

ABAL

OWNERS MANUAL



CENTURION 100CH

V-GROOVE BELTS

THE LOVESHAW CORPORATION
2206 EASTON TURNPIKE, BOX 83
SOUTH CANAAN, PA 18459

TEL: (570) 937-4921
FAX: (570) 937-4370

LOVESHAW - EUROPE
UNIT 9, BRUNEL GATE
W. PORTWAY INDUSTRIAL ESTATE
ANDOVER, HAMPSHIRE SP103SL
ENGLAND
44-264-3575-11

GENERAL SAFETY PRECAUTIONS

BEFORE USING OR PERFORMING SERVICE ON **ABAL** EQUIPMENT, PLEASE READ THE FOLLOWING SAFETY PRECAUTIONS CAREFULLY:

1. BE AWARE THAT THE TAPING UNIT HAS A VERY SHARP KNIFE. EXERCISE CAUTION WHEN WORKING WITH TAPING UNIT AND WHEN THREADING TAPE.
2. KEEP HANDS AWAY FROM MOVING BELTS. TO CLEAR A BOX JAM; POWER MACHINE OFF FIRST.
3. ALWAYS DISCONNECT POWER AND AIR BEFORE WORKING ON ANY ELECTRICAL COMPONENTS.
4. DO NOT WEAR JEWELRY WHEN OPERATING MACHINE.
5. DO NOT WEAR LOOSE CLOTHING SUCH AS TIES, SCARVES, WHEN OPERATING MACHINE.
6. LONG HAIR SHOULD BE PULLED BACK WHEN OPERATING MACHINE.
7. RANDOM MACHINES OPERATE AUTOMATICALLY. SO NOT PLACE HANDS OR BODY PARTS INSIDE THE CONFINES OF THE MACHINE, UNLESS AIR AND POWER ARE DISCONNECTED.
8. WHEN OPERATING SEMI-AUTOMATIC MACHINES, PLACE HANDS ON REAR OF CASE AND PUSH ONLY UNTIL BELTS GRAB CASE.
9. KEEP AWAY FROM FLAP FOLDING ARM ON FULLY AUTOMATIC MACHINES UNLESS AIR AND POWER ARE DISCONNECTED.
10. SAFETY GLASSES SHOULD BE WORN WHEN WORKING WITH OR AROUND THE MACHINE.

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WARRANTY

INTRODUCTION

THE MACHINE IS DESIGNED TO TAPE THE TOP AND BOTTOM FLAPS OF A WIDE VARIETY OF BOX SIZES. AFTER MANUALLY ADJUSTING MACHINE FOR THE BOX SIZE, THE OPERATION ONLY HAS TO FOLD THE FLAPS AND PUSH THE BOX INTO THE MACHINE AFTER WHICH THE MACHINE WILL TAPE THE TOP AND BOTTOM FLAPS AND DISCHARGE THE BOX.

IF REPAIRS BECOME NECESSARY, YOU WILL FIND SIMPLE INSTRUCTIONS OUTLINED IN THIS MANUAL. IF A PROBLEM OCCURS THAT IS NOT COVERED, PLEASE CONTACT OUR SERVICE DEPARTMENT AT THE ADDRESS SHOWN ON THE COVER OF THIS MANUAL.

INSTALLATION

WHEN UNCRATED, THE MACHINE IS READY FOR OPERATION AFTER PLUGGING IT INTO AN APPROPRIATE ELECTRICAL OUTLET AND TAPE UNITS ARE LOADED WITH TAPE. THE CONNECTION CABLE IS LOCATED ON THE FRONT OF THE MACHINE, CONNECT IT TO THE APPROPRIATE GROUNDED OUTLET.

THE MACHINE SHOULD BE PLACED ON A FLAT LEVEL FLOOR SO THAT IT DOES NOT ROCK. DUE TO ITS PORTABILITY AND EASY PLUG-IN CONNECTION, THE MACHINE MAY BE QUICKLY MOVED TO VARIOUS LOCATIONS AS THE NEED ARISES. OPTIONAL CASTERS ARE AVAILABLE, IF REQUIRED. LEG EXTENSIONS HAVE BEEN PROVIDED, SHOULD THE MACHINE HEIGHT NEED CHANGING.

AN OPTIONAL INFEED OR PACK TABLE CAN BE INSTALLED ON THE MACHINE WHERE THE PACKER CAN FILL THE BOXES AND CLOSE THE FLAPS PRIOR TO FEEDING THE BOXES INTO THE MACHINE. AN OPTIONAL EXIT TABLE CAN ALSO BE INSTALLED AT THE OUTFEED END OF THE MACHINE TO RECEIVE TE BOXES AS THEY ARE DISCHARGED FROM THE MACHINE.

OPERATION

AFTER THE TAPE UNITS ARE LOADED, THE MACHINE IS READY TO SEAL BOXES. PLACE A SAMPLE BOX OF THE SIZE TO BE SEALED ON THE BED OF THE MACHINE, AND FOLD THE FLAPS. CENTER THE BOX IN THE MACHINE AND MOVE BELT ARMS TO THE BOX AND LOCK. BRING UPPER TAPE UNIT BOX ON TOP OF THE BOX AND LOCK IN PLACE. DO NOT USE MORE PRESSURE THAN NECESSARY AS IT WILL PUT TOO MUCH STRAIN ON THE DRIVE MOTORS.

START MACHINE WITH START SWITCH LOCATED ON THE OPERATOR SIDE OF THE MACHINE. NOW THE SAMPLE BOX WILL BE TAPED AND DISCHARGED. ROTATE BOX 180° - DO NOT TURN UPSIDE DOWN. FEED BOX THROUGH MACHINE ONCE MORE. THE SECOND STRIP OF TAPE SHOULD BE APPLIED DIRECTLY OVER FIRST STRIP OF TAPE. THIS SHOWS THAT THE BELT ARMS ARE CENTERED TO THE TAPING UNITS. IF NOT, CORRECT BY SHIFTING THE BELT ARMS ONE-HALF THE AMOUNT OF THE MISALIGNED TAPE. (IF MACHINE IS SELF-CENTERING, THERE ARE ADJUSTMENT SLOTS WHERE THE LEAD SCREW MOUNTS TO THE BELT ARMS). THE UPPER TAPE UNIT MAY ALSO BE CENTERED BY ADJUSTING THE TAPE UNIT BOX THAT HOLDS THE UPPER TAPE UNIT IN THE NECESSARY DIRECTION. THE MACHINE IS NOW READY TO PROCESS BOXES.

THE PACKER SHOULD FOLD THE BOX FLAPS IN THE NORMAL MANNER AND **WHILE HOLDING THEM CLOSED ON THE REAR OF THE BOX**, HE SHOULD FEED THE BOX INTO THE MACHINE UNTIL THE BELTS TAKE IT FROM HIM. THE MACHINE WILL SEAL THE TOP AND BOTTOM FLAPS AND DISCHARGE THE BOX TO THE OUT FEED CONVEYOR AUTOMATICALLY.

MAIN FRAME

STARTER SWITCH:

THE STARTER SWITCH, MOUNTED ON THE OPERATOR SIDE OF THE MACHINE, INCORPORATES A HEATER COIL WHICH IS SET TO TRIP AT THE PROPER RATING OF THE MOTOR. TO REPLACE THIS SWITCH, FIRST DISCONNECT THE MACHINE FROM THE ELECTRICAL SUPPLY. REMOVE THE SWITCH BY LOOSENING THE TWO FASTENING SCREWS AND PULL THE SWITCH FROM THE ELECTRICAL BOX. REMOVE THE WIRES AFTER FIRST NOTING THEIR CONNECTIONS TO THE SWITCH.

TO REPLACE THE STARTER SWITCH, REVERSE THE ABOVE PROCEDURE.

BELT ARMS:

THIS SYSTEM CENTERS AND DRIVES THE BOX THROUGH THE MACHINE. THE BOX WIDTH IS SET MANUALLY BY TURNING THE HAND WHEELS LOCATED ON EACH BELT ARM ASSEMBLY. TO SET THEM, PLACE THE DESIRED BOX ON THE MACHINE BETWEEN THE BELTS, TURN THE HAND WHEELS AND MOVE THE BELT ARMS UNTIL THEY JUST TOUCH THE BOX SIDES. IF THE BOX FAILS TO DRIVE, MOVE THE BELTS SLIGHTLY CLOSER TO THE BOX. TOO MUCH PRESSURE ON THE BOX WILL PUT UNNECESSARY STRAIN ON THE DRIVE MOTORS.

EACH BELT IS POWERED BY ITS OWN MOTOR LOCATED AT THE EXIT END OF THE MACHINE. TO REPLACE THE BELTS, POWER OFF THE MACHINE AND REMOVE TWO SCREWS ON BELT GUARD; REMOVE BELT GUARD. LOOSEN NUT ON IDLER ROLLER. SLIDE IDLER ROLLER TOWARD EXIT END OF MACHINE AND REMOVE BELT BY SLIDING IDLER ROLLER TOWARD INFEED END OF MACHINE. REPLACE BELT GUARD. EACH BELT IS REPLACED SEPARATELY, HOWEVER, IT IS ADVISABLE TO REPLACE BOTH BELTS AT THE SAME TIME.

DRIVE MOTOR:

THE BELTS ARE DRIVEN BY TWO DRIVE MOTORS LOCATED AT THE EXIT END OF THE MACHINE. THE MOTORS ARE CONTROLLED BY THE STARTER SWITCH IN WHICH THE OVERLOAD IS FACTORY SET TO TRIP AT THE PROPER SETTING.

IF TROUBLE IS BEING EXPERIENCED WITH A DRIVE MOTOR, A QUALIFIED ELECTRICIAN SHOULD CHECK THE ELECTRICAL SYSTEM. STARTER SWITCH SHOULD BE CHECKED FIRST.

TO REPLACE A DRIVE MOTOR, FIRST DISCONNECT THE MACHINE FROM ELECTRICAL SUPPLY. REMOVE THE MOTOR GEAR HEAD FROM MOUNTING PLATE. REPLACE WITH NEW MOTOR USING THE WIRING DIAGRAM IN THE MOTOR JUNCTION BOX. CHECK MOTOR FOR PROPER ROTATION.

REMOVING AND REPLACING TAPE UNITS

THE TOP AND BOTTOM TAPE UNITS ARE IDENTICAL AND MAY BE INTERCHANGED. BOTH UNITS ARE REMOVABLE FROM THE MACHINE BUT ONLY THE LOWER TAPE UNIT MUST BE REMOVED TO LOAD THE TAPE. THE TOP TAPE UNIT MAY REMAIN IN PLACE WHEN LOADING TAPE.

REMOVING BOTTOM TAPE UNIT:

CAUTION: NEW HANDLING TAPE UNITS AVOID CONTACT WITH SERRATED BLADE.
IT IS VERY SHARP.

- RAISE UPPER TAPE UNIT BOX TO ITS UPPER POSITION.
- STANDING AT THE CONTROL SIDE OF THE MACHINE, GRASP TAPE UNIT AT POINTS "A" AND "B".
- LIFT TAPE UNIT CLEAR OF MACHINE.

