



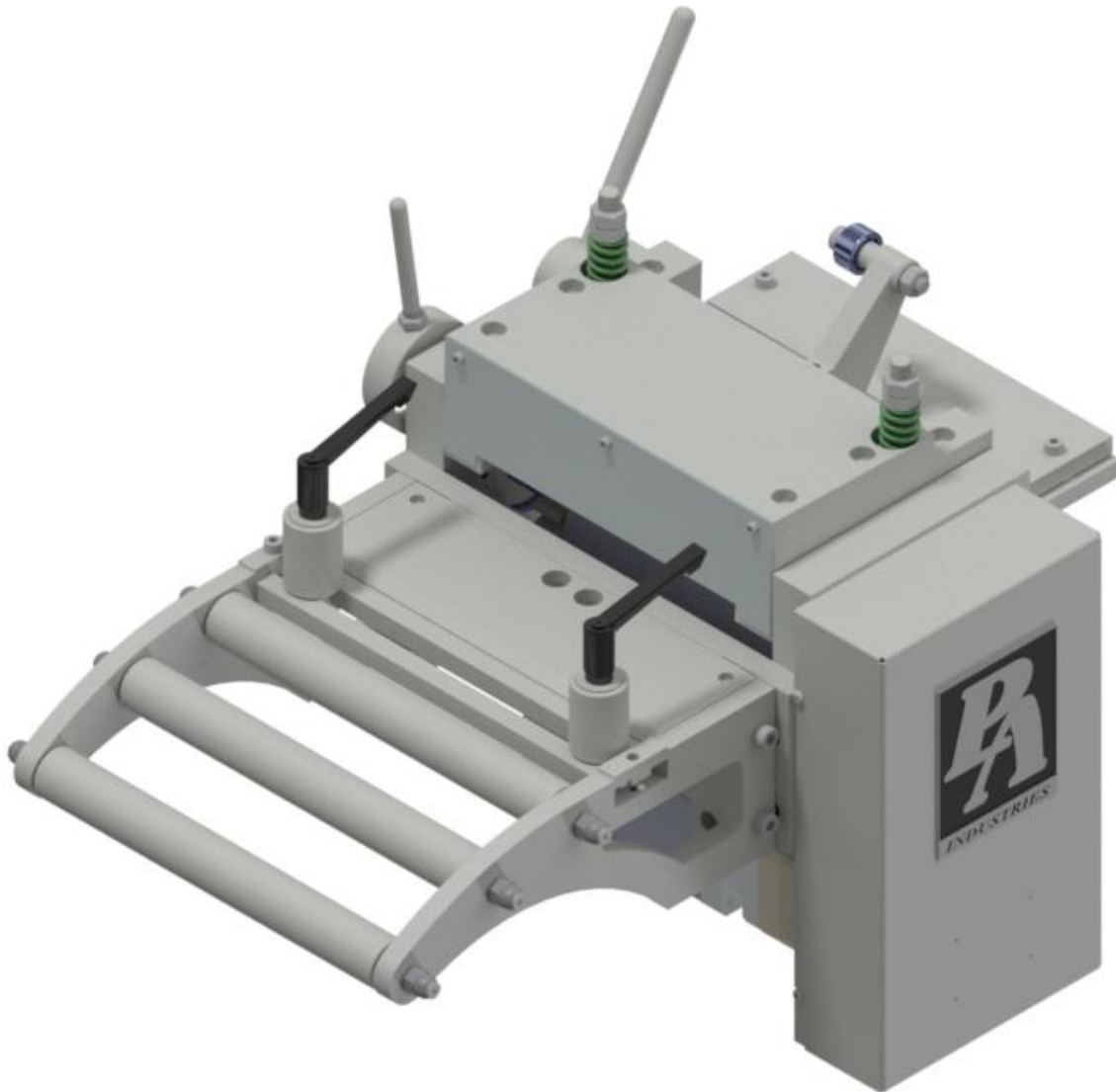
# **P/A INDUSTRIES INC.**

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## **Servo Roll Feed**

*SRF-125 (5) through SRF-900 (36)*

Installation Manual



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## 2 Introduction



**Please read this manual thoroughly before installing, operating, applying and maintaining this machinery. Failure to do so may result in serious injury to yourself and/or others.**

### 2.1 General Safety program

Accident free operation will result from a well developed, management sponsored and enforced safety program. Of vital importance to any successful program is the proper selection of guards and devices. However, there is no safety device that will bring “automatic” safety to your operation. Of equal importance to this proper selection of the guard and the device is the training of your personnel. Each person must be trained as to the operation of the guard or safety device, highlighting why they have been provided on the equipment. Rules for safe operating should be written and enforced at all times. A final major concern of an effective safety program is regularly scheduled inspection and maintenance of all of the equipment.

To ensure continued safety at all times, top management, line supervision, safety engineers and all employees must assume their proper share of the responsibility in the program. Only qualified personnel can carry out an effective safety program either as a group or someone who knows your operation and its problems.

To assist you in the development of and continued use of safety programs, many safety minded groups have made guidelines available to you. However, you must know when and how to apply these guidelines. The manufacturer provides information to assist you in properly adjusting and maintaining your equipment. There is no short cut to proper safety; therefore, it is recommended that you comply with their recommendations at all times.

### 2.2 Warning

This equipment offers various means of operating or controlling machines. The operator must not be in or near the point-of-operation of the machine, or the operating parts of any equipment installed on the machine, or bodily injury could result. The EMPLOYER must post adequate warning signs onto the machine with proper warnings for his machine and the specific application to which the machine and equipment are being applied. Occupational Safety and Health Act (OSHA) Sections 1910.211, 1910.212, and 1910.217 contain installation information on the distance between danger points and point-of-operation guards and devices. No specific references have been made to which paragraph of OSHA 1910.211, 1910.212, 1910.217 or any other applicable sections because the paragraphs may change with each edition of the publication of OSHA provisions.

All equipment manufactured by us is designed to meet the construction standards of OSHA in effect at the

time of sale, but the EMPLOYER installs the equipment so the EMPLOYER is responsible for installation, use, application, training, and maintenance, as well as adequate signs on the machine onto which this equipment will be installed.

Remember, OSHA says that the EMPLOYER must use operating methods designed to control or eliminate hazards to operating personnel.

It shall be the responsibility of the EMPLOYER to establish and follow a program of periodic and regular inspections of his machine to insure that all their parts, auxiliary equipment, and safeguards are in a safe operating condition and adjustment. Each machine should be inspected and tested no less than weekly to determine the condition of the machine. Necessary maintenance or repair of both shall be performed and completed before the machine is operated. The EMPLOYER shall maintain records of these inspections and the maintenance work performed.

PA Industries is not responsible to notify the user of this equipment of future changes in State or Federal laws, or construction standards.

## 2.3 Warranty Program

We warrant our new parts against defects under normal use and service for a period of 12 months after date of shipment. Our obligation under this warranty is limited to replacing or repairing (at our option) the defective part without charge, F.O.B. our plant in Bloomfield, Connecticut. The defective part must be forwarded to our plant, freight prepaid, for our inspection prior to replacement or repair. **EXCEPT AS EXPRESSLY PROVIDED HEREIN, THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING A WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

Furthermore, the seller does not warrant or represent that the equipment complies with the provisions of any law, particularly including the Occupational Safety and Health Act of 1970, and regulations promulgated there under. In no event shall we be liable for special, indirect incidental or consequential damages, however rising.

