

# FEED MONITORING SYSTEM

BY

MOYER



Congratulations on your purchase of the Moyer Feed Monitoring System. We know that you appreciate quality, and have put every effort into making this quality product for your use. By following the procedures outlined in this manual, you can install and operate the System with your coiling equipment.

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<p><b>SAFETY WARNINGS</b></p> <p>PLEASE CONNECT ALL PIECES OF GAGING EQUIPMENT TO THE SAME POWER SOURCE. OTHERWISE, HAZARDOUS SHOCKS OR EQUIPMENT DAMAGE MAY RESULT. TO AVOID THIS DAMAGE, PLEASE CONNECT THE GAGE AND FEED MONITORING SYSTEM TO THE SAME SET OF POWER OUTLETS.</p> <p>PLEASE ENSURE THAT THE FEED DOES NOT LEAVE THE MEASUREMENT WHEEL. EQUIPMENT DAMAGE OR INJURY COULD RESULT.</p>
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*MERLIN GAGE is a trademark of Moyer Process & Control Company, Inc.*

# 1 Features and Accessories

The Feed Monitoring System measures wire and strip feed simply and effectively. A measurement wheel accurately measures the feed, and an optional sorting chute automatically sorts out bad parts. If necessary, add a coiler-kill kit to shut down the coiler if a misfeed occurs.

The Feed Monitoring System can also measure other types of feeds, such as strip feeds. Certain applications may require additional equipment, however. Please contact Moyer Process & Control for more information.

## 1.1 Basic Features



The Feed Monitoring System measures the wire content of springs. It can detect feed roll slippage, missing coils and other feed problems. Combined with an external logging device, the operator can conduct additional statistical analysis of the measurements. The operator can watch for trends and tune the process, if necessary.

Using a sorting chute, the System can accept springs with the desired wire content and reject misfed springs. Combine the System with a MERLIN GAGE to control free length and rate. The System also allows the MERLIN GAGE to avoid length corrections due to a misfeed, leading to better free-length control.

The System has additional features that put it far ahead of the competition. Automatic read and learn mode functions reduce setup time and confusion. For more difficult or higher precision jobs, the operator can override these features. Learn mode statistically determines the normal limits of your process. Later, the operator can tighten the Learn mode limits.

## 1.2 Enhanced Features with MERLIN GAGE

Together, the Feed Monitoring System and the MERLIN GAGE can sort out misfed parts and apply pitch correction. The System's auto-read capability can provide a read signal for the MERLIN GAGE. This may be convenient on large coiling machines where a normal read switch would be impractical. MERLIN GAGE can also use the wire feed data to aid in pitch control decisions and eliminate the needless control moves that it might attempt without the wire feed data.

Using the System with other equipment such as the MEAN MACHINE requires the complex pass-through option. With a MERLIN GAGE, a simpler and cleaner installation is possible. This eliminates the large number of pass-through cables, replacing them with the "Serial 2" connection. Data collection devices that would normally use the MERLIN GAGE's serial port now use the System's "Serial 1" port.



## 1.3 Available Accessories and Their Uses

Accessories enhance the functionality and usability of the Feed Monitoring System. Contact Moyer Process & Control for information about these options. The next few pages briefly describe these accessories and their uses.

### 1.3.1 Measurement Wheel

The most important component of the Feed Monitoring System is the measurement wheel. A measurement wheel assembly consists of the wheel itself, two stabilizing pulleys, a cable, and mounting hardware. Mount the measurement wheel assembly near or on the coiler. Any location after a wire straightener is good, but not necessary. String the wire between the pulleys and the wheel. Tighten the wire against the wheel with the pulleys. The wire should be tight enough to maintain continuous contact with the wheel during the entire coiling process. (WARNING: Excessive tension may cause tooling marks to appear on the finished part.) Attach the cable from the measurement wheel to the "Encoder" socket on System.



### 1.3.2 Sorting Chutes

Sorting chutes are available from Moyer in many different styles, as described below. Moyer makes sorting chutes from durable stainless steel and quarter-inch aluminum, offering the most modern designs available. Connect the chute to the System's "3-Way Out" and "5-Way Out" connectors with the attached cables. Use of non-Moyer chutes may be possible, but is not recommended. Please contact Moyer Process & Control or your chute manufacturer for assistance with these chutes.

#### **MOYER HIGH-SPEED TWO-WAY SORTING CHUTE**

The Moyer two-way chute simply and quickly sorts parts into two categories: good and bad. This makes it appropriate for standalone use with the Feed Monitoring System. It is also used with a high-speed coiler, as it is air-driven for additional speed. The Moyer top-mount flapper design lengthens flapper life and eliminates the risk of a bottleneck of parts. Moyer's two-way chutes come in two throat sizes: 6"x6" and 3"x3".

