Waddington

Electronics Inc.

8/29/95

Attention:
Reference:

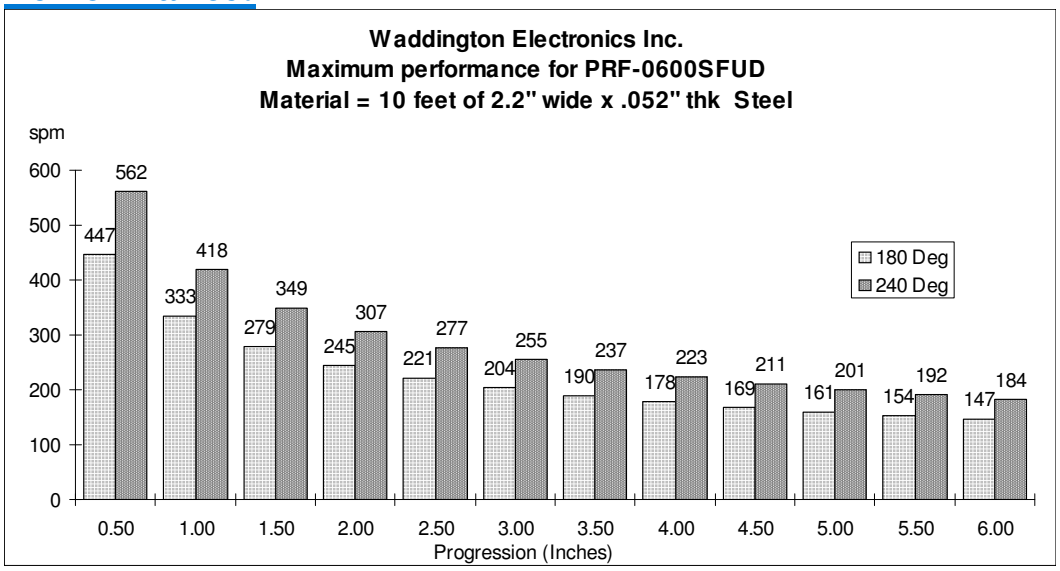
Pursuant to your recent request we are pleased to offer for your consideration the following:
(1) PRF Systems Precision Digital Roll Feed Model PRF-0600SFUD having the following basic specifications:

Maximum Stock Width	6.125 inches
Maximum Stock Thickness	.059 inches
Minimum Feed Length	.001 inches
Maximum Feed Length	665.000 inches
Standard Accuracy	+/-.001 inches
Power Supply (see options)	230V 3ph 60 Hz

The Waddington Sure-Fire ™ Roll Feed is NOT a low cost alternative to a servo-driven roll fee, but is in fact a true high-performance, brushless, servo-based stock positioning system.
Brushless resolver feedback insures quick and accurate progressions, and computerized controls allow for instantaneous progression setup.

The PRF-0600SFUD Feed features the following:

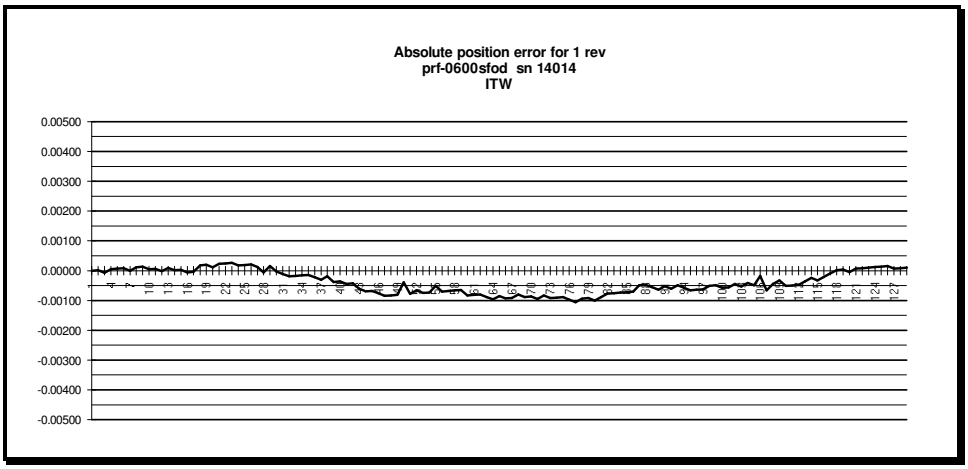
Performance:



All calculations are based on real world conditions (as best as we can simulate on a computer). Allowances are made for loop size and material thickness, width, and density.

Timing is based on move time with factored-in servo settle-out time.

Extended performance servo systems are available.