## 2.4 Receiving and Inspection

**SPECIAL NOTE:** P/A INDUSTREIS INC. ASSUMES NO RESPONSIBILTIIY IN CONNECTION HEREWITH, NOR CAN IT BE ASSUMED THAT ALL ACCEPTABLE SAFETY MEASURES ARE CONTAINED IN THIS PUBLICATION, OR THAT OTHER ADDITIONAL MEASURES MAY NOT BE REQUIRED UNDER PARTICULAR OR EXCEPTIONAL CIRCUMSTANCES OR CONDITIONS.

### **RECEIVING INSPECTION:**

Before removing the unit from its packaging, check for visual damage, especially if the crate, skid, or carton has been damaged in transit. Any damage caused by shipping should be immediately reported to the carrier. If the unit appears to be in satisfactory condition, remove all packing and wipe rust preventive from rollers with mild solvent.

## 3 Installation and Assembly

### 3.1 Mechanical

Before removing equipment from the packaging check for visual damage especially if the crate, skid, or container looks to have been damaged during transport. Any damage caused by transport should be reported to the carrier immediately. Given the equipment is in satisfactory condition, check for the following components.

- Feeder Assembly
- Feeder Adjustable Mounting Plate
- Feeder Exit Plate
- Electrical Control

#### 3.1.1 Moving the Feeder

The equipment is equipped with two eye bolts on the upper side of the feeders housing as shown in Figure 1. Remove the lag bolts on the back side of the assembly and be sure to use OSHA approved lifting hooks or straps to lift the feeder assembly from the skid.

**NOTE: Protect the motor connects and encoder as any sudden hits or pressure may cause damage to the encoder.**

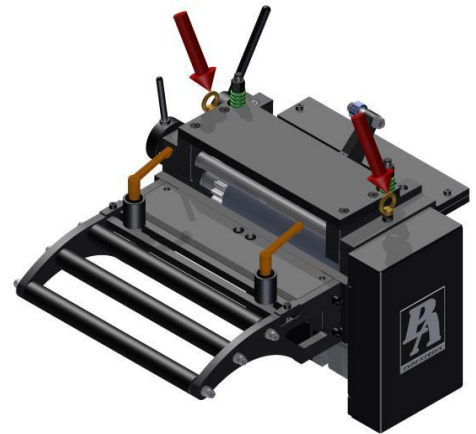


Figure 1

#### 3.1.2 Mounting to the Press

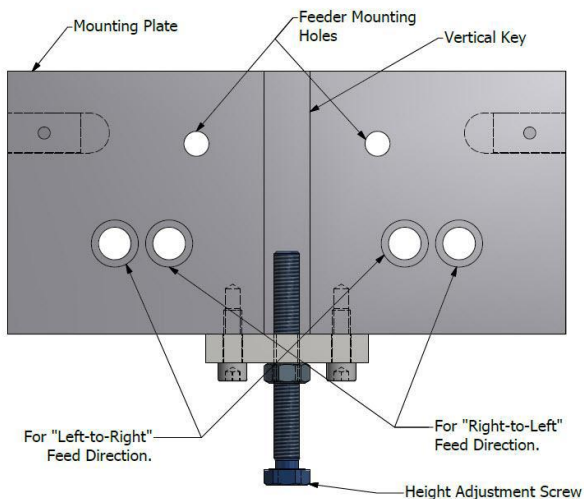


Figure 2

Servo Roll Feed (from now on is referred in this manual as the Feeder) comes assembled for mounting on the right or left side of the press (Right to Left or Left to Right feed direction) per customer order. Verify that operator levers of the Feeder are on the operator side of the press. Figure 3 shows the Feeder assembled for Right to Left direction.

The Feeder mounting plate provides simple and secure installation onto the press. It has two sets of through holes for installation on the right and left sides of the press. Bolster plate must be pre-drilled and tapped per Figure 3 and Table 1. Note that, SRF-100 through SRF-300 models have 2 sets of 2 mounting holes, as shown on Figure 2, SRF-400 and larger have 2 sets of 4 mounting holes.

**NOTE: A transition bracket is sometimes required in certain applications.**

Before you install the Feeder, the height adjustment bolt should be turned all the way down. The Feeder's alignment with the mounting plate is done by means of the vertical key on the feeder housing back plate.

To attach the Feeder to the mounting plate use supplied screws and washers.

The Feeder should be centered, square, and perpendicular to the pass line of the press. It should be mounted at a height that will accommodate the appropriate die sets. Refer to Figure 2 and Tables 1 and 2 for dimensions.

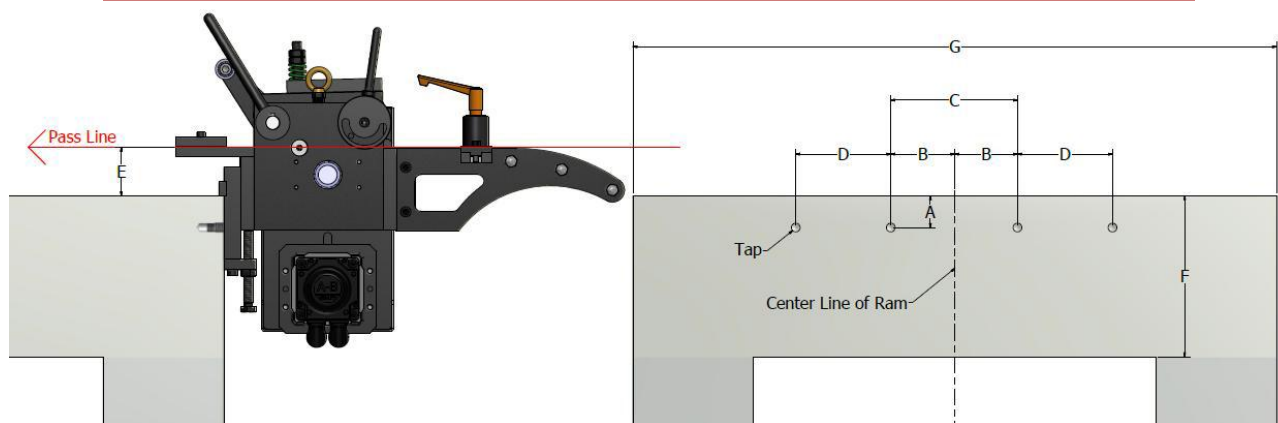
**NOTE: The centerline of the feeder is NOT the centerline of the rolls**

Table 1: Mounting Holes Dimensions (Inches)

Dimension	SRF-100	SRF-125	SRF-200	SRF-300	SRF-400 through 900
A	1.18	1.97			
B	1.97	3.15	3.94		
C	3.94	6.30	7.87		
D	---	---	---	---	5.91
E	2.2	2.4			
F	4.21	5.71			
G	9.72	12.13	14.88	18.82	22.76/26.69/30.63 34.57/38.50/43.19
Screw Thread	M14 x 25	M16 x 30			
Pass Line Adjustment	+2.0/-0.0	+2.4/-0.0			

Table 2: Mounting Holes Dimension (mm)

Dimension	SRF-100	SRF-125	SRF-200	SRF-300	SRF-400 through 900
A	30	50			
B	50	80	100		
C	100	160	200		
D	---	---	---	---	150
E	55	60			
F	107	145			
G	247	308	378	478	578/678/778 878/978/1097
Screw Thread	M14 x 25	M16 x 30			
Pass Line Adjustment	+50/-0	+60/-0			



### 3.1.3 Exit Plate Installation

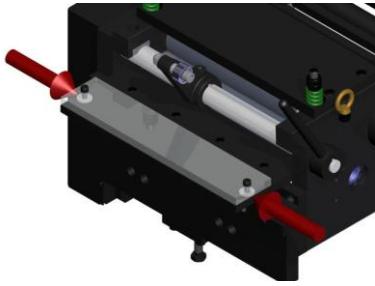
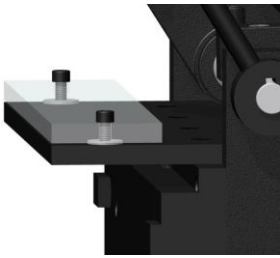


Figure 4

The exit plates are mounted on the Feeder's exit area with supplied screws. The top surface of the lower plate can be used as a reference point for exact adjustment of the Feeder's pass line.