REPLACING BOTTOM TAPE UNIT:

- REMOVE (4) SCREWS THAT ATTACH TAPE UNIT TO UPPER TAPE UNIT BOX.

REPLACING TOP TAPE UNIT:

- REVERSE ABOVE PROCEDURE.

LOADING TAPE UNITS

BOTTOM TAPE UNIT MUST BE REMOVED BEFORE PERFORMING THE FOLLOWING TASKS.

INITIAL LOADING OF TAPE:

- PUSH TAPE ROLL ONTO TAPE REEL WITH TAPE FEEDING COUNTERCLOCKWISE. TAPE ROLL SHOULD BE PUSHED TO THE BACK OF THE TAPE REEL.
- FOLD BACK ABOUT 12" (300 MM) OF TAPE, STICK IT TO ITSELF TO FORM A LEADER. THREAD TAPE AS SHOWN ON THE TAPE THREADING DIAGRAM. TAPE THREADING DIAGRAM DECAL IS LOCATED ON THE TOP AND BOTTOM TAPE UNIT FRAMES.

SPLICING PROCEDURE:

- WITH A PAIR OF SCISSORS, CUT TAPE ON EXPIRING ROLL WHERE TAPE FEEDS INTO TAPE UNIT. REMOVE BUTT ROLL OF TAPE FROM TAPE REEL.
- INSTALL A NEW ROLL OF TAPE ONTO TAPE REEL WITH TAPE FEEDING COUNTERCLOCKWISE.
- SPLICE A 1/2" LAP TO CUT END OF TAPE. PULL TAPE THROUGH TAPE UNTIL SPLICE IS OUT OF TAPE UNIT. CUT SPLICE OFF.

TAPE UNITS

TAPE REEL:

THE DRAG OF THE TAPE REEL IS ADJUSTED BY TURNING THE NUT LOCATED ON THE FRONT OF THE TAPE REEL. TURNING THE NUT CLOCKWISE OR COUNTERCLOCKWISE WILL INCREASE OR DECREASE THE DRAG. THIS ADJUSTMENT SHOULD ALWAYS BE THE MINIMUM NECESSARY TO PREVENT THE TAPE FROM OVERRUNNING. TOO MUCH DRAG, ESPECIALLY WITH STRETCHY TAPE, MAY RESULT IN POOR TAPING, BAD CUTOFFS, TAPE SNAP BACKS, OR JAMS.

WIPE DOWN ROLLERS:

THE RUBBER WIPE DOWN ROLLERS WIPE THE TAPE AS THE BOX PASSES THROUGH THE MACHINE. THE TENSION IS CONTROLLED BY THE LARGE TORSION SPRING. THIS IS FACTORY SET AND SHOULD NOT NEED ADJUSTMENT.

HOWEVER, IF ADJUSTMENTS DO BECOME NECESSARY, REPOSITION THE THREADED SHAFT WHICH IS LOCATED AT ONE END OF THE SPRING.

BLADE:

IF THE BLADE SHOULD ACCUMULATE A DEPOSIT OF ADHESIVE, IT MAY BE CLEANED WITH AN OILY RAG. BE CAREFUL WHEN HANDLING THE BLADE, AS IT IS VERY SHARP. WHEN THE BLADE BECOMES DULL, IT SHOULD BE REPLACED.

FINGER AND FINGER HOLDER:

THE FINGER IS LOCATED ON THE FRONT WIPE DOWN ROLLER ARM. ITS FUNCTION IS TO KEEP THE TAPE ERECT. THE FINGER HOLDERS ARE MAINTAINED IN THE PROPER POSITION BY THE GUIDE SPRING. IF THE TAPE IS CURLING ONTO ITSELF, CHECK FITNESS OF GUIDE SPRING, AND REPLACE IF NECESSARY.

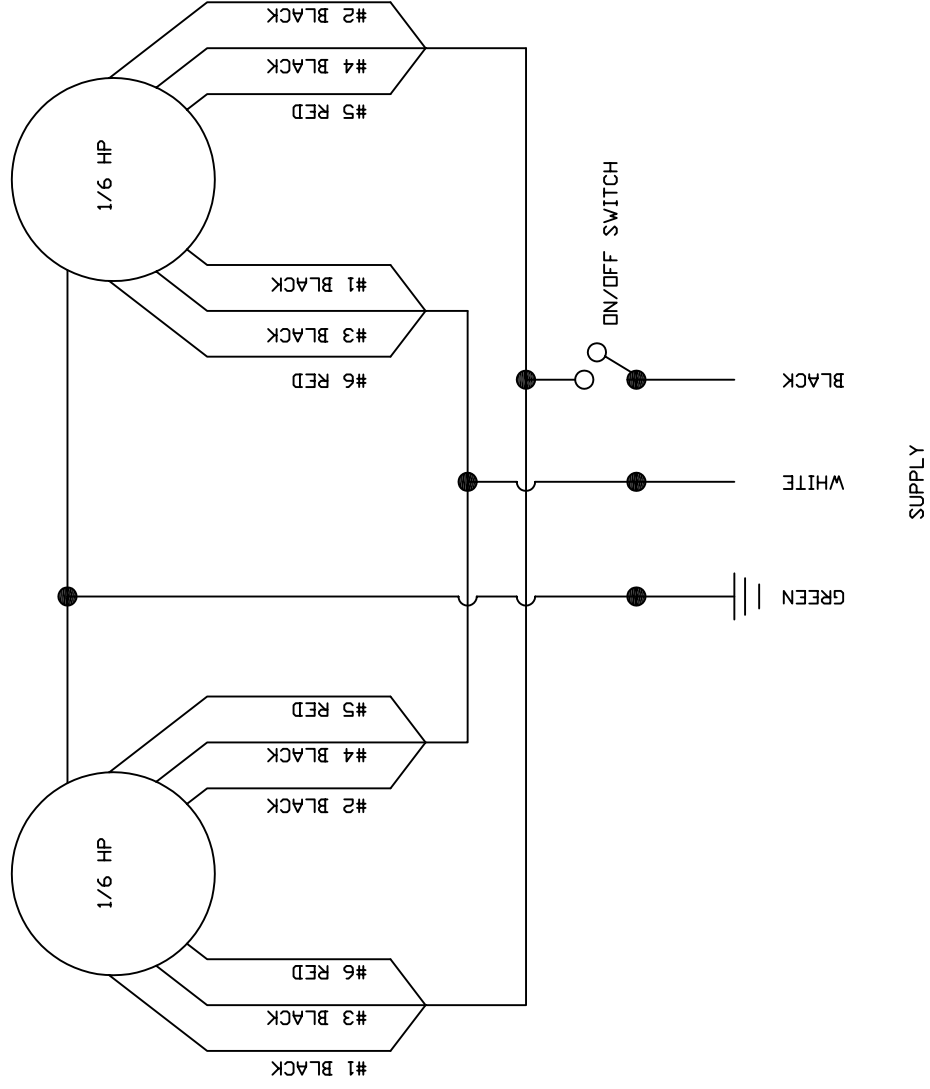
UPPER TAPE UNIT BOX

THE TAPE UNIT BOX IS SUPPORTED BY TWO SHAFTS THAT RIDE ALONG THE COLUMNS MOUNTED ON EACH SIDE OF THE MACHINE. THE HEIGHT IS ADJUSTED BY LOOSENING THE TWO HAND WHEELS AND RAISING OR LOWERING THE TAPE UNIT BOX TO THE DESIRED HEIGHT, TIGHTEN THE HAND WHEELS.

ELECTRICAL SYSTEM

THE ELECTRICAL SYSTEM CONSISTS OF TWO FRACTIONAL HP DRIVE MOTORS AND THE STARTER SWITCH. THE MOTORS AND FRAME ARE GROUNDED THROUGH THE ELECTRICAL CONNECTOR.

THE CIRCUIT BREAKER IS FACTORY SET. IF IT TRIPS, FIRST CHECK THE BELT ARM PRESSURE AND ADJUST IF NECESSARY. IF THE CIRCUIT BREAKER TRIPS AGAIN, A QUALIFIED TECHNICIAN SHOULD CHECK THE ELECTRICAL SYSTEM, THEN RESET THE CIRCUIT BREAKER.



MAINTENANCE SCHEDULE

- BELT ARM SHAFTS SHOULD BE CLEANED AND LIGHTLY OILED WEEKLY.
- BLADES SHOULD BE CLEANED DAILY WITH A CLEANING SOLUTION.
- COLUMNS SHOULD BE OILED WEEKLY.
- BELTS SHOULD BE CHECKED MONTHLY FOR WEAR, REPLACE WHEN NECESSARY.

TROUBLE - SHOOTING

TAPING DIFFICULTIES:

TAPE DOES NOT ADHERE WELL TO BOX:

1. CHECK THAT BOX IS NOT WAXY OR OILY.
2. CHECK THAT BOX IS PROPERLY CUT AND SCORED SO THAT FLAPS DO NOT OVERLAP. IF THE TAPE ADHERES TO THE TOP AND BOTTOM BUT NOT TO THE END PANELS, THE BOX MAY BE SKEWED FORMING A PARALLELOGRAM. IF THIS CONDITION EXISTS, BRING IT TO THE ATTENTION OF YOUR BOX SUPPLIER.
3. CHECK THE PRESSURE ON THE WIPE DOWN ROLLERS. INCREASE THE TENSION OF THE TORSION SPRING. CHECK THAT SPRING IS NOT BROKEN.
4. CHECK BOX FOR CLAY CONTENT. TOO MUCH RECYCLING WILL RAISE CLAY CONTENT TOO HIGH FOR TAPE TO ADHERE PROPERLY.

TAPE END STICKS TO ITSELF OR MECHANISM:

1. CHECK THAT THERE IS NO TOO MUCH DRAG ON THE TAPE CAUSING STRETCHING AND SNAPBACK AT CUTOFF. REDUCE THE TAPE REEL DRAG SETTING.
2. CHECK THE TAPE THREADING PATH. SEE TAPE THREADING DIAGRAM.
3. CHECK FOR DEFECTIVE TAPE ROLL BY PULLING OFF TAPE MANUALLY. THE PULL SHOULD BE EVEN AND SHOULD NOT VARY SUDDENLY.

TAPE BREAKS OR JAMS:

1. CHECK THE TAPE BY PULLING OFF MANUALLY. THE PULL SHOULD BE EVEN AND SHOULD NOT VARY SUDDENLY. CHECK THE TAPE REEL DRAG SETTING.
2. CHECK ONE-WAY CLUTCH ROLLER TENSION, ADJUST IF NECESSARY.
3. CHECK THE TAPE THREADING PATH. SEE TAPE THREADING DIAGRAM.
4. CHECK FOR NICKS IN EDGE OF TAPE ROLL. PULL OFF DAMAGED TAPE.

TAPE WRINKLES:

1. CHECK THE TAPE BY PULLING OFF MANUALLY. THE PULL SHOULD BE EVEN AND SHOULD NOT VARY SUDDENLY.
2. CHECK ONE-WAY CLUTCH ROLLER TENSION, ADJUST IF NECESSARY.