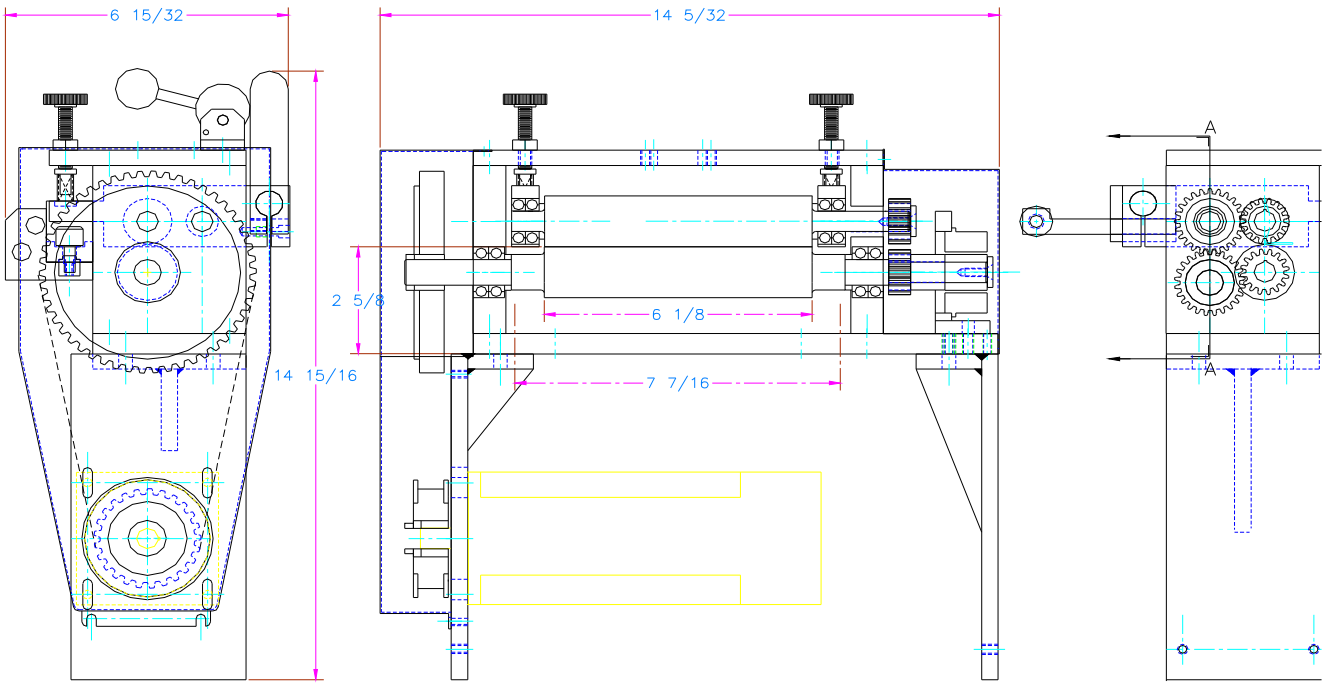


Accuracy:

Most companies rate their feeds on a move-to-move basis. We believe a feed should hold its length tolerance over several moves, so we have developed a testing program that in some cases involves taking thousands of accuracy measurements and analyzing them on a computer. We also believe a feed manufacturer should be able to backup up its claims of feed accuracy. Every feed we ship is tested extensively on our computerized feed test bed. Each system is individually tuned for maximum performance. To aid in tuning and refining of our feed systems we have developed a computerized testing program that in some cases involves taking thousands of measurements a single system. Data, collected from precision instruments accurate to .0001 inches is uploaded to our computer database and processed by our Ser-Faas accuracy analysis software. This program reveals critical information about the positioning performance of the feed under test. The Accuracy Curve shown here is based on strip position error over one roll revolution (about 3.9720). The above Accuracy Curve is typical for the SF series of feeds.

Mechanical Features:

