBBER, 1/4" ID
30	1	SPH-1260	GROMMET, RUBBER, 1/2" ID
31	1	CF50-0063L-5	TOP RAIL, LEFT
32	1	CF50-0063R-5	TOP RAIL, RIGHT
33	2	CF50-0192 -4	LEG EXTENSION, HOPPER (OPTIONAL)

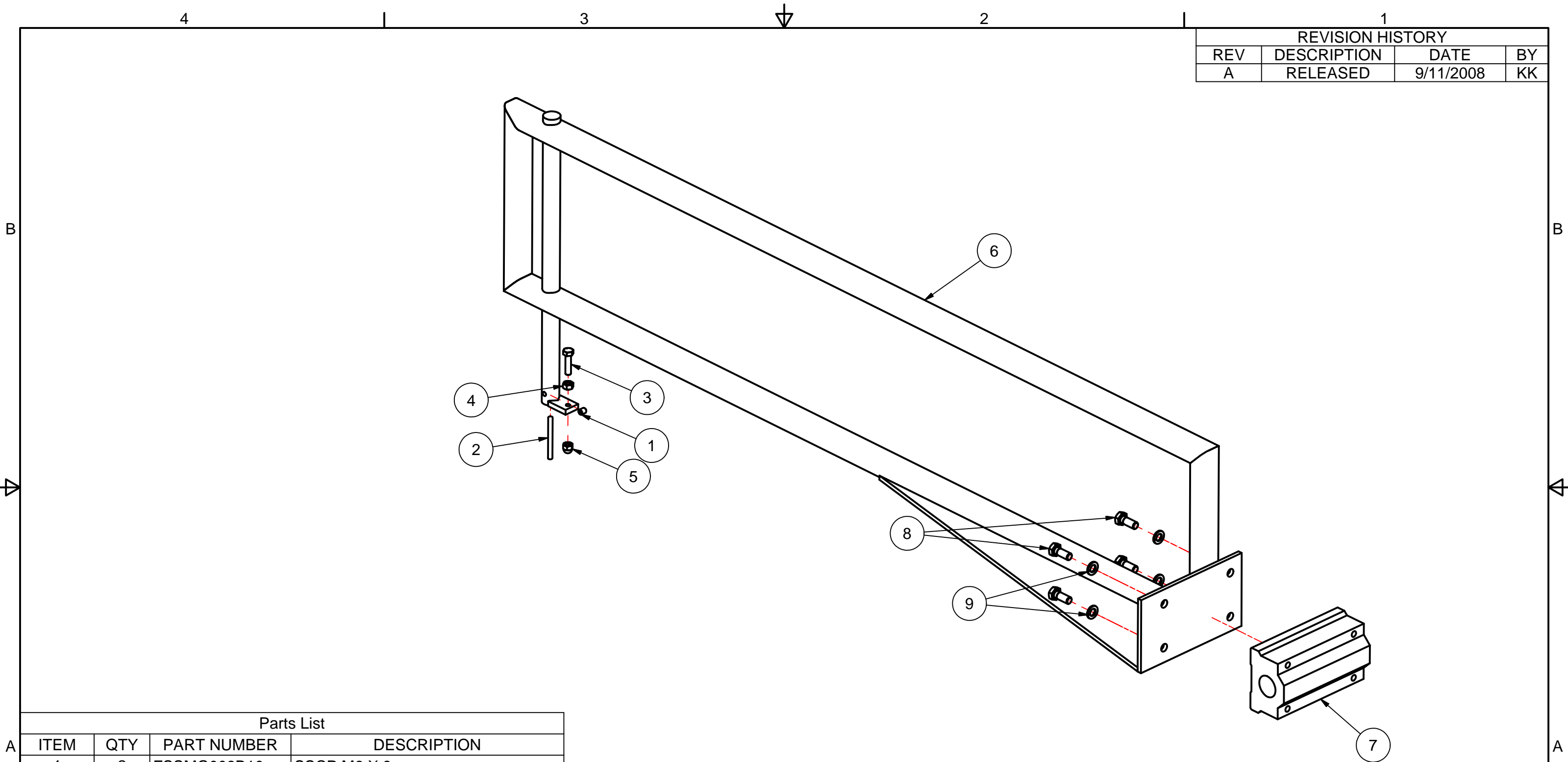
MATL	PART #	CAD FILE .HFACF50	TOLERANCES UNLESS OTHERWISE NOTED:		LOVESHAW an ITW Company	
C R S	STD	PLOT DATE 3/26/2009	X =+0.050		RT. 296, SOUTH CANAAN, PA.	
ST ST	N/A	DRAWN DATE 3/21/2006	INCH XX =+0.015 ANGLES +1/2°		TITLE	
STAINLESS NO FINISH		DO NOT SCALE PRINT	METRIC XX =+0.3mm MACH FINISH		HOPPER FRAME ASSEMBLY	
THIS DRAWING AND SUBJECT MATTER THEREON IS THE EXCLUSIVE PROPERTY OF LOVESHAW ITW AND IS TO BE TREATED BY YOU AS CONFIDENTIAL PROPRIETARY INFORMATION. THIS DRAWING OR SUBJECT MATTER THEREOF SHALL NOT BE REPRODUCED OTHER THAN FOR YOUR OWN USE OR TO BE LOANED TO OTHER WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOVESHAW ITW AND WILL BE RETURNED TO LOVESHAW ITW UPON REQUEST.			FRACTIONS ± 1/64		DWG NO .HFACF50	SCALE N/A
					MATERIAL N/A	CHECKED
					DRAWN AMYR	APPROVED



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CF50-0023R-6	CHANNEL, ADJUSTABLE S DE
2	4	BSG-1074	BUSH NG
3	2	SC125	SET COLLAR
4	1	C170390-PG	LOCKING ELEVATOR MOUNT
5	1	C170477-PG	ELEVATOR MOUNT, NON-LOCKING
6	1	PA600010-44	ROD
7	2	CF50-0049-4	CHA N GUIDE, HOPPER
8	2	SPK-0105	SPROCKET
9	1	N483	ROD CLEVIS
10	1	N401-241	A R CYLINDER
11	1	CF50-0053L-4	CLUTCH HOUSING, HOPPER
12	1	CL-1006	CAM CLUTCH
13	1	CF50-0058-3	CLUTCH WASHER, HOPPER
14	2	CF50-0025-5	BRACKET, ADJUSTABLE GUIDE
15	1	CF50-0026R-5	HOPPER GUIDE, ADJUSTABLE SIDE
16	1	CF50-0027L-5	HOPPER GUIDE, FIXED SIDE
17	6	SC100	1" ID SHAFT COLLAR
18	3	CF50-0032-3	ROLLER, HOPPER CHAIN
19	1	CF50-0024L-6	CHANNEL, FIXED SIDE
21	1	CF50-0055-4	DRIVE SPROCKET, HOPPER
22	1	CF50-0057-5	DLER BACKER, HOPPER
23	1	CF50-0056-5	DLER SHAFT, HOPPER
24	2	202766-10	SPUR GEAR
25	1	CF50-0115-3	RAMP
26	1	CF50-0123-4	SHAFT, SPROCKET BACKSTOP
27	1	B622583AG	FINGER, SPROCKET BACKSTOP
28	1	200623	3/8 FLANGE BUSHING
29	1	202186	3/8 COLLAR
30	5	FFHMG012P10	FHCS M6x12 LG.
31	1	FSHMG020P10	SHCS M6 X 20
32	2	FLWMFP	LOCK WASHER M5
33	8	FLWM P	LOCK WASHER M10
34	4	FHFNMP	HEX NUT M10
35	3	FLWMGP	LOCK WASHER M6
36	22	FLWMHP	LOCK WASHER M8
37	7	FHHMH025P10	HHCS M8 X 25
38	5	FHHMH016P10	HHCS M8 X 16
39	4	FLWSHP	1/2" LOCK WASHER
40	4	FHHSN100P05	HHCS 1/2-13 X 1.00 LG.
41	2	FHHMI020P88	HHCS M10 X 20
42	6	FHHMI025P88	HHCS M10 X 25
43	1	204823	RATCHET HANDLE
44	1	FHHSE075P08	HHCS 1/4-20 x 3/4 LG
45	1	SPH-1206	FENDER WASHER, 1/4"
46	1	FLWSDP	LOCK WASHER 1/4
47	1	FSBSH100B05	SHOULDER BOLT
48	1	202822-2	SPRING, RIGHT HAND
49	1	CF50-0031-4	BRACKET, BLANK PROX
50	2	FFWMGP	FLAT WASHER M6
51	2	FHFNMG	HEX NUT M6
52	2	FFHMG035P10	FHSC M6x35 LG.
53	1	303526	PHOTOELECTRIC SENSOR
56	4	FFWMHP	FLAT WASHER M8
57	8	FFHMH020P10	FLAT HEAD CAP SCREW M8 X 20 LG.
58	2	STD-077-41 81	GEAR RACK 48-13/16" LG.
59	9	FHFNMP	HEX NUT M8
60	2	N591	FLOW CONTROL, 1/4 NPT X 1/4 TUBE
61	1	CF50-0119-4	CHANNEL, BOTTOM FINGER
62	1	CF50-0089-3	NUT PLATE, REAR FLAP FOLDER
63	1	A622966	BOTTOM FINGER
64	1	201816	KNOB, 3/8-16
65	1	CF50-0206-4	MOUNT, BOTTOM FINGER
68	2	FSHMF012P10	SHCS M5 X 0.8 X 12 LG.
70	1	CF50-0217-5	DRIVE SHAFT, HOPPER
71	2	CF20-0123-3	PANEL BRACKET
72	2	CF50-0230-5	GUARD, HOPPER SPROCKET (*) OPTIONAL
73	4	CF50-0213-4	FORK, HOPPER DRIVE
74	2	CF50-0214-3	MOUNTING BLOCK, FORK
75	2	CF50-0215-4	BLOCK, BUSHING
76	1	CF50-0216-3	SHAFT, IDLER
77	2	CF50-0218-3	COLLAR, IDLER SHAFT
78	1	CF50-0219-3	DRIVE SPROCKET, ADJUSTABLE SIDE
79	6	BSG-1092	WASHER 1 1/4" X 2 X 1/8
80	2	SPC-1005	SPLIT COLLAR 1 1/4"
81	10	FHHMH020P10	HHCS M8 X 20
82	6	FSHMF010B10	SHCS, M5 X 10
83	4	FSHMF025B10	SHCS, M5 X 25
85	1	CF50-0274-3	BRACKET, HOPPER CHA N TENSIONER
86	3	CF50-0273-3	ROLLER, HOPPER CHAIN TENSIONER
87	1	CF50-0275-3	SHAFT, HOPPER CHAIN TENSIONER
88	3	SPH-1238	SHOULDER BOLT, 5/16 DIA X 1.25
N.S.	20 ft.	201765	#40 CHAIN
113	1	CF50-0483-4	GUARD, LOWER, HOPPER, RIGHT
114	2	CF50-0484-3	GUARD, TOP, HOPPER CHA N
115	1	CF50-0482L/R-4	GUARD, LOWER, HOPPER CHAIN, LEFT/RIGHT
119	1	CF50-0396-3	GUARD, FRONT SPROCKET, ADJ. S DE

**NOTE:**  
Part #129 CF50-0302-4 used only in LONG BOX OPTION.

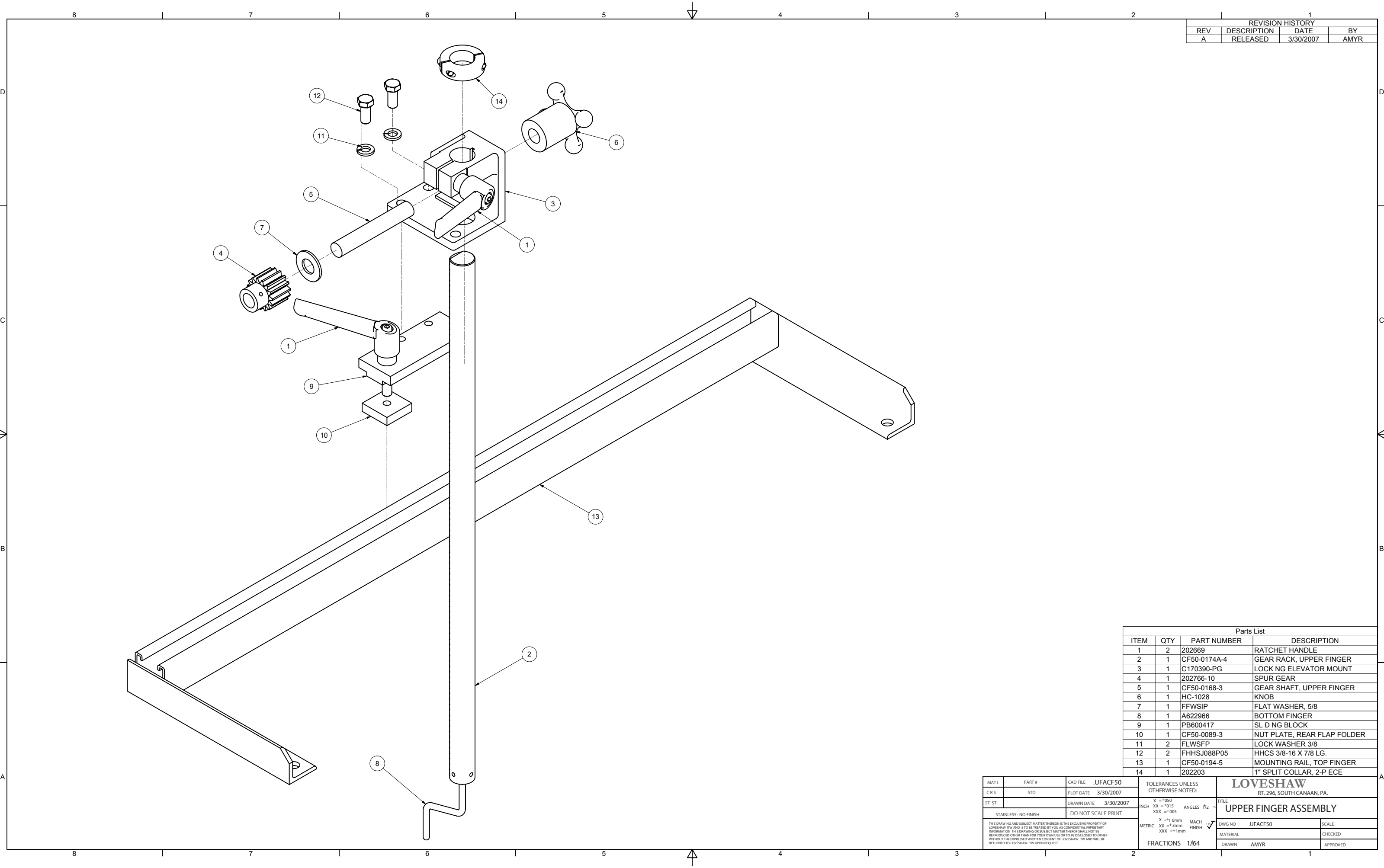
MAT'L	PART #	CAD FILE	HDACF50-DC	TOLERANCES UNLESS OTHERWISE NOTED:	LOVESHAW an ITW Company RT. 296, SOUTH CANAAN, PA.		
C.R.S.	STD	PLOT DATE	7/30/2007	X ±.050 INCH .XX ±.015 XXX ±.005	TITLE HOPPER DRIVE ASSEMBLY		
ST. ST.		DRAWN DATE	7/5/2007	X ±1.0mm METRIC .XX ±.3mm XXX ±.1mm	DWG NO .HDACF50-DC		
STAINLESS NO FINISH		DO NOT SCALE PRINT		MACH FINISH ✓	SCALE		
THIS DRAWING AND SUBJECT MATTER THEREON IS THE EXCLUSIVE PROPERTY OF LOVESHAW-ITW AND IS TO BE TREATED BY YOU AS CONFIDENTIAL PROPRIETARY INFORMATION. THIS DRAWING OR SUBJECT MATTER THEREOF SHALL NOT BE REPRODUCED OTHER THAN FOR YOUR OWN USE OR TO BE SOLOED TO OTHER WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOVESHAW-ITW AND WILL BE RETURNED TO LOVESHAW-ITW UPON REQUEST.				FRACTIONS ± 1/64	DRAWN	APPROVED	
					AMYR		



REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
A	RELEASED	9/11/2008	KK

Parts List				
ITEM	QTY	PART NUMBER	DESCRIPTION	
1	2	FSSMG008B10	SSCP M6 X 8	
2	1	SPH-1413	PIN, HOPPER GATE	
3	1	FHHMG025P10	HEX HD. CAP SCREW M6 X 25 LG.	
4	1	FHFNMGP	HEX NUT M6	
5	1	SPH-1256	ACORN NUT, M6	
6	1	CF50-0041L-5	HOPPER GATE ASSEMBLY	
7	1	PB25-SB-2	LINEAR PILLOW BLOCK	
8	4	FHHMH020P10	HEX HD. CAP SCREW M8 X 20 LG.	
9	4	FLWMHP	LOCK WASHER M8	

MAT'L	PART #	CAD FILE .BPACF50-DC	TOLERANCES UNLESS OTHERWISE NOTED:  .X =±.050 INCH .XX =±.015    ANGLES ± 1/2 .XXX =±.005  .X =±1.0mm    MACH. FINISH 125✓ METRIC .XX =±.3mm .XXX =±.1mm  FRACTIONS ± 1/64	LOVESHAW RT. 296, SOUTH CANAAN, PA.	
N/A	STD	PLOT DATE 9/11/2009		TITLE BOX PUSHER ASSEMBLY	
ST. ST.	N/A	DRAWN DATE 9/11/2008	THIS DRAWING AND SUBJECT MATTER THEREON IS THE EXCLUSIVE PROPERTY OF LOVESHAW-ITW AND IS TO BE TREATED BY YOU AS CONFIDENTIAL PROPRIETARY INFORMATION. THIS DRAWING OR SUBJECT MATTER THEREOF SHALL NOT BE REPRODUCED OTHER THAN FOR YOUR OWN USE OR TO BE DISCLOSED TO OTHER WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOVESHAW-ITW AND WILL BE RETURNED TO LOVESHAW-ITW UPON REQUEST.	DWG NO .BPACF50/B    SCALE 1:4	
STAINLESS : NO FINISH		DO NOT SCALE PRINT		MATERIAL N/A    CHECKED	
				DRAWN KENK    APPROVED	



REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
A	RELEASED	3/30/2007	AMYR

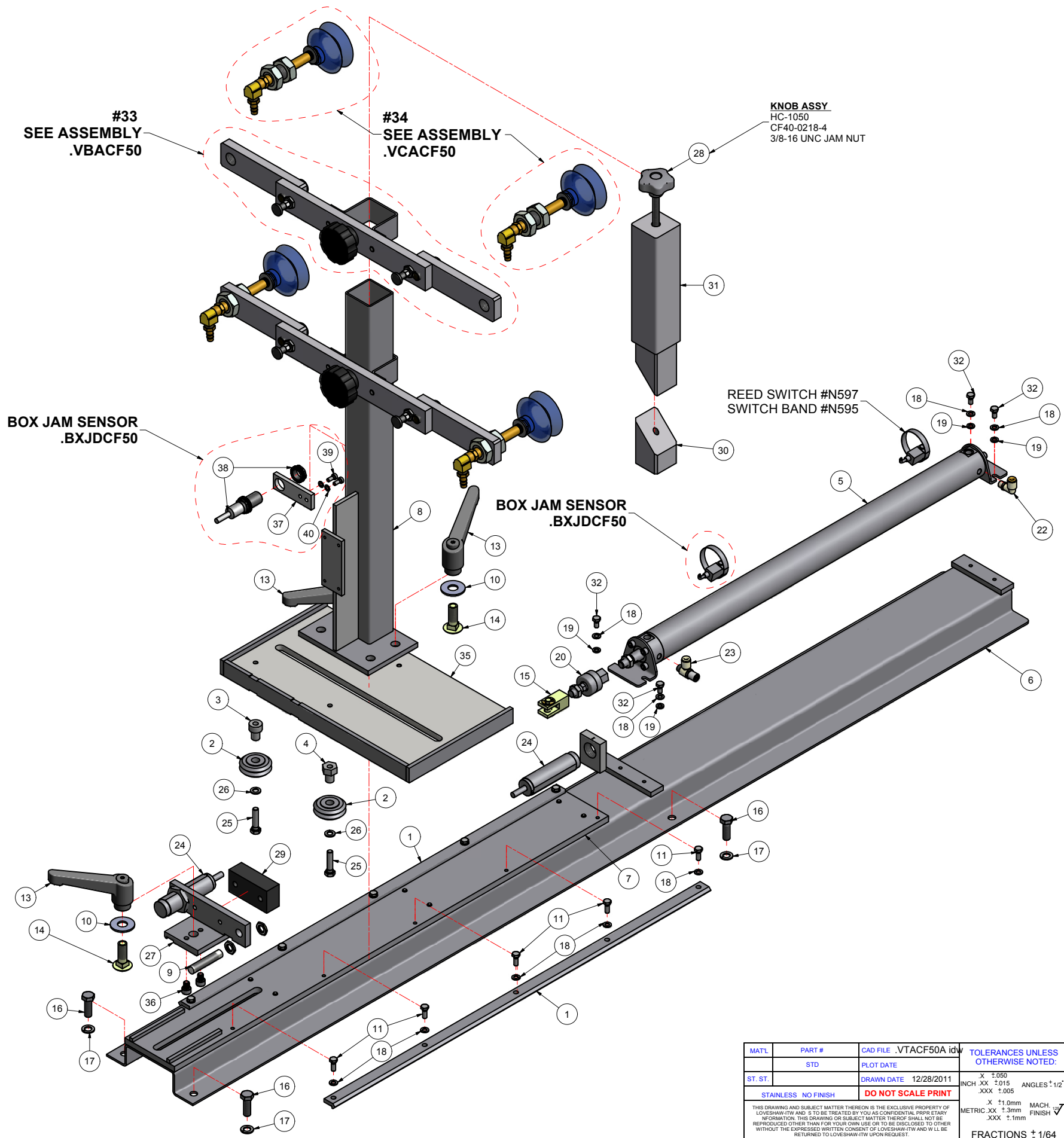
Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	202669	RATCHET HANDLE
2	1	CF50-0174A-4	GEAR RACK, UPPER FINGER
3	1	C170390-PG	LOCK NG ELEVATOR MOUNT
4	1	202766-10	SPUR GEAR
5	1	CF50-0168-3	GEAR SHAFT, UPPER FINGER
6	1	HC-1028	KNOB
7	1	FFWSIP	FLAT WASHER, 5/8
8	1	A622966	BOTTOM FINGER
9	1	PB600417	SL D NG BLOCK
10	1	CF50-0089-3	NUT PLATE, REAR FLAP FOLDER
11	2	FLWSFP	LOCK WASHER 3/8
12	2	FHHSJ088P05	HHCS 3/8-16 X 7/8 LG.
13	1	CF50-0194-5	MOUNTING RAIL, TOP FINGER
14	1	202203	1" SPLIT COLLAR, 2-P ECE

MAT L	PART #	CAD FILE	.UFACF50		TOLERANCES UNLESS OTHERWISE NOTED: X =+0.050 INCH XX =+0.015 XXX =+0.005 X =+1.0mm XX =+3mm XXX =+1mm		LOVESHAW RT. 296, SOUTH CANAAN, PA.	
C R S	STD	PLOT DATE	3/30/2007				TITLE UPPER FINGER ASSEMBLY	
ST ST		DRAWN DATE	3/30/2007		DO NOT SCALE PRINT		DWG NO	.UFACF50
STAINLESS - NO FINISH			MACH FINISH 127			MATERIAL		CHECKED
THIS DRAWING AND SUBJECT MATTER THEREON IS THE EXCLUSIVE PROPERTY OF LOVESHAW T/W AND IS TO BE TREATED BY YOU AS CONFIDENTIAL PROPRIETARY INFORMATION. THIS DRAWING OR SUBJECT MATTER THEREOF SHALL NOT BE REPRODUCED OTHER THAN FOR YOUR OWN USE OR TO BE DISCLOSED TO OTHER WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOVESHAW T/W AND WILL BE RETURNED TO LOVESHAW T/W UPON REQUEST.						FRACTIONS 1/64		
						DRAWN	AMYR	APPROVED