Appropriately sized spacers should be installed between the lower and the upper exit plates exit to accommodate required material thickness.

If the distance between the Feed and the die is such that the material sags or bounces, it is recommended to provide a support bridge.

### 3.1.4 Verifying Mechanical Functionality

After the Feeder is installed on the press, check all its mechanical controls:

- Material Thickness Adjustment Cam rotates from the rolls close position to the maximum material thickness;
- Manual Roll Release Lever can be pushed forward until it latches;
- Roll Pressure Springs are factory set and should not be loose;
- Material Entry Guides can be loosened up and slid across the entry support rolls.

If any of mechanical controls of the Feeder is found not functioning properly, report to P/A Service Department, Do Not Operate the Feeder.

Refer to the figure 5 below for mechanical controls locations.

Read more about the Feeder operating procedures in the Chapter 3.3 "Running the Feeder"

### 3.1.5 Mechanical Roll Release (Option)

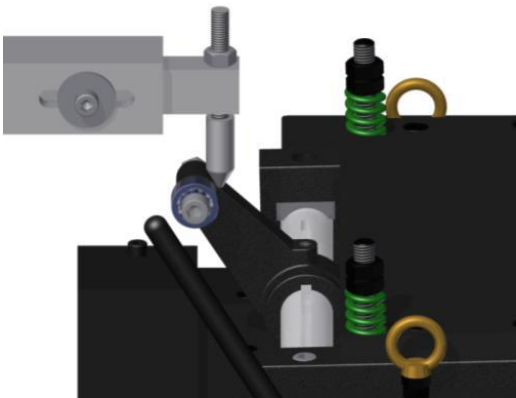


Figure 5

The optional Mechanical Roll Release Arm should be attached to the press ram by two screws M12 / 0.5 inch (not included in the shipping package). It must be mounted in such a way as to provide roll opening at the proper time and be adjustable for different die sets. Refer to Figure 5 for the dimensions of the Roll Release Arm. Make sure the tip of the threaded rod points at the front part of the release lever roller, as shown in the Figure 5.

### 3.1.6 Electro-Pneumatic Roll Release (Option)

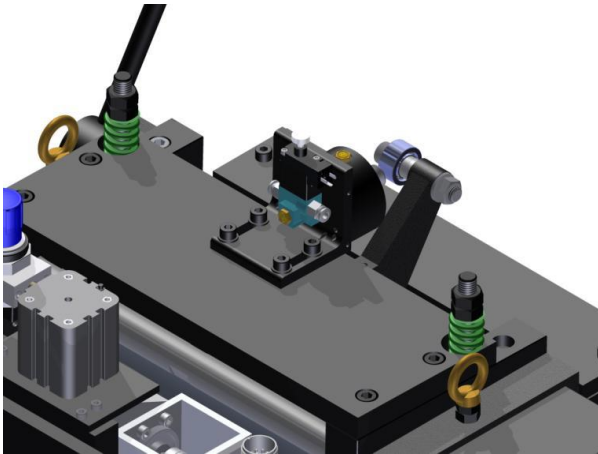


Figure 6

The optional electro-pneumatic Roll Release comes factory pre-installed, all required is a compressed-air line of maximum 6-7 Bar (90-100 PSI) and a proper maintenance unit, including filter, oiler and pressure regulator are required, 6 mm tubing is included in the shipping package.

The pneumatic release mechanism is mounted centrally on the top of the feeder using (4) M8 screws and washers in slotted holes. The slots are to allow proper alignment and adjustment with the release arm and roller. Open the rolls, allowing clearance between the upper roll and the material approximately 0.010"/0.25 mm (Use a shim on top of the material, if needed.), and position the Pilot Release mechanism so that with the cylinder piston fully retracted, it is against the roller.

Test Roll Release by pushing valve manual open button, push and twist clockwise to latch, if necessary.

**Solenoid valve cable comes pre-wired into the electrical control and disconnected from the valve for transportation.**

**NOTE: Electro-Pneumatic Roll Release requires a cam switch, mechanical or otherwise, for operating of air valve.**

### 3.1.7 PA Programmable Limit Switch (PLS)

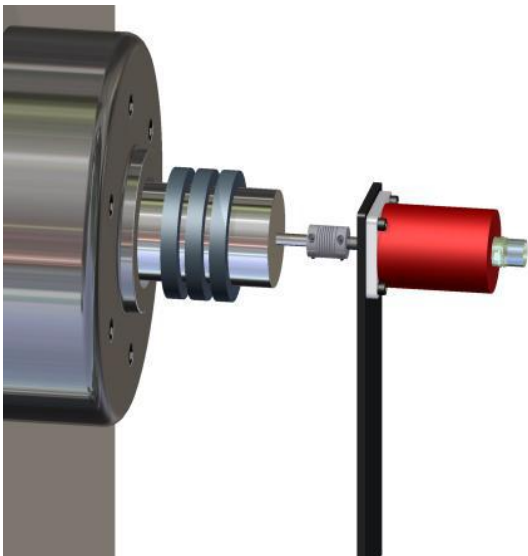


Figure 7

The optional Programmable Limit Switch or PLS consists of the encoder, encoder cable and flexible coupling. The encoder must be mounted on the press so its shaft is coupled or belted to the crankshaft with one to one (1:1) ratio. It is strongly recommended to use plastic chain or timing belt and plastic or aluminum sprockets on the encoder shaft. Refer to Figure 7 for the encoder mounting dimensions. The mounting bracket for PLS encoder must provide some flexibility of shafts alignments. Encoder cable comes pre-wired to the electrical control and disconnected from the encoder for the shipping purpose.

To zero the PLS, please set the press at top dead center and refer to page 19 in the operation manual.

**NOTE: The PLS Encoder contains a highly sensitive optical system. Do not subject it to major shock and prevent from being dropped.**

### 3.1.8 PA Strip Encoder (STE)

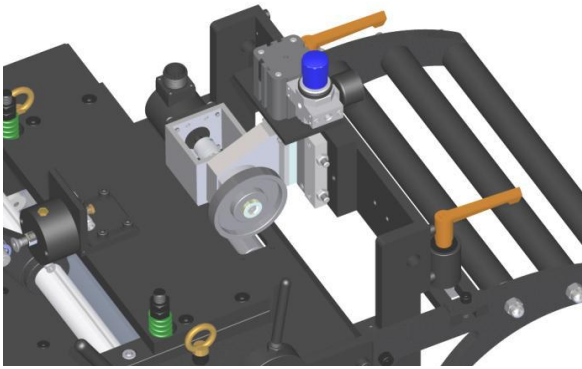


Figure 8

The optional STE encoder comes pre-installed on the Feeder, all required is a compressed-air line of maximum 6-7 Bar (90-100 PSI) and a proper maintenance unit, including filter, oiler and pressure regulator are required, 6 mm tubing is included in the shipping package.