1.25 inch diameter hardened ground finish rolls	Our special low inertia roll design is a proven performer in thousands of applications
Heavy duty dowel-pinned frame	We start with high-quality precision ground steel plate. All precision bores are machined in sets and, after assembly and alignment, the frame is dowel-pinned. This insures long-term alignment and feeding accuracy, and has none of the stability problems associated with cast feed frames. The steel is finished with black oxide.
Permanently lubricated anti-friction bearings	Long life back-to-back sets.
Anti-Backlash gears between top and bottom rolls	Provides the lowest inertia solution to the problem of increasing stock-gripping force and eliminating backlash between the upper and lower rolls.
Two adjustable stock entry guides	Cam rollers with handles. No tools are required for adjustment.
Horizontal hold-down rollers at feed input	These entry rollers keep material from jumping the stock guides during very high acceleration.
Precision long life Kevlar timing belt	Less elastic than steel, Kevlar belts are the ultimate choice for speed reduction in servo systems. We warranty the belt for 10 years.
High-speed air pilot release or mechanical pilot release	Used for releasing the feed rolls, allowing pilot pins to take control of strip position, or to help compensate for defects in strip geometry. Waddington feeds feature one of the fastest air pilot release systems in use today. Customers routinely use them for applications as high as 300 SPM. Waddington offers many types of mechanical pilot release mechanisms depending on press stroke length and speed. We also offer servo-driven pilot release for applications that involve very high speeds and/or no mechanical access to the press crank shaft.



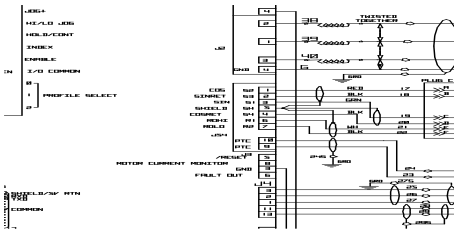
Electrical Features:

Brushless low-inertia Servo Motor

With high temperature windings and internal thermal protector

Close loop brushless resolver feedback

Provides the most shock-proof absolute position feedback available. Only Waddington feeds feature resolvers that are directly coupled to the bottom feed roll. Unlike systems that have the position feedback device mounted on the back of the motor, this arrangement yields the best servo-positioning performance.



Following error output

Stops press or other equipment in event of stock jam or feed malfunction.

RS-232 interface

For connection to remote computers or Data Instruments' Spectrum, ProCam®1500, SmartPak, DiPro®1500, and selected Link Systems for total press control integration.

Military style connectors

Only the highest quality motor and feedback connectors are used to insure reliability.

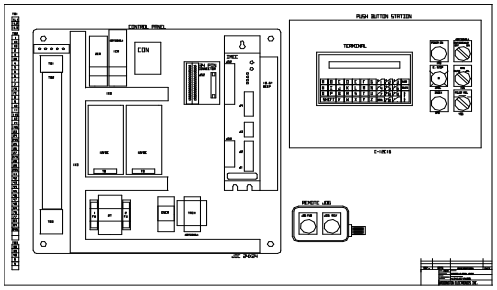
Liquitight

Used on motor cables and remote push button stations, this protects cables from most shop hazards. Unlike some feeds where the lowest cost is the only object, we provide steel armored cable on all leads.

Electrical surge suppressors

14 suppressors are provided to suppress any inductive coils found in the press electrical control system. Additional suppressors are listed under optional equipment.

Control Console push buttons and operators. We use only NEMA 12 rated industrial operators.



Power "ON"	(push button)
Emergency "STOP"	(palm button)
Index	(push button)
Manual/Automatic/Jog-to-length	(selector)
Feed rolls open /closed / auto	(selector)
Feed hold (optional)	(palm button)

Productivity Features

Data Entry Keypad

Waddington feeds come with a NEMA 4-rated (oil, water, and dust-tight) industrial keypad. It features a 40 x 2-line LCD display and full alpha-numeric entry and display. Changing the feed parameters, such as length, speed, and acceleration, is fast and simple.

Portable "SETUP" Push-button Station Jog Fwd / Jog Rev / JTL

A standard feature on Waddington feeds, the jog forward and reverse buttons are mounted in a 2 push-button hand-held box and connected to the main electrical enclosure or operator station by a coil cord. There is also a storage pocket that can be mounted in a convenient location.

The jog feature allows the press operator or setup person to jog the material through the die. When used in conjunction with jog-to-length feature, the material can be jogged up to stock guides started in the guides, and then continued into the next die station, the jog-to-length software will automatically stop the feed at exactly the proper location. This feature allows for rapid threading of progressive tooling with stock lifters or unsupported areas between die stations.

Electrical /Pneumatic roll open/close operation

For easy stock threading into feed rolls.

Special Tools

We provide special tools to help the setup person get the most from their new feed. T-handle wrenches are provided for operator mechanical adjustments like pilot release travel, anti-backlash gear setting and, in some cases, feed passline adjustment..

Electrical I/O

E-Stop String Input

Stops feed

E-Stop String Output

Can be used to stop other equipment

Index Complete

Used to cycle presses or other equipment and can be tied into die protection systems. This output is used in conjunction with the software settable index complete window.

Early index Complete

Used to start other equipment such as hydraulic presses. This output can start other equipment before the feed cycle is finished, and can decrease total cycle time when the feed is used with hydraulic presses.