TROUBLE-SHOOTING, CONT'D

3. CHECK THE PRESSURE OF THE WIPE DOWN ROLLERS. TOO MUCH OR NOT ENOUGH PRESSURE MAY CAUSE WRINKLES. PRESSURE THAT IS TOO HIGH MAY DEPRESS THE FLAPS CAUSING PROBLEMS. ADJUST THE PRESSURE, IF NECESSARY.
4. CHECK THAT THE ROLLERS TURN FREELY ON THEIR SHAFTS.
5. CHECK THE CONTENTS OF THE BOX. PARTIALLY FULL BOXES OR VERY COMPRESSIBLE CONTENTS MAY ALLOW THE FLAPS TO DEPRESS EXCESSIVELY CAUSING WRINKLES.
6. CHECK THE DRAG OF THE TAPE. TOO MUCH DRAG MAY CAUSE PROBLEMS. TOO LITTLE DRAG MAY CAUSE OVERRUNNING OF THE TAPE ROLL. ADJUST THE TAPE REEL DRAG SETTING.
7. CHECK THAT THE TAPE IS PROPERLY THREADED AND THE TAPE CORE IS PROPERLY CENTERED.
8. CHECK THE PRESSURE OF THE UPPER TAPE UNIT BOX AGAINST THE BOX. IF THE PRESSURE IS INSUFFICIENT, THE BOX MAY SLIP AGAINST THE BELTS AND HESITATE AS IT IS BEING FED THROUGH THE MACHINE.
9. CHECK THAT THE BELTS ARE NOT SLIPPING.
10. CHECK ADJUSTMENT OF THE FINGER HOLDER.

BOX PROBLEMS:

BOXES JAMMING IN MACHINE:

1. STOP MACHINE.
2. OPEN BELT ARMS AND RAISE THE UPPER TAPE UNIT BOX.
3. REMOVE JAMMED BOX. CUT TAPE FLUSH WITH END OF ROLLERS.
4. RESET THE UPPER TAPE UNIT BOX HEIGHT AND BELT ARMS TO THE SIZE OF A SAMPLE BOX.
5. RESTART MACHINE. MACHINE IS NOW READY TO PROCESS THE NEXT BOX.

INCORRECT BOX SIZE OR SHAPE:

1. CHECK BOXES TO MAKE SURE THE SIZE FALLS WITHIN THE LIMITS OF THE MACHINE.
2. MACHINE WILL NOT PROCESS UNSTABLE BOXES.

TROUBLE-SHOOTING, CONT'D

CONTENTS BULGING THROUGH TOP OF BOX:

1. CHECK TO BE SURE THE BOX IS NOT OVERFILLED WITH CONTENTS. TALLER BOXES MAY REQUIRE SQUEEZERS, CONSULT FACTORY.

BOX SLIPPING AGAINST BELTS:

1. INCREASE BELT PRESSURE.

BOX BEING CLAMPED BY BELT ARMS:

1. OPEN BELT ARMS SLIGHTLY TO REDUCE PRESSURE ON BOX.

BOX BEING CRUSHED BY UPPER TAPE UNIT BOX:

1. RAISE UPPER TAPE UNIT BOX SLIGHTLY TO REDUCE PRESSURE ON BOX.
2. ROLLER TENSION MAY BE TOO HIGH, REDUCE TENSION WITH THREADED SCREW MOUNTED TO SPRING.

BELT DRIVE PROBLEMS:

BELTS DO NOT MOVE:

1. CHECK THAT MACHINE IS CONNECTED TO A LIVE ELECTRICAL SOURCE.

BELTS SLIP:

1. CHECK TENSION OF BELTS AND ADJUST IDLER ROLLERS.

ILLUSTRATED REPLACEMENT PARTS TABLE OF CONTENTS

MAIN FRAME ASSEMBLY

FRAME ASSEMBLY

HEAD ASSEMBLY

COLUMN ASSEMBLY

BELT ARM ASSEMBLY

SELF-CENTERING ASSEMBLY

TOP SQUEEZER ASSEMBLY

INFEEED TABLE ASSEMBLY

ABAL TAPE CARTRIDGE - 2"

OPTIONAL ASSEMBLIES

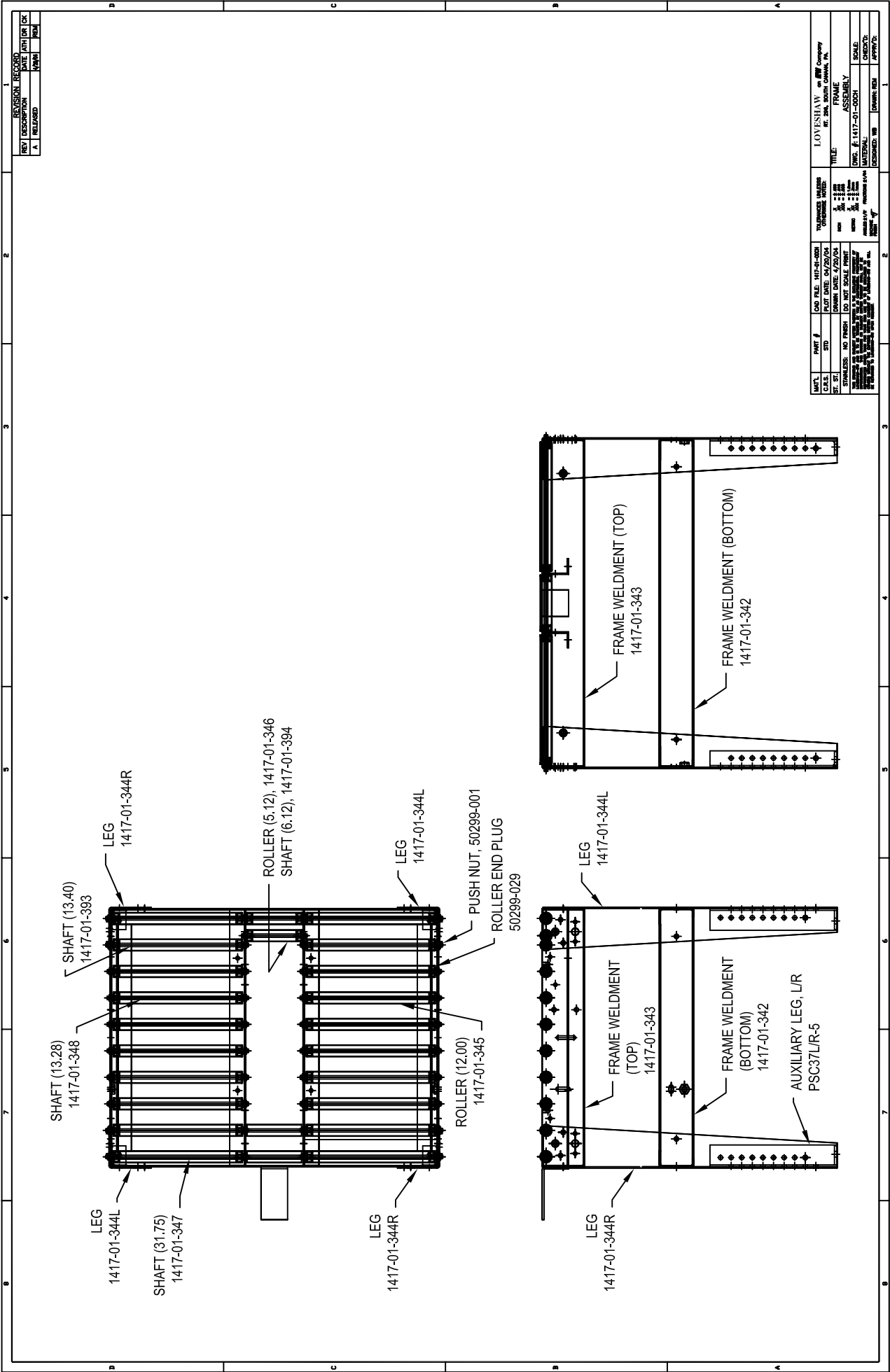
EXIT TABLE ASSEMBLY

Technical drawing of a printing press assembly, showing various components and their part numbers. The drawing includes a side view of the press structure and a detailed view of the carriage and frame assembly.

Key components and part numbers labeled in the drawing:

- EXIT TABLE ASSEMBLY (OPTIONAL) 1417-12-00CH
- SELF CENTERING ASSEMBLY 1417-17-00CH
- (2) ABAL AUTO. TAPE UNIT (2" STANDARD) 1500-00-04CH
- OPTIONAL 3" UNIT 1502-00-04CH
- QUICK RELEASE TOP CARTRIDGE (OPTIONAL) 1417-60-01CH
- HEAD ASSEMBLY 1417-13-00CH
- HEAD 3 FLAP FOLDER (OPTIONAL) 1417-60-02CH
- HOLD DOWN SLED ASSY (OPTIONAL) 1417-60-04CH
- FRAME ASSEMBLY 1417-01-00CH
- BELT ARM ASSEMBLY 1417-04-00CH
- BELT SLIDE SUPPORT (OPTIONAL, NOT VISIBLE) 1417-60-03CH
- 2" CARTRIDGE TRANSFER KIT (OPTIONAL) 1417-60-05CH
- 3" CARTRIDGE TRANSFER KIT (OPTIONAL) 1417-60-06CH
- COLUMN ASSEMBLY 1417-02-00CH
- TOP SQUEEZER ASSEMBLY 1417-08-00CH
- INFEED TABLE ASSEMBLY 1417-11-00CH

FRAME ASSEMBLY



Technical drawing of a roller assembly. The main view shows a cross-section of the roller assembly with the following labels:

- SHAFT, HEAD ROLLER, 1417-13-361
- ROLLER, SPONGE RUBBER, 1417-13-362
- (2) CORE, ROLLER, 1417-13-363
- (2) SET COLLAR, SC37
- (2) SUPPORT ROD 1417-13-360