When air supply is connected, verify using manual air valve that STE slide goes down until STE wheel is on the support roller and up. STE encoder cable comes pre-wired to the electrical control and disconnected from the valve for the shipping purpose.

**NOTE: The Strip Encoder contains a highly sensitive optical system. Do not subject it to major shock and prevent from being dropped.**

## 3.2 Electrical Control

### 3.2.1 Connections

All the Feeder external electrical and electro-mechanical component cables come pre-wired to the electrical control and appropriately labeled. Connect corresponding cables to PLS and STE encoders, Pneumatic Roll Release solenoid valve, STE junction box and the servo motor.

Refer to the supplied electrical schematic and labeling of the electrical control for the main power and input / output requirements.

Apply power line in accordance with local electrical regulations.

Input / output connection wires must be at least 18AWG (1.02 mm<sup>2</sup>)

**NOTE 1: A word about electrical “noise”; most pressroom environments contains considerable electrical noise. It is emitted from electro-mechanical press relays, contacts, and solenoids. While all P/A Servo Roll Feeds have been designed to minimize “self generated” electrical noise, it is difficult to provide protection for all applications. If erratic system behavior is experienced, then the source of the "noise" must be suppressed with either a resistive/capacitive type of suppressor on AC coils, or “Avalanche” type diodes on DC coils.**

**NOTE 2: The electrical control enclosure is supplied with a stand/support, which may be placed in any convenient location. The enclosure may also be mounted in any fixed location as long as the cabling is adequate to reach the feed. It is not recommended that the electrical enclosure be mounted directly to the press. The vibrations caused by the punch press can result in damage to the control system**

### **IMPORTANT!**

Electrical Control internal 24VDC power supply is capable of providing of 2 Ampere to the external signaling devices such as cam switches, etc. In case, there is a need for more 24VDC power use an additional external 24VDC power supply.

## 4 Feeder Setup

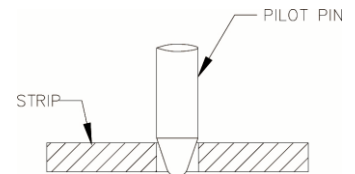
### 4.1 Loading

#### IMPORTANT!

Prior to this step the Electrical Control must be powered up and all needed parameters are loaded. Please refer to the Operation Manual for details.

**NOTE:** This example is based on using PLS (Programmable Limit Switch) but all PLS timing notes can be translated to other forms of timing.

1. Put the Feeder electrical control into “MANUAL MODE”. Record the present settings of the Feed Cam, Reset Cam, and Pilot Release Cam into a tool set-up record sheet for future reference to the job.
2. Adjust the roll clamping force by pre-loading the two die springs located on top of the feed housing. Normal setting for the roll force spring pre-load is two full turns clockwise from finger tight (factory preset). Be sure to use the jam nut to lock the setting.
3. Open the Feeder rolls by pulling on the Manual Roll Release Lever and latching it in open roll position. Insert the material through the Feeder rolls, unlatch and close the Feeder rolls by releasing the Manual Roll Release Lever.
4. Adjust for the material thickness using the Material Thickness Adjustment Cam and Adjustable Lock Screw. Make the play at the end of the roll release lever approximately 1/16” (1.5mm).
5. Using the Jog Forward button on the jog pendant, advance the material up to the entrance of the die (far enough where the punches would not pierce the material).
6. Check the vertical alignment of the strip. If necessary, adjust the pass line of the Feeder so that the material is at the proper height.
7. Assuming that the press shut height and the tool are set up properly, jog the press one or two strokes without the feed working.
8. Jog the press down slowly observing when the longest pilot would engage the pilot hole in the material if the material were there. Note the press positional readout and put this setting into your program for the ‘Pilot Release On’ setting. The ‘Pilot Release Off’ setting, in most cases, should be 180°. Some drawing applications require the rolls to remain open past 180°.
9. Continue to jog the press slowly until the longest pilot just comes out of the material. Note the press positional readout and put this setting into your program for the ‘Feed Cam On’ setting. Set the ‘Feed Cam Off’ point so that there is enough time to complete the Feeder length and enough time to stop the press, if there is a feed fault. (See Figure 5.)
10. Set the ‘Reset Cam On’ for 180 degrees and ‘Reset Cam Off’ for 200 degrees. This setting should never need changing. (See Figure 5.)



## 4.2 Threading the Tool

Put the Feeder electrical control into “JTL” mode. All the adjustments to the Feeder system and press have now been made. The press is at Top Dead Center (TDC) and ready for automatic cycling. Proceed by advancing the material using Jog Forward button on the jog pendant until WAITING FOR PRESS is seen in the display and inch the press through another stroke, verifying that things are happening at the correct time (Roll Release, etc.). If the system is operating properly, you can make a few more “hits”, checking your parts.

### Note on Cams:

**The Feed Cam (open tool):** The feed system uses this press cam for timing the feeder to the press crankshaft.

**Although no shafting or belts are connecting the press to the feeder, the feed must be “told” when it is safe to move the strip and when the feed move must be completed. This “connection” is an electrical. This gives the operator/setup personnel flexibility in deciding when the feed progression should take place.**

**Each die set can have a unique “feed angle”. This “feed angle” is dependent upon variables; pilot and punch length, press stroke, strip forming in the die, etc.**

## 4.3 Running the Feed

Put the Feeder electrical control into “Auto”. The Feeder will now follow the press until it is stopped by the Operator, counter, emergency stop, or feed error.

### Note about “Possible Tooling Problem”:

**A tight die, one that is not square, or has other tooling problems, will cause significant difficulty and downtime.**

**Accuracy in feeding is directly related to how easily the feeder can position the strip in the die. Binding, ejection of a bad part, or sticking parts may cause the material to “jam” in the die.**

**The Servo Roll Feed will “try” to overcome the jam by applying more power to the rolls.**

One of four outcomes will result:

1. The fee will continue to try to move the strip (if the rolls do not slip) until the Feed Cam opens. A Synchronization Fault will occur and the feeder will stop.
2. The feed will apply more power to the rolls, causing them to slip on the material. This produces a “short feed”. The feeder DID NOT “miss feed”. The rolls were positioned properly, the strip did not keep up, and causing the die to close and a miss-hit is produced.
3. The feed applies more power to a thin strip, causing the material to buckle somewhere between the feed and the die set. The feeder positioned the strip accurately, it just did not occur in the die set.
4. The feed tries to apply so much power to a heavy strip in order to move it, excessive current is drawn by the servo drive. This results in the drive shutting down to protect and will result in the feeder stopping.

The feeder detected a problem and emergency-stopped the press before the die closed. In using the Advantage Servo Roll Feed, you have added a “die protection” system to your tooling.

A tooling problem is a problem caused by tooling and not the Feeder itself

## 5 Maintenance

All P/A Servo Roll Feeds need very little maintenance to keep the system operating at its optimum performance.