#### **MOYER THREE-WAY SORTING CHUTE**

This chute sorts parts into three groups: short, long and good. It is appropriate for a companion-gaging situation. (The System will sort misfeeds into the short group.) A three-way chute comes complete with all the necessary cabling and plugs for connecting to the System's "3-Way Out" socket. Three-way chutes are available in four throat sizes: 3.375"x4.000", 3.375"x8.000", 7.450"x8.000", and 7.450"x16.000".

#### **MOYER FIVE-WAY SORTING CHUTE**

This chute sorts springs into five groups. A MERLIN GAGE will divide the total spring length tolerance into three good and two bad groups. The System will sort misfed parts into the very short group. The Five-Way chute is available in three throat sizes: 3.375"x4.000", 3.375"x8.000", and 7.450"x10.000". The chute plugs into the System with two cables connected to the System's "3-Way Out" and "5-Way Out" sockets. The Moyer Five-Way sorting chute operates as a three-way chute on gages that lack five-way sorting capability.

### 1.3.3 Coiler Kill kit

A coiler kill kit includes two 3-pin sockets and a relay mounted on a PC-board, and a 3-pin cable. It turns off the coiler if enough misfeeds occur. If used with a pass-through cable connected to a MERLIN GAGE, the Gage can turn off the coiler. See the MERLIN GAGE manual for details.

The three-pin cable from the coiler-kill kit connects to the "Safety Out" connector on the back of the Feed Monitoring System. If the System is being used with a 5-Way chute, connect the two-pin cable from that device to the two-pin connector on the coiler-kill kit.

### 1.3.4 Pass-Through Cables

When the System is equipped with the pass-through option, pass-through cables can be used. Pass-through cables allow sorting and safety signals to “pass through” the System to the sorting chutes and safety. Simply connect a cable from the output port on the equipment to the corresponding input port on the Feed Monitoring System.

### 1.3.5 Serial Data Collection Cable

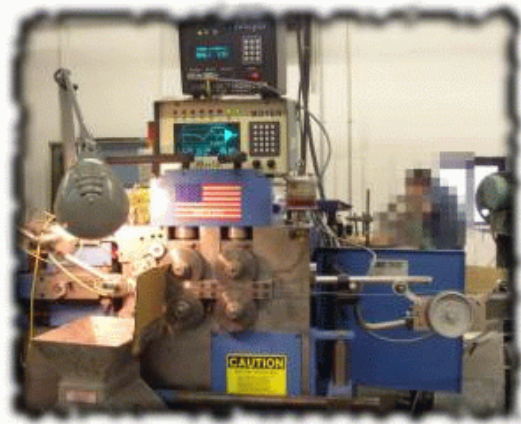
The serial data collection cable is a nine-pin serial cable. It connects to “Serial 1” on one end and a PC or data-logger serial port on the other. Using additional third-party software, the operator can collect data and perform statistical analysis. Additionally, the Feed Monitoring System has a serial command language, so that operations like a “read” can be done via the serial cable. This subject is covered in section 5, Serial Interface.

### 1.3.6 MERLIN GAGE and Cable

The Moyer MERLIN GAGE is a computerized free-length control system, designed to measure springs and control scrap. It reduces scrap by probing and controlling the springs’ free-length. The MERLIN GAGE can use a Moyer pitch controller to maintain a consistent free-length. Add a Moyer sorting chute to sort the springs according to length. When used with the Feed Monitoring System, the operator can measure several parameters of the coiling operation.

The MERLIN GAGE can perform statistical (SPC) analysis, display histograms, and create statistical printouts. MERLIN GAGE also includes a patented feedback calculation and temperature-stabilized probe for accurate measurements and intelligent process control. With features like rotary probing and broken tool detection, scrap reduction is easy with the MERLIN GAGE. With speeds of more than 84,000 parts per hour proven in the field, the MERLIN GAGE can go anywhere.

Interfacing the MERLIN GAGE and the Feed Monitoring System is simple. A male-to-male serial cable transfers data between the two systems. Simply connect the cable from “Serial 2” on the System, to the “Serial” port on the MERLIN GAGE.

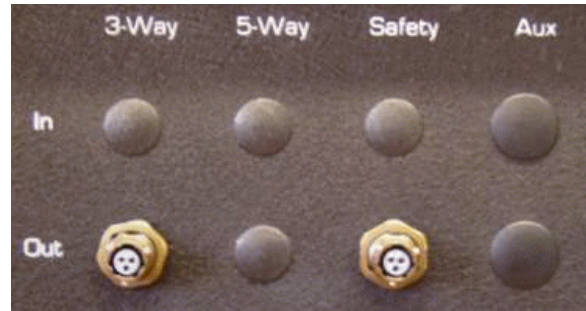


## 2 Panel Functions

The front panel of the Feed Monitoring System is simple. The front panel has a screen and a keypad, and two LEDs (green for good, red for bad.) The front panel also has one nine-pin connector for the encoder measurement wheel, two serial ports and a power switch.



The rear panel has “In” and “Out” connectors for sorting chutes and safety