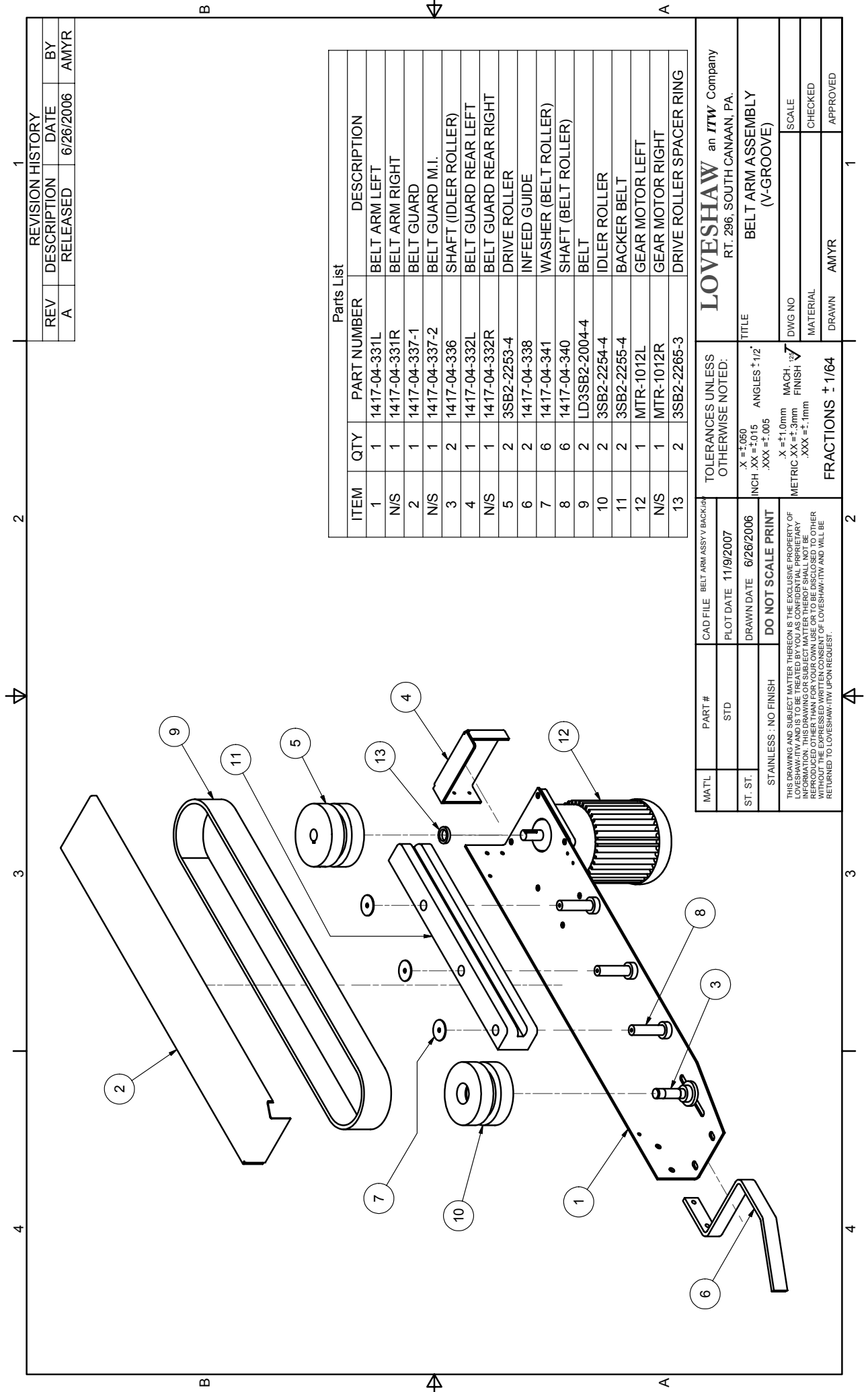
A detail view of the HEAD WELDMENT 1417-13-359 is shown, featuring a cross-section of the weldment with internal features and dimensions.

Technical drawing of a column assembly, showing two side views and a top view.

Side View (Left): Shows the column with a carriage and a hand knob. Labels include: CARRIAGE, RH 1417-02-376R, CARRIAGE, LH 1417-02-376L, (2) COLUMN 1417-02-373, (2) SPRING (COLUMN) 1417-02-374, (2) RETAINING RING 50200-025, (2) HAND KNOB 1417-08-371, and (4) BUSHING (COLUMN) 1417-02-375.

Side View (Right): Shows the column with a carriage and a hand knob. Labels include: CARRIAGE, RH 1417-02-376R, CARRIAGE, LH 1417-02-376L, (2) COLUMN 1417-02-373, (2) SPRING (COLUMN) 1417-02-374, (2) RETAINING RING 50200-025, (2) HAND KNOB 1417-08-371, and (4) BUSHING (COLUMN) 1417-02-375.

Top View: Shows the column with a spring and a retaining ring. Labels include: (2) COLUMN 1417-02-373, (2) SPRING (COLUMN) 1417-02-374, (2) RETAINING RING 50200-025, (2) HAND KNOB 1417-08-371, and (4) BUSHING (COLUMN) 1417-02-375.

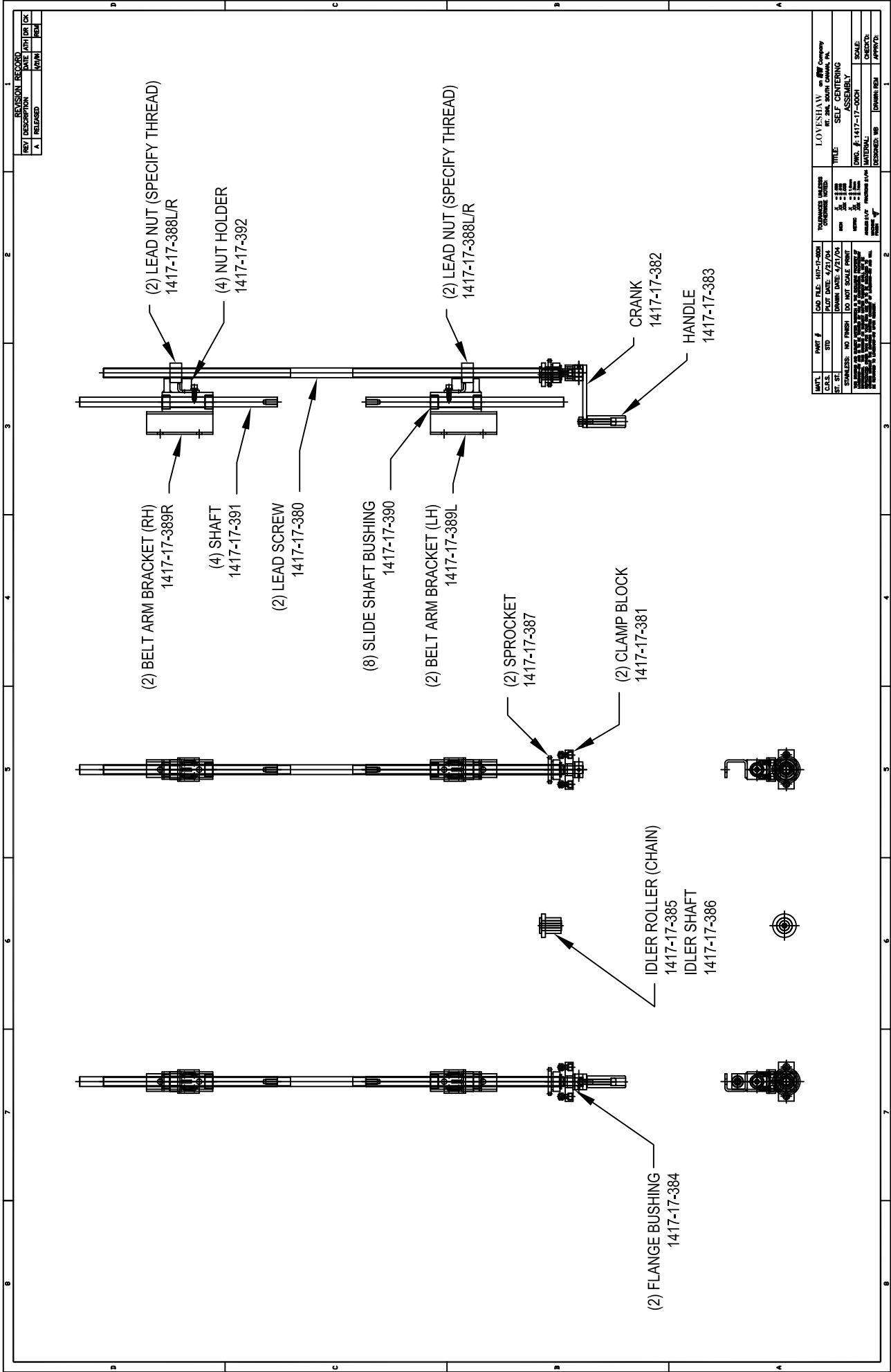


| REVISION HISTORY | | | |
|------------------|-------------|-----------|------|
| REV | DESCRIPTION | DATE | BY |
| A | RELEASED | 6/26/2006 | AMJR |

| Parts List | | | |
|------------|-----|---------------|--------------------------|
| ITEM | QTY | PART NUMBER | DESCRIPTION |
| 1 | 1 | 1417-04-331L | BELT ARM LEFT |
| N/S | 1 | 1417-04-331R | BELT ARM RIGHT |
| 2 | 1 | 1417-04-337-1 | BELT GUARD |
| N/S | 1 | 1417-04-337-2 | BELT GUARD M.I. |
| 3 | 2 | 1417-04-336 | SHAFT (IDLER ROLLER) |
| 4 | 1 | 1417-04-332L | BELT GUARD REAR LEFT |
| N/S | 1 | 1417-04-332R | BELT GUARD REAR RIGHT |
| 5 | 2 | 3SB2-2253-4 | DRIVE ROLLER |
| 6 | 2 | 1417-04-338 | INFEED GUIDE |
| 7 | 6 | 1417-04-341 | WASHER (BELT ROLLER) |
| 8 | 6 | 1417-04-340 | SHAFT (BELT ROLLER) |
| 9 | 2 | LD3SB2-2004-4 | BELT |
| 10 | 2 | 3SB2-2254-4 | IDLER ROLLER |
| 11 | 2 | 3SB2-2255-4 | BACKER BELT |
| 12 | 1 | MTR-1012L | GEAR MOTOR LEFT |
| N/S | 1 | MTR-1012R | GEAR MOTOR RIGHT |
| 13 | 2 | 3SB2-2265-3 | DRIVE ROLLER SPACER RING |

| | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------|--|
| TOLERANCES UNLESS OTHERWISE NOTED: | | LOVESHAW an ITW Company RT. 296, SOUTH CANAAN, PA. | |
| X = ±.050 INCH XX = ±.015 .XXX = ±.005 | | TITLE BELT ARM ASSEMBLY (V-GROOVE) | |
| X = ±1.0mm MACH. $\sqrt{}$ FINISH METRIC XX = ±.3mm .XXX = ±.1mm | | DWG NO SCALE | |
| 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 PROPRIETARY INFORMATION. THIS DRAWING OR SUBJECT MATTER THEREOF SHALL NOT BE REPRODUCED OTHER THAN FOR YOUR OWN USE OR TO BE DISCLOSED TO OTHER PERSONS OR COMPANIES WITHOUT THE WRITTEN CONSENT OF LOVESHAW-ITW AND WILL BE RETURNED TO LOVESHAW-ITW UPON REQUEST. | | MATERIAL CHECKED | |
| STAINLESS : NO FINISH | | DRAWN APPROVED | |
| CAD FILE BELT ARM ASSY V BACK.136 | | FRACTIONS ± 1/64 | |
| PLOT DATE 11/9/2007 | | 1 | |
| DRAWN DATE 6/26/2006 | | 2 | |
| PART # STD | | 4 | |
| ST. ST. | | 3 | |