- This precision equipment must be kept as clean as possible. This is especially important if large amounts of air suspended oil mists in combination with “dirty metals” are used. The resulting abrasive dust can attach itself to the feed rolls and other surfaces, leading to premature wear on many parts.
- The roll release system requires a clean, dry air supply.
- Some bearings used on the feeder are fully sealed and maintenance-free roller ball bearings. The exceptions are provided with standard “zerk” type grease fittings. They should be lubricated with a good grade of high pressure bearing grease. The frequency of lubrication will depend on the overall usage of the system. A small “shot” once a day is a good starting point. The feed roll gears set should be coated with a small amount of open gear grease.
- The main drive belt should be checked periodically for tightness. It can be adjusted by loosening the two fasteners on the motor adjuster plate, applying downward pressure on the motor adapter plate, and retightening. **ERRATIC MOTOR BEHAVIOR WILL BE EXPERIENCED IF THE DRIVE BELT IS LOOSE!**
- All of the above guidelines should be added to your existing pressroom Preventive Maintenance (PM) Program

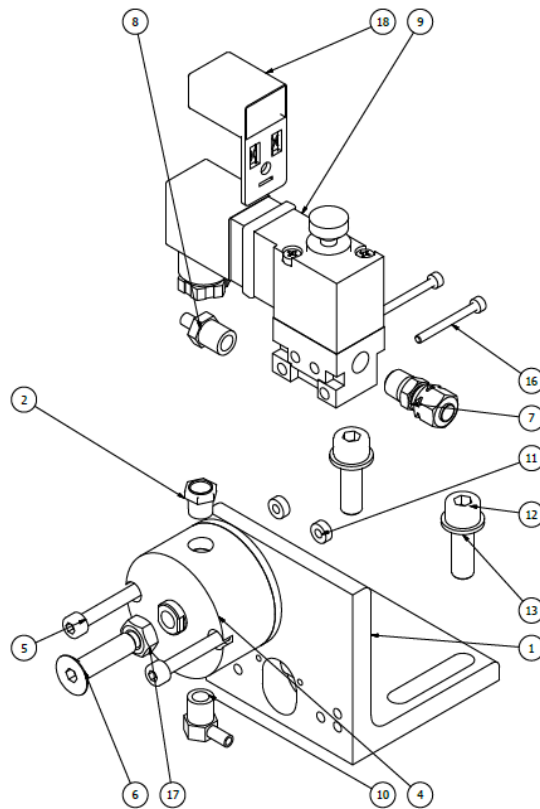
### 5.1 Servo Motor Replacement

**NOTE!!! Never pull or hit servo motor shaft. Even light deformation of motor encoder, mounted directly on the shaft, will result its un-repairable damage.**

1. Turn electrical control power off and put its disconnect switch in off position;
2. Disconnect the servo motor cables;
3. Take the feeder’s belt guard off by undoing four “button head” screws on its vertical sides;
4. Loosened up four bolts holding the servo motor (gear reducer) flange;
5. Push the motor (with gear reducer) up and take the timing belt off THE sprockets.
6. Provide some support to the motor before unscrewing four bolts holding it on the mounting plate.
7. Take the motor (with gear reducer) off and place it (them) on a work bench.
8. If the feeder is equipped with gear reducer:
  - Take out the access cap screw and rotate the sprocket to the point where the coupling screw is visible through the access hole.
  - Loosened up the coupling screw first and unscrew motor mounting bolts.
  - Slide the motor out of gear reducer.
  - Slide the new servo motor shaft into the gear reducer coupling. Do not tighten the coupling screw.
  - Attach the motor to the gear reducer with four, previously taken off, bolts.
  - Tighten the gear reducer coupling screw using a torque wrench.
  - Due to the variety of gear reducers used, consult P/A service department for the torque proper value.
  - Replace the access cap screw.
9. If the feeder does not have gear reducer:
  - Record the distance from the sprocket to the motor frame.
  - Loosened up set screws of the servo motor sprocket and slide the sprocket off the motor shaft. In case the sprocket doesn’t slide off the shaft by hand, use sprocket removal tool.
    - ! Do not apply any force between the sprocket and the motor frame !
  - Install the sprocket onto the new motor in reverse direction, positioning it on the shaft with the previously recorded distance from the motor frame.
10. Install the servo motor (with gear reducer) onto the feeder mounting plate and leave all four mounting screws slightly loose, enough to move the motor up and down within slotted holes.
11. Push the motor up and install the timing belt.
12. Apply pressure onto the motor (gear reducer) flange using a lever (crow-bar) and tighten four mounting screws.
13. Install belt guard.
14. Connect motor cables.

## 6 Parts List

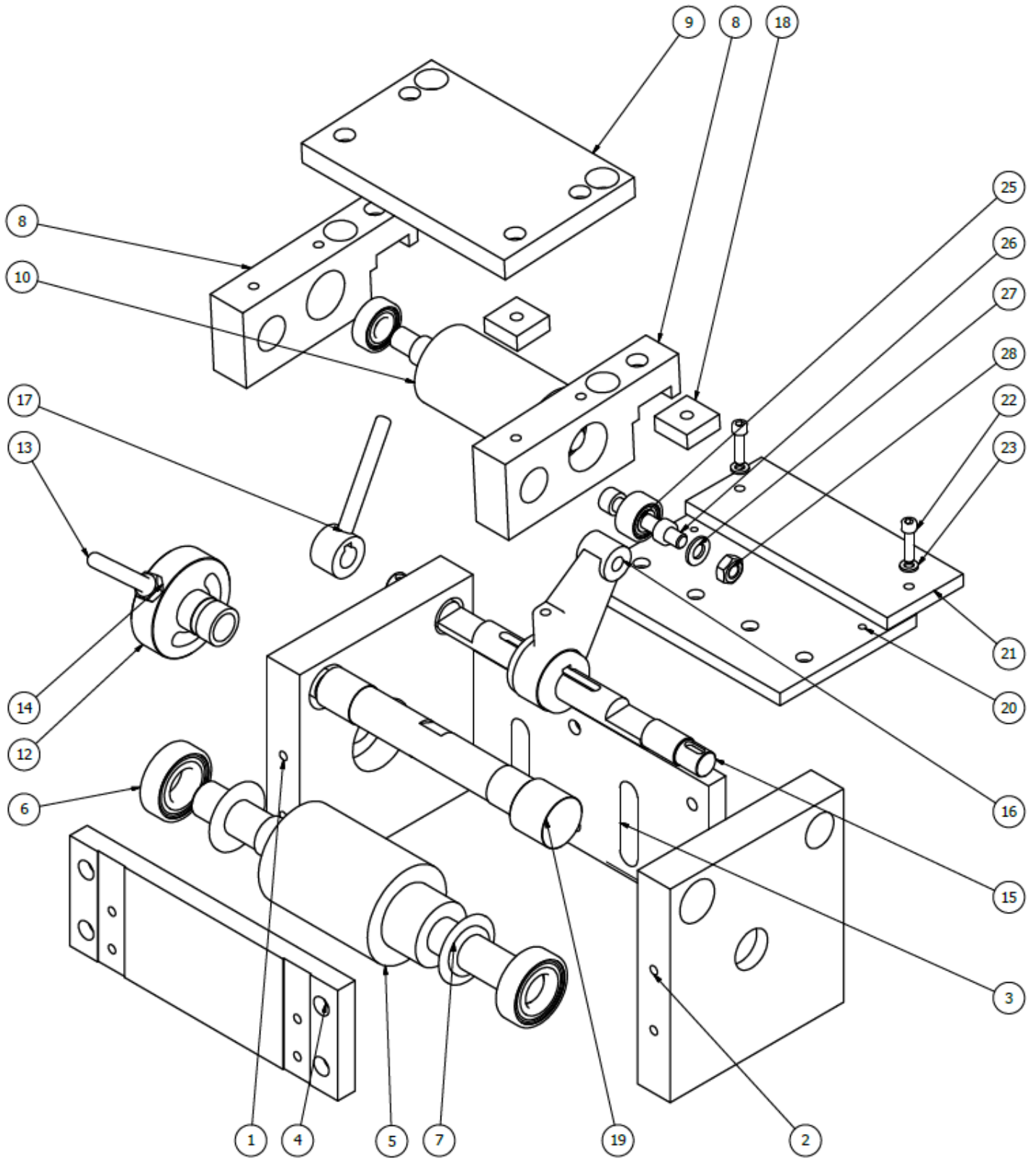
### 6.1 Pilot Release: SRF 100 (4)