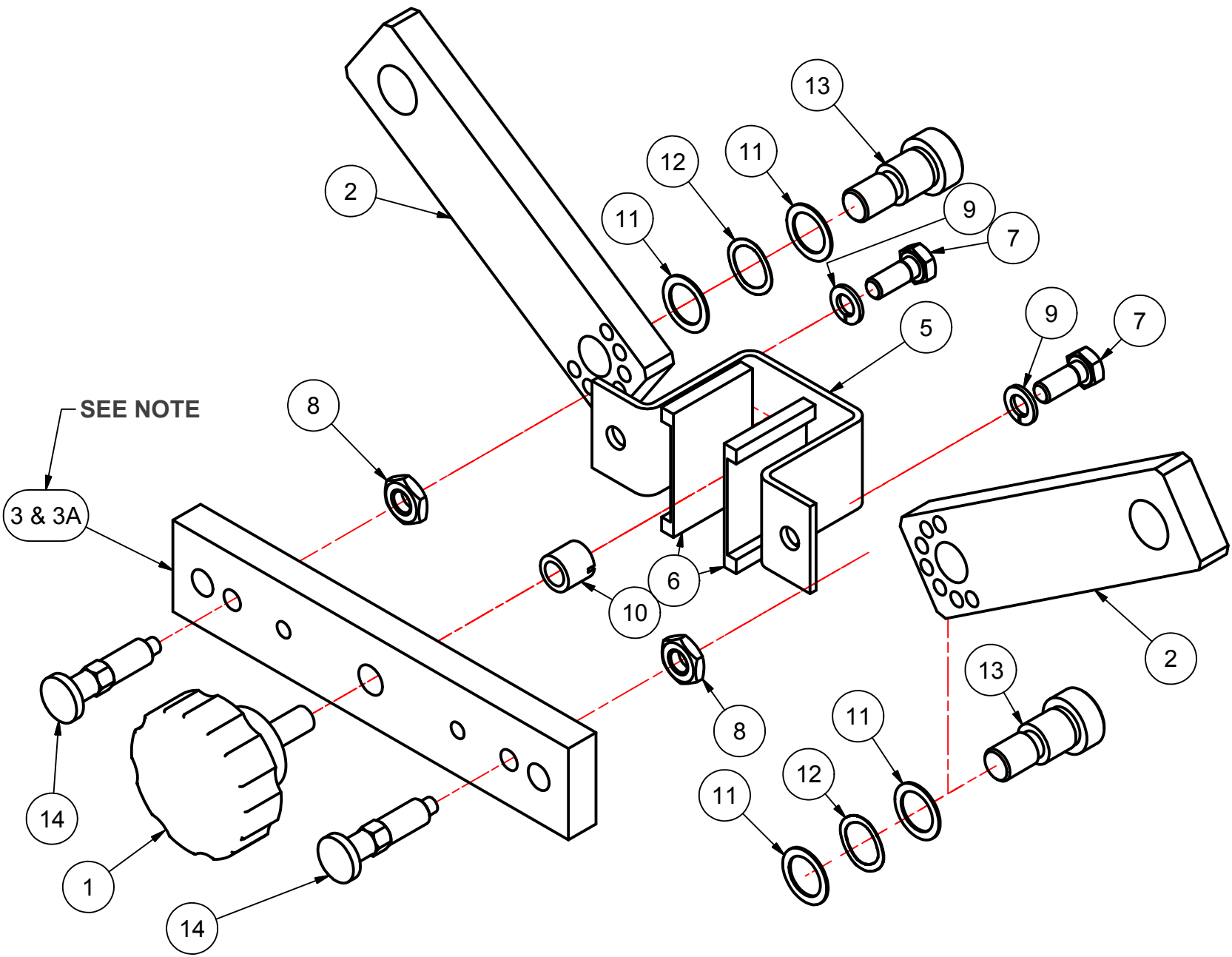
Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	C622400B	VEE TRACK
2	4	204225	VEE WHEEL
3	2	204227	BUSH NG, CONCENTRIC
4	2	204226	BUSH NG, ECCENTRIC
5	1	N401-242	TROLLEY CYL NDER
6	1	CF50-0069-6	BASE, VACUUM TROLLEY
7	1	CF50-0070-5	PLATE, VACUUM TROLLEY
8	1	CF50-0073-5	VACUUM TREE
9	1	302575	PROXIMITY SWITCH
10	3	FFWSHP	FLAT WASHER 1/2"
11	16	FHHMG016P10	HHCS M6 X 16
12	2	FHJNMHP	HEX JAM NUT, M8, PLATED
13	3	HC-1027	RATCHET HANDLE
14	3	FCBSN150P05	CARRIAGE BOLT, 1/2-13 X 1 1/2"
15	1	N594	ROD CLEVIS
16	4	FHHM030P88	HHCS M10 X 30
17	4	FLWM P	LOCK WASHER M10
18	20	FLWMGP	LOCK WASHER M6
19	4	FFWMGP	FLAT WASHER M6
20	1	N629	FLOATING JOINT
21	1	FHJNSMP	7/16-20 HEX JAM NUT
22	1	14441	ELBOW, 1/4 TUBE X 1/8 NPT
23	1	N400-201	FLOW CONTROL, TAMPER PROOF
24	2	SHK-007	SHOCK ABSORBER
25	4	FHHMH035P10	HEX HD M8 X 35
26	4	FLWMHP	LOCK WASHER M8
27	1	CF50-0428-5	TROLLEY STOP
28	1	.CF40-0207-4	LOCK KNOB, VACUUM TREE
29	1	SPH-1507	BUMPER, POLYURETHANE
30	1	CF40-0206-4	NUT, SLIDING, VACUUM TREE
31	1	CF40-0205-4	EXTENSION, VACUUM TREE
32	4	FHHMG012P10	HHCS M6 X 12
33	2	.VBACF50	VACUUM BAR ASSEMBLY
34	4	.VCACF50	VACUUM CUP ASSEMBLY
35	1	CF50-0427-5	CARRIAGE PLATE, VACUUM TROLLEY
36	2	91290A414	
37	1	B621837	
38	1	303529	PHOTOELECTRIC SENSOR
39	2	FSHMF012P10	SHCS M5 X 0.8 X 12 LG.
40	2	FLWMFP	LOCK WASHER M5

REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
A	RELEASED	12/28/2011	RM



MATL	PART #	CAD FILE .VTACF50A idw	TOLERANCES UNLESS OTHERWISE NOTED:	LOVESHAW an ITW Company RT. 296, SOUTH CANAAN, PA.	
ST. ST.	STD	PLOT DATE	X: ±.050 INCH .XX: ±.015 .XXX: ±.005	TITLE VACUUM TROLLEY ASSEMBLY	
STAINLESS NO FINISH		DO NOT SCALE PRINT	ANGLES ±1/2° X: ±1.0mm MACH. FINISH METRIC .XX: ±.3mm .XXX: ±.1mm	DWG NO. .VTACF50A	SCALE
THIS DRAWING AND SUBJECT MATTER THEREON IS THE EXCLUSIVE PROPERTY OF LOVESHAW-ITW AND IS TO BE TREATED BY YOU AS CONFIDENTIAL. PROPRIETARY INFORMATION. THIS DRAWING OR SUBJECT MATTER THEREOF SHALL NOT BE REPRODUCED OTHER THAN FOR YOUR OWN USE OR TO BE DISCLOSED TO OTHERS WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOVESHAW-ITW AND WILL BE RETURNED TO LOVESHAW-ITW UPON REQUEST.				MATERIAL	CHECKED
FRACTIONS ± 1/64				DRAWN richm	APPROVED

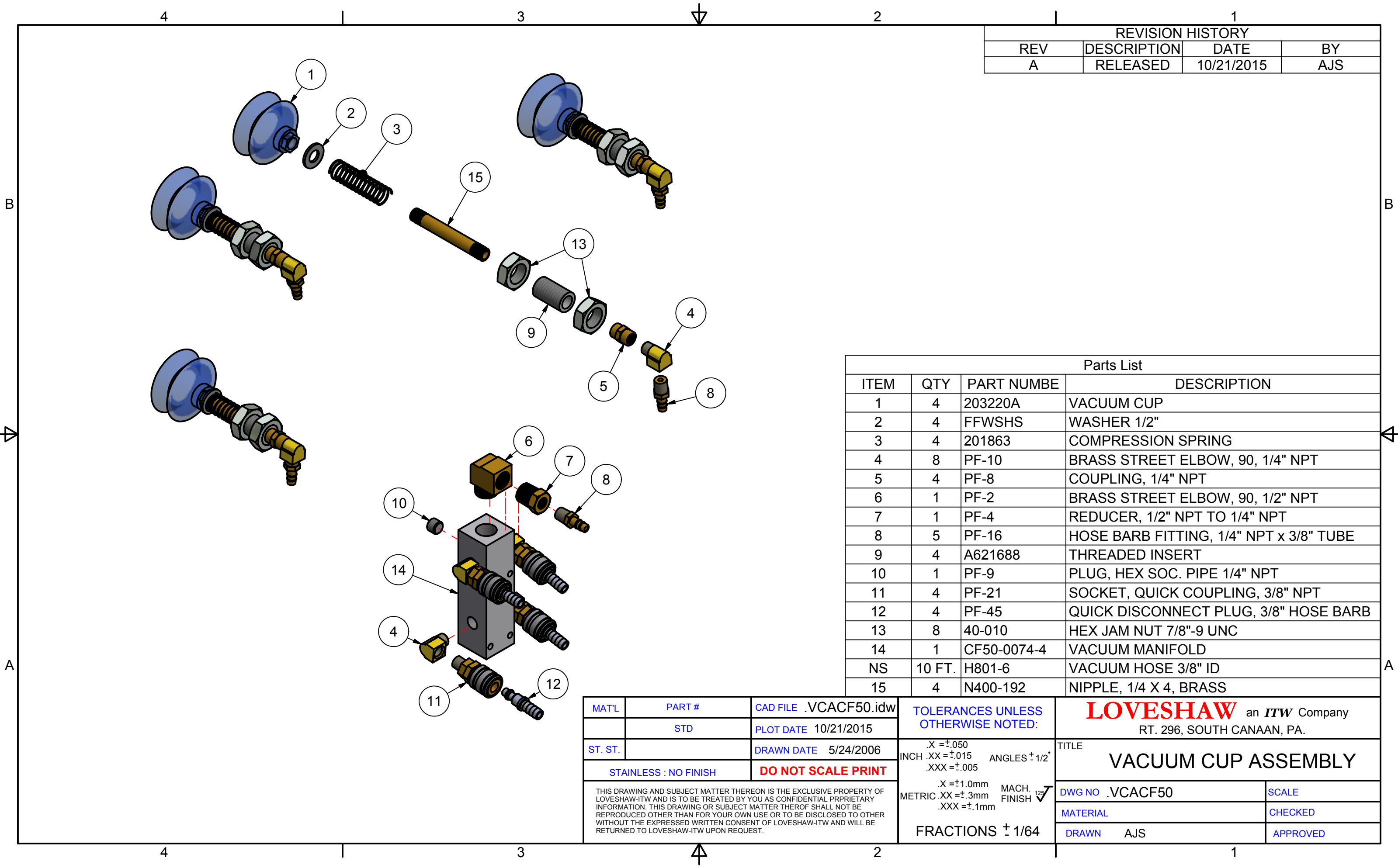
REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
A	RELEASED	9/25/2007	AMYR



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	201816	KNOB, 3/8-16
2	2	CF50-0078-4	ARM, VACUUM CUP
3	1	CF50-0079-4	BRACKET, VACUUM CUPS
3A	1	CF50-0079A-4	BRACKET, VACUUM CUPS
NS	1	CF50-0079A-4	BRACKET, VACUUM CUPS, LONG BOX
5	1	CF50-0175-4	BRACKET, VACUUM TREE
6	2	CF50-0205-4	SPACER, VACUUM BAR
7	2	FHHMH020P10	HHCS M8 X 20
8	2	FHJNMIP	HEX JAM NUT, M10, PLATED
9	2	FLWMHP	LOCK WASHER M8
10	1	SPH-1219	THREADED INSERT
11	4	SPH-1319	SHIM
12	2	SPH-1320	WAVE WASHER
13	2	SPH-1321	SHLDR. BOLT 5/8" DIA. X 5/8" LG., 1/2-13 THRD.
14	2	SPH-1325	SPRING PLUNGER, NON-LOCKING

**Note:**  
Part #3 CF50-0079-4 used in standard VACUUM BAR ASSY.  
Part #3A CF50-0079A-4 used in LONG BOX OPTION VACUUM BAR ASSY.

MAT'L	PART #	CAD FILE .VBACF50-PIN	TOLERANCES UNLESS OTHERWISE NOTED:  .X =±.050 INCH .XX =±.015    ANGLES ± 1/2° .XXX =±.005  .X =±1.0mm METRIC .XX =±.3mm    MACH. FINISH 125✓ .XXX =±.1mm  FRACTIONS ± 1/64	LOVESHAW an ITW Company RT. 296, SOUTH CANAAN, PA.	
C.R.S.	STD	PLOT DATE 9/7/2009		TITLE VACUUM BAR ASSEMBLY	
ST. ST.	N/A	DRAWN DATE 9/25/2007		DWG NO .VBACF50-PIN    SCALE N/A	
STAINLESS : NO FINISH		DO NOT SCALE PRINT	MACH. FINISH 125✓	MATERIAL N/A    CHECKED	
THIS DRAWING AND SUBJECT MATTER THEREON IS THE EXCLUSIVE PROPERTY OF LOVESHAW-ITW AND IS TO BE TREATED BY YOU AS CONFIDENTIAL PROPRIETARY INFORMATION. THIS DRAWING OR SUBJECT MATTER THEREOF SHALL NOT BE REPRODUCED OTHER THAN FOR YOUR OWN USE OR TO BE DISCLOSED TO OTHER WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOVESHAW-ITW AND WILL BE RETURNED TO LOVESHAW-ITW UPON REQUEST.				DRAWN AMYR    APPROVED	



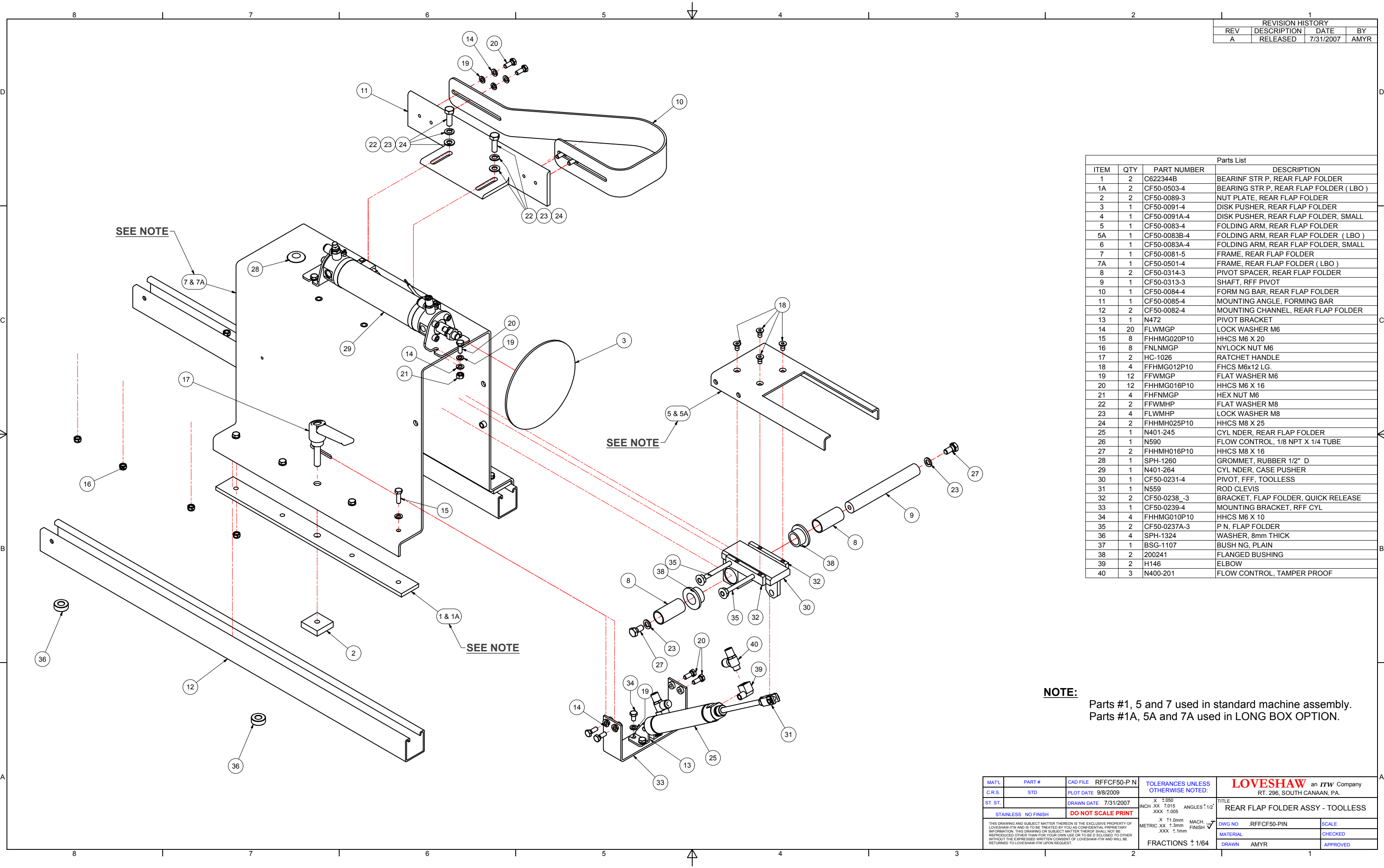
REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
A	RELEASED	10/21/2015	AJS

Parts List			
ITEM	QTY	PART NUMBE	DESCRIPTION
1	4	203220A	VACUUM CUP
2	4	FFWSHS	WASHER 1/2"
3	4	201863	COMPRESSION SPRING
4	8	PF-10	BRASS STREET ELBOW, 90, 1/4" NPT
5	4	PF-8	COUPLING, 1/4" NPT
6	1	PF-2	BRASS STREET ELBOW, 90, 1/2" NPT
7	1	PF-4	REDUCER, 1/2" NPT TO 1/4" NPT
8	5	PF-16	HOSE BARB FITTING, 1/4" NPT x 3/8" TUBE
9	4	A621688	THREADED INSERT
10	1	PF-9	PLUG, HEX SOC. PIPE 1/4" NPT
11	4	PF-21	SOCKET, QUICK COUPLING, 3/8" NPT
12	4	PF-45	QUICK DISCONNECT PLUG, 3/8" HOSE BARB
13	8	40-010	HEX JAM NUT 7/8"-9 UNC
14	1	CF50-0074-4	VACUUM MANIFOLD
NS	10 FT.	H801-6	VACUUM HOSE 3/8" ID
15	4	N400-192	NIPPLE, 1/4 X 4, BRASS

MAT'L	PART #	CAD FILE .VCACF50.idw	TOLERANCES UNLESS OTHERWISE NOTED:		LOVESHAW an ITW Company RT. 296, SOUTH CANAAN, PA.					
	STD	PLOT DATE 10/21/2015								
ST. ST.		DRAWN DATE 5/24/2006	.X =±.050 INCH .XX =±.015 ANGLES ± 1/2° .XXX =±.005  .X =±1.0mm MACH. FINISH 125✓ METRIC .XX =±.3mm .XXX =±.1mm  FRACTIONS ± 1/64		TITLE  VACUUM CUP ASSEMBLY					
STAINLESS : NO FINISH		DO NOT SCALE PRINT								
THIS DRAWING AND SUBJECT MATTER THEREON IS THE EXCLUSIVE PROPERTY OF LOVESHAW-ITW AND IS TO BE TREATED BY YOU AS CONFIDENTIAL PRPRIETARY INFORMATION. THIS DRAWING OR SUBJECT MATTER THEROF SHALL NOT BE REPRODUCED OTHER THAN FOR YOUR OWN USE OR TO BE DISCLOSED TO OTHER WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOVESHAW-ITW AND WILL BE RETURNED TO LOVESHAW-ITW UPON REQUEST.										
						DWG NO .VCACF50		SCALE		
						MATERIAL		CHECKED		
DRAWN AJS		APPROVED								





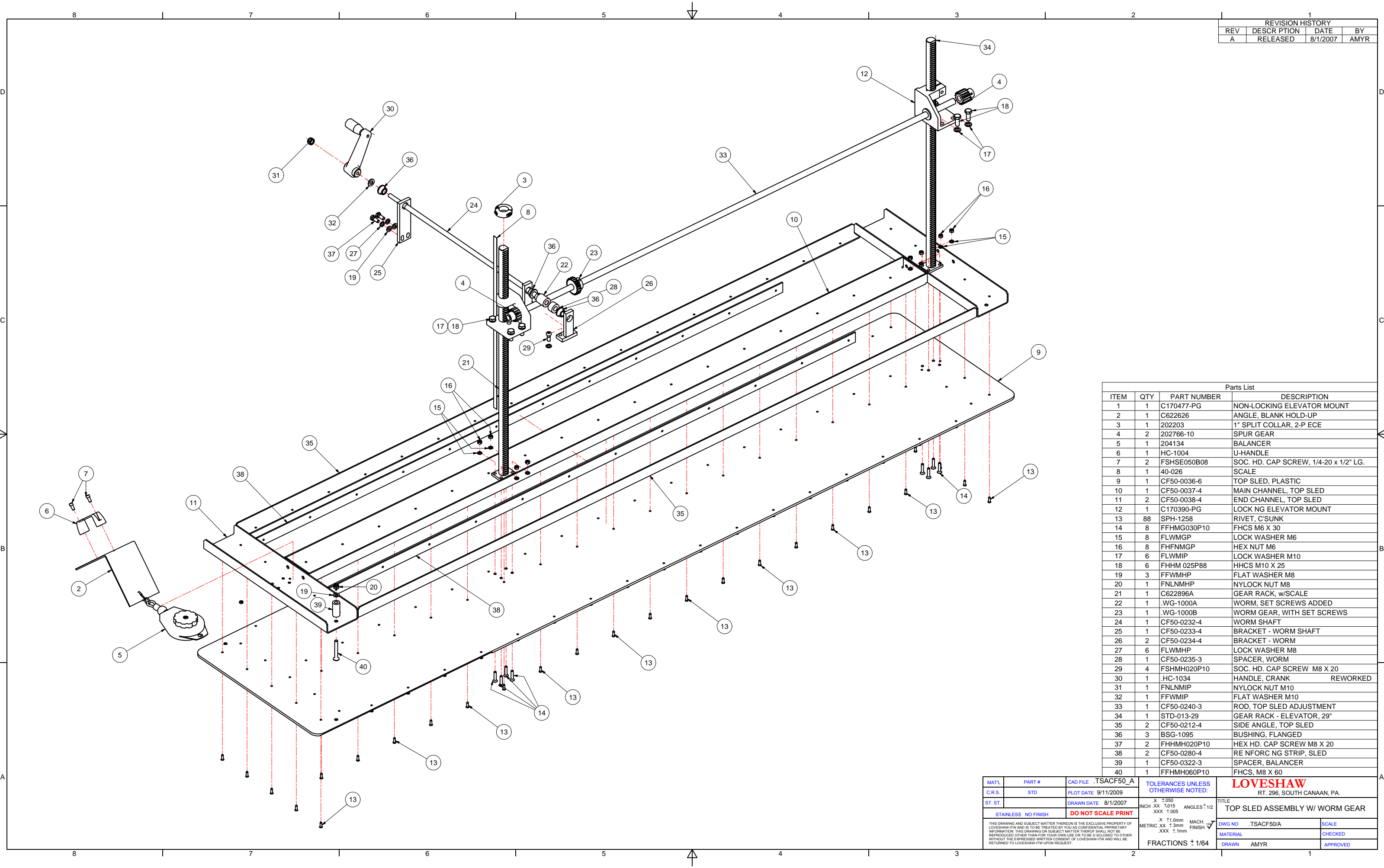


REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
A	RELEASED	7/31/2007	AMJR

Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	C622344B	BEARINF STR P, REAR FLAP FOLDER
1A	2	CF50-0503-4	BEARING STR P, REAR FLAP FOLDER ( LBO )
2	2	CF50-0089-3	NUT PLATE, REAR FLAP FOLDER
3	1	CF50-0091-4	DISK PUSHER, REAR FLAP FOLDER
4	1	CF50-0091A-4	DISK PUSHER, REAR FLAP FOLDER, SMALL
5	1	CF50-0083-4	FOLDING ARM, REAR FLAP FOLDER
5A	1	CF50-0083B-4	FOLDING ARM, REAR FLAP FOLDER ( LBO )
6	1	CF50-0083A-4	FOLDING ARM, REAR FLAP FOLDER, SMALL
7	1	CF50-0081-5	FRAME, REAR FLAP FOLDER
7A	1	CF50-0501-4	FRAME, REAR FLAP FOLDER ( LBO )
8	2	CF50-0314-3	PIVOT SPACER, REAR FLAP FOLDER
9	1	CF50-0313-3	SHAFT, RFF PIVOT
10	1	CF50-0084-4	FORM NG BAR, REAR FLAP FOLDER
11	1	CF50-0085-4	MOUNTING ANGLE, FORMING BAR
12	2	CF50-0082-4	MOUNTING CHANNEL, REAR FLAP FOLDER
13	1	N472	PIVOT BRACKET
14	20	FLWMGP	LOCK WASHER M6
15	8	FHHMG020P10	HHCS M6 X 20
16	8	FNLNMG	NYLOCK NUT M6
17	2	HC-1026	RATCHET HANDLE
18	4	FFHMG012P10	FHCS M6x12 LG.
19	12	FFWMGP	FLAT WASHER M6
20	12	FHHMG016P10	HHCS M6 X 16
21	4	FHFNMGP	HEX NUT M6
22	2	FFWMHP	FLAT WASHER M8
23	4	FLWMHP	LOCK WASHER M8
24	2	FHHMG025P10	HHCS M8 X 25
25	1	N401-245	CYL NDER, REAR FLAP FOLDER
26	1	N590	FLOW CONTROL, 1/8 NPT X 1/4 TUBE
27	2	FHHMH016P10	HHCS M8 X 16
28	1	SPH-1260	GROMMET, RUBBER 1/2" D
29	1	N401-264	CYL NDER, CASE PUSHER
30	1	CF50-0231-4	PIVOT, FFF, TOOLLESS
31	1	N559	ROD CLEVIS
32	2	CF50-0238_-3	BRACKET, FLAP FOLDER, QUICK RELEASE
33	1	CF50-0239-4	MOUNTING BRACKET, RFF CYL
34	4	FHHMG010P10	HHCS M6 X 10
35	2	CF50-0237A-3	P N, FLAP FOLDER
36	4	SPH-1324	WASHER, 8mm THICK
37	1	BSG-1107	BUSH NG, PLAIN
38	2	200241	FLANGED BUSHING
39	2	H146	ELBOW
40	3	N400-201	FLOW CONTROL, TAMPER PROOF

**NOTE:** Parts #1, 5 and 7 used in standard machine assembly.  
Parts #1A, 5A and 7A used in LONG BOX OPTION.

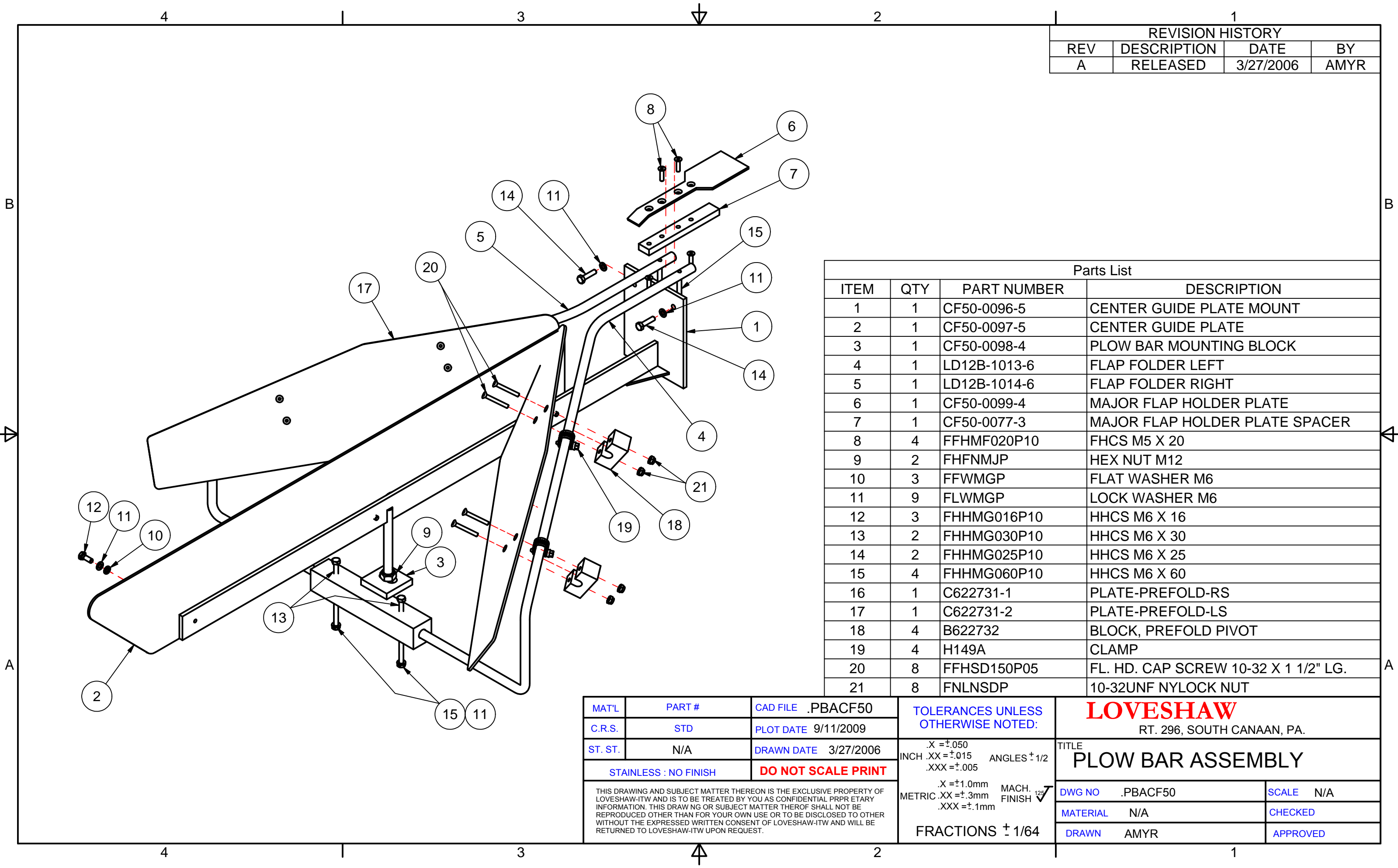
MATL	PART #	CAD FILE	RFFCF50-P-N	TOLERANCES UNLESS OTHERWISE NOTED:	LOVESHAW an ITW Company RT. 296, SOUTH CANAAN, PA.		
C.R.S.	STD	PLOT DATE	9/8/2009	X ±.050 INCH .XX ±.015 ANGLES ±1/2° .XXX ±.005	TITLE REAR FLAP FOLDER ASSY - TOOLLESS		
ST. ST.		DRAWN DATE	7/31/2007	X ±.10mm METRIC .XX ±.3mm MACH. FINISH .XXX ±.1mm	DWG NO	.RFFCF50-PIN	SCALE
STAINLESS NO FINISH		DO NOT SCALE PRINT		FRACTIONS ± 1/64	MATERIAL	CHECKED	
THIS DRAWING AND SUBJECT MATTER THEREON IS THE EXCLUSIVE PROPERTY OF LOVESHAW-ITW AND IS TO BE TREATED BY YOU AS CONFIDENTIAL PROPRIETARY INFORMATION. THIS DRAWING OR SUBJECT MATTER THEREOF SHALL NOT BE REPRODUCED OTHER THAN FOR YOUR OWN USE OR TO BE DISCLOSED TO OTHER WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOVESHAW-ITW AND WILL BE RETURNED TO LOVESHAW-ITW UPON REQUEST.						DRAWN	AMJR
							APPROVED



REVISION HISTORY			
REV	DESCR PTION	DATE	BY
A	RELEASED	8/1/2007	AMYR

Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	C170477-PG	NON-LOCKING ELEVATOR MOUNT
2	1	C622626	ANGLE, BLANK HOLD-UP
3	1	202203	1" SPLIT COLLAR, 2-P ECE
4	2	202766-10	SPUR GEAR
5	1	204134	BALANCER
6	1	HC-1004	U-HANDLE
7	2	FSHSE050B08	SOC. HD. CAP SCREW, 1/4-20 x 1/2" LG.
8	1	40-026	SCALE
9	1	CF50-0036-6	TOP SLED, PLASTIC
10	1	CF50-0037-4	MAIN CHANNEL, TOP SLED
11	2	CF50-0038-4	END CHANNEL, TOP SLED
12	1	C170390-PG	LOCK NG ELEVATOR MOUNT
13	88	SPH-1258	RIVET, C'SUNK
14	8	FFHMG030P10	FHCS M6 X 30
15	8	FLWMGP	LOCK WASHER M6
16	8	FHFNMG	HEX NUT M6
17	6	FLWMIP	LOCK WASHER M10
18	6	FHHM 025P88	HHCS M10 X 25
19	3	FFWMHP	FLAT WASHER M8
20	1	FNLNMHP	NYLOCK NUT M8
21	1	C622896A	GEAR RACK, w/SCALE
22	1	.WG-1000A	WORM, SET SCREWS ADDED
23	1	.WG-1000B	WORM GEAR, WITH SET SCREWS
24	1	CF50-0232-4	WORM SHAFT
25	1	CF50-0233-4	BRACKET - WORM SHAFT
26	2	CF50-0234-4	BRACKET - WORM
27	6	FLWMHP	LOCK WASHER M8
28	1	CF50-0235-3	SPACER, WORM
29	4	FSHMH020P10	SOC. HD. CAP SCREW M8 X 20
30	1	.HC-1034	HANDLE, CRANK REWORKED
31	1	FNLNMIP	NYLOCK NUT M10
32	1	FFWMIP	FLAT WASHER M10
33	1	CF50-0240-3	ROD, TOP SLED ADJUSTMENT
34	1	STD-013-29	GEAR RACK - ELEVATOR, 29"
35	2	CF50-0212-4	SIDE ANGLE, TOP SLED
36	3	BSG-1095	BUSHING, FLANGED
37	2	FHHMH020P10	HEX HD. CAP SCREW M8 X 20
38	2	CF50-0280-4	RE NFORC NG STRIP, SLED
39	1	CF50-0322-3	SPACER, BALANCER
40	1	FFHMH060P10	FHCS, M8 X 60

MATL	PART #	CAD FILE .TSACF50_A	TOLERANCES UNLESS OTHERWISE NOTED:	LOVESHAW RT. 296, SOUTH CANAAN, PA.	
C.R.S.	STD	PLOT DATE 9/11/2009	X: ±.050 INCH .XX: ±.015 XXX: ±.005	TITLE TOP SLED ASSEMBLY W/ WORM GEAR	
ST. ST.		DRAWN DATE 8/1/2007	ANGLES: ±1/2 X: ±1.0mm MACH. FINISH: XXX: ±.1mm	DWG NO .TSACF50/A	
STAINLESS NO FINISH		DO NOT SCALE PRINT	FRACTIONS ± 1/64	MATERIAL	CHECKED
THIS DRAWING AND SUBJECT MATTER THEREON IS THE EXCLUSIVE PROPERTY OF LOVESHAW-ITW AND IS TO BE TREATED BY YOU AS CONFIDENTIAL PROPRIETARY INFORMATION. THIS DRAWING OR SUBJECT MATTER THEREOF SHALL NOT BE REPRODUCED OTHER THAN FOR YOUR OWN USE OR TO BE D SOLOED TO OTHER WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOVESHAW-ITW AND WILL BE RETURNED TO LOVESHAW-ITW UPON REQUEST.				DRAWN	APPROVED
				AMYR	



REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
A	RELEASED	3/27/2006	AMYR

Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CF50-0096-5	CENTER GUIDE PLATE MOUNT
2	1	CF50-0097-5	CENTER GUIDE PLATE
3	1	CF50-0098-4	PLOW BAR MOUNTING BLOCK
4	1	LD12B-1013-6	FLAP FOLDER LEFT
5	1	LD12B-1014-6	FLAP FOLDER RIGHT
6	1	CF50-0099-4	MAJOR FLAP HOLDER PLATE
7	1	CF50-0077-3	MAJOR FLAP HOLDER PLATE SPACER
8	4	FFHMF020P10	FHCS M5 X 20
9	2	FHFNMJP	HEX NUT M12
10	3	FFWMGP	FLAT WASHER M6
11	9	FLWMGP	LOCK WASHER M6
12	3	FHHMG016P10	HHCS M6 X 16
13	2	FHHMG030P10	HHCS M6 X 30
14	2	FHHMG025P10	HHCS M6 X 25
15	4	FHHMG060P10	HHCS M6 X 60
16	1	C622731-1	PLATE-PREFOLD-RS
17	1	C622731-2	PLATE-PREFOLD-LS
18	4	B622732	BLOCK, PREFOLD PIVOT
19	4	H149A	CLAMP
20	8	FFHSD150P05	FL. HD. CAP SCREW 10-32 X 1 1/2" LG.
21	8	FNLNSDP	10-32UNF NYLOCK NUT

MAT'L	PART #	CAD FILE .PBACF50	TOLERANCES UNLESS OTHERWISE NOTED:  INCH .X =±.050 .XX =±.015 .XXX =±.005  METRIC .X =±1.0mm .XX =±.3mm .XXX =±.1mm  FRACTIONS ± 1/64	LOVESHAW RT. 296, SOUTH CANAAN, PA.	
C.R.S.	STD	PLOT DATE 9/11/2009		TITLE PLOW BAR ASSEMBLY	
ST. ST.	N/A	DRAWN DATE 3/27/2006		DWG NO .PBACF50	
STAINLESS : NO FINISH		DO NOT SCALE PRINT		SCALE N/A	
THIS DRAWING AND SUBJECT MATTER THEREON IS THE EXCLUSIVE PROPERTY OF LOVESHAW-ITW AND IS TO BE TREATED BY YOU AS CONFIDENTIAL PROPRIETARY INFORMATION. THIS DRAWING OR SUBJECT MATTER THEREOF SHALL NOT BE REPRODUCED OTHER THAN FOR YOUR OWN USE OR TO BE DISCLOSED TO OTHER WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOVESHAW-ITW AND WILL BE RETURNED TO LOVESHAW-ITW UPON REQUEST.			MACH. FINISH 125✓	MATERIAL N/A	
				CHECKED	
				DRAWN AMYR	
				APPROVED	



REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	RELEASED	6/10/2015	TONYS

Parts List			
ITEM	QTY	PART NUMBER	DESCR PTION
1	3	A195SG-TM1	SAFETY GATE SWITCH
3	4	CF20-0123-3	PANEL BRACKET
4	2	CF50-0126-5	LOWER GUARD PANEL
5	1	CF50-0130-4	FRONT PANEL
6	2	CF50-0140-4	SL D NG PANEL
7	4	CF50-0141-4	SL D NG PANEL EDGE
8	2	CF50-0142-3	KEY PLATE
9	1	CF50-0144-4	BACK PANEL
10	1	CF50-0146-5	DOOR PANEL
11	2	CF50-0147-4	WEAR STRIP, GUARDING
12	1	CF50-0148-5	FRAME, SLIDING DOOR
13	2	CF50-0149-5	DOOR CHANNEL
14	1	CF50-0143-3	SAFETY SWITCH SPACER
15	8	FFHMF010P10	FHCS M5 X 0.8 X 10 LG.
16	6	FHHMF010P10	HHCS M5 X 0.8 X 10 LG.
17	14	FHHMI030P88	HHCS M10 X 30
18	6	FLWMFP	LOCK WASHER M5
19	14	FLWMIP	LOCK WASHER M10
20	4	FNLNSEP	NYLOCK NUT 1/4-20
21	2	FSHMG040P10	SHCS M6 X 1.0 X 40 LG.
22	4	FSHSE100B05	SHCS 1/4-20 X 1 0 LG.
23	3	HC-1004	U-HANDLE
24	1	CF50-0152-3	DOOR STOP BRACKET
25	1	204238	DOOR LOCK
26	2	FFHMG016P10	FHCS M6 X 1.0 X 16 LG.
27	2	FFHMF012P10	FHCS M5 X 0.8 X 12 LG.
28	31	FBHMF010P10	BHCS M5 X 0.8 X 10 LG.
29	71	FFWMFP	FLAT WASHER M5
30	11	FSHMF012P10	SHCS M5 X 0.8 X 12 LG.
31	12	FSHMF020P10	SHCS M5 X 0.8 X 20 LG.
32	4	FSHME035P10	SHCS M4 X 0.7 X 35 LG.
33	2	FSHME050S10	SHCS M4 X 0.7 X 50 LG.
34	2	FSHMF040P10	SHCS M5 X 0.8 x 40 LG.
35	5	FHFNMFP	HEX NUT M5
36	1	CF50-0197-4	SUPPORT BRACKET, DOOR RAIL
37	4	CF50-0195-5	SL DE, SAFETY GATE
38	4	SPH-1258	RIVET, C/SUNK
39	1	CF50-0193-4	GUARD, DRIVE CHAIN
40	2	FLWMGP	LOCK WASHER M6
41	2	FHHMG012P10	HHCS M6 X 12
42	40	FBHMF016P10	BHCS M5 X 16
43	2	CF50-0211-4	TIE BAR, SAFETY CURTAIN
44	1	SPH-1348	GROMMET, RUBBER
45	1	SPH-1280	GROMMET, RUBBER
47	1	CF50-0376-4	STOP, SLIDING DOOR
48	2	FFWMGP	FLAT WASHER M6
49	2	FHHMG025P10	HHCS M6 X 25
55	1	CF50-0127-5	FIXED S DE PANEL
56	1	CF50-0473-4	TOP EXIT GUARD PANEL
57	1	CF50-0474-4	TOP EXIT GUARD PANEL SUPPORT
58	2	CF50-0478-6	EXIT GUARD FRAME
59	2	CF50-0481-4	EXIT GUARD GLASS
60	2	CF50-0489-4	EXIT GUARD BOTTOM
61	2	CF50-0469-3	GUARD ANGLE BRKT.
62	2	CF50-0480-4	EXIT GUARD HINGE P N TOP
63	2	CF50-0479-4	EXIT GUARD HINGE P N
64	1	CF50-0465-4	FILL PLATE BOTTOM FRAME
65	4	FHHMH016P10	HHCS M8 X 16
66	10	FETLWMHP	Lock Washer Ext. M8
67	6	FHFNMHP	HEX NUT M8
68	6	FHHMH020P10	HHCS M8 X 20
69	4	FFWMHP	FLAT WASHER M8
70	50	FETLWMFP	EXT. LOCK WASHER M5
71	47	FBHMF012P10	HEX SOC. BUTT. HD. SCREW
72	1	F3MB	RUBBER BUMPER

SHEET 1 OF 2  
VIEW OF ACCESS DOOR SLIDE

MATL	PART #	CAD FILE .SGACF50 rev 2	TOLERANCES UNLESS OTHERWISE NOTED:	LOVESHAW 2206 EASTON TPK., SOUTH CANAAN, PA.	
NOTED	STD	PLOT DATE 6/10/2015	X ±.050 INCH .XX ±.015 XXX ±.005	TITLE SAFETY GUARD ASSEMBLY	
ST. ST.	N/A	DRAWN DATE 6/10/2015	ANGLES ±1/2° X ±.0mm METRIC .XX ±.3mm XXX ±.1mm	DWG NO .SGACF50 rev 2	
STAINLESS NO FINISH		DO NOT SCALE PRINT	MACH. FINISH	SCALE N/A	CHECKED
THIS DRAWING AND SUBJECT MATTER THEREON IS THE EXCLUSIVE PROPERTY OF LOVESHAW AND IS TO BE TREATED BY YOU AS CONFIDENTIAL PROPRIETARY INFORMATION. THIS DRAWING OR SUBJECT MATTER THEREOF SHALL NOT BE REPRODUCED OTHER THAN FOR YOUR OWN USE OR TO BE DISCLOSED TO OTHER WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOVESHAW. AND WILL BE RETURNED TO LOVESHAW UPON REQUEST.			FRACTIONS ± 1/64	MATERIAL NOTED	APPROVED TONY'S
DRAWN		tonys			



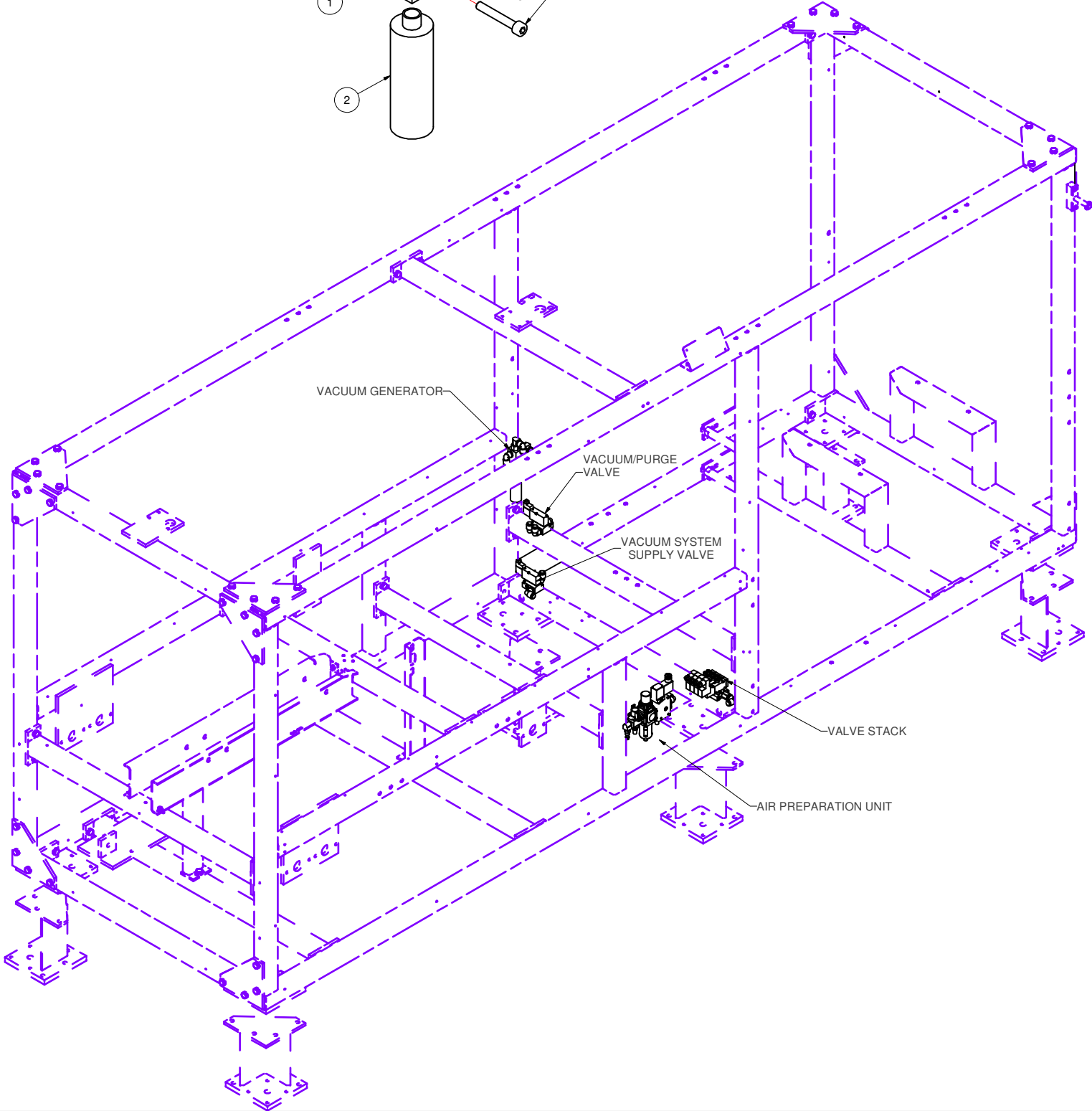
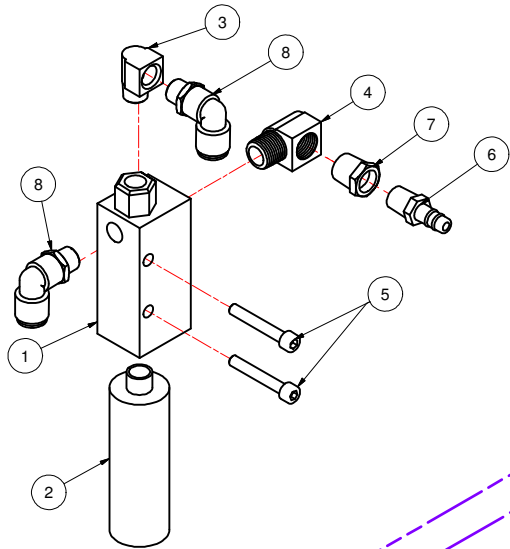
REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	RELEASED	6/11/2015	TONYS

Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	3	A195SG-TM1	SAFETY GATE SWITCH
2	4	CF20-0123-3	PANEL BRACKET
3	2	CF50-0126-5	LOWER GUARD PANEL
4	1	CF50-0130-4	FRONT PANEL
5	2	CF50-0140-4	SLIDING PANEL
6	4	CF50-0141-4	SLIDING PANEL EDGE
7	2	CF50-0142-3	KEY PLATE
8	1	CF50-0144-4	BACK PANEL
9	1	CF50-0146-5	DOOR PANEL
10	2	CF50-0147-4	WEAR STR P, GUARD NG
11	1	CF50-0148-5	FRAME, SLIDING DOOR
12	2	CF50-0149-5	DOOR CHANNEL
13	1	CF50-0143-3	SAFETY SWITCH SPACER
14	8	FFHMF010P10	FHCS M5 X 0.8 X 10 LG.
15	6	FHHMF010P10	HHCS M5 X 0.8 X 10 LG.
16	14	FHHM030P88	HHCS M10 X 30
17	6	FLWMFP	LOCK WASHER M5
18	14	FLWM P	LOCK WASHER M10
19	4	FNLNSEP	NYLOCK NUT 1/4-20
20	2	FSHMG040P10	SHCS M6 X 1.0 X 40 LG.
21	4	FSHSE100B05	SHCS 1/4-20 X 1.0 LG.
22	3	HC-1004	U-HANDLE
23	1	CF50-0152-3	DOOR STOP BRACKET
24	1	204238	DOOR LOCK
25	2	FFHMG016P10	FHCS M6 X 1.0 X 16 LG.
26	2	FFHMF012P10	FHCS M5 X 0.8 X 12 LG.
27	31	FBHMF010P10	BHCS M5 X 0.8 X 10 LG.
28	71	FFWMFP	FLAT WASHER M5
29	11	FSHMF012P10	SHCS M5 X 0.8 X 12 LG.
30	12	FSHMF020P10	SHCS M5 X 0.8 X 20 LG.
31	4	FSHME035P10	SHCS M4 X 0.7 X 35 LG.
32	2	FSHME050S10	SHCS M4 X 0.7 X 50 LG.
33	2	FSHMF040P10	SHCS M5 X 0.8 X 40 LG.
34	5	FHFNMFP	HEX NUT M5
35	1	CF50-0197-4	SUPPORT BRACKET, DOOR RAIL
36	4	CF50-0195-5	SLIDE, SAFETY GATE
37	4	SPH-1258	RIVET, C'SUNK
38	1	CF50-0193-4	GUARD, DRIVE CHAIN
39	2	FLWMGP	LOCK WASHER M6
40	2	FHHMG012P10	HHCS M6 X 12
41	40	FBHMF016P10	BHCS M5 X 16
42	2	CF50-0211-4	T E BAR, SAFETY CURTA N
43	1	SPH-1348	GROMMET, RUBBER
44	1	SPH-1280	GROMMET, RUBBER
46	1	CF50-0376-4	STOP, SLIDING DOOR
47	2	FFWMGP	FLAT WASHER M6
48	2	FHHMG025P10	HHCS M6 X 25
51	1	CF50-0416_-3	SPACER, SAFETY GATE SWITCH, CAT 3
52	1	CF50-0127-5	FIXED SIDE PANEL
53	1	CF50-0473-4	TOP EXIT GUARD PANEL
54	1	CF50-0474-4	TOP EXIT GUARD PANEL SUPPORT
55	2	CF50-0478-6	EXIT GUARD FRAME
56	2	CF50-0481-4	EXIT GUARD GLASS
57	2	CF50-0489-4	EXIT GUARD BOTTOM
58	2	CF50-0469-3	GUARD ANGLE BRKT.
59	2	CF50-0480-4	EXIT GUARD HINGE PIN TOP
60	2	CF50-0479-4	EXIT GUARD HINGE PIN
61	1	CF50-0465-4	F LL PLATE BOTTOM FRAME
62	4	FHHMH016P10	HHCS M8 X 16
63	10	FETLWMHP	Lock Washer Ext. M8
64	6	FHFNMHP	HEX NUT M8
65	6	FHHMH020P10	HHCS M8 X 20
66	4	FFWMHP	FLAT WASHER M8
67	50	FETLWMFP	EXT. LOCK WASHER M5
68	47	FBHMF012P10	HEX SOC. BUTT. HD. SCREW
69	1	F3MB	RUBBER BUMPER

SHEET 2 OF 2  
VIEW OF OPERATOR SIDE

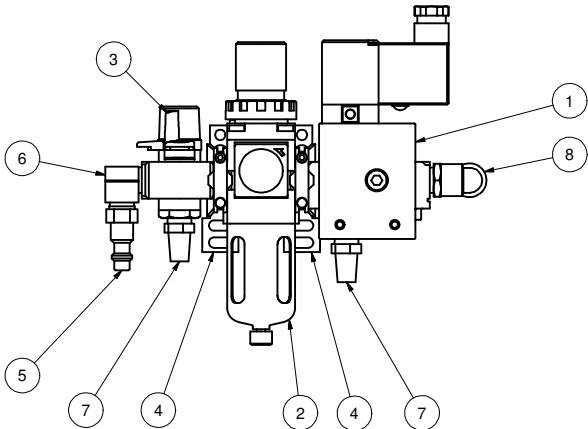
MATL	PART #	CAD FILE .SGACF50 rev 2	operator side	LOVESHAW	
NOTED	STD	PLOT DATE 6/11/2015	OPERATOR SIDE UNLESS OTHERWISE NOTED:	2206 EASTON TPK., SOUTH CANAAN, PA.	
ST. ST.	N/A	DRAWN DATE 6/11/2015	<div><div><div><div><div>x .050</div><div>INCH .XX .1015</div><div>ANGLES ±1/2°</div></div></div><div><div>x .1mm</div><div>METRIC XX ±.3mm</div><div>MACH FINISH ✓</div></div></div></div> <div><div>TITLE</div><div>SAFETY GUARD ASSEMBLY</div></div>		
STAINLESS NO FINISH		DO NOT SCALE PRINT		DWG NO .SGACF50 rev 2	SCALE N/A
<div>THIS DRAWING AND SUBJECT MATTER THEREON IS THE EXCLUSIVE PROPERTY OF LOVESHAW AND IS TO BE TREATED BY YOU AS CONFIDENTIAL PROPRIETARY INFORMATION. THIS DRAWING OR SUBJECT MATTER THEREOF SHALL NOT BE REPRODUCED OTHER THAN FOR YOUR OWN USE OR TO BE DISCLOSED TO OTHER WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOVESHAW. AND WILL BE RETURNED TO LOVESHAW UPON REQUEST.</div>				MATERIAL	CHECKED
				DRAWN	tonys
FRACTIONS ± 1/64					

VACUUM GENERATOR			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	N576B	VACUUM GENERATOR
2	1	402018	MUFFLER
3	1	PF-10	BRASS STREET ELBOW, 90, 1/4 NPT
4	1	PF-34	STEET ELBOW, 3/8 NPT
5	2	FSHMG040P10	SHCS M6 X 1.0 X 40 LG.
6	1	PF-16	HOSE BARB FITTING, 1/4 NPT x 3/8 TUBE
7	1	PF-38	REDUCER, 3/8 X 1/4 NPT, BRASS
8	2	PF-18	ELBOW, 1/4NPT X 3/8 PUSHLOC

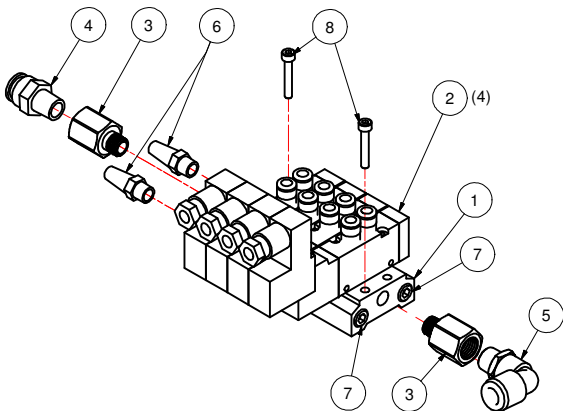


REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
A	RELEASED	5/24/2006	RM

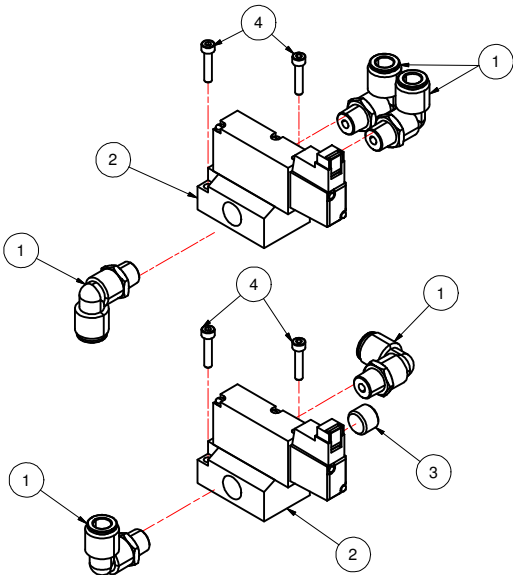
AIR PREPARATION UNIT			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	N402-100	SOFT START VALVE
2	1	N578	FILTER/REGULATOR
3	1	N402-101	MANUAL SHUT OFF/RELIEF VALVE
4	2	N584	BRACKET
5	1	PF-22	QUICK DISCONNECT PLUG, 1/4 NPT
6	1	PF-10	BRASS STREET ELBOW, 90, 1/4 NPT
7	2	N400-16	MUFFLER
8	1	PF-18	ELBOW, 1/4NPT X 3/8 PUSHLOC



VALVE STACK			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	N402-98M	MANIFOLD
2	4	N402-97	SOLENOID VALVE
3	2	PF-27	PIPE ADAPTER, 1/4 X 1/8
4	1	N400-8	STR. CONN. 1/4 NPT X 3/8 PUSH LOC
5	1	PF-18	ELBOW, 1/4NPT X 3/8 PUSHLOC
6	2	N400-178	MUFFLER
7	2	N400-178	SOCKET HEX PLUG, 1/8 NPT
8	2	FSHME025P10	SHCS M4 X 0.7 X 25 LG.

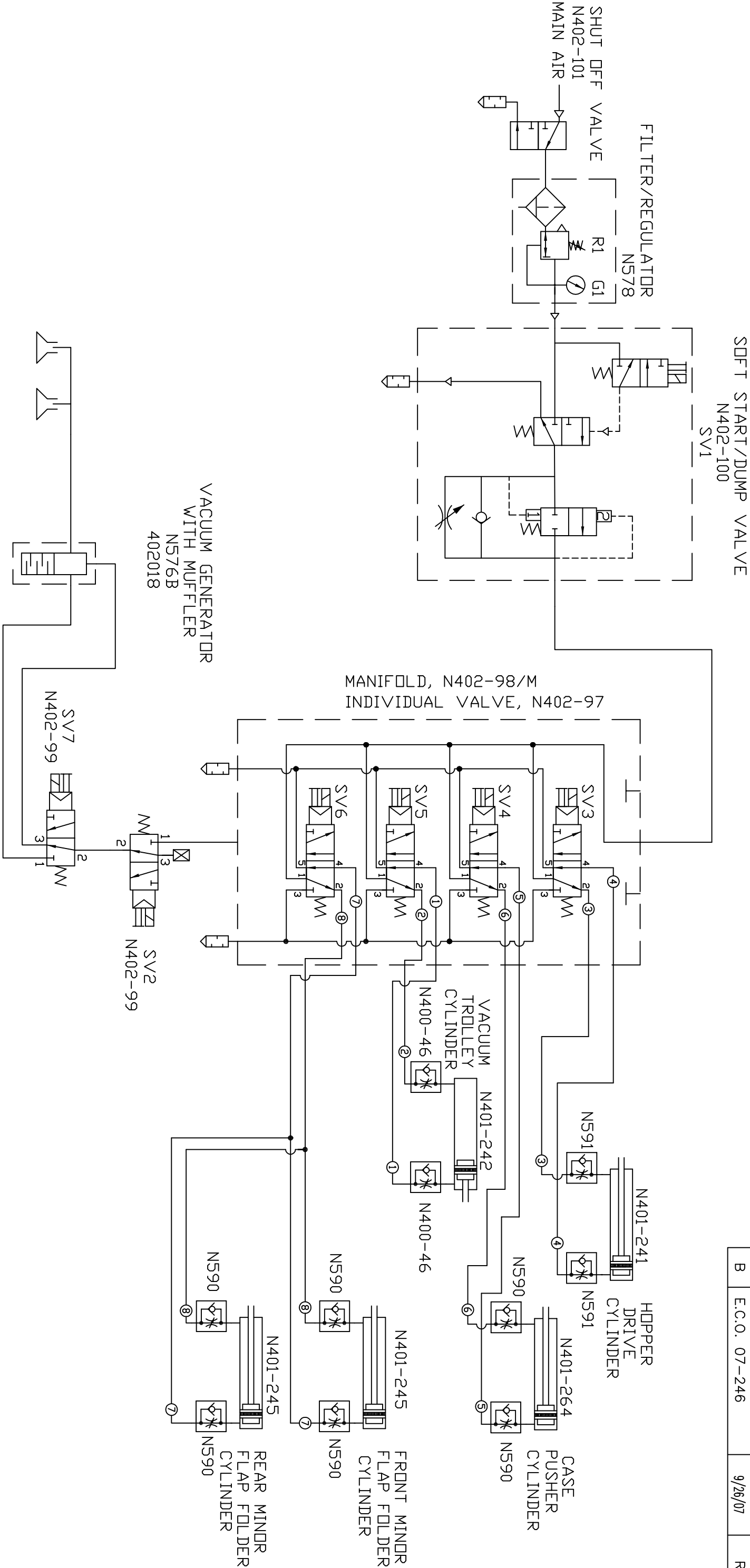


VACUUM VALVES			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	5	PF-18	ELBOW, 1/4NPT X 3/8 PUSHLOC
2	2	N402-99	VACUUM VALVE
3	1	PF-9	PLUG, HEX SOC PIPE, 1/4 NPT
4	4	FSHME020P10	SHCS M4 X 0.7 X 20 LG.



MATL	PART #	CAD FILE .PNEUCF50.i	TOLERANCES UNLESS OTHERWISE NOTED:	LOVESHAW RT. 296, SOUTH CANAAN, PA.	
ST ST	STD	PLOT DATE 9/26/2007	X =+ 050 INCH XX =+ 015 XXX =+ 005	TITLE PNEUMATIC COMPONENTS	
STAINLESS NO FINISH		DRAWN DATE 5/24/2006	ANGLES +1/2° X =+1 0mm METRIC XX =+ 3mm XXX =+ 1mm	DWG NO .PNEUCF50	SCALE
THIS DRAWING AND SUBJECT MATTER THEREON IS THE EXCLUSIVE PROPERTY OF LOVESHAW ITW AND IS TO BE TREATED BY YOU AS CONFIDENTIAL PROPRIETARY INFORMATION. THIS DRAWING OR SUBJECT MATTER THEREOF SHALL NOT BE REPRODUCED OTHER THAN FOR YOUR OWN USE OR TO BE DISCLOSED TO OTHER WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOVESHAW ITW AND WILL BE RETURNED TO LOVESHAW ITW UPON REQUEST.				MATERIAL	CHECKED
FRACTIONS ± 1/64				DRAWN RICHM	APPROVED

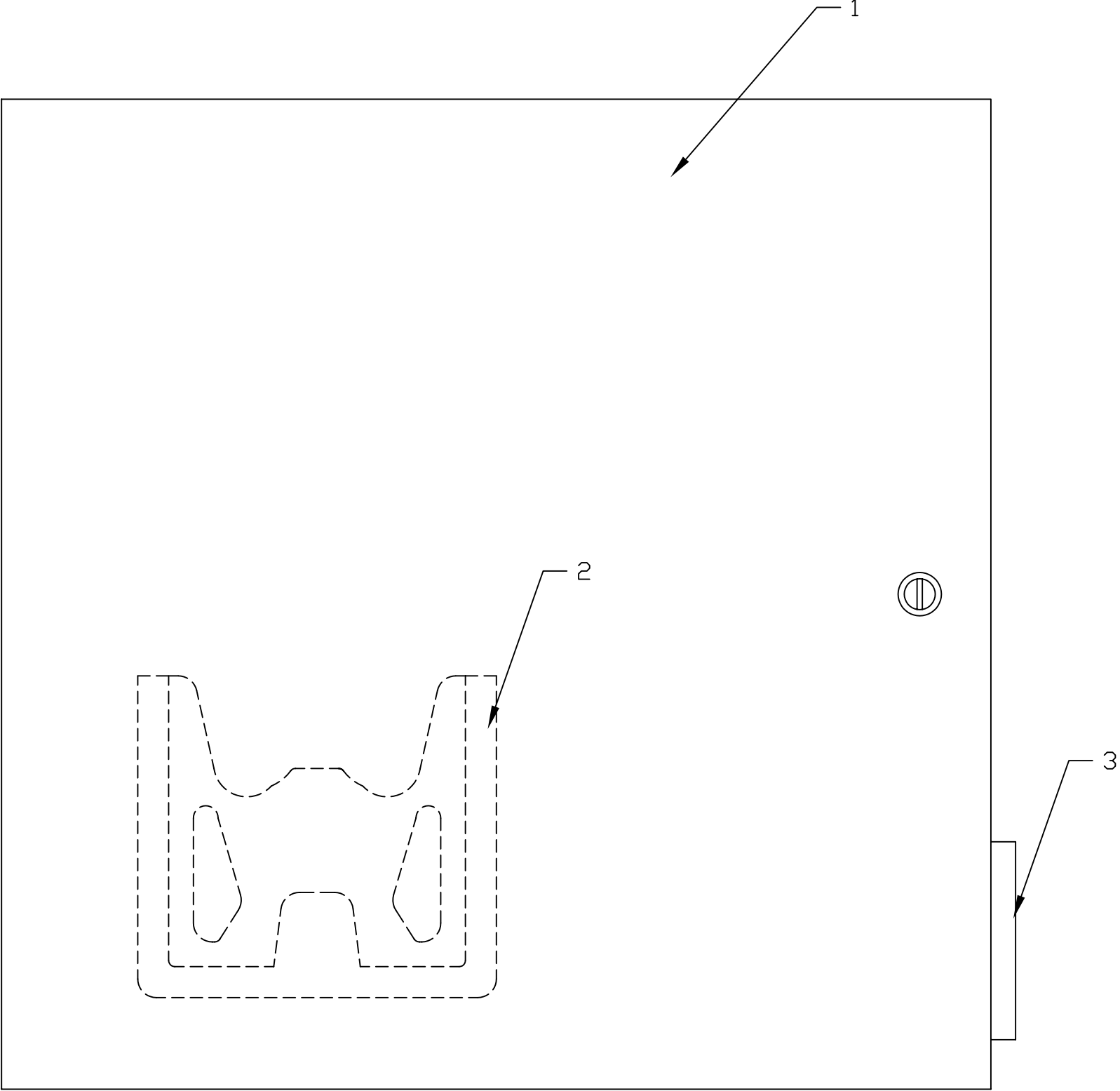
REVISION RECORD			
REV	DESCRIPTION	DATE	BY
A	RELEASED	3/23/07	RM
B	E.C.O. 07-246	9/26/07	RM



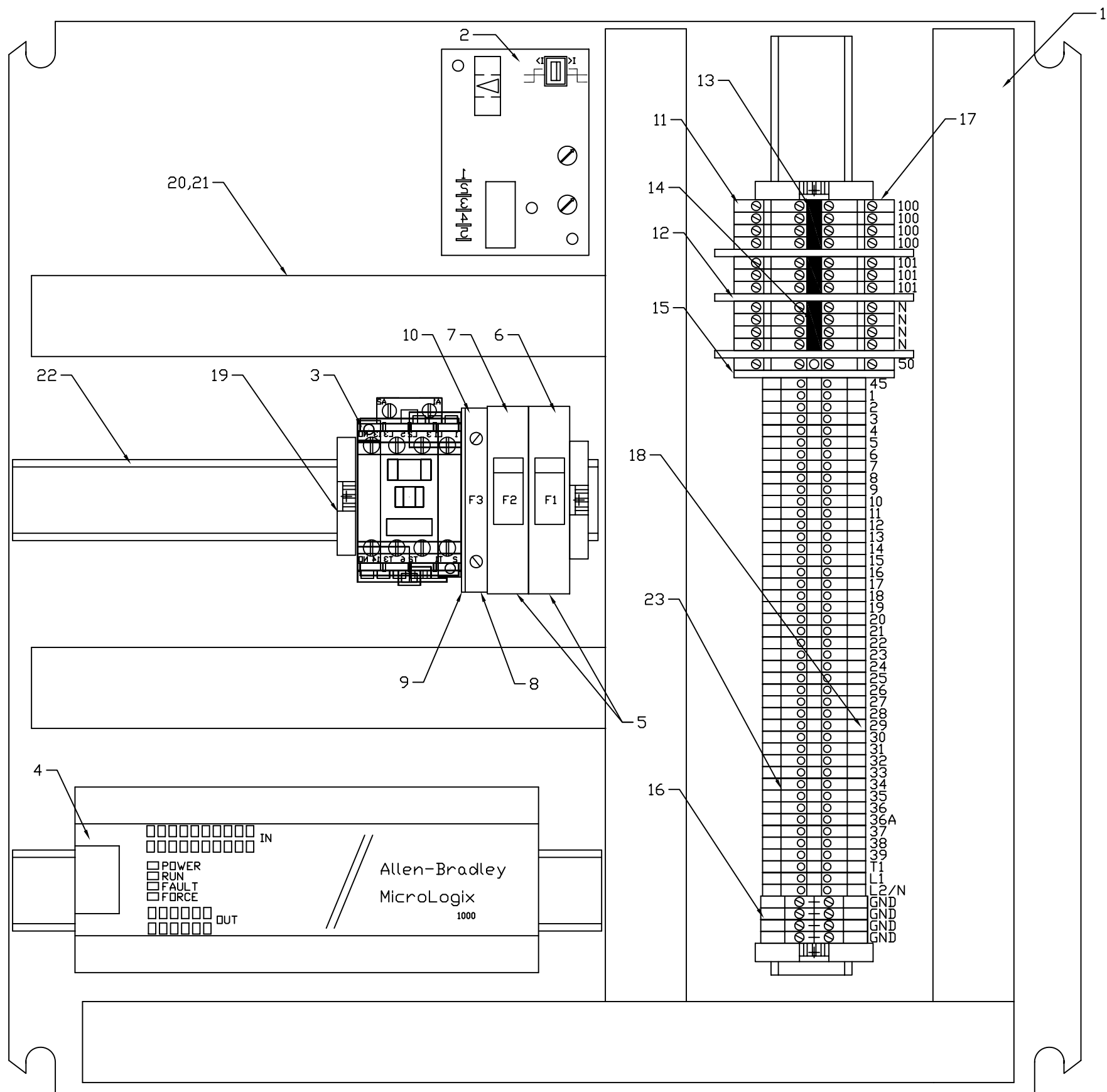
MAT'L	PART #	CAD FILE: G81558	TOLERANCES UNLESSS OTHERWISE NOTED:		<b>LOVESHAW</b> RT. 296, SOUTH CANAAN, PA.  TITLE: CF50T PNEUMATIC SCHEMATIC				
	STD	PLOT DATE: 9/26/07							
ST. ST.		DRAWN DATE: 3/23/07							
STAINLESS: NO FINISH		DO NOT SCALE PRINT	INCH .X = ± .050 .XX = ± .015 .XXX = ± .005  METRIC .X = ± 1.0mm .XX = ± .5mm .XXX = ± .1mm  ANGLES ±1/2° FRACTIONS ±1/64 MACHINE FINISH 125/						
			DWG. #: CF50-0189-4					SCALE:	
			MATERIAL:					CHECK'D:	
			DESIGNED: RM					DRAWN: RM	
					APPRV'D:				