SELF CENTERING ASSEMBLY

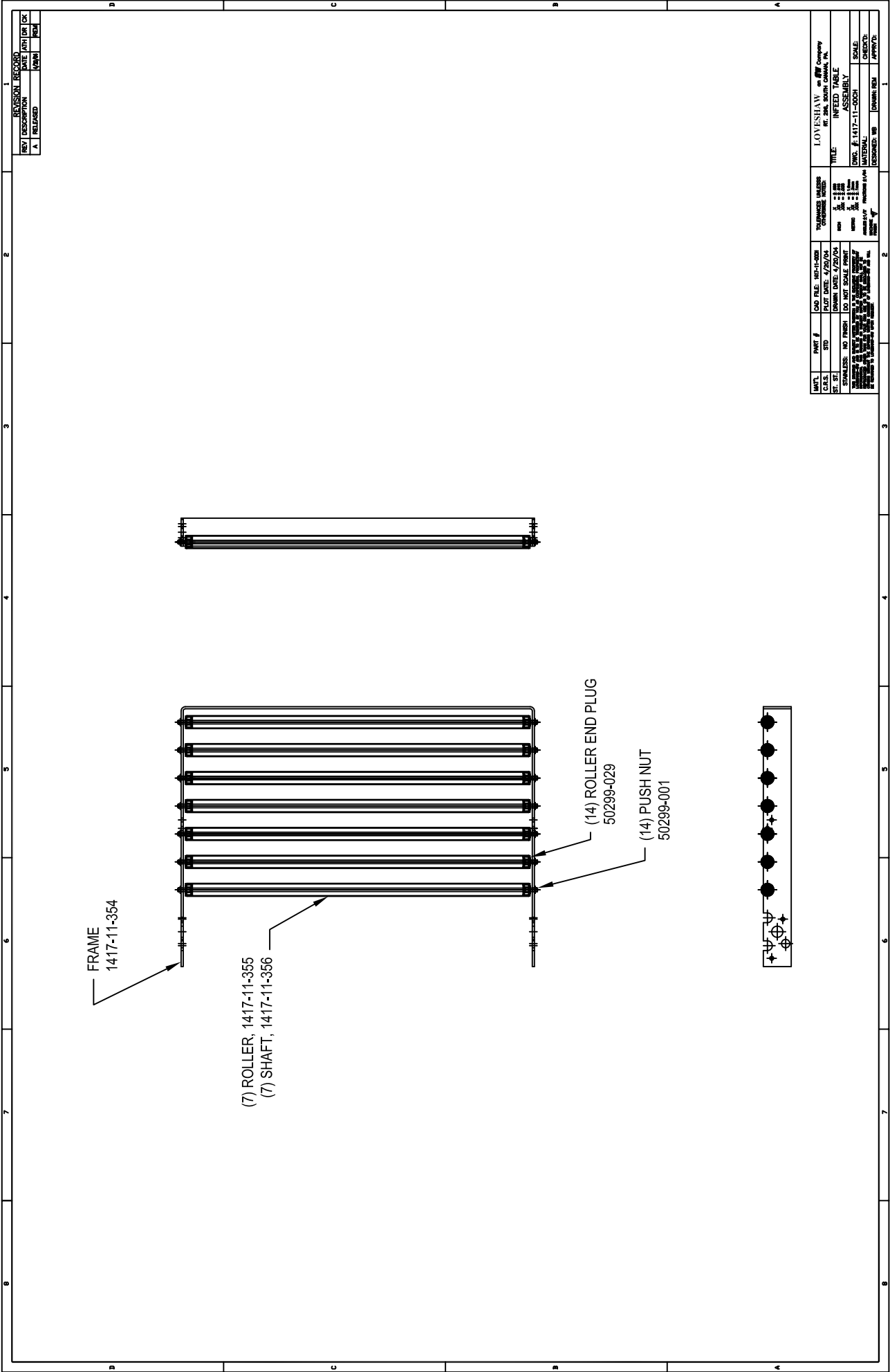


Technical drawing of a mechanical assembly, likely a door or window frame. The drawing includes the following callouts:

- (2) FRAME 1417-08-367
- (2) ROLLER, 1417-08-369
- (2) SHAFT, 1417-08-370
- (4) HAND KNOB 1417-08-371
- (4) PAD 1417-08-368

The drawing shows a side view of the assembly with two rollers/shafts mounted on a frame. The hand knob and pad are shown in detail views on the right side of the drawing.

INFEED TABLE



ABAL

OWNERS MANUAL



1500-00-04CH

ABAL AUTO. TAPE UNIT 2"

THE LOVESHAW CORPORATION
2206 EASTON TURNPIKE, BOX 83
SOUTH CANAAN, PA 18459

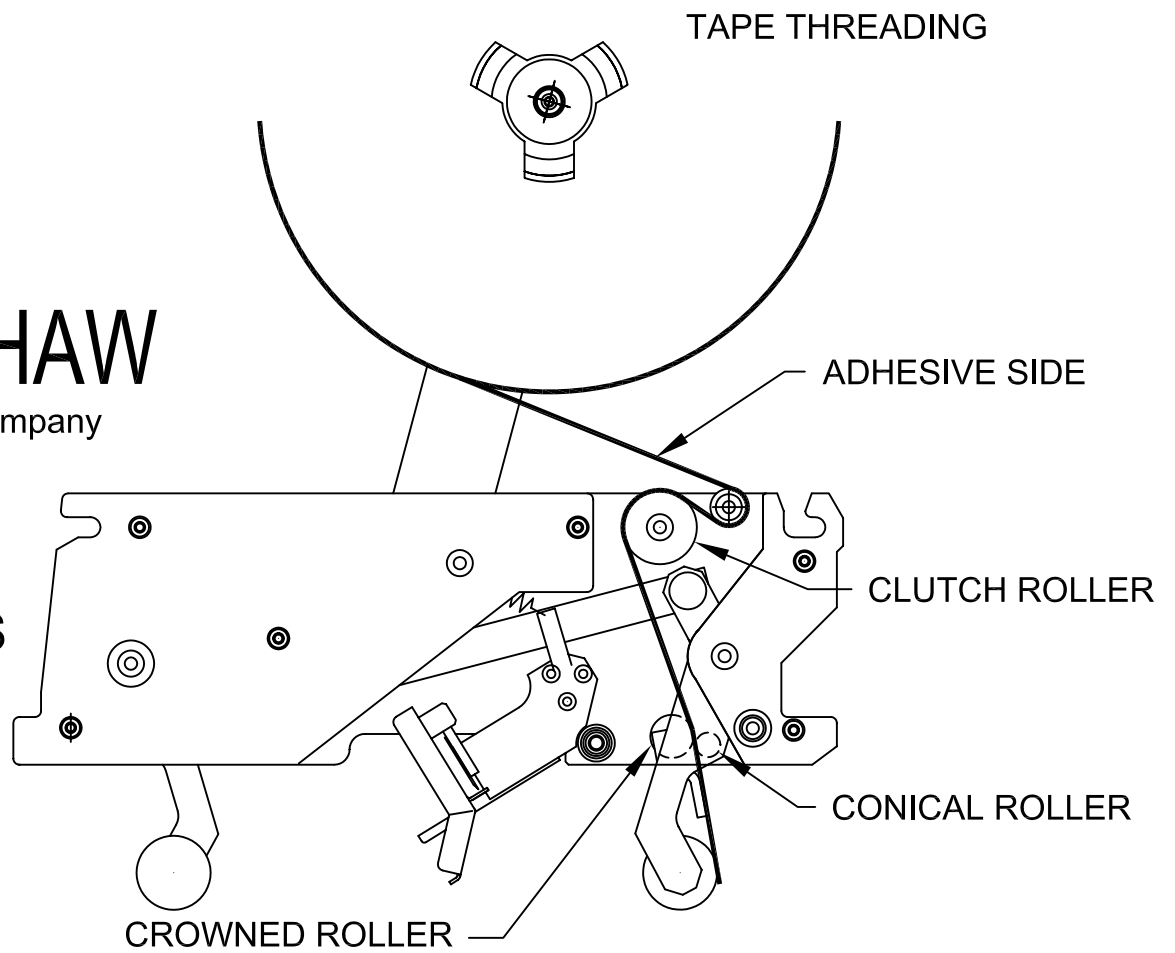
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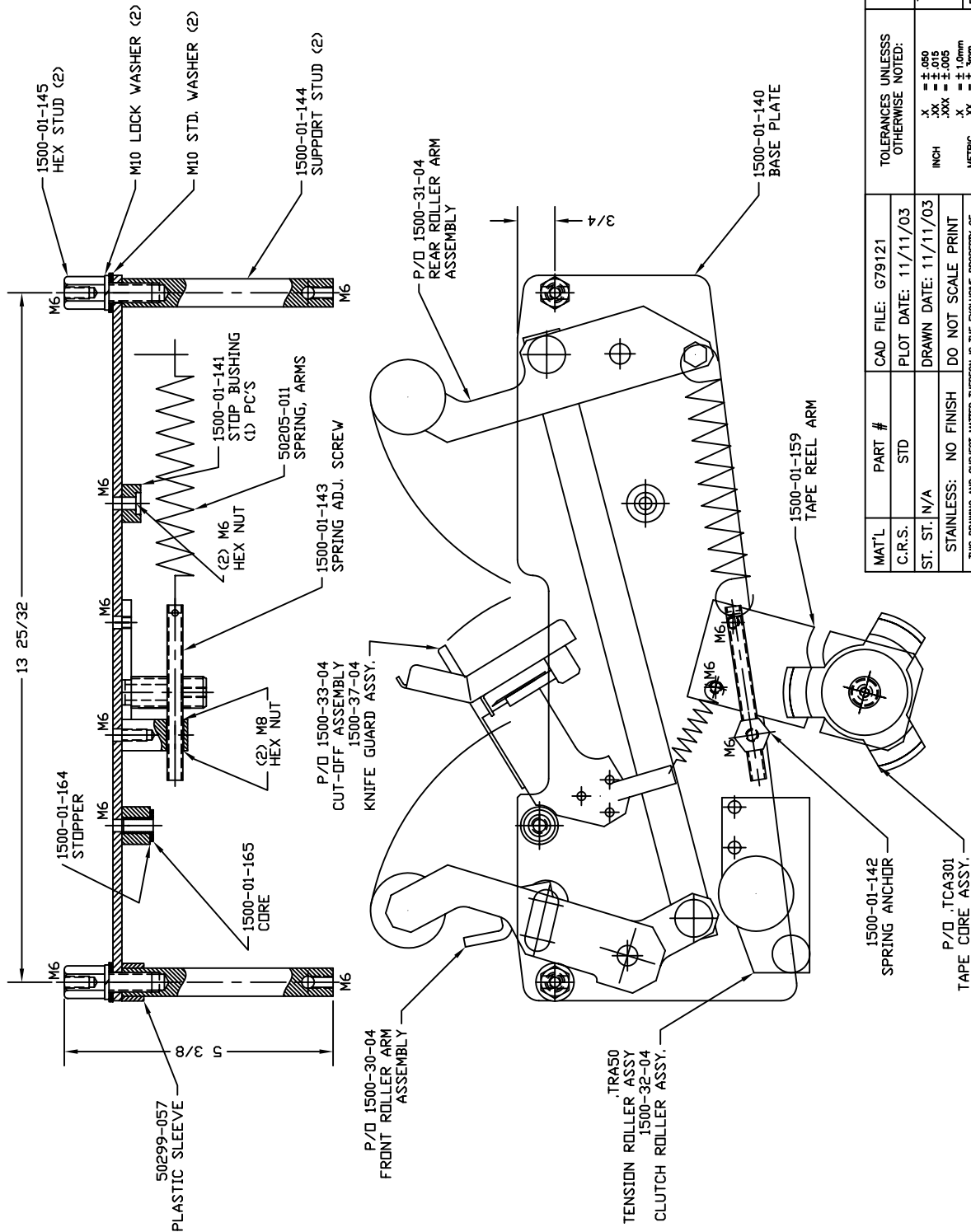
LOVESHAW