**16733-21: Servo Pilot Release SRF 100 (4)**

Item	Quantity	Part Number	Description
1	1	16730-04	BRACKET, SRF PILOT RELEASE, MAC
2	2	12024-11	SILENCER, 1/8 NPT, FLAT
4	1	12111-160	CYLINDER, PNEUMATIC, PANCAKE 28.5 x 9.5
5	2	DIN 912-M5 x 35	M5x35MM LG, SHCS, BLACK
6	1	DIN 7991-M8 x 30	M8x30MM LG, FHSCS, ZINC PLATED
7	1	12032-93	FITTING, MALE CONN, 1/4 TUBE X 1/8 NPT
8	1	12032-12	FITTING, MALE TUBE, 1/8 NPT x .170 ID T
9	1	12039-62	VALVE, SOLENOID, 3 WAY 120V
10	1	12032-10	FITTING, MALE ELBOW 1/8 NPT x .170 ID
11	2	12434-53	SPACER, .140 ID X 5/16 OD X 1/8 WIDE
12	2	DIN-912-M8 x 25	M8x25MM LG, SHCS, BLACK
13	2	DIN-125-M8	M8, WASHER, FLAT, REG,ZINC PLATED STEEL
16	2	DIN-912-M3 x 30	M3x30MM LG, SHCS, BLACK
17	1	DIN-934-M8	M8, HEX NUT, BLACK
18	1	16286-02	SOLENOID VALVE SUPPRESSOR, 110 VAC/DC

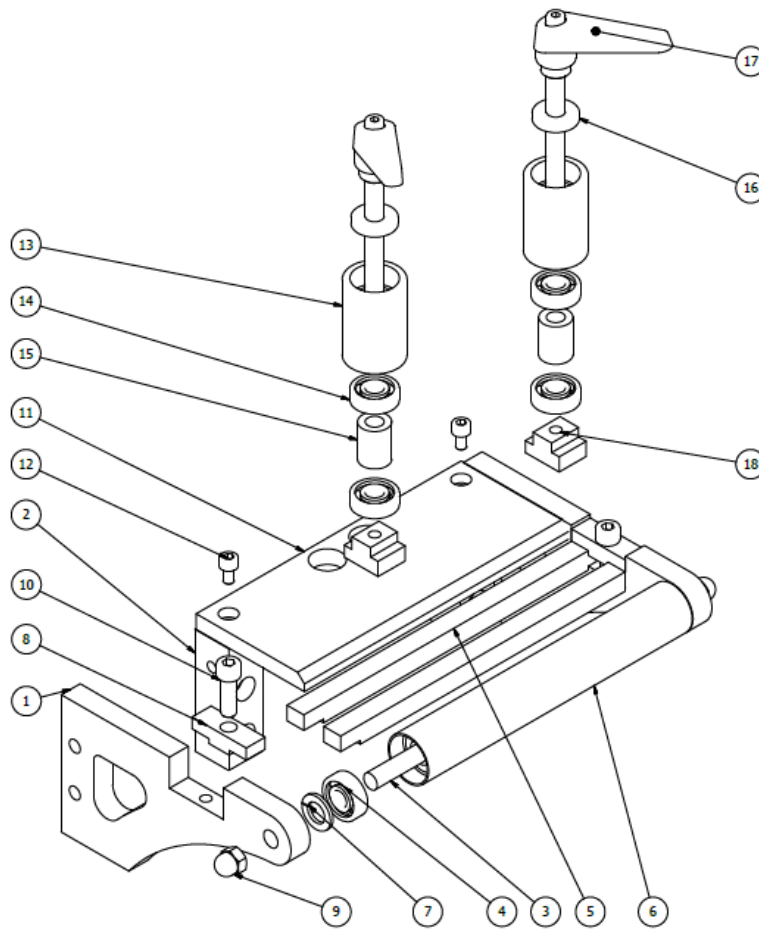
## 6.2 Feed Head: SRF 100 (4)



**SRF-100 (4) Feed Head Assmbley**

<b>Item</b>	<b>Quantity</b>	<b>Part Number</b>	<b>Description</b>
1	1	R-SRF-1	BEARING HOUSING LEFT, SRF 5-36
2	1	R-SRF-2	BEARING HOUSING RIGHT, SRF 5-36
3	1	R-SRF-4-4	PLATE, FEED MOUNTING
4	1	R-SRF-4-3	PLATE, CASCADE MOUNTING
5	1	R-SRF-4-11	ROLL, LOWER, SRF-4
6	2	12117-15	BEARING, BALL, 25 ID x 52 OD x 15 W,
7	2	R-SRF-4-12	BEARING, BALL, 25 ID x 52 OD x 15 W,
8	2	R-SRF-4-7	BRACKET, UPPER ROLL LEFT/RIGHT
9	1	R-SRF-4-9	PLATE, UPPER ROLL
10	1	R-SRF-4-16	ROLL, UPPER
11	2	12117-95	BEARING, BALL, 15MM ID X 35MM OD X 11 WD
12	1	R-SRF-4-84	CAM, THICKNESS ADJ.
13	1	R-SRF-4-22	LEVER - THICKNESS ADJ.
14	1	DIN-934-M10	M10, HEX NUT, BLACK
15	1	R-SRF-4-26	SHAFT ROLL RELEASE, SRF-4/100
16	1	R-SRF-4-30	RELEASE LEVER, MECHANICAL, SRF4/100
17	1	R-SRF-4-29	RELEASE LEVER, MANUAL, SRF4/100
18	2	R-SRF-4-28	WEAR PAD
19	1	R-SRF-4-21	SHAFT, THICKNESS ADJ SRF4/400
20	1	R-SRF-4-6	PLATE, MATERIAL HOLD DOWN
21	1	R-SRF-4-5	PLATE, EXIT
22	2	DIN-912-M6X25	M6x25MM LG, SHCS, BLACK
23	4	DIN-125-M6	M6, WASHER, FLAT, REG,ZINC PLATED STEEL
24	1	R-SRF-4-53	KEY, 22mm x 5mm x 110mm
25	2	R-SRF-MINI-55	BEARING, ROLL RELEASE
26	1	DIN-912-M10X60	M10x60MM LG, SHCS, BLACK
27	1	DIN-125-M10	M10, WASHER, FLAT, REG,ZINC PLATED STEEL
28	1	DIN-934-M10	M10, HEX NUT, BLACK

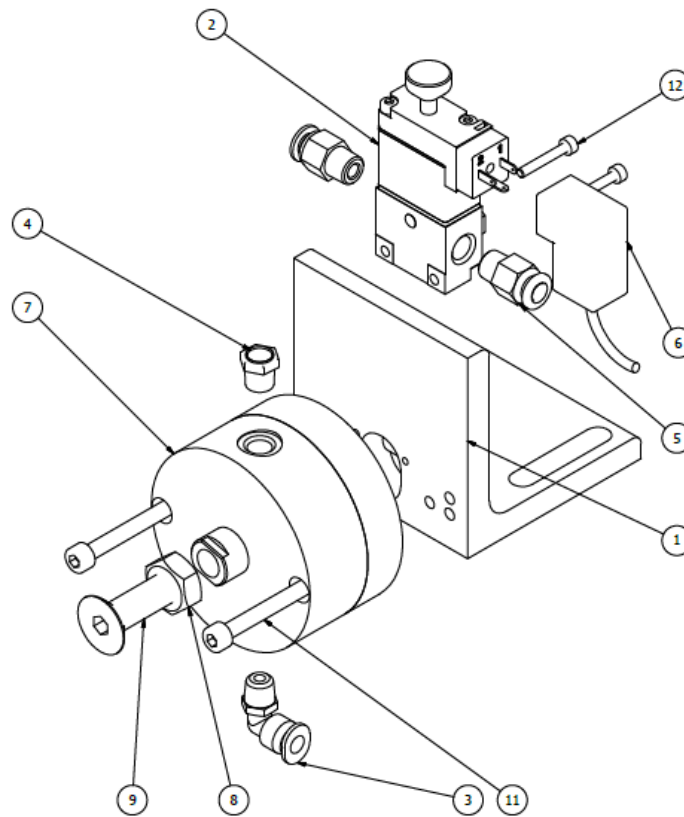
## 6.2.1 SRF 100 (4) Cascade Assembly



**SRF-100 (4) Cascade Assembly**

Item	Quantity	Part Number	Description
1	2	R-SRF-4-37	BRACKET, CASCADE ENTRY
2	2	R-SRF-4-38	CASCADE MOUNTING BLOCK, SRF-4
3	1	R-SRF-4-47	SHAFT -ENTRY ROLL, SRF-4
4	2	12117-40	BEARING, BALL, 10 ID x 26 OD x 8 WD
5	2	R-SRF-4-41	BAR, GUIDE ROLLER
6	1	R-SRF-4-46	CASCADE ENTRY ROLL, SRF-100
7	2	DIN-127B-M10	M10, REG LOCK WASHER, STEEL
8	2	R-SRF-4-42	NUT - T SLOT
9	2	R-SRF-4-71	DOME NUT, M10
10	2	DIN-912-M8 X 25	M8x25MM LG, SHCS, BLACK
11	1	R-SRF-4-40	PLATE, ENTRY
12	2	DIN-912-M6 X 10	M6x10MM LG, SHCS, BLACK
13	2	R-SRF-4-43	GUIDE ROLLER
14	4	R-SRF-48	BEARING, CASCADE
15	2	R-SRF-4-100	INNER SPACER GUIDE
16	4	R-SRF-4-44	SPACER, GUIDE ROLLER
17	2	R-SRF-4-69	ADJ HANDLE W/THREADED STUD M8 X 80 MM
18	2	R-SRF-4-45	T-NUT, GUIDE ROLLER

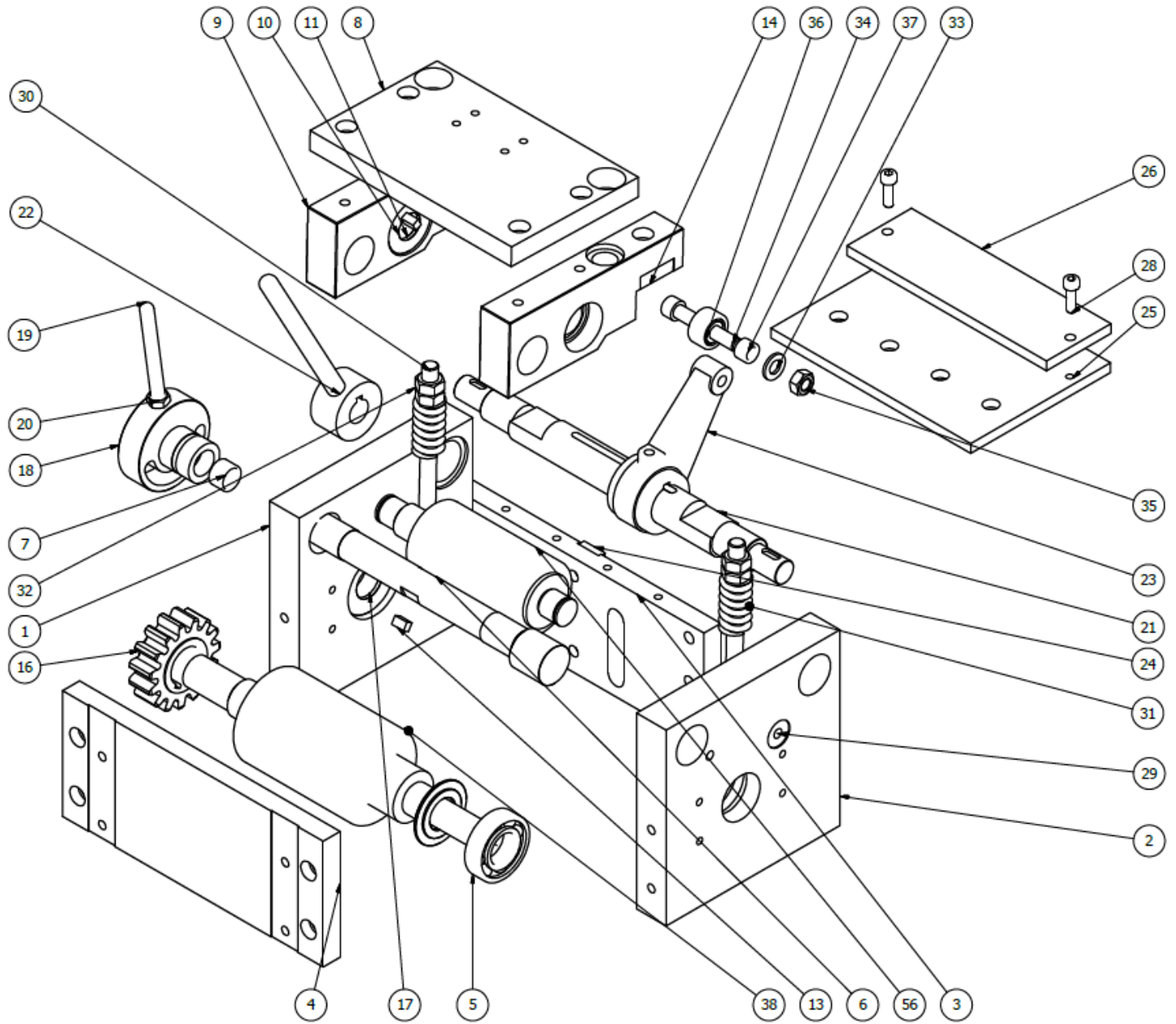
### 6.3 Pilot Release: SRF 125 - 600 (5 - 24)