REVISION RECORD					
REV	DESCRIPTION	DATE	ATH	DR	CK

KEY	PART NO.	DESCRIPTION
1	A100N-202006B-1	ENCLOSURE
2	A100N-PP-HOF-1	PRINT POCKET
3	AH-CEP-1	CABLE ENTRY PLATE

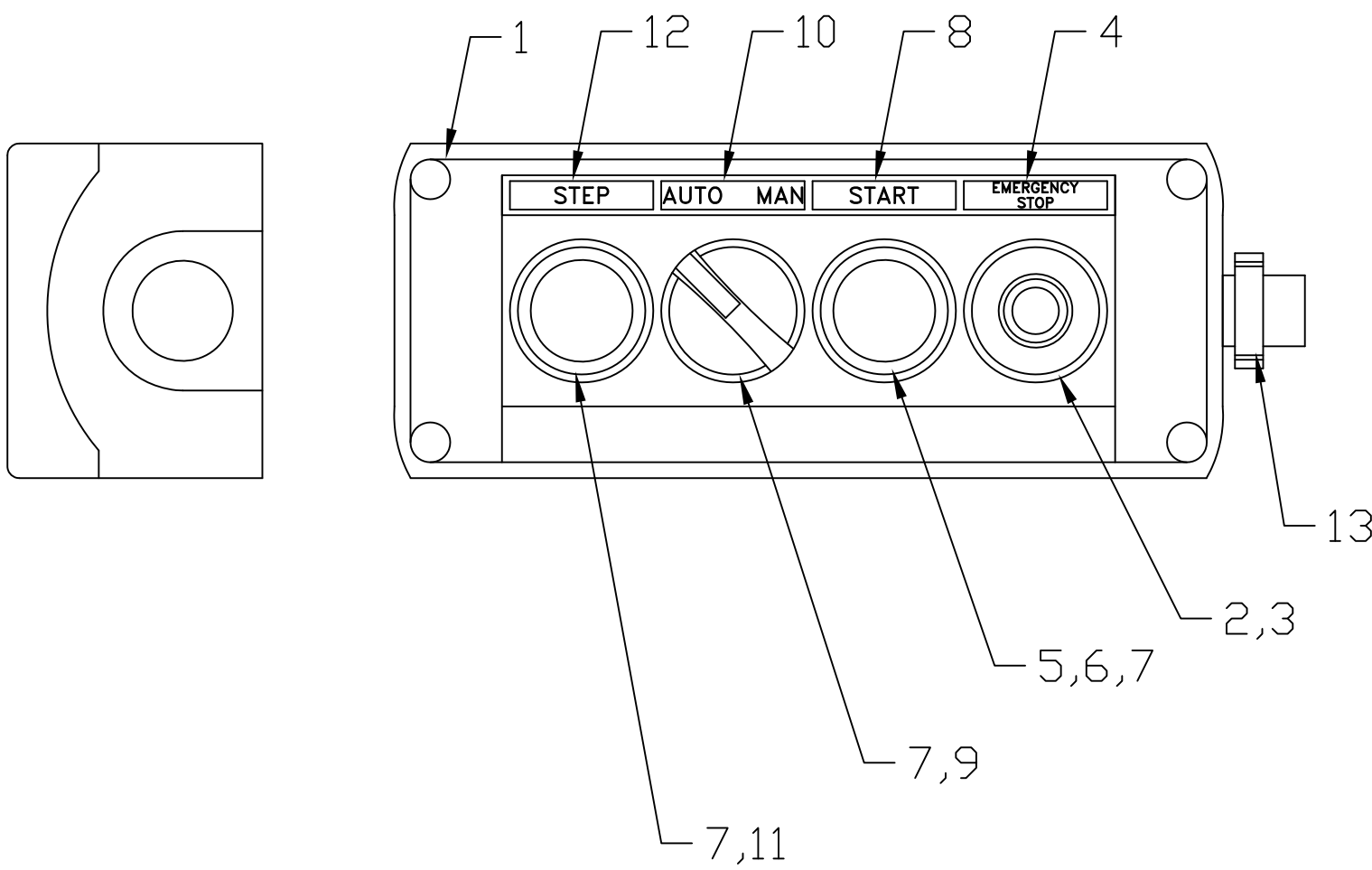
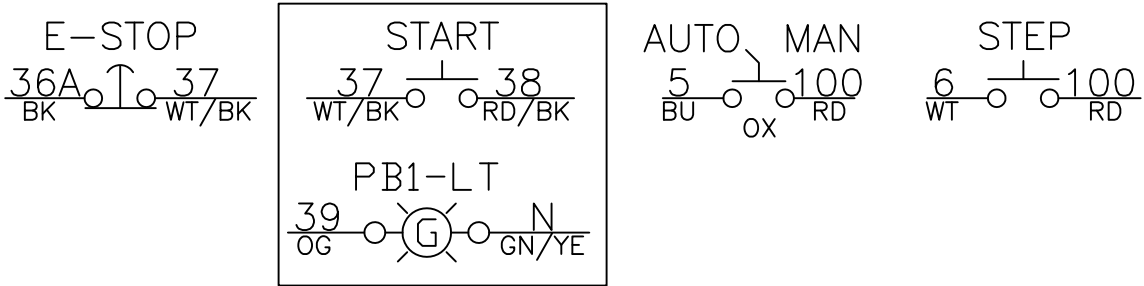


TOLERANCES EXCEPT AS NOTED	<b>THE LOVESHAW CORPORATION</b> RT 296, SOUTH CANAAN, PA.	
DECIMAL (3 PLC) +/- .005	TITLE: ELECTRICAL ENCLOSURE ASSEMBLY CF50T - 120/1/60	
FRACTIONAL +/- 1/64	DWG. NO. ED1703	SCALE: 3 : 8
ANG. - 1/2°	MATERIAL: COMMERCIAL	DATE: 04/27/06
	DESIGNED: MENTA	DRAWN: WM
		APPRVD: --



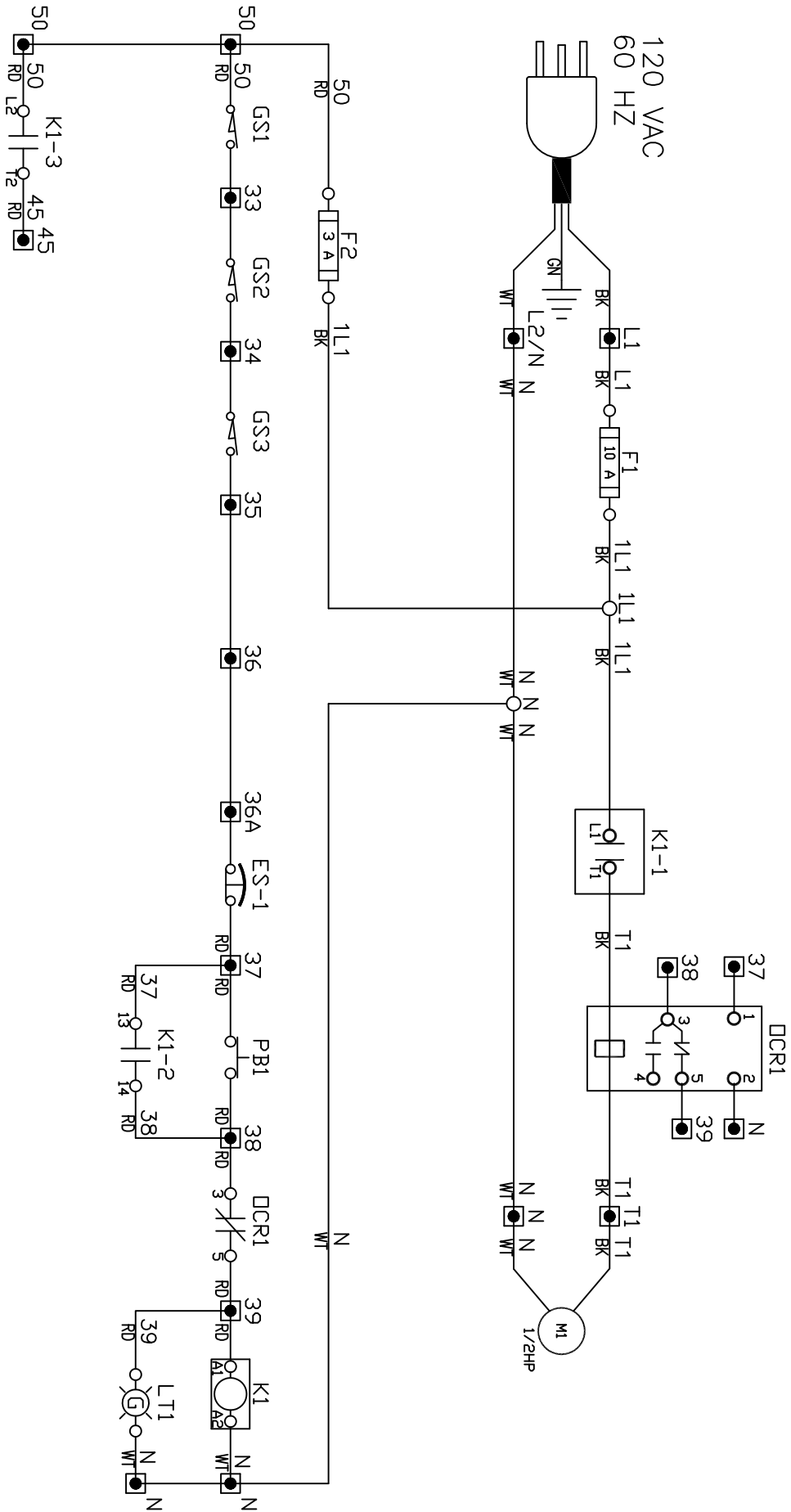
KEY	PART NO.	DESCRIPTION
1	A100N-2020P-1	PANEL
2	303111	OVER CURRENT RELAY
3	A106-AB-2A	CONTACTOR
4	A241AB-1000-1DC	PLC
5	A125BH-AB-DIN-3	FUSE HOLDER
6	A125SB-10-R	FUSE, 10 AMP
7	A125SB-3-R	FUSE, 3 AMP
8	A125BH-AB-DIN	FUSE HOLDER
9	A128B-AB16	FUSE BLOCK BARRIER
10	A125SB-2/10-312	FUSE 2/10 AMP
11	A124-AB-JD3C	DOUBLE TERMINAL BLOCK
12	A128-AB-PPJD3	PARTITION PLATE
13	A124-AB-CJ-4	4 POLE CENTER JUMPER
14	A124-AB-CJ-3	3 POLE CENTER JUMPER
15	A128-AB-EBJD3	END PARRIER PLATE
16	A124-AB-JG4	GROUND TERMINAL
17	A124-AB-MARK-DT	TERMINAL MARKER CARD
18	A124-AB-MARK-ST	TERMINAL MARKER CARD
19	A128-AB-ERL35	TERMINAL ANCHOR
20	A250-HOF	WIREWAY
21	A250A-HOF	WIREWAY COVER
22	A209-AB-2	DIN RAIL
23	A124-AB-J3	SINGLE TERMINAL

TOLERANCES EXCEPT AS NOTED	<b>THE LOVESHAW CORPORATION</b> RT 296, SOUTH CANAAN, PA.	
DECIMAL (3 PLC) +/- .005	TITLE: ELECTRICAL PANEL ASSEMBLY CF50T - 120/1/60	
FRACTIONAL +/- 1/64	DWG. NO.ED1704	SCALE: 1 : 2
ANG. - 1/2°	MATERIAL: COMMERCIAL	DATE:05/01/06
	DESIGNED: MENTA	DRAWN: WM
		APPRVD: --



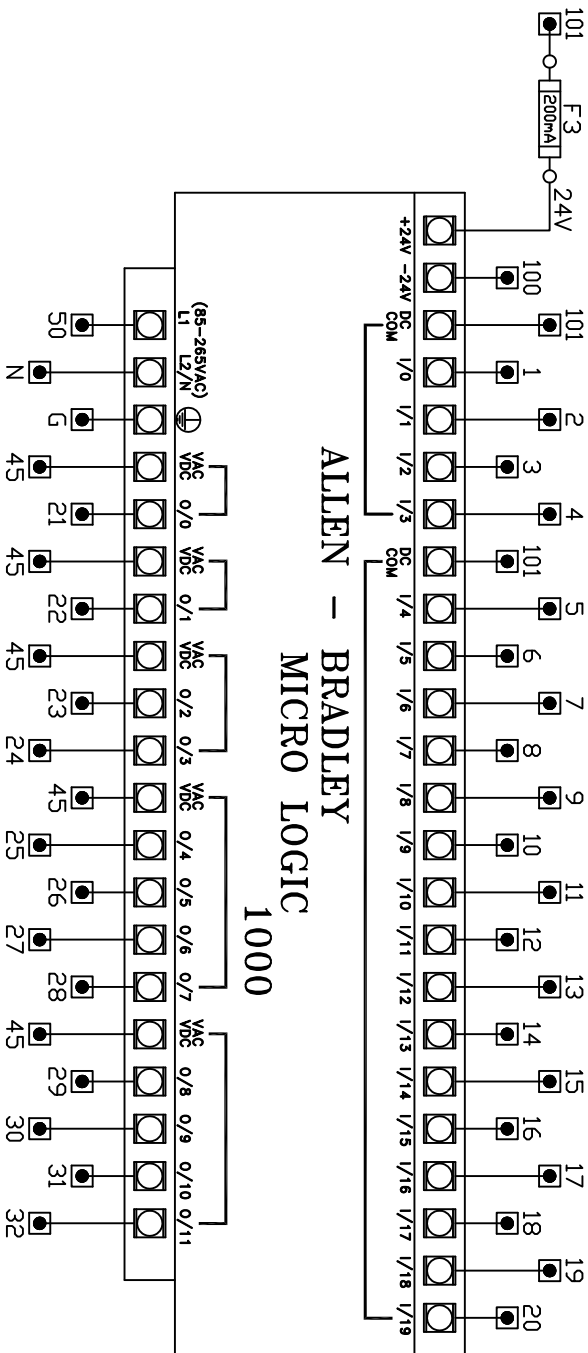
ITEM	PART No.	DESCRIPTION
1	A149-SQD-1	4 HOLE ENCLOSURE
2	A149-SQD-2	E-STOP PUSH BUTTON SW.
3	A149-SQD-3	N.C. CONTACT BLOCK
4	A149-SQD-4	E-STOP LEGEND PLATE
5	A149-SQD-5	GREEN PUSH BUTTON ILLUMINATED SW.
6	A149-SQD-6	LIGHT MODULE
7	A149-SQD-7	N.O. CONTACT BLOCK
8	A149-SQD-8	"START" LEGEND PLATE
9	A149-SQD-9	(2) POSITION SELECTOR SWITCH
10	A149-SQD-10	AUTO / MAN LEGEND PLATE
11	A149-SQD-11	BLACK FLUSH PUSH BUTTON SW.
12	A149-SQD-12	"STEP" LEGEND PLATE
13	AH200-QD-8	MALE 8 POLE DISCONNECT

TOLERANCES EXCEPT AS NOTED	<b>THE LOVESHAW CORPORATION</b> RT 296, SOUTH CANAAN, PA.	
DECIMAL (3 PLC) +/- .005	TITLE: OPERATOR ENCLOSURE ASSY. CF50T	
FRACTIONAL +/- 1/64	DWG. NO. ED1795A	SCALE: 3 : 4
ANG. - 1/2°	MATERIAL: COMMERCIAL	DATE: 10/08/07
	DESIGNED: MENTA	DRAWN: WM
		APPRVD: --



SYMBOL	DEVICE	FUNCTION
ES-1	PUSHBUTTON	EMERGENCY STOP SWITCH
F1	FUSE	MAIN INCOMING POWER PROTECTION
F2	FUSE	CONTROL POWER PROTECTION
F3	FUSE	24 VDC CONTROL POWER PROTECTION
GS1	GUARD SWITCH	SLIDING DOOR INTERLOCK SWITCH
GS2	GUARD SWITCH	INTERLOCK SWITCH
GS3	GUARD SWITCH	INTERLOCK SWITCH
K1	MOTOR CONTACTOR	MAIN DRIVE MOTOR CONTACTOR
LT1	LIGHT	RUN INDICATOR - GREEN
M1	MOTOR	MAIN DRIVE MOTOR
DCR1	OVERCURRENT RELAY	MACHINE OVERLOAD ELECTRONIC PROTECTION
PB1	PUSHBUTTON	START BUTTON

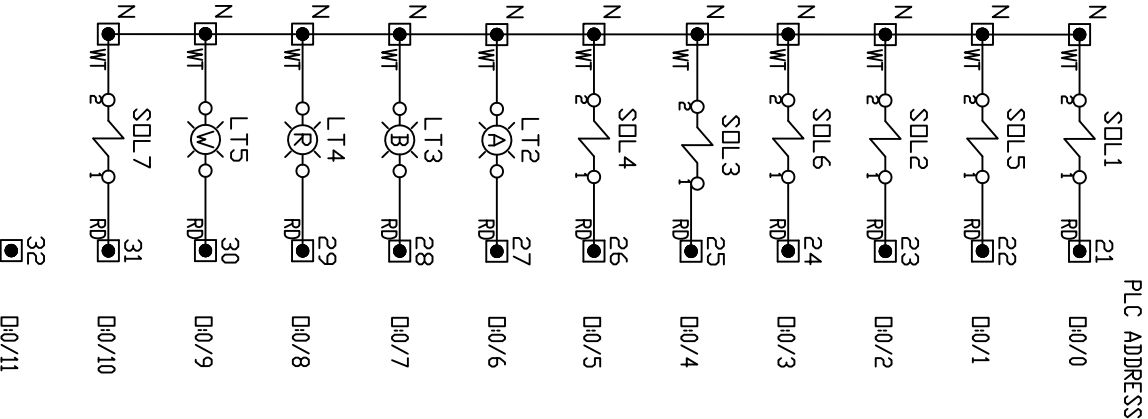
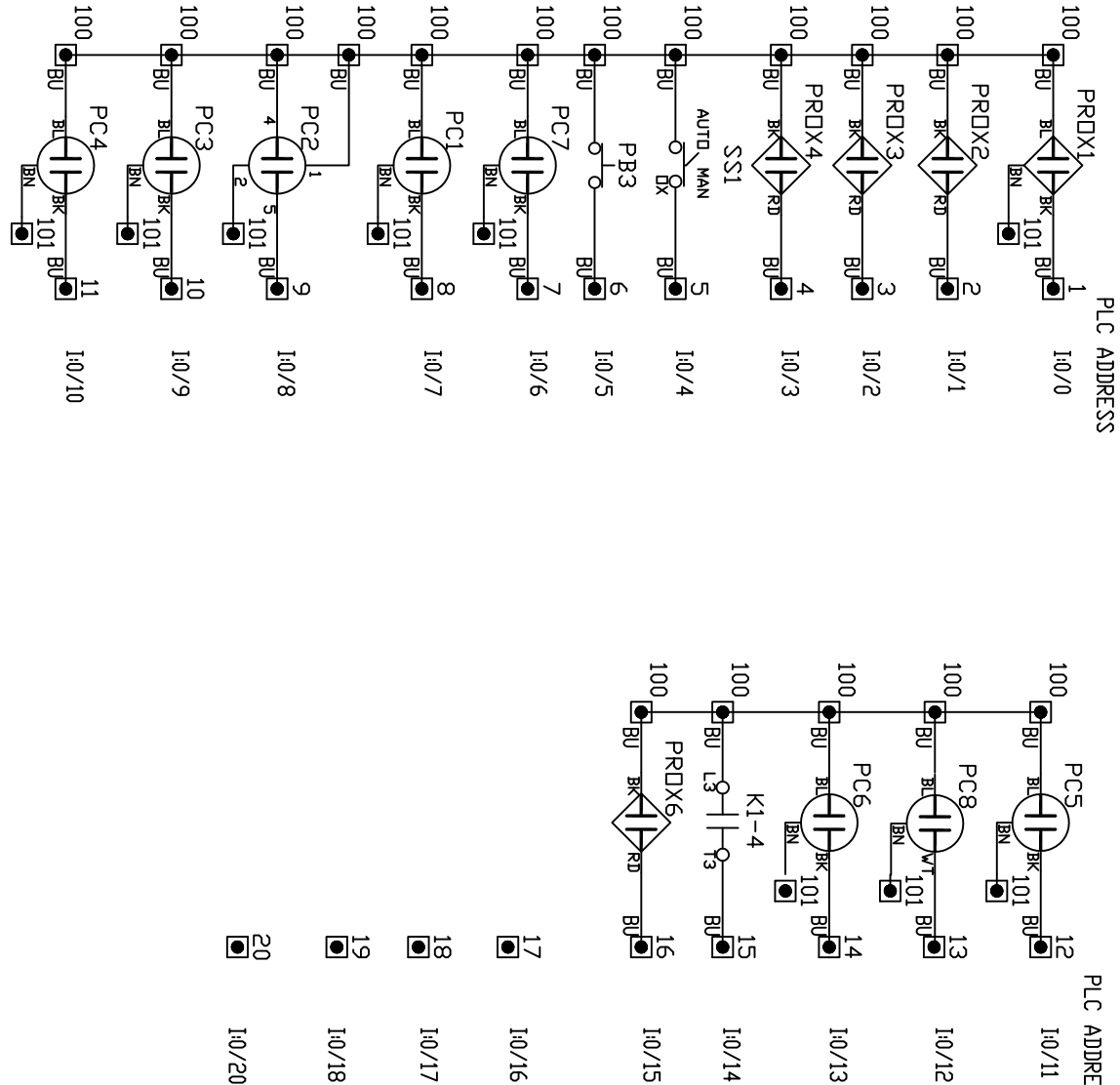
ALLEN - BRADLEY  
MICRO LOGIC  
1000



- WIRING NOTES:
1. WIRE COLORS ARE AS NOTED.
  2. AC CONTROL WIRE MIN. 18 AWG.
  3. DC CONTROL WIRE MIN 20 AWG.
  4. MOTOR WIRE MIN. 16 AWG.