an ITW Company

ABAL SERIES



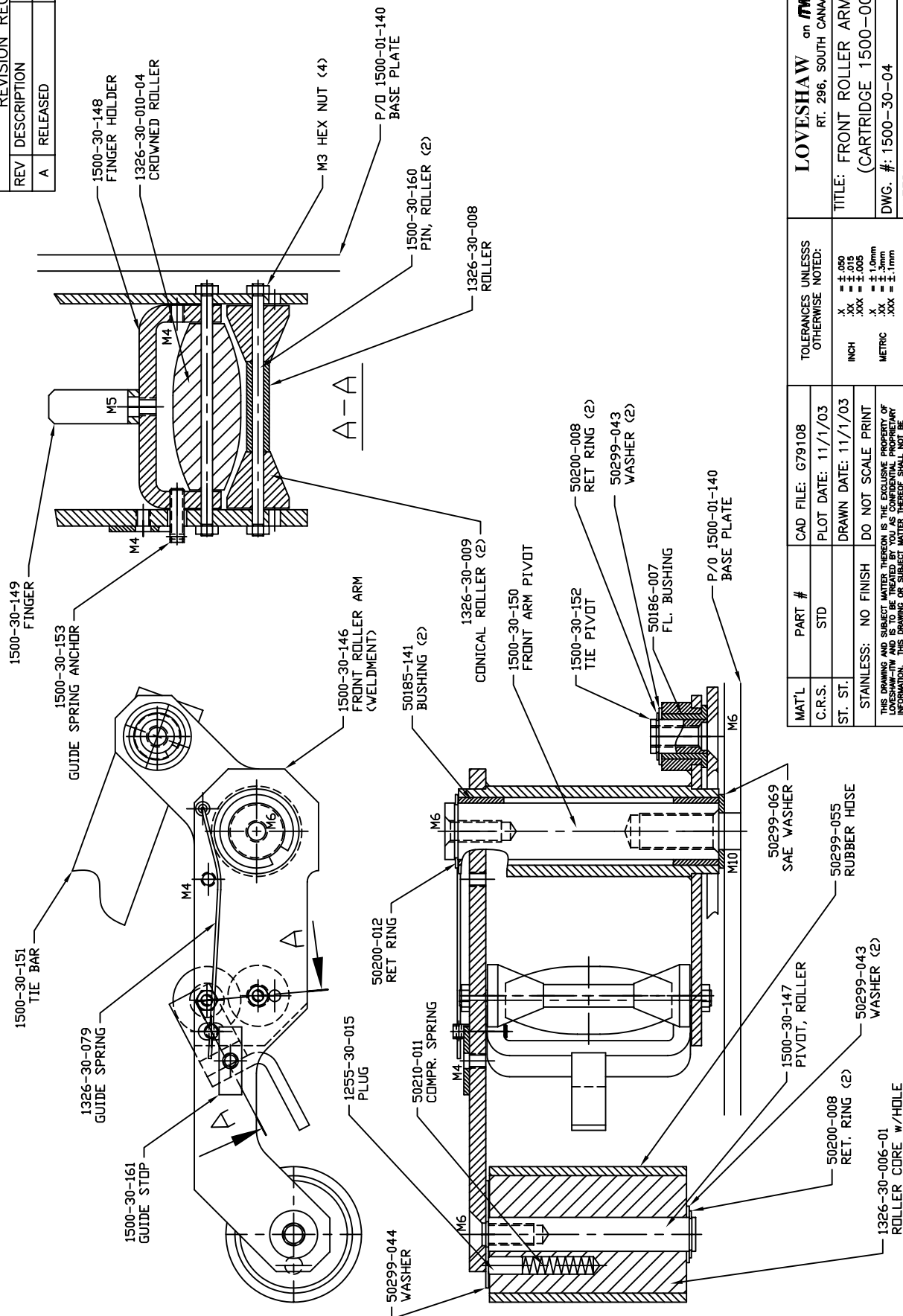
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| MATT'L | PART # | CAD FILE: G79121 | LOVESHAW an RTW Company | |
| | STD | PLOT DATE: 11/11/03 | RT. 296, SOUTH CANAAN, PA. | |
| C.R.S. | | | TITLE: BASE ASSEMBLY | |
| ST. ST. N/A | | DRAWN DATE: 11/11/03 | (CARTRIDGE 1500-00-04CH) | |
| STAINLESS: NO FINISH | | | DWG. #: 1500-01-04 | SCALE: 1:2 |
| THIS DRAWING AND SUBJECT MATTER HEREON IS THE EXCLUSIVE PROPERTY OF LOVESHAW-RTW AND IS TO BE TREATED BY YOU AS CONFIDENTIAL PROPRIETARY INFORMATION. THIS DRAWING OR SUBJECT MATTER HEREON SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF LOVESHAW-RTW AND WILL BE RETURNED TO LOVESHAW-RTW UPON REQUEST. | | | MATERIAL: | CHECK'D: |
| | | | DESIGNED: WB | APPR'D: |

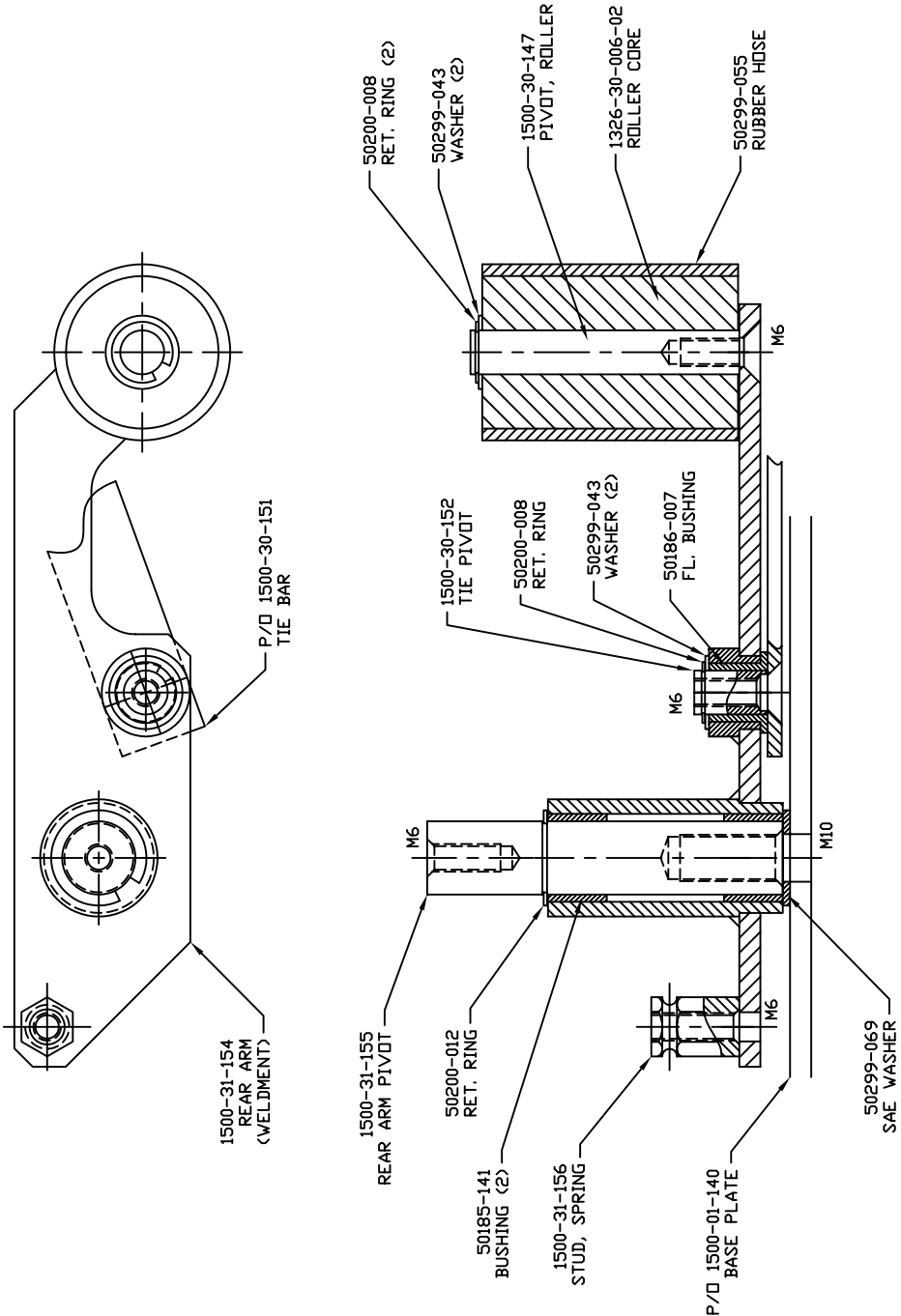
| | |
|------------------------------------|------------------------------------------------------------------------------------------------|
| TOLERANCES UNLESS OTHERWISE NOTED: | |
| INCH | .X = ±.050 .XX = ±.015 .XXX = ±.005 .Xmm = ±.1mm .XXmm = ±.05mm .XXXmm = ±.01mm |
| METRIC | |
| ANGLES ±1/2° | FRACTIONS ±1/64 |
| MACHINE FINISH | |

| REVISION RECORD | | | | |
|-----------------|-------------|---------|-----|----|
| REV | DESCRIPTION | DATE | ATH | CK |
| A | RELEASED | 11/1/03 | | WB |



| | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------|------------------------------------|
| LOVESHAW an ITW Company | | RT. 296, SOUTH CANAAN, PA. | |
| MAT'L | PART # | CAD FILE: G79108 | TOLERANCES UNLESS OTHERWISE NOTED: |
| C.R.S. | STD | PLOT DATE: 11/1/03 | INCH |
| ST. ST. | | DRAWN DATE: 11/1/03 | METRIC |
| STAINLESS: NO FINISH | | DO NOT SCALE PRINT | ANGLES $\pm 1/2^\circ$ |
| THIS DRAWING AND SUBJECT MATTER HEREON 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, COPIED, OR IN ANY MANNER DISCLOSED TO ANY OTHER PERSON OR ENTITY WITHOUT THE EXPRESS WRITTEN CONSENT OF LOVESHAW-ITW AND WILL BE RETURNED TO LOVESHAW-ITW UPON REQUEST. | | | MACHINE FINISH |
| TITLE: FRONT ROLLER ARM ASSY. (CARTRIDGE 1500-00-04CH) | | | FRACTIONS $\pm 1/64$ |
| DWG. #: 1500-30-04 | | | SCALE: 1:1 |
| MATERIAL: | | | CHECK'D: |
| DESIGNED: WB | | | APPR'D: |
| DRAWN: WB | | | |