**19946-07: Servo Pilot Release SRF-100 (4)**

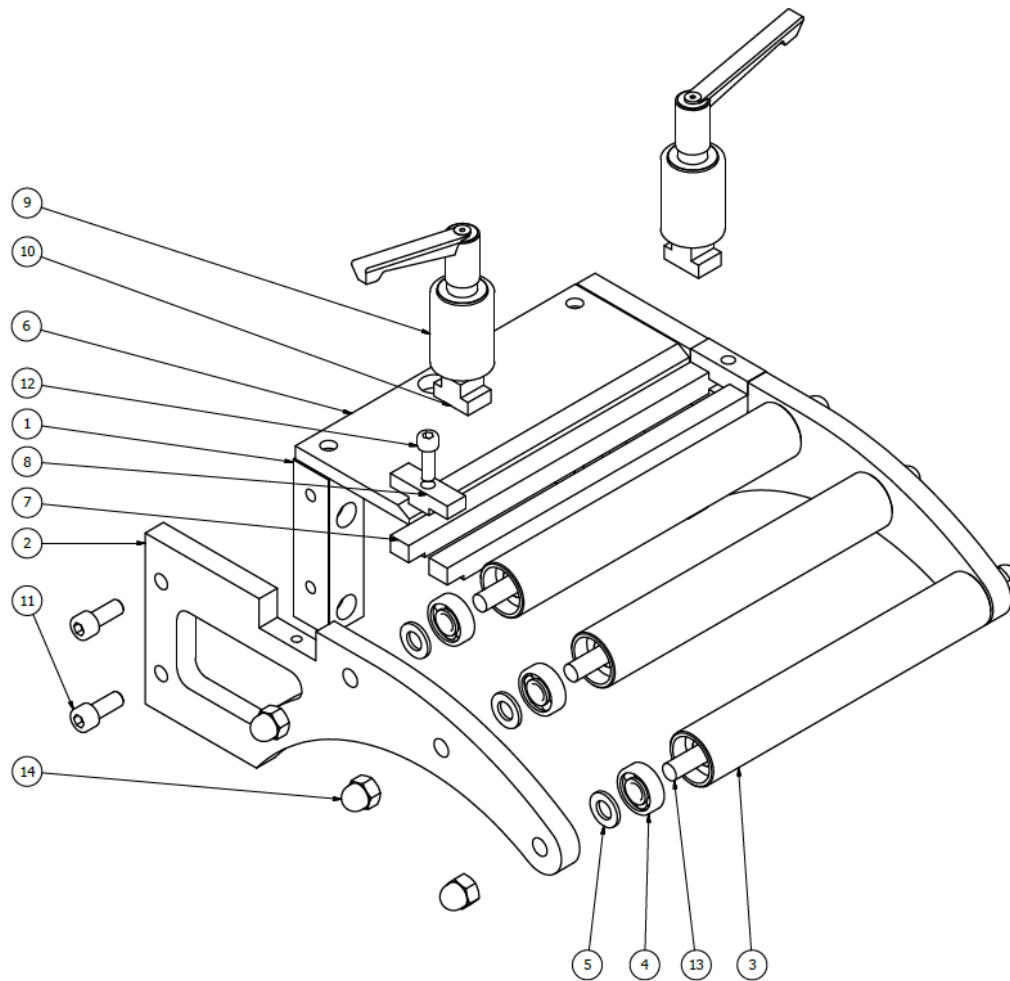
Item	Quantity	Part Number	Description
1	1	16730-04	BRACKET, SRF PILOT RELEASE, MAC
2	1	12039-141	VALVE, SOLENOID, 3 WAY, 24VDC, MAC
3	1	12032-42	FITTING, ELBOW, QSML-1/8-6
4	2	12024-11	SILENCER, 1/8 NPT, FLAT
5	2	12032-18	FITTING, STRAIGHT, QS-1/8-6
6	1	12039-142	CABLE, MAC VALVE, 5M FOR 12039-141
7	1	12111-212	CYLINDER, PNEUMATIC, PANCAKE 41.3 x 9.7
8	1	DIN-934-M10	M10, HEX NUT, BLACK
9	1	DIN 7991-M10 x 30	M10x30MM LG, FHSCS, BO
11	2	DIN-912-M5 x 45	M5x45MM LG, SHCS, BLACK
12	2	DIN-912-M3 x 20	M3x20MM LG, SHCS, BLACK

## 6.4 Feed Head: SRF 125 - 600 (5 - 24)



Feed Head			
Item	Quantity	Part Number	Description
1	1	R-SRF-2	BEARING HOUSING RIGHT, SRF 5-36
2	1	R-SRF-1	BEARING HOUSING LEFT, SRF 5-36
3	1	R-SRF-XX-4	FEED MOUNTING PLATE
4	1	R-SRF-XX-3	FRONT PLATE, CASCADE MOUNTING
5	2	12117-79	BEARING 30 ID X 62 OD X 16 WD
6	1	R-SRF-XX-21	SHAFT, THICKNESS ADJ
7	2	R-SRF-82	ECCENTRIC BUSHING
8	1	R-SRF-XX-9	PLATE, UPPER ROLL
9	2	R-SRF-8	BRACKET, UPPER ROLL RIGHT, 5-36
10	2	12117-15	BEARING, BALL, 25 ID x 52 OD x 15 W,
11	2	R-SRF-#-17	SHIELD, DUST, UPPER FOR SRF-5 THRU 36
12	1	R-SRF-20	GEAR - UPPER
14	2	R-SRF-28	WEAR PAD
15	1	R-SRF-XX-16	ROLL, UPPER
16	1	R-SRF-12-15	LOWER GEAR
17	2	R-SRF-#-12	SHIELD, DUST, LOWER USED ON 5-36
18	1	R-SRF-84	CAM, THICKNESS ADJ.
19	1	R-SRF-22	LEVER, THICKNESS ADJUST
20	1	DIN-934-M10	M10, HEX NUT, BLACK
21	1	R-SRF-XX-26	SHAFT, ROLL RELEASE
22	1	R-SRF-29	RELEASE LEVER, MANUAL
23	1	R-SRF-12-30	RELEASE LEVER, MECHANICAL
24	1	R-SRF-53	KEY, 25x8x116
25	1	R-SRF-XX-6	PLATE, MATERIAL HOLD DOWN
26	1	R-SRF-XX-5	EXIT PLATE
28	3	DIN-912-M8X25	M8x25MM LG, SHCS, BLACK
29	2	R-SRF-33	RETAINER, SPRING ROD, 5-36
30	2	R-SRF-34	ROD, ROLL TENSION
31	2	R-SRF-12-35	SPRING, BROWN
32	4	R-SRF-67	NUT, M14,ROLL TENSION
33	1	DIN-7980-M12	M12, WASHER, LOCK, SPRING STEEL
34	1	DIN-912-M12X70	M12x70MM LG, SHCS, BLACK
35	1	DIN-934-M12	M12, HEX NUT, BLACK
36	1	R-SRF-31	BEARING, ROLL RELEASE
37	1	R-SRF-32	SPACER, PILOT RELEASE CAM BAR
38	1	R-SRF-XX-11	ROLL, LOWER
56	1	R-SRF-XX-16	ROLL, UPPER

## 6.4.1 SRF 5-36 Cascade Assembly



**R-SRF-XX-Cascade Assembly**

Item	Quantity	Part Number	Description
1	2	R-SRF-39	CASCADE MOUNTING BLOCK
2	2	R-SRF-37	ENTRANCE CASCADE, SRF
3	3	R-SRF-XX-46	ROLLER, CASCADE ENTRY
4	6	R-SRF-48	BEARING, ENTRY ROLLER & EDGE GUIDE, SRF
5	6	R-SRF-80	SPRING WASHER, ROLLER
6	1	R-SRF-XX-40	FEED HEAD SPECIFIC
7	2	R-SRF-XX-41	FEED HEAD SPECIFIC
8	2	R-SRF-42	CLAMP, GUIDE ROLLER BAR
9	2	16532-02	ROLLER, MATERIAL GUIDE MF1125 W/BEAR
10	2	R-SRF-45	SUPPLIED WITH ITEM 9
11	4	DIN-912-M10X25	M10x25MM LG, SHCS, BLACK
12	1	DIN-912-M8X25	M8x25MM LG, SHCS, BLACK
13	3	R-SRF-XX-47	FEED HEAD SPECIFIC
14	6	R-SRF-71	NUT, DOME, M12, ROLLER