TOLERANCES EXCEPT AS NOTED	<b><i>THE LOVESHAW CORPORATION</i></b>		
	RT 296, SOUTH CANAAN, PA.		
DECIMAL (3 PLC)	TITLE:		ELECTRICAL SCHEMATIC
+/- .005			CF50T - 120/1/60
FRACTIONAL	DWG. NO. ED1706A		SCALE: N/A
+/- 1/64	MATERIAL: N/A		DATE: 05/01/06
ANG. - 1/2°	DESIGNED: MENTA	DRAWN: WM	APPRVD: --





SYMBOL	DEVICE	FUNCTION
F3	FUSE	24 VDC CONTROL POWER PROTECTION
LT2	LIGHT	OPTIONAL - LOW TAPE ALARM (AMBER)
LT3	LIGHT	OPTIONAL - LOW HOPPER (BLUE)
LT4	LIGHT	OPTIONAL - CASE JAM (RED)
LT5	LIGHT	OPTIONAL - NO TAPE (WHITE)
K1	MOTOR CONTACTOR	MAIN DRIVE MOTOR CONTACTOR
PB3	PUSHBUTTON	STEP MODE PUSH BUTTON
PC1	PHOTOCELL	CHAIN LUG DETECTOR
PC2	PHOTOCELL	CASE DEMAND
PC3	PHOTOCELL	HOPPER DEMAND
PC4	PHOTOCELL	OPTIONAL - LOW TAPE DETECTION
PC5	PHOTOCELL	OPTIONAL - CASE JAM (USED WITH PROX6)
PC6	PHOTOCELL	OPTIONAL - NO TAPE DETECTION
PC7	PHOTOCELL	OPTIONAL - CASE AT TAPE INSPECTION
PC8	PHOTOCELL	OPTIONAL - CASE AT TAPE INSPECTION
PROX1	PROXIMITY SWITCH	VACUUM TROLLEY - HOME POSITION
PROX2	PROXIMITY SWITCH (DN CYL.)	VACUUM TROLLEY - BLANK PICKUP POSITION
PROX3	PROXIMITY SWITCH (DN CYL.)	CASE PUSHER - RETRACTED
PROX4	PROXIMITY SWITCH (DN CYL.)	CASE PUSHER - EXTENDED
PROX6	PROXIMITY SWITCH (DN CYL.)	OPTIONAL - CASE JAM (USED WITH PC5)
SOL1	SOLENOID VALVE	MAIN AIR DUMP
SOL2	SOLENOID VALVE	VACUUM SOLENOID
SOL3	SOLENOID VALVE	BLANK HOPPER DRIVE
SOL4	SOLENOID VALVE	CASE PUSHER
SOL5	SOLENOID VALVE	VACUUM TROLLEY
SOL6	SOLENOID VALVE	BOTTOM MINDR FLAP FOLDER
SOL7	SOLENOID VALVE	VACUUM PURGE SYSTEM
SSI	SELECTOR SWITCH	MACHINE (AUTO - MANUAL)

WIRING NOTES:

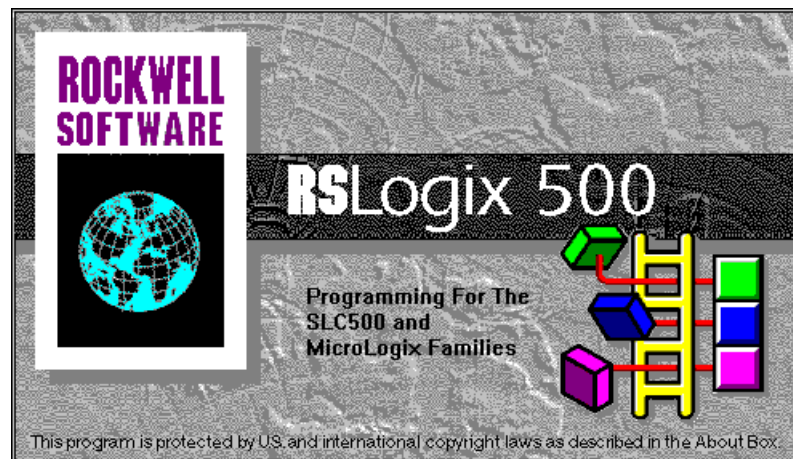
1. WIRE COLORS ARE AS NOTED.
2. AC CONTROL WIRE MIN. 18 AWG.
3. DC CONTROL WIRE MIN 20 AWG.
4. MOTOR WIRE MIN. 16 AWG.

TOLERANCES EXCEPT AS NOTED	<b><i>THE LOVESHAW CORPORATION</i></b>		
	RT 296, SOUTH CANAAN, PA.		
DECIMAL (3 PLC) +/- .005	TITLE: ELECTRICAL SCHEMATIC		CF50T - 120/1/60
FRACTIONAL	DWG. NO. ED1706B		SCALE: N/A
+/- 1/64	MATERIAL: N/A		DATE: 05/01/06
ANG. - 1/2°	DESIGNED: MENTA	DRAWN: WM	APPRVD: --



**LOVESHAW CASE ERECTOR - MODEL CF50**

**CF50R1.RSS**



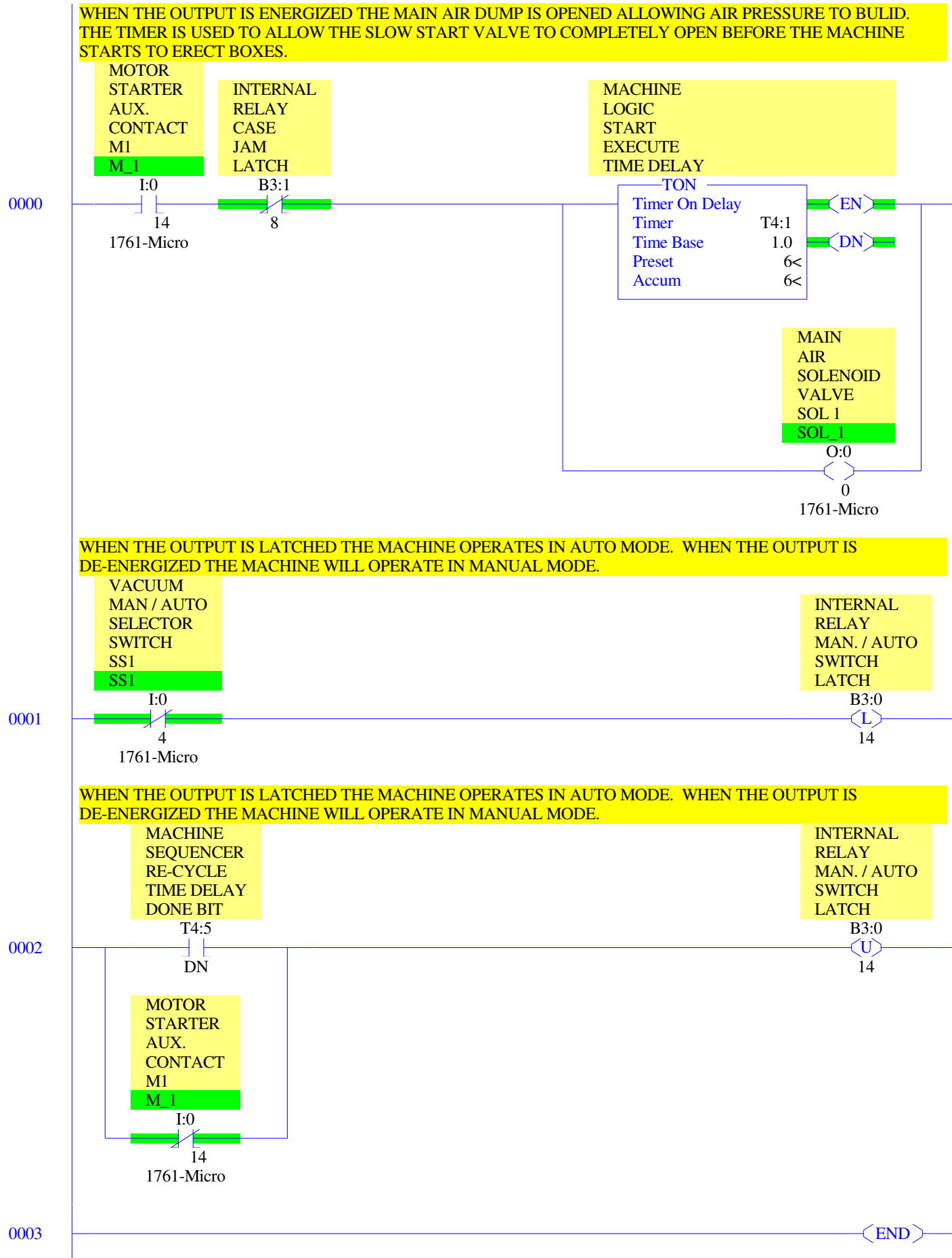
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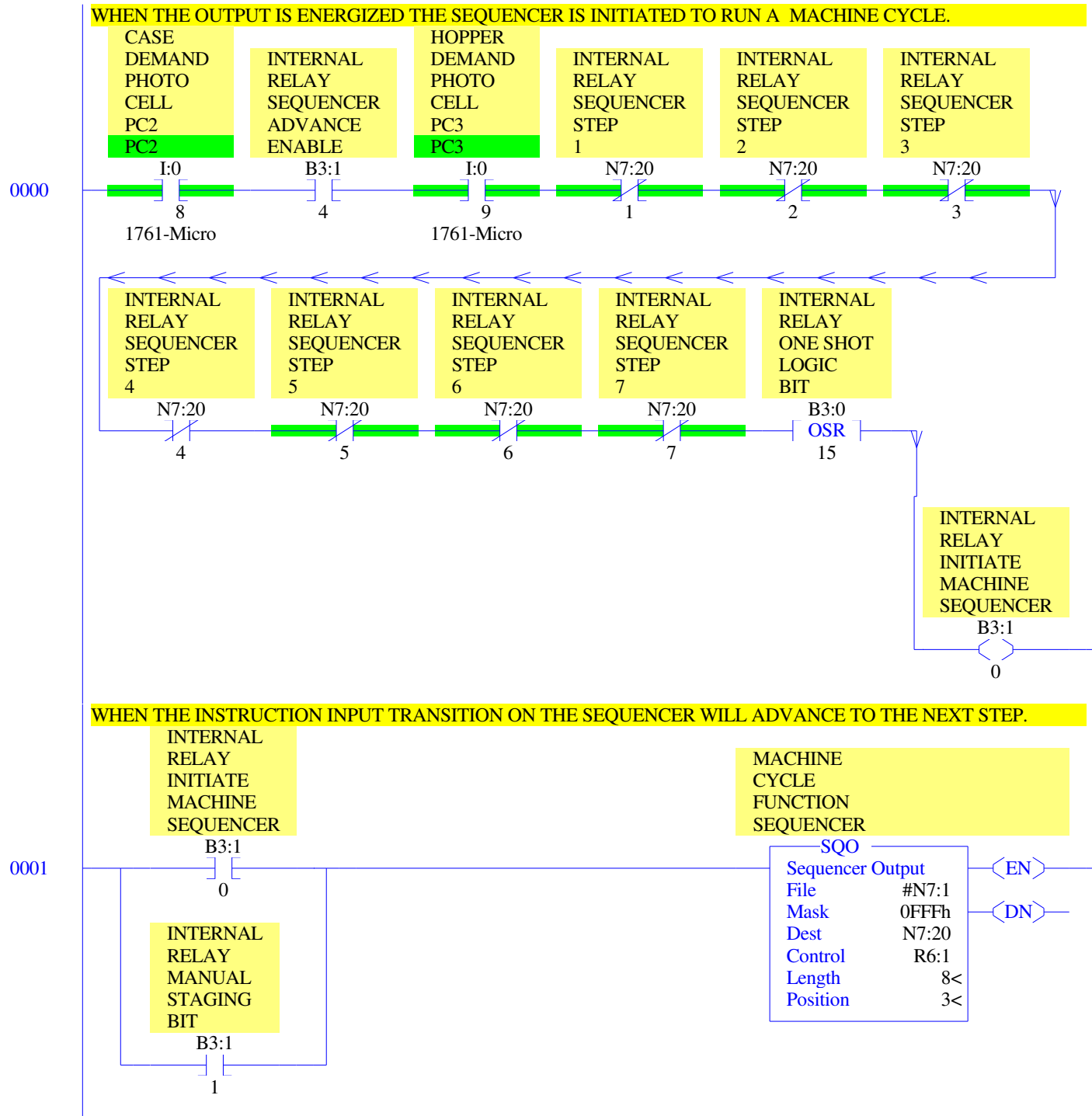
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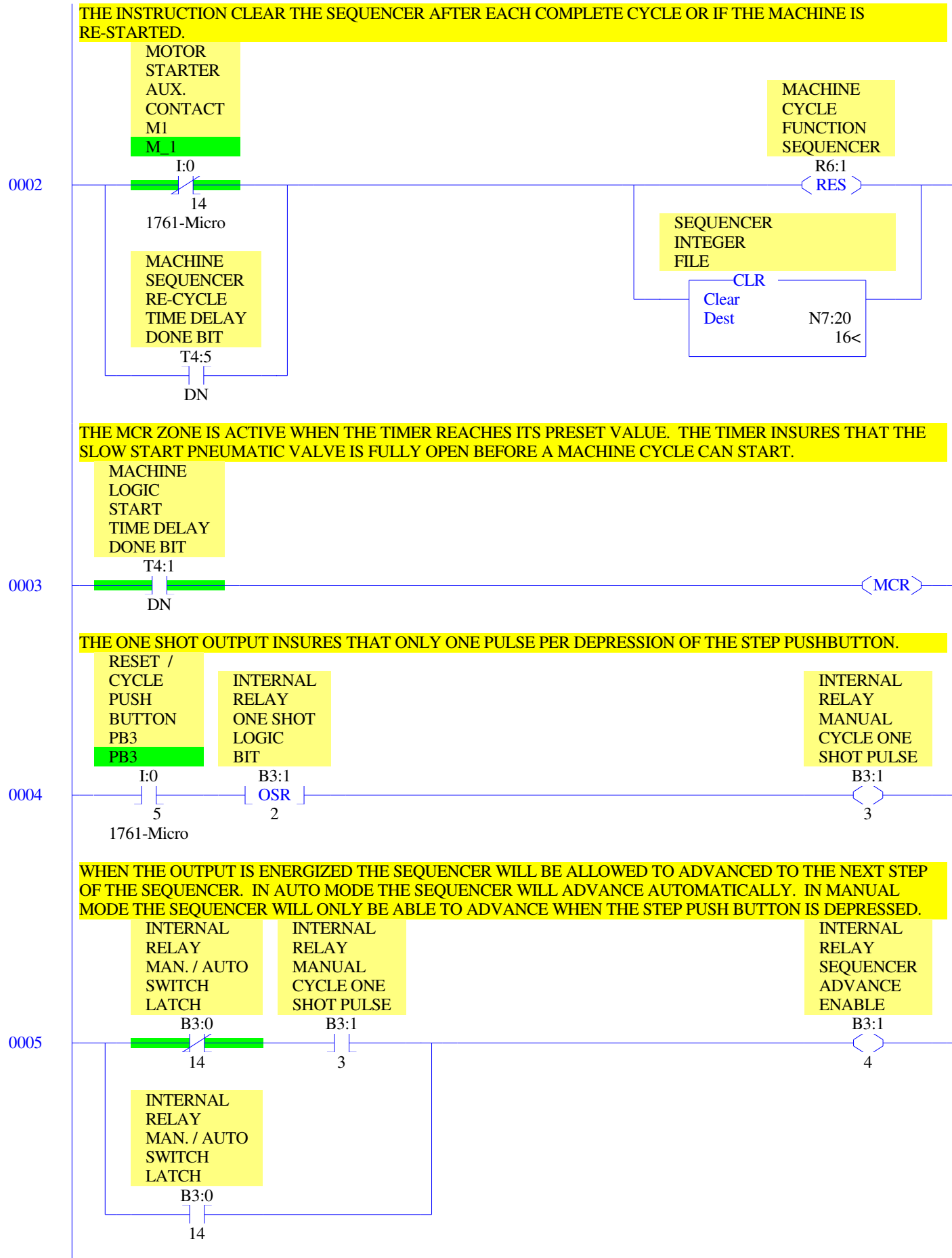
Name	Number	Type	Rungs	Debug	Bytes
[SYSTEM]	0	SYS	0	No	0
	1	SYS	0	No	0
SUBROUTINE	2	LADDER	13	No	111
MACH START	3	LADDER	4	No	84
SEQUENCER	4	LADDER	9	No	422
VACUUM	5	LADDER	4	No	75
VAC TROLLY	6	LADDER	4	No	80
FLAP FOLD	7	LADDER	4	No	52
BOX PUSHER	8	LADDER	4	No	73
SEQ. TIMER	9	LADDER	7	No	80
HOPPER	10	LADDER	7	No	141
LOW TAPE	11	LADDER	3	No	42
LOW HOPPER	12	LADDER	3	No	42
BOX JAM	13	LADDER	3	No	83
BOX COUNT	14	LADDER	5	No	107
	15	LADDER	1	No	3
	16	LADDER	1	Yes	3