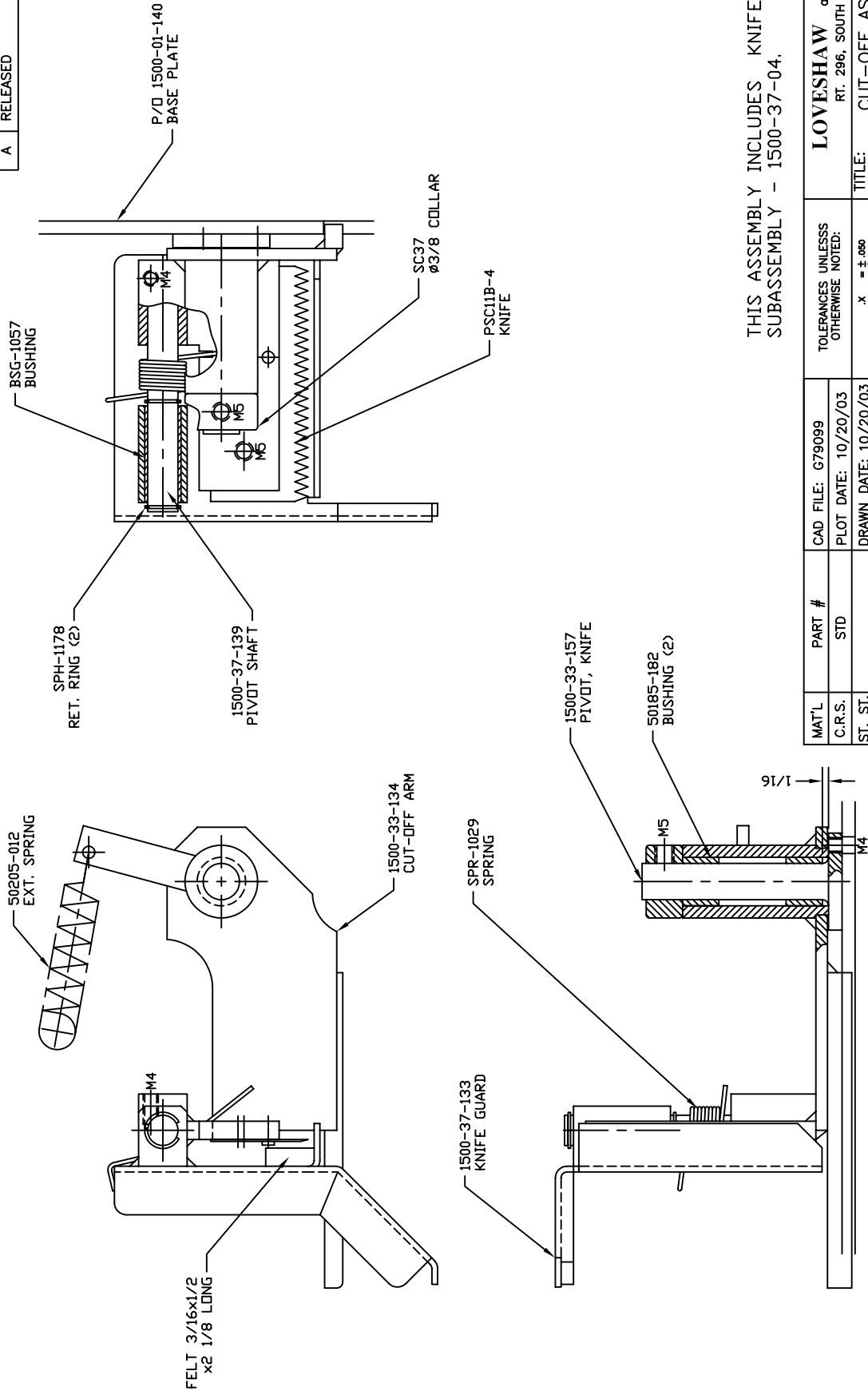
| REVISION RECORD | | | | |
|-----------------|-------------|---------|-----|----|
| REV | DESCRIPTION | DATE | ATH | CK |
| A | RELEASED | 11/1/03 | | WB |



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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------|--------------------------------|------------|
| MAT'L | PART # | CAD FILE: G79114 | LOVESHAW an ITW Company | |
| C.R.S. | STD | PLOT DATE: 11/1/03 | RT. 296, SOUTH CANAAN, PA. | |
| ST. ST. | | DRAWN DATE: 11/1/03 | TITLE: REAR ROLLER ARM ASSY. | |
| STAINLESS: NO FINISH | | DO NOT SCALE PRINT | (CARTRIDGE 1500-00-04CH) | |
| THIS DRAWING AND SUBJECT MATTER HEREON 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, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT THE EXPRESS WRITTEN CONSENT OF LOVESHAW-ITW AND WILL BE RETURNED TO LOVESHAW-ITW UPON REQUEST. | | | DWG. #: 1500-31-04 | SCALE: 1:1 |
| | | | MATERIAL: | CHECK'D: |
| | | | DESIGNED: WB | APPR'D: |

| TOLERANCES UNLESS OTHERWISE NOTED: | |
|------------------------------------|------------------------------------------------------------------------------------------------|
| INCH | $\begin{matrix} .X & = & \pm .050 \\ .XX & = & \pm .015 \\ .XXX & = & \pm .005 \end{matrix}$ |
| METRIC | $\begin{matrix} .X & = & \pm .1mm \\ .XX & = & \pm .05mm \\ .XXX & = & \pm .01mm \end{matrix}$ |
| ANGLES $\pm 1/2^\circ$ | FRACTIONS $\pm 1/64$ |
| MACHINE FINISH | $\sqrt{\text{ }}$ |

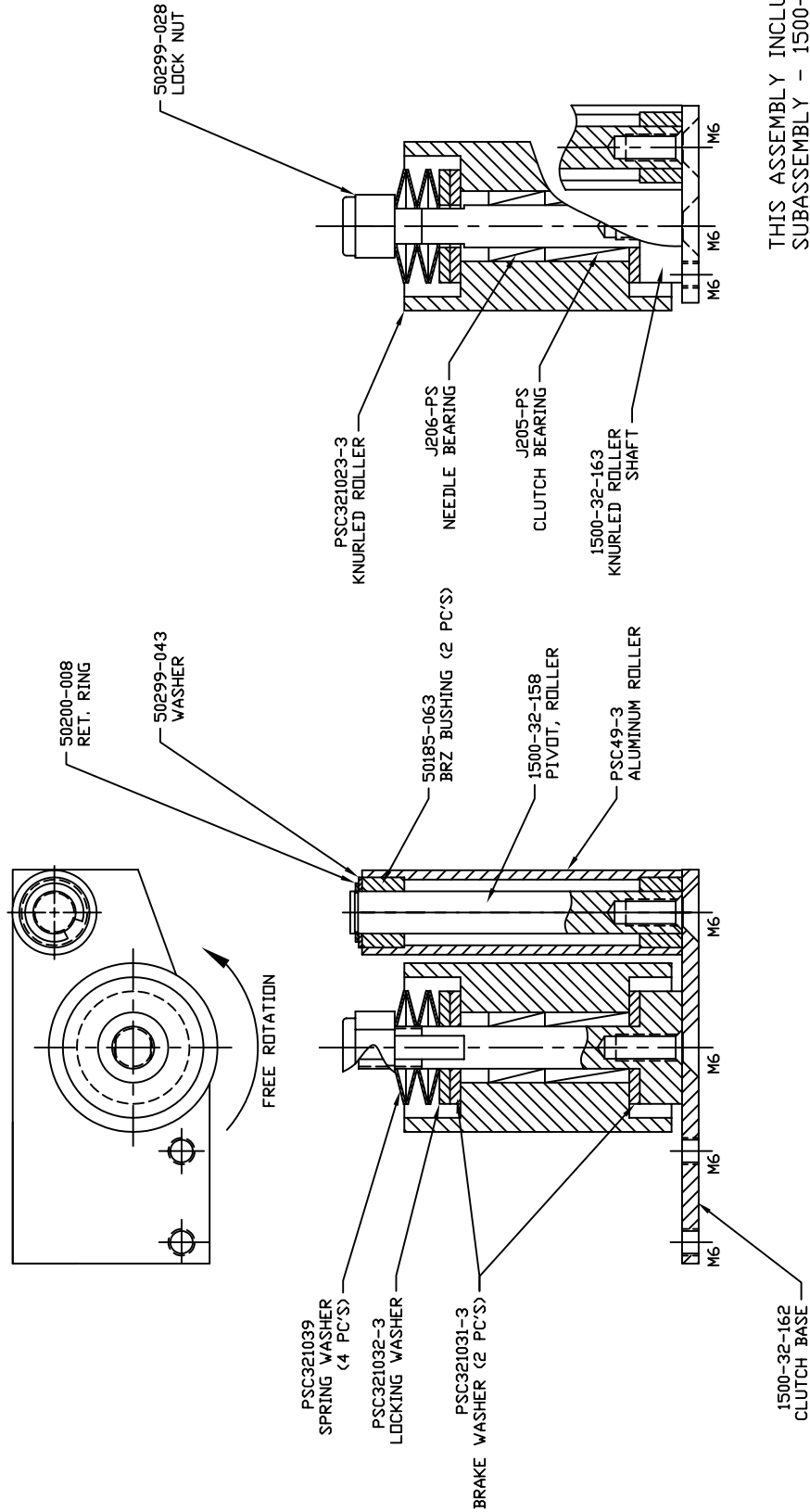
| REVISION RECORD | | | | |
|-----------------|-------------|----------|-----|----|
| REV | DESCRIPTION | DATE | ATH | CK |
| A | RELEASED | 10/20/03 | | WB |



THIS ASSEMBLY INCLUDES KNIFE GUARD
SUBASSEMBLY - 1500-37-04.

| | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------|--------------------------------------------------------------|--|
| MAT'L | PART # | CAD FILE: G79099 | LOVESHAW an ITW Company RT. 296, SOUTH CANAAN, PA. | |
| C.R.S. | STD | PLOT DATE: 10/20/03 | TOLERANCES UNLESS OTHERWISE NOTED: | |
| ST. ST. | | DRAWN DATE: 10/20/03 | TITLE: CUT-OFF ASSEMBLY (CARTRIDGE 1500-00-04CH) | |
| STAINLESS: NO FINISH | | DO NOT SCALE PRINT | DWG. #: 1500-33-04 | |
| 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, COPIED, OR IN ANY MANNER USED OR TO BE DISCLOSED TO ANY OTHERS WITHOUT THE EXPRESS WRITTEN CONSENT OF LOVESHAW-ITW AND WILL BE RETURNED TO LOVESHAW-ITW UPON REQUEST. | | | MATERIAL: SCALE: 1:1 | |
| | | | DESIGNED: WB | |
| | | | DRAWN: WB | |
| | | | APPR'D: | |

| REVISION RECORD | | | | |
|-----------------|-------------|---------|-----|----|
| REV | DESCRIPTION | DATE | ATH | CK |
| A | RELEASED | 12/3/03 | | WB |