Feed to sensor input

Allows the feed system to position the material based on a registration mark or previously stamped feature on the strip.

Profile select

These hardware inputs can be used to initiate an alternate feed length profile when the feed is used with simple batch counters and a gagable cutoff or to initiate a skip feed cycle.

Fault

Signals other equipment in event of feed overload or failure

Following error	Can be used to detect stock jams and other tooling and feeding problems
Current monitor	Can be used with load meters to monitor the amount of power required to do a particular job and as a troubleshooting tool in cases of binding and material alignment problems.
Pilot release	Our new solid state air operated pilot release driver can be interfaced with a variety of electronic Cams, limit and proximity switches.

Control Console:

The control console (NEMA 12) is wired to J.I.C. standards

The enclosure is free standing type. The dimensions are approximately 24" x 24" x 12". Standard color: PRF light tan. The enclosure sits on a set of legs and the slant front push button station is located on the top of the cabinet.

Remote push button station — The push button station can also be remote mounted from the main feed enclosure. For customized installations and applications where die protection, electronic Cam switch, and programmable pattern options are ordered, larger push-button stations are utilized.

Documentation and support — Each feed ships with one set of D-Sized electrical drawings, an installation guide, an operator's manual with programming instructions, examples and a trouble-shooting guide. In addition, factory manuals are provided for the positioning system and servo drive. All systems are followed by our computerized feed tracking database; all major feed components are tracked by serial number. This computerized system allows our service and support staff to provide prompt answers to your servo feed application questions and service requests.

Special Services

Customer supplied equipment (consult factory) — We will gladly mount or provide space for customer supplied equipment such as extra switches, buttons, programmable Cams, die protection systems, programmable controllers, etc. (consult factory)

Price FOB Cranston RI. **CISF-06-0050-00-0000** **$ 8,950.00**
(Price does not include the following)

OPTIONAL EQUIPMENT:

Cascade Rolls: **CISF-06-0210-00-0000** **$ 646.00**
Maintain proper radius for stock entering the feed. Bracket-mounted.

High Speed Air Pilot Release: **CISF-00-0350-00-0000** **$ 537.00**
For opening and shutting feed rolls during stock piloting operation. Waddington Electronics has developed air pilot release mechanisms that operate at speeds up to 300 SPM

Heavy-duty Adjustable Mounting Bracket: **CISF-06-0600-00-0000** **$ 480.00**
For press side mounting of feed w/ +-1.5" travel.

Matte Chrome Finish on Rolls: **CISF-06-0110-02-0000 (lower)** **$ 69.00**
CISF-06-0110-12-0000 (upper) **$ 69.00**
LD series feeds come standard with smooth rolls. Matte Chrome feeds rolls are grit blasted and then finished with industrial chrome .Brand name finishes such as Kroton are also available but are basically the same composition. Chrome plated rolls provide excellent roll wear characteristics and the rougher finish provides improved traction between

the rolls and the stock preventing material slippage during high acceleration. Smooth rolls work best with Prepainted materials and are also sometimes used to prevent material marking on some materials. Matte chrome is used in most general stamping operations and when increased gripping force is required

Low Inertia Package II: Low Inertia Pulleys. **Standard**

Our specially designed aluminum pulleys are ultra light-weight. They are hard anodized to prevent wear and are mounted with a keyless mounting, resulting in a superior low-inertia drive train with none of the problems associated with set screws and key ways.

All PRF Systems Roll feeds operate from 230v 3 phase 60 Hz. For operation at other voltages a transformer is required.

Transformer 3 Kva 460v 3Ph. 60 Hz **CIUO-00-1350-00-0000** **$ 660.00**

PRICE VALIDITY: 60 Days

TERMS: Net 30 Days On Approved Credit

DELIVERY: 4-6 weeks ARO

SHIPPING: Standard Shipping Freight Collect

WARRANTY: P.R.F. Systems of Waddington Electronics, Inc. warrants equipment manufactured by P.R.F. to be free from defects in material and workmanship under normal conditions of use and service for a period of two (2) years after shipment of equipment to original purchaser.

PERFORMANCE GUARANTY:

Waddington Electronics guarantees the performance of all their products. We understand that our customers expect a premium product, and we intend to deliver one. If you are not happy with the performance of our products, we expect you to return them. All we ask is to be given the chance to come to your site and make the product perform to your satisfaction.

If you have any questions regarding this quotation or require additional information, please do not hesitate to call.

Very truly yours,

John E. Waddington

John E. Waddington V.P.
Waddington Electronics, Inc.