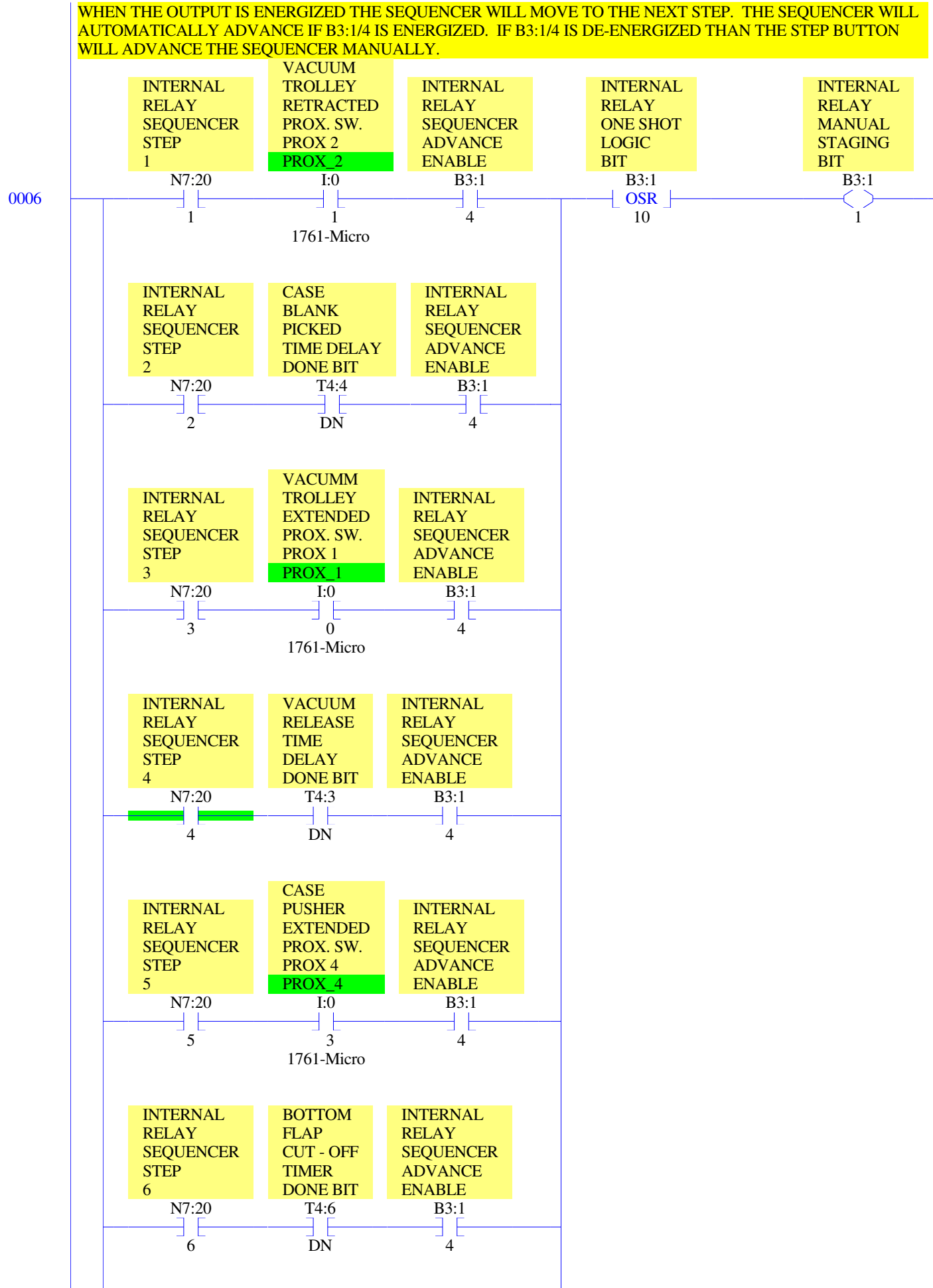




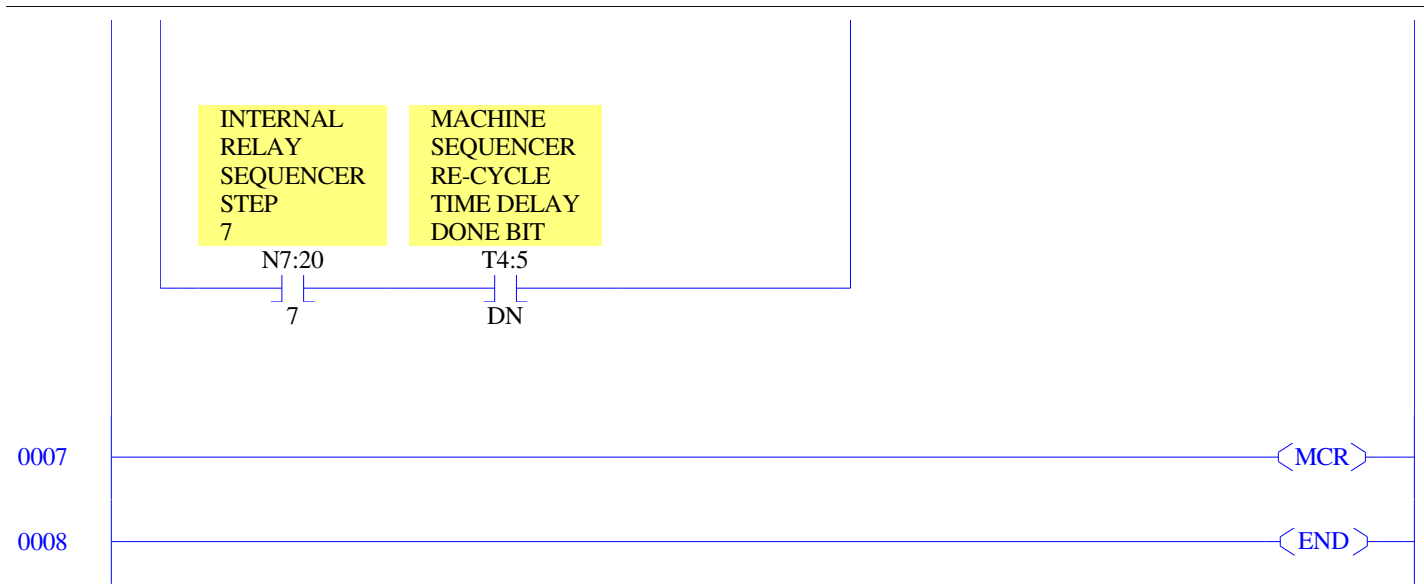


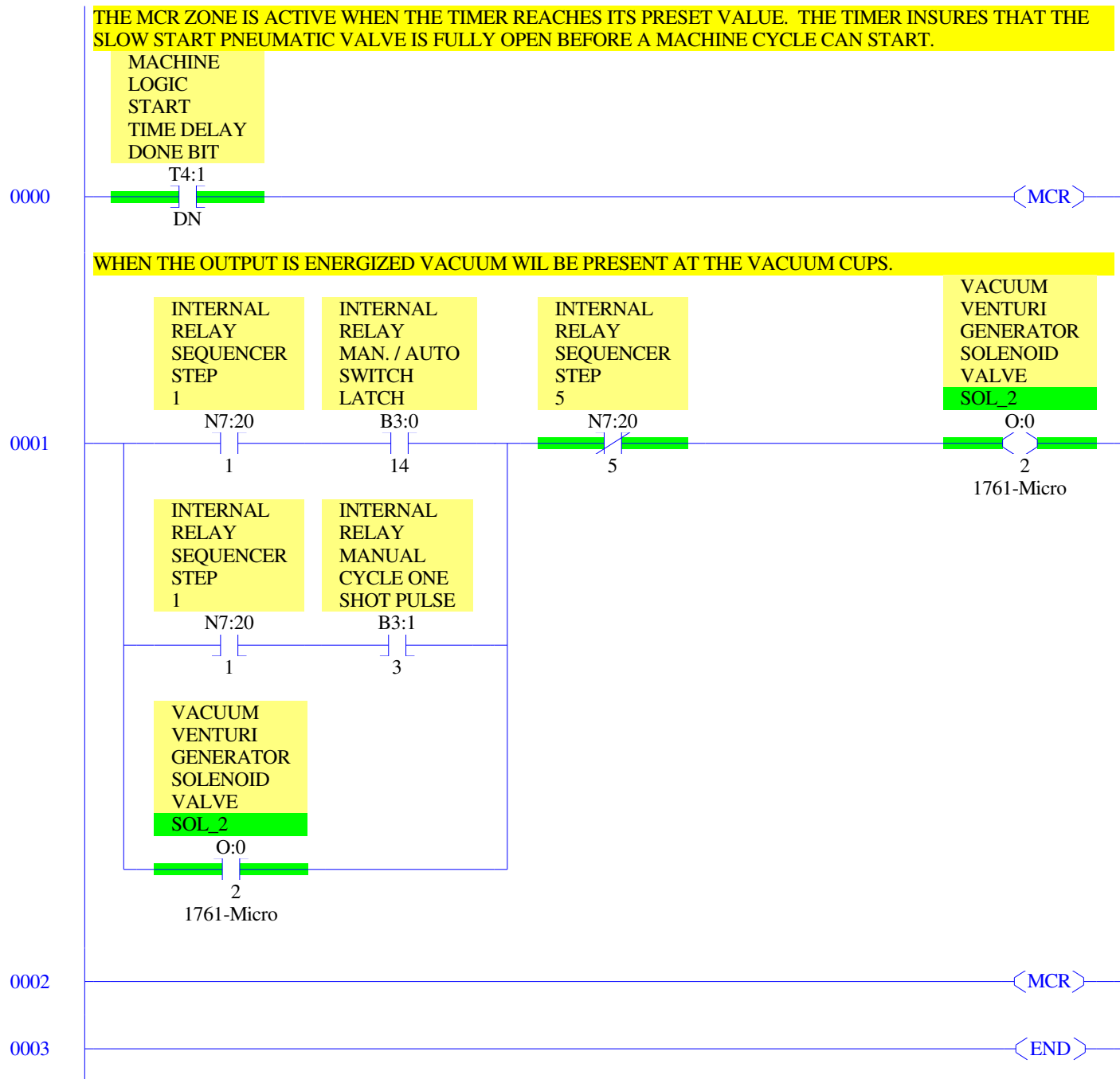


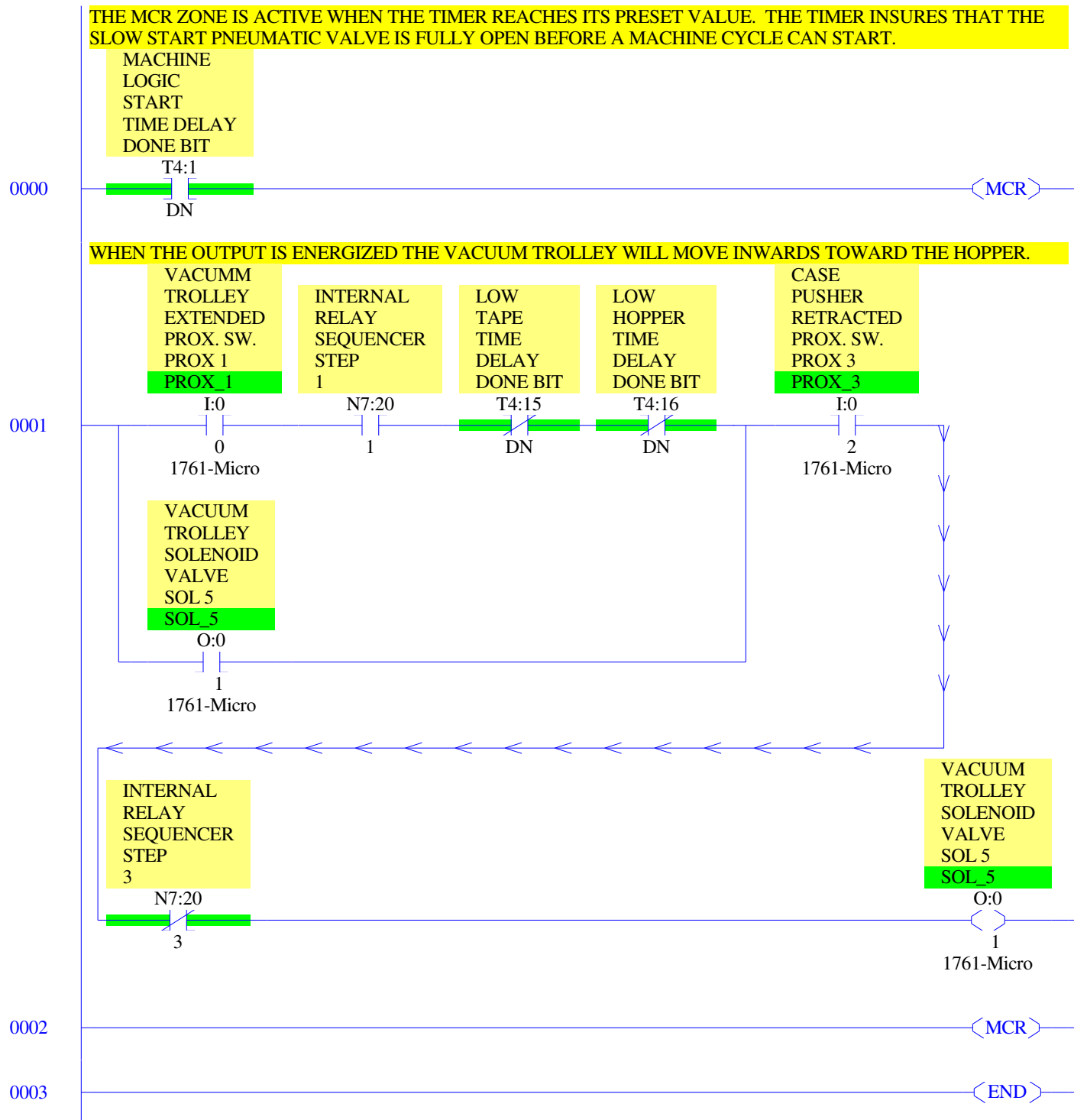


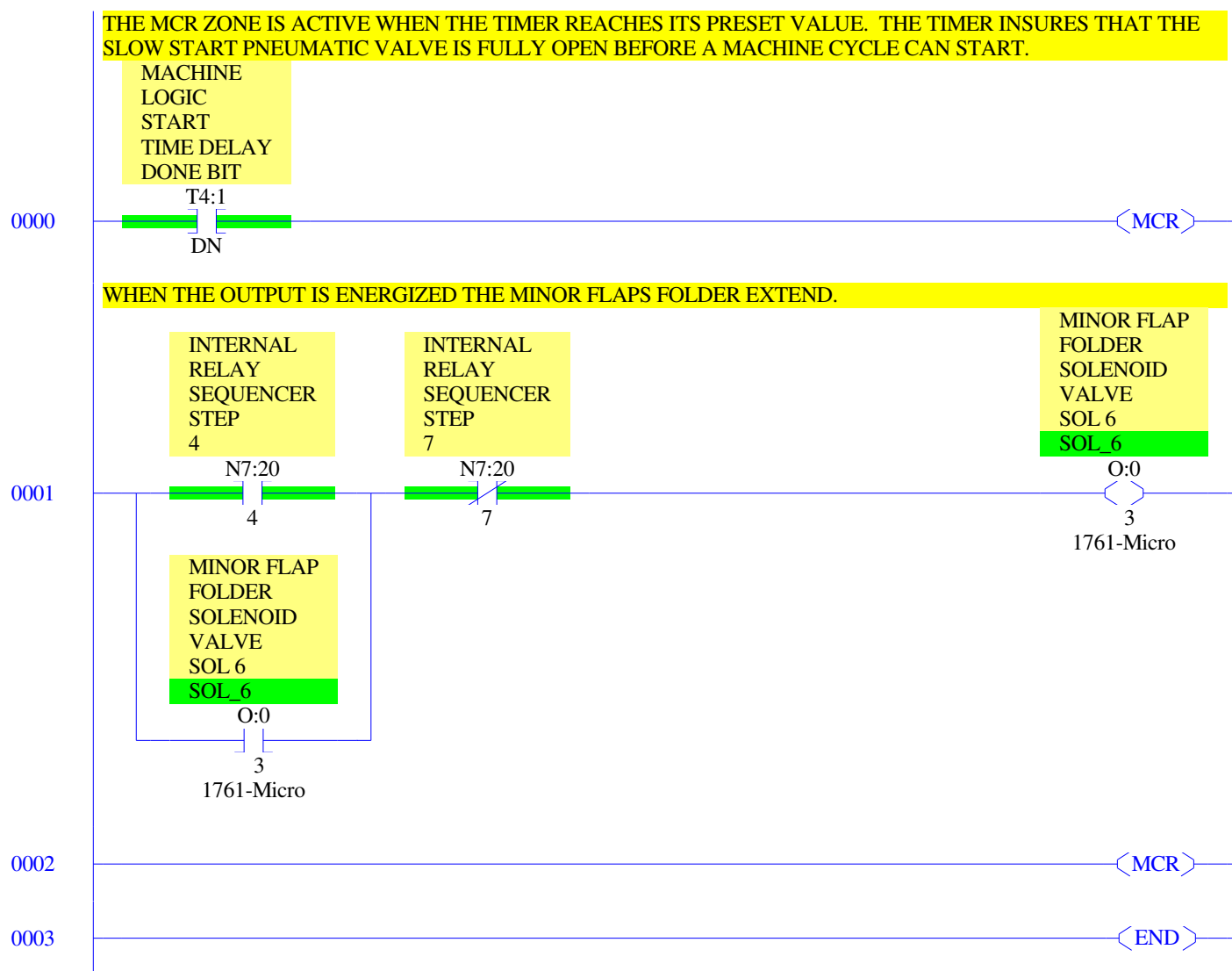


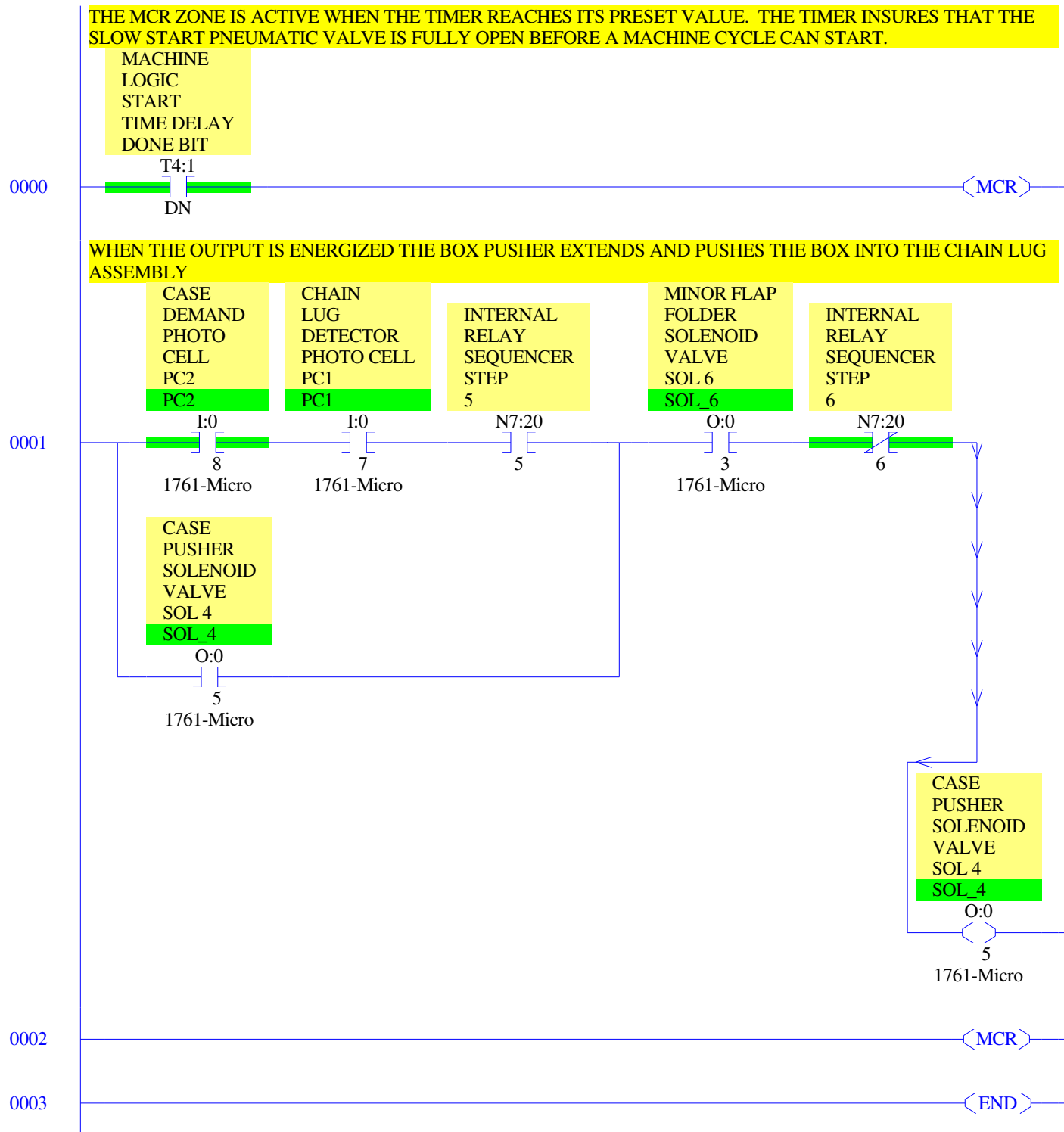


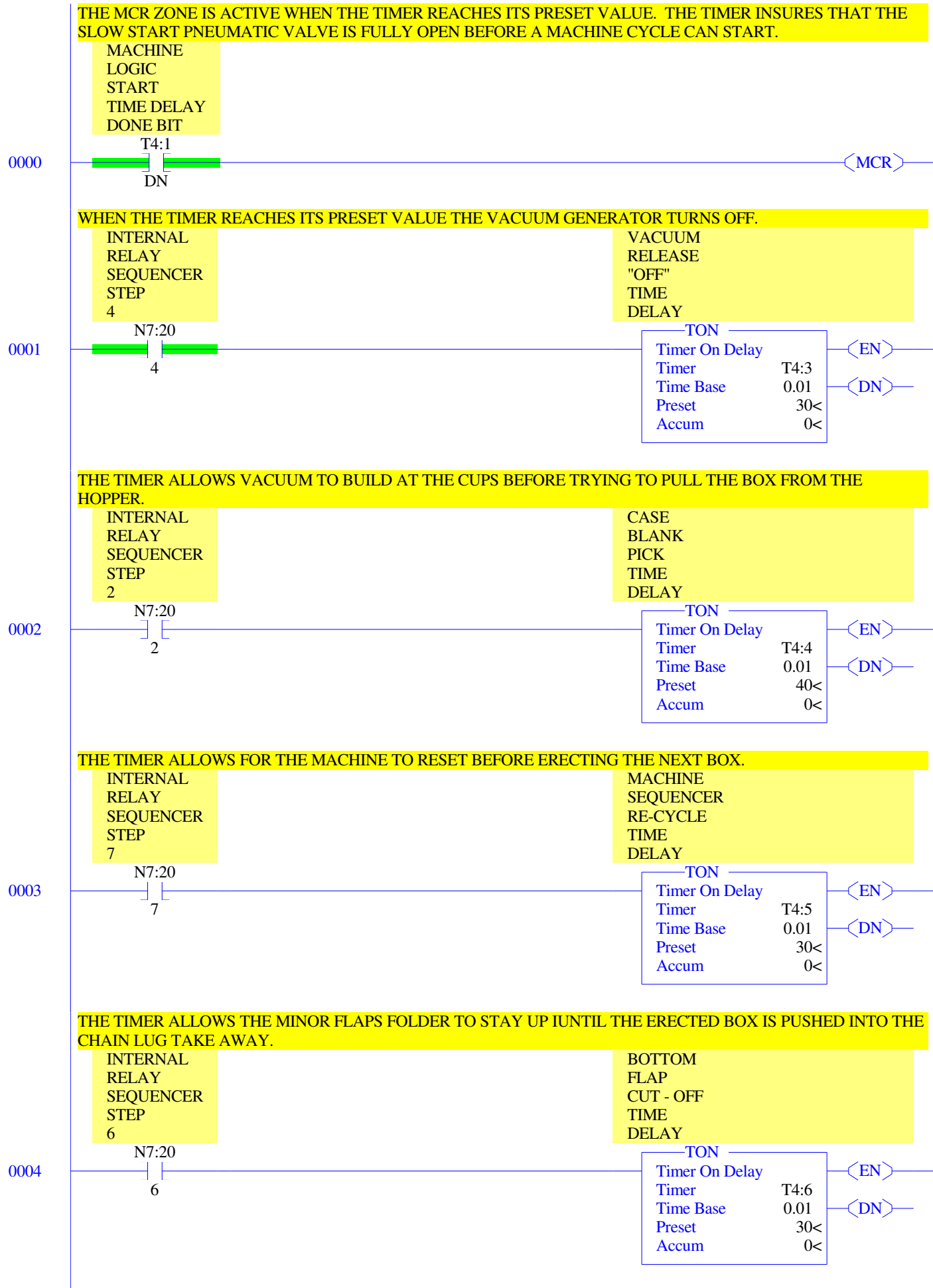


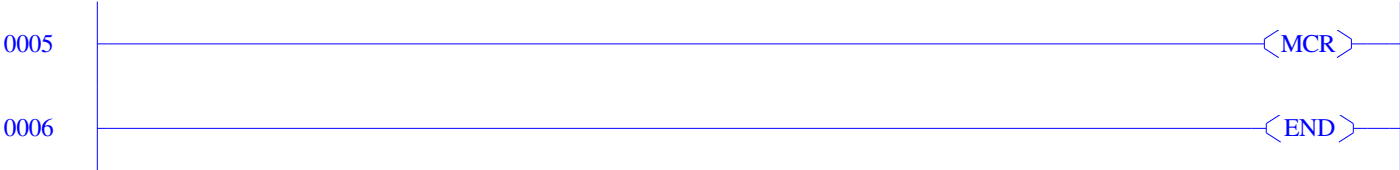


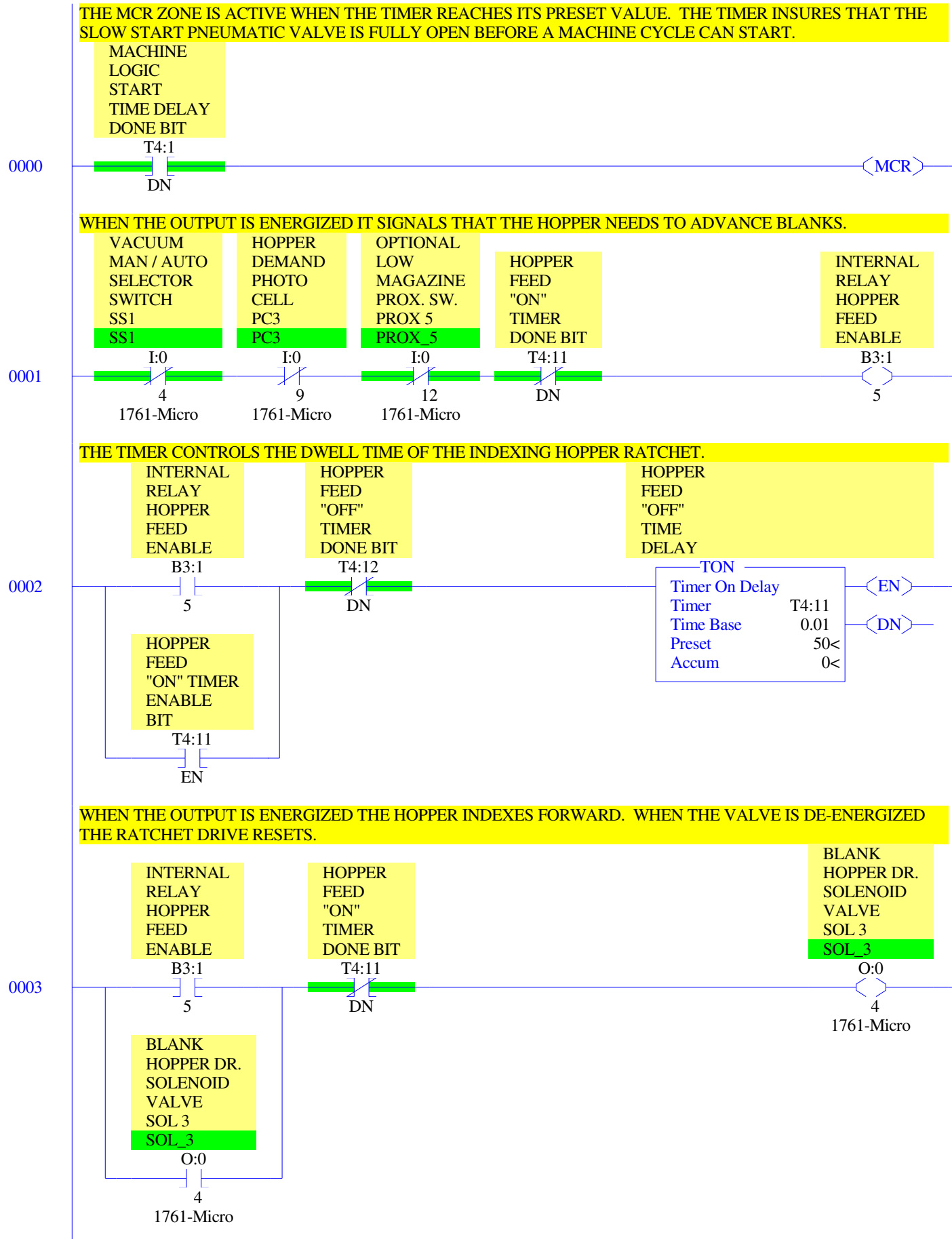




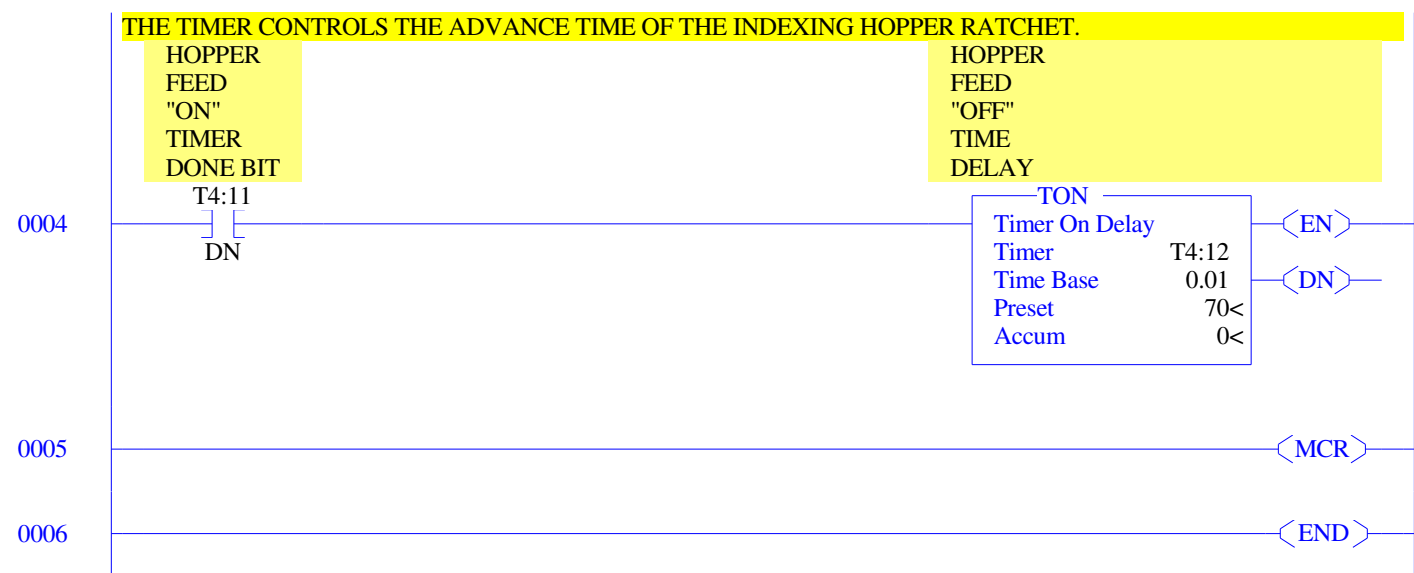


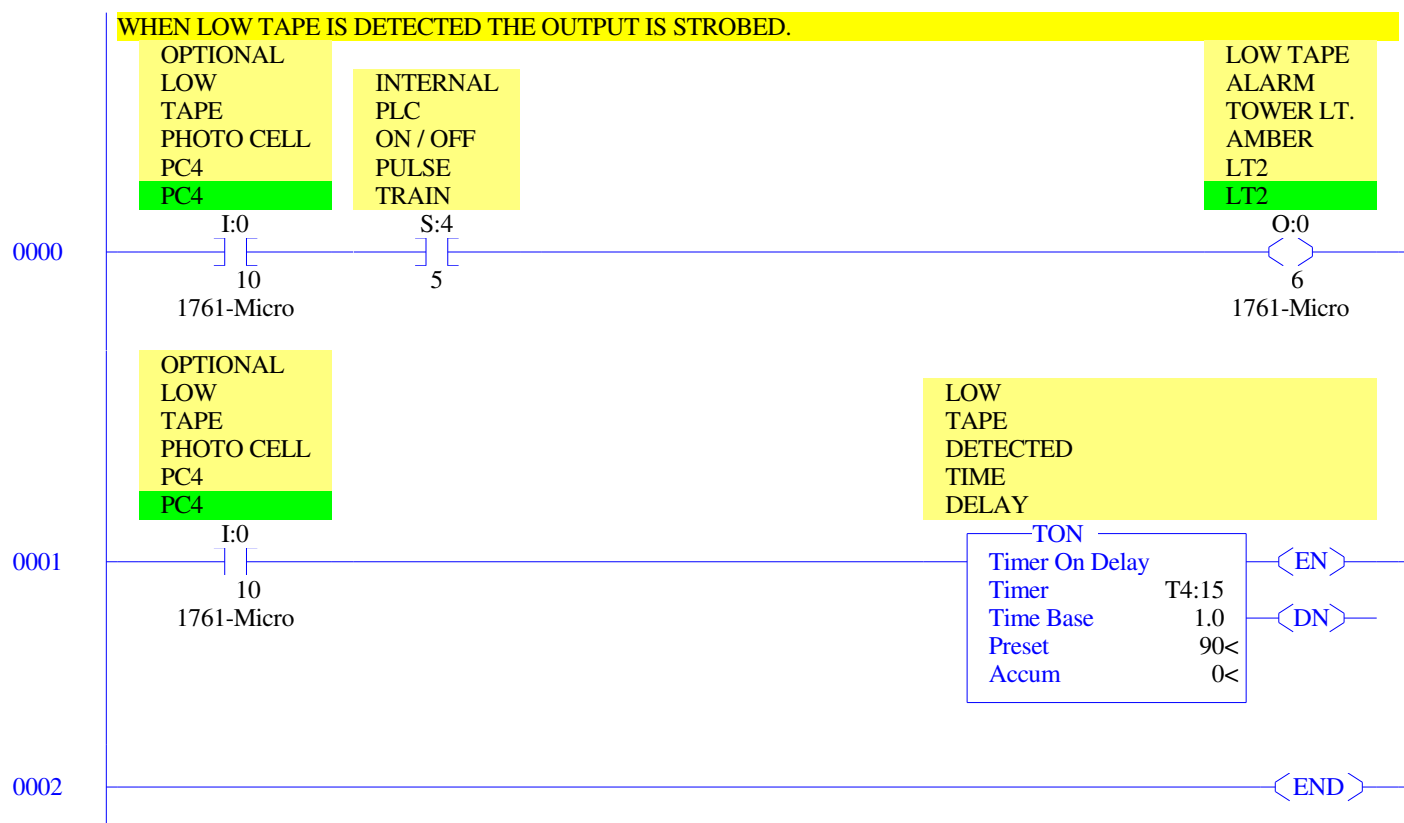


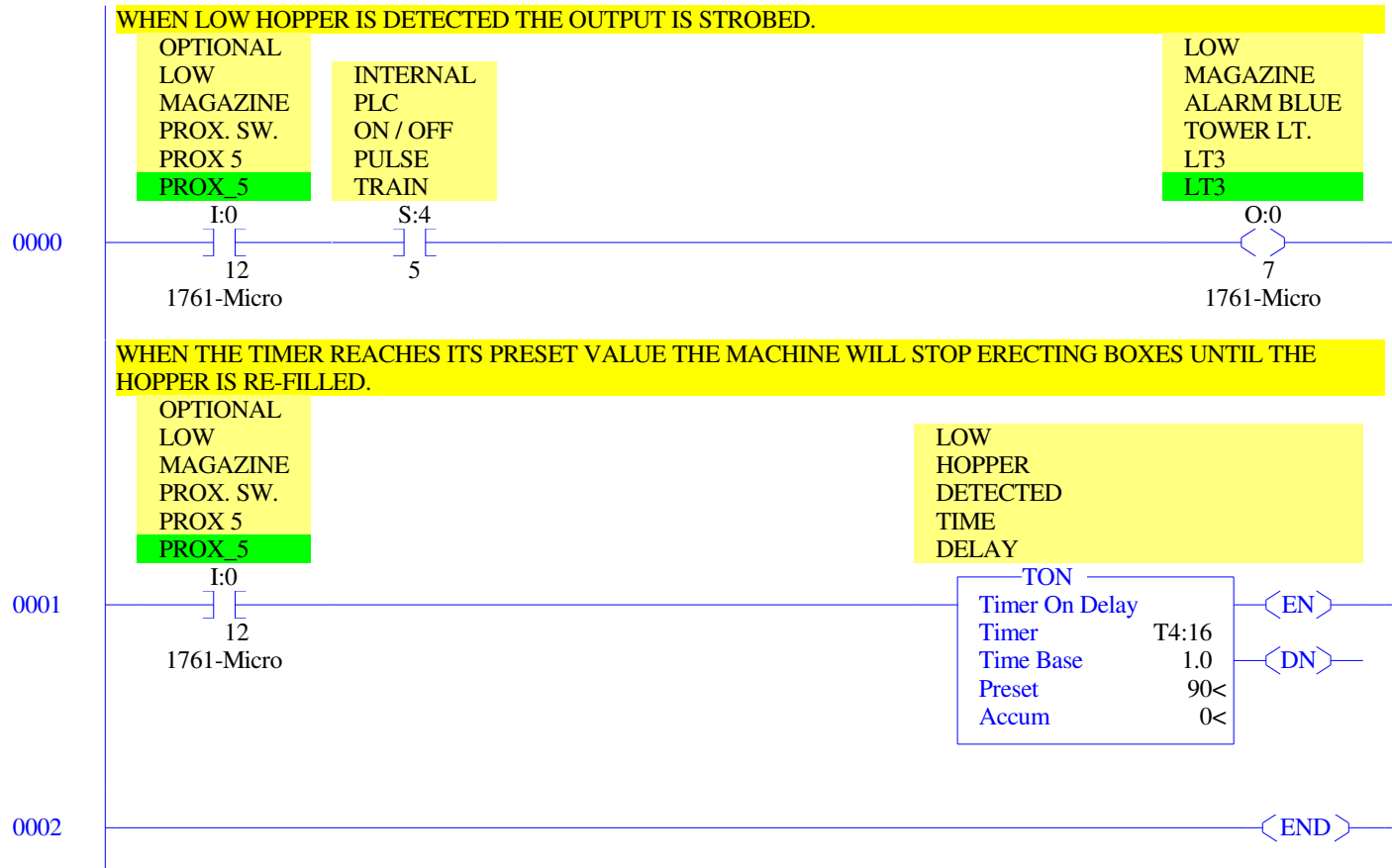


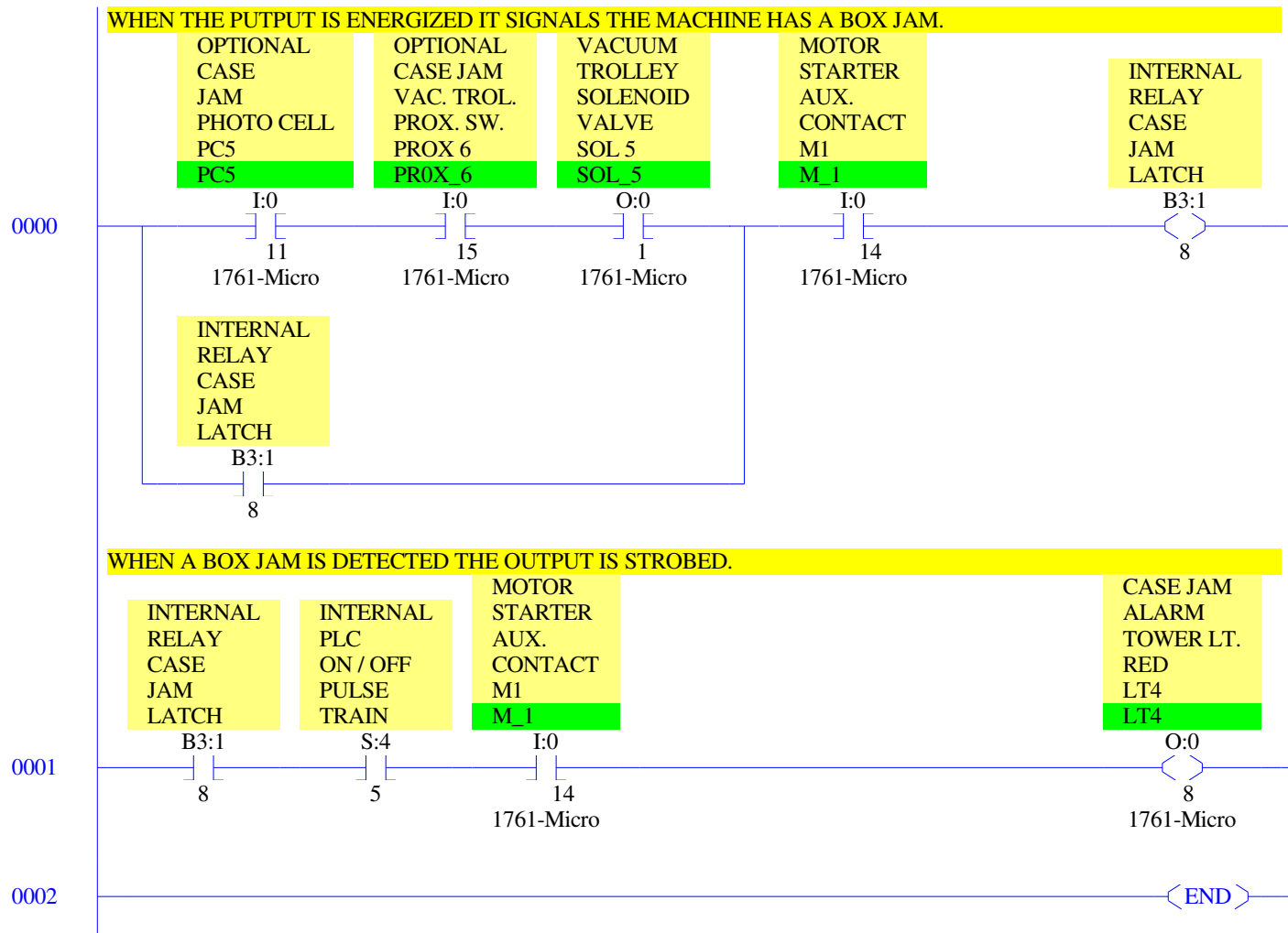












## RSLogix 500 Cross Reference Report - Sorted by Address

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O:0/0	- {SOL_1} MAIN AIR SOLENOID VALVE SOL 1 OTE - File #3 MACH START - 0
O:0/1	- {SOL_5} VACUUM TROLLEY SOLENOID VALVE SOL 5 OTE - File #6 VAC TROLLY - 1 XIC - File #6 VAC TROLLY - 1 File #13 BOX JAM - 0
O:0/2	- {SOL_2} VACUUM VENTURI GENERATOR SOLENOID VALVE OTE - File #5 VACUUM - 1 XIC - File #5 VACUUM - 1 File #14 BOX COUNT - 0
O:0/3	- {SOL_6} MINOR FLAP FOLDER SOLENOID VALVE SOL 6 OTE - File #7 FLAP FOLD - 1 XIC - File #7 FLAP FOLD - 1 File #8 BOX PUSHER - 1
O:0/4	- {SOL_3} BLANK HOPPER DR. SOLENOID VALVE SOL 3 OTE - File #10 HOPPER - 3 XIC - File #10 HOPPER - 3
O:0/5	- {SOL_4} CASE PUSHER SOLENOID VALVE SOL 4 OTE - File #8 BOX PUSHER - 1 XIC - File #8 BOX PUSHER - 1
O:0/6	- {LT2} LOW TAPE ALARM TOWER LT. AMBER LT2 OTE - File #11 LOW TAPE - 0
O:0/7	- {LT3} LOW MAGAZINE ALARM BLUE TOWER LT. LT3 OTE - File #12 LOW HOPPER - 0
O:0/8	- {LT4} CASE JAM ALARM TOWER LT. RED LT4 OTE - File #13 BOX JAM - 1
I:0/0	- {PROX_1} VACUUM TROLLEY EXTENDED PROX. SW. PROX 1 XIC - File #4 SEQUENCER - 6 File #6 VAC TROLLY - 1
I:0/1	- {PROX_2} VACUUM TROLLEY RETRACTED PROX. SW. PROX 2 XIC - File #4 SEQUENCER - 6
I:0/2	- {PROX_3} CASE PUSHER RETRACTED PROX. SW. PROX 3 XIC - File #6 VAC TROLLY - 1
I:0/3	- {PROX_4} CASE PUSHER EXTENDED PROX. SW. PROX 4 XIC - File #4 SEQUENCER - 6
I:0/4	- {SS1} VACUUM MAN / AUTO SELECTOR SWITCH SS1 XIO - File #3 MACH START - 1 File #10 HOPPER - 1 File #14 BOX COUNT - 0
I:0/5	- {PB3} RESET / CYCLE PUSH BUTTON PB3 XIC - File #4 SEQUENCER - 4
I:0/7	- {PC1} CHAIN LUG DETECTOR PHOTO CELL PC1 XIC - File #8 BOX PUSHER - 1
I:0/8	- {PC2} CASE DEMAND PHOTO CELL PC2 XIC - File #4 SEQUENCER - 0 File #8 BOX PUSHER - 1
I:0/9	- {PC3} HOPPER DEMAND PHOTO CELL PC3 XIC - File #4 SEQUENCER - 0 XIO - File #10 HOPPER - 1
I:0/10	- {PC4} OPTIONAL LOW TAPE PHOTO CELL PC4 XIC - File #11 LOW TAPE - 0, 1
I:0/11	- {PC5} OPTIONAL CASE JAM PHOTO CELL PC5 XIC - File #13 BOX JAM - 0
I:0/12	- {PROX_5} OPTIONAL LOW MAGAZINE PROX. SW. PROX 5 XIC - File #12 LOW HOPPER - 0, 1 XIO - File #10 HOPPER - 1
I:0/14	- {M_1} MOTOR STARTER AUX. CONTACT M1 XIC - File #3 MACH START - 0 File #13 BOX JAM - 0, 1 XIO - File #3 MACH START - 2 File #4 SEQUENCER - 2
I:0/15	- {PROX_6} OPTIONAL CASE JAM VAC. TROL. PROX. SW. PROX 6 XIC - File #13 BOX JAM - 0
S:4/5	- INTERNAL PLC ON / OFF PULSE TRAIN XIC - File #11 LOW TAPE - 0 File #12 LOW HOPPER - 0 File #13 BOX JAM - 1
B3:0/0	- INTERNAL RELAY ONE SHOT LOGIC INSTRUCTION OSR - File #14 BOX COUNT - 0
B3:0/1	- INTERNAL RELAY BOX TOTALIZER COUNT TRIGGER

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## RSLogix 500 Cross Reference Report - Sorted by Address

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	OTE - File #14 BOX COUNT - 0
	XIC - File #14 BOX COUNT - 1
B3:0/14	- INTERNAL RELAY MAN. / AUTO SWITCH LATCH
	OTL - File #3 MACH START - 1
	OTU - File #3 MACH START - 2
	XIC - File #4 SEQUENCER - 5
	File #5 VACUUM - 1
	XIO - File #4 SEQUENCER - 5
B3:0/15	- INTERNAL RELAY ONE SHOT LOGIC BIT
	OSR - File #4 SEQUENCER - 0
B3:1/0	- INTERNAL RELAY INITIATE MACHINE SEQUENCER
	OTE - File #4 SEQUENCER - 0
	XIC - File #4 SEQUENCER - 1
B3:1/1	- INTERNAL RELAY MANUAL STAGING BIT
	OTE - File #4 SEQUENCER - 6
	XIC - File #4 SEQUENCER - 1
B3:1/2	- INTERNAL RELAY ONE SHOT LOGIC BIT
	OSR - File #4 SEQUENCER - 4
B3:1/3	- INTERNAL RELAY MANUAL CYCLE ONE SHOT PULSE
	OTE - File #4 SEQUENCER - 4
	XIC - File #4 SEQUENCER - 5
	File #5 VACUUM - 1
B3:1/4	- INTERNAL RELAY SEQUENCER ADVANCE ENABLE
	OTE - File #4 SEQUENCER - 5
	XIC - File #4 SEQUENCER - 0, 6
B3:1/5	- INTERNAL RELAY HOPPER FEED ENABLE
	OTE - File #10 HOPPER - 1
	XIC - File #10 HOPPER - 2, 3
B3:1/8	- INTERNAL RELAY CASE JAM LATCH
	OTE - File #13 BOX JAM - 0
	XIC - File #13 BOX JAM - 0, 1
	XIO - File #3 MACH START - 0
B3:1/10	- INTERNAL RELAY ONE SHOT LOGIC BIT
	OSR - File #4 SEQUENCER - 6
T4:1	- MACHINE LOGIC START EXECUTE TIME DELAY
	TON - File #3 MACH START - 0
T4:1/DN	- MACHINE LOGIC START TIME DELAY DONE BIT
	XIC - File #4 SEQUENCER - 3
	File #5 VACUUM - 0
	File #6 VAC TROLLY - 0
	File #7 FLAP FOLD - 0
	File #8 BOX PUSHER - 0
	File #9 SEQ. TIMER - 0
	File #10 HOPPER - 0
T4:3	- VACUUM RELEASE "OFF" TIME DELAY
	TON - File #9 SEQ. TIMER - 1
T4:3/DN	- VACUUM RELEASE TIME DELAY DONE BIT
	XIC - File #4 SEQUENCER - 6
T4:4	- CASE BLANK PICK TIME DELAY
	TON - File #9 SEQ. TIMER - 2
T4:4/DN	- CASE BLANK PICKED TIME DELAY DONE BIT
	XIC - File #4 SEQUENCER - 6
T4:5	- MACHINE SEQUENCER RE-CYCLE TIME DELAY
	TON - File #9 SEQ. TIMER - 3
T4:5/DN	- MACHINE SEQUENCER RE-CYCLE TIME DELAY DONE BIT
	XIC - File #3 MACH START - 2
	File #4 SEQUENCER - 2, 6
T4:6	- BOTTOM FLAP CUT - OFF TIME DELAY
	TON - File #9 SEQ. TIMER - 4
T4:6/DN	- BOTTOM FLAP CUT - OFF TIMER DONE BIT
	XIC - File #4 SEQUENCER - 6
T4:11	- HOPPER FEED "OFF" TIME DELAY
	TON - File #10 HOPPER - 2
T4:11/DN	- HOPPER FEED "ON" TIMER DONE BIT
	XIC - File #10 HOPPER - 4
	XIO - File #10 HOPPER - 1, 3
T4:11/EN	- HOPPER FEED "ON" TIMER ENABLE BIT
	XIC - File #10 HOPPER - 2
T4:12	- HOPPER FEED "OFF" TIME DELAY
	TON - File #10 HOPPER - 4

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T4:12/DN	- HOPPER FEED "OFF" TIMER DONE BIT XIO - File #10 HOPPER - 2
T4:15	- LOW TAPE DETECTED TIME DELAY TON - File #11 LOW TAPE - 1
T4:15/DN	- LOW TAPE TIME DELAY DONE BIT XIO - File #6 VAC TROLLY - 1
T4:16	- LOW HOPPER DETECTED TIME DELAY TON - File #12 LOW HOPPER - 1
T4:16/DN	- LOW HOPPER TIME DELAY DONE BIT XIO - File #6 VAC TROLLY - 1
C5:0	- HUNDREDS BOX COUNTER 100 CTU - File #14 BOX COUNT - 1 RES - File #14 BOX COUNT - 2
C5:0/DN	- XIC - File #14 BOX COUNT - 2
C5:1	- THOUSANDS BOX COUNTER 100,000 CTU - File #14 BOX COUNT - 2 RES - File #14 BOX COUNT - 3
C5:1/DN	- XIC - File #14 BOX COUNT - 3
C5:2	- MILLIONS BOX COUNTER 100,000,000 CTU - File #14 BOX COUNT - 3
R6:1	- MACHINE CYCLE FUNCTION SEQUENCER RES - File #4 SEQUENCER - 2 SQO - File #4 SEQUENCER - 1
N7:1	- MACHINE CYCLE FUNCTION SEQUENCER SQO - File #4 SEQUENCER - 1
FILE N7:1 LEN:9	- SQO - File #4 SEQUENCER - 1
N7:20	- SEQUENCER INTEGER FILE CLR - File #4 SEQUENCER - 2 SQO - File #4 SEQUENCER - 1
N7:20/1	- INTERNAL RELAY SEQUENCER STEP 1 XIC - File #4 SEQUENCER - 6 File #5 VACUUM - 1 File #6 VAC TROLLY - 1 XIO - File #4 SEQUENCER - 0
N7:20/2	- INTERNAL RELAY SEQUENCER STEP 2 XIC - File #4 SEQUENCER - 6 File #9 SEQ. TIMER - 2 XIO - File #4 SEQUENCER - 0
N7:20/3	- INTERNAL RELAY SEQUENCER STEP 3 XIC - File #4 SEQUENCER - 6 XIO - File #4 SEQUENCER - 0 File #6 VAC TROLLY - 1
N7:20/4	- INTERNAL RELAY SEQUENCER STEP 4 XIC - File #4 SEQUENCER - 6 File #7 FLAP FOLD - 1 File #9 SEQ. TIMER - 1 XIO - File #4 SEQUENCER - 0
N7:20/5	- INTERNAL RELAY SEQUENCER STEP 5 XIC - File #4 SEQUENCER - 6 File #8 BOX PUSHER - 1 XIO - File #4 SEQUENCER - 0 File #5 VACUUM - 1
N7:20/6	- INTERNAL RELAY SEQUENCER STEP 6 XIC - File #4 SEQUENCER - 6 File #9 SEQ. TIMER - 4 XIO - File #4 SEQUENCER - 0 File #8 BOX PUSHER - 1
N7:20/7	- INTERNAL RELAY SEQUENCER STEP 7 XIC - File #4 SEQUENCER - 6 File #9 SEQ. TIMER - 3 XIO - File #4 SEQUENCER - 0 File #7 FLAP FOLD - 1
U:3	- MACHINE START LOGIC SUBROUTINE JSR - File #2 SUBROUTINE - 0
U:4	- MACHINE CYCLE SEQUENCER LOGIC JSR - File #2 SUBROUTINE - 1
U:5	- VACUUM GENERATOR SUPPLY LOGIC JSR - File #2 SUBROUTINE - 2
U:6	- VACUUM TROLLEY TRAVEL LOGIC JSR - File #2 SUBROUTINE - 3

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U:7	- MINOR FLAP FOLDER LOGIC JSR - File #2 SUBROUTINE - 4
U:8	- BOX CROSS PUSHER LOGIC JSR - File #2 SUBROUTINE - 5
U:9	- MACHINE CYCLE SEQUENCER TIMERS JSR - File #2 SUBROUTINE - 6
U:10	- BLANK HOPPER DRIVE LOGIC JSR - File #2 SUBROUTINE - 7
U:11	- LOW TAPE DETECTION LOGIC JSR - File #2 SUBROUTINE - 8
U:12	- LOW HOPPER DETECTION LOGIC JSR - File #2 SUBROUTINE - 9
U:13	- BOX JAM DETECTION LOGIC JSR - File #2 SUBROUTINE - 10
U:14	- BOX COUNT TOTALIZER LOGIC PROTOTYPE JSR - File #2 SUBROUTINE - 11