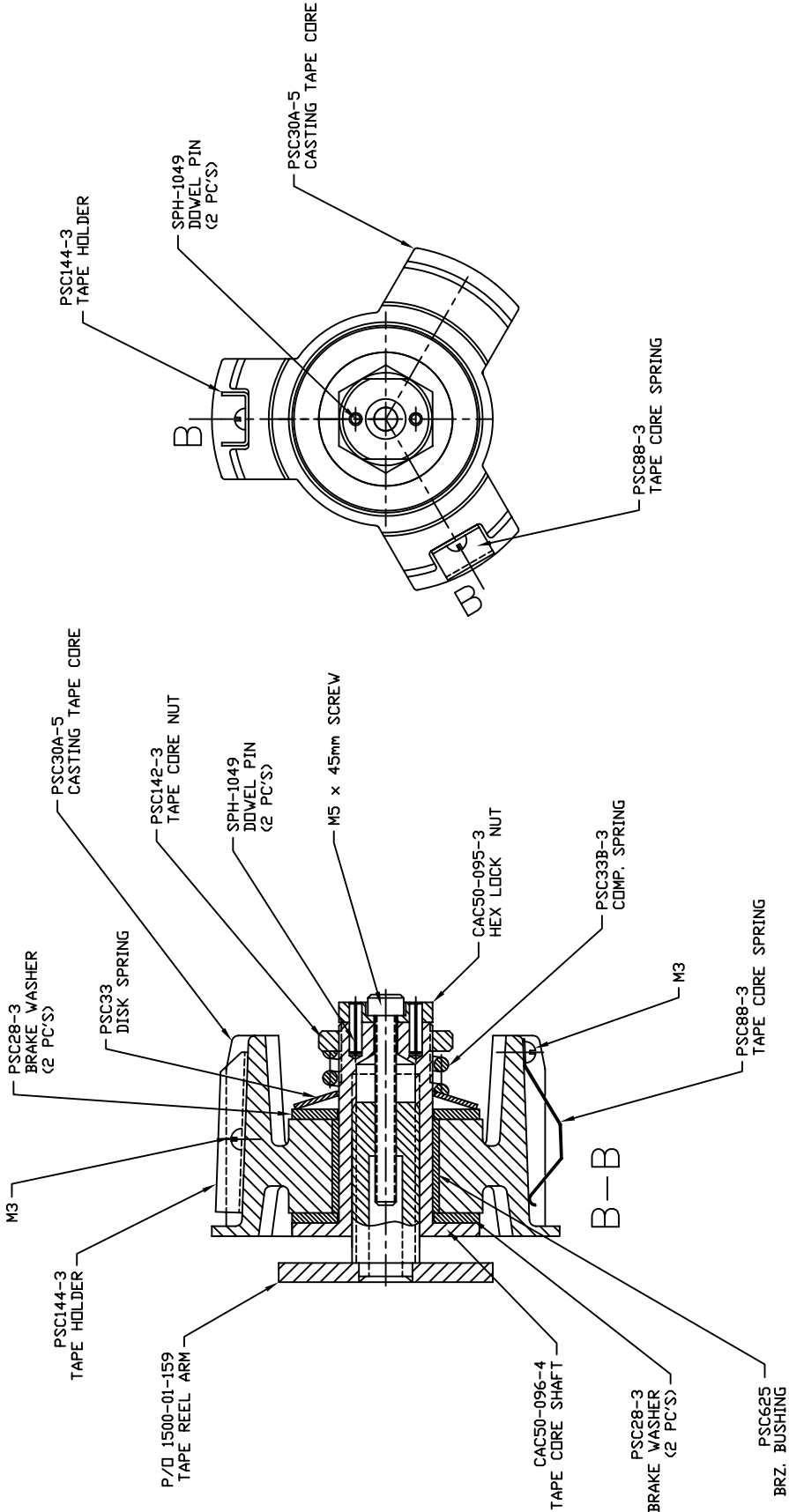


THIS ASSEMBLY INCLUDES CLUTCH ROLLER SUBASSEMBLY - 1500-32-04.

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| MAT'L | PART # | CAD FILE: G79294 | LOVESHAW an ITW Company | |
| C.R.S. | STD | PLOT DATE: 12/3/03 | RT. 296, SOUTH CANAAN, PA. | |
| ST. ST. N/A | | DRAWN DATE: 12/3/03 | TITLE: TENSION ROLLER ASSY | |
| STAINLESS: NO FINISH | | DO NOT SCALE PRINT | (CARTRIDGE 1500-00-04CH) | |
| 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, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT THE EXPRESS WRITTEN PERMISSION OF LOVESHAW-ITW. ANY UNAUTHORIZED USE SHALL BE RETURNED TO LOVESHAW-ITW UPON REQUEST. | | | DWG. #: .TRA1500 | SCALE: 1:1 |
| | | | MATERIAL: | CHECK'D: |
| | | | DESIGNED: WB | APPR'D: |

| TOLERANCES UNLESS OTHERWISE NOTED: | |
|------------------------------------|------------------------------------------------------|
| INCH | $\pm .000$ $\pm .015$ $\pm .005$ $\pm .001$ |
| METRIC | $\pm .000$ $\pm .015$ $\pm .005$ $\pm .001$ |
| ANGLES $\pm 1/2^\circ$ | FRACTIONS $\pm 1/64$ |
| MACHINE FINISH | |

| REVISION RECORD | | | | |
|-----------------|-------------|----------|-----|----|
| REV | DESCRIPTION | DATE | ATH | CK |
| A | RELEASED | 12/12/03 | | WB |

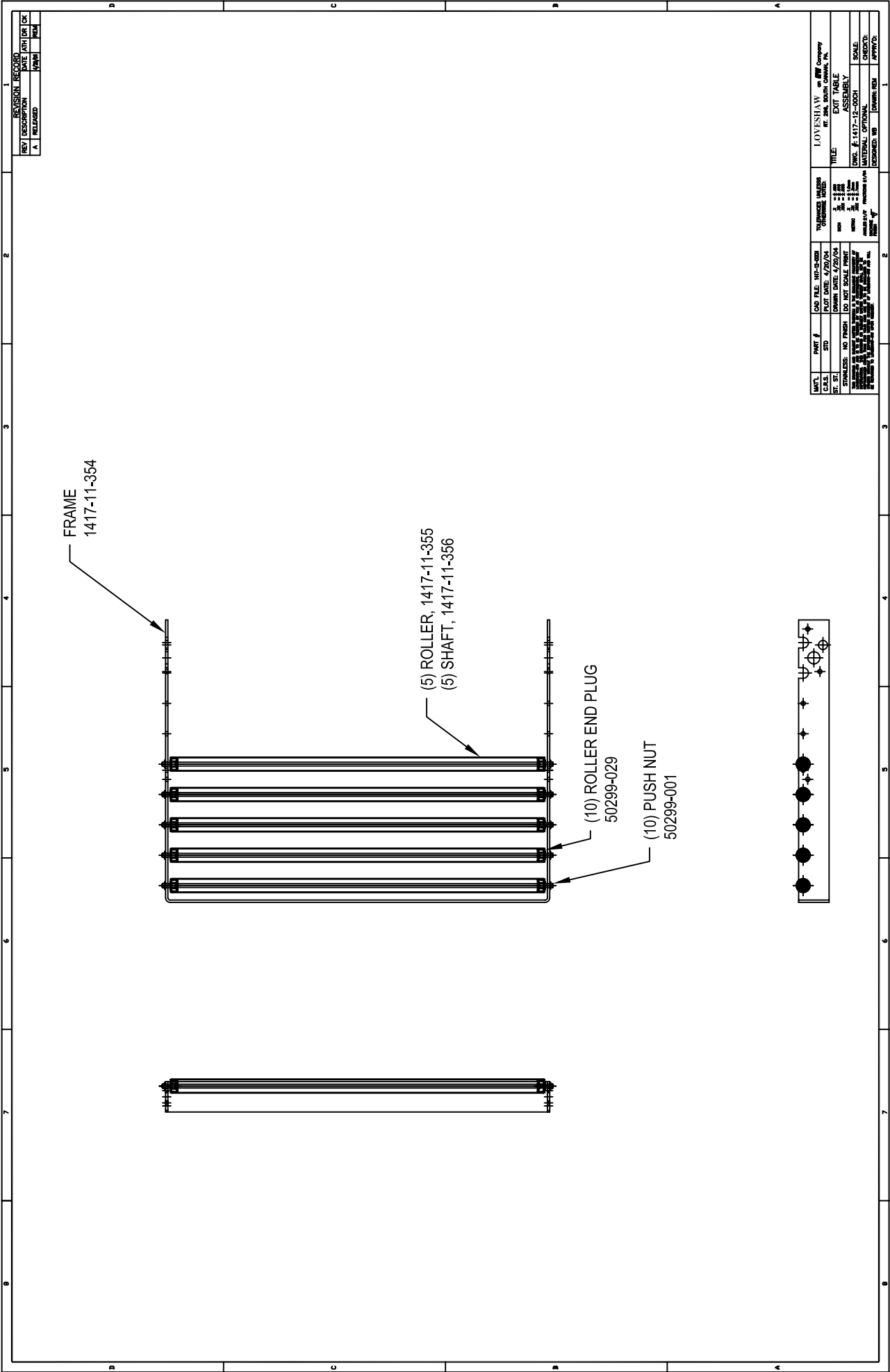


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| MAT'L | PART # | CAD FILE: G79300 | LOVESHAW an ITW Company | |
| C.R.S. | STD | PLOT DATE: 12/12/03 | RT. 296, SOUTH CANAAN, PA. | |
| ST. ST. | .TCA301SS | DRAWN DATE: 12/12/03 | TITLE: TAPE CORE ASSY 2" | |
| STAINLESS: NO FINISH | | DO NOT SCALE PRINT | (2" CARTRIDGE) | |
| 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 OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE EXPRESS WRITTEN PERMISSION OF LOVESHAW-ITW. IT WILL BE RETURNED TO LOVESHAW-ITW UPON REQUEST. | | | DWG. #: .TCA301 | SCALE: 1:1 |
| | | | MATERIAL: | CHECK'D: |
| | | | DRAWN: WB | APPR'D: |

| TOLERANCES UNLESS OTHERWISE NOTED: | |
|------------------------------------|----------------------------------------------------------------------------------------------|
| INCH | $\begin{matrix} .X & = & \pm .050 \\ .XX & = & \pm .015 \\ .XXX & = & \pm .005 \end{matrix}$ |
| METRIC | $\begin{matrix} X & = & \pm 1.0mm \\ XX & = & \pm .5mm \\ XXX & = & \pm .1mm \end{matrix}$ |
| ANGLES $\pm 1/2^\circ$ | FRACTIONS $\pm 1/64$ |
| MACHINE FINISH | $\sqrt{\text{A}}$ |

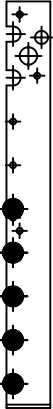
..... OPTIONAL ASSEMBLIES

EXIT TABLE



| REVISION RECORD | | | |
|-----------------|-------------|----------|----------|
| REV | DESCRIPTION | DATE | AUTHOR |
| A | RELEASED | 10/01/04 | 10/01/04 |

| | |
|---------------------------|--|
| LOVESHAW on BOW Company | |
| 101 2nd, South Orange, NJ | |
| TITLE: EXIT TABLE | |
| DWG. E-1417-11-355 | |
| MATERIAL: OPTIONAL | |
| EXAMINED: 10/01/04 | |
| APPROVED: 10/01/04 | |



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THE ONLY OBLIGATION OF THE MANUFACTURER AND SELLER OF

THE ABAL CENTURION 100CH

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**THE LOVESHAW CORPORATION
2206 EASTON TURNPIKE, BOX 83
SOUTH CANAAN, PA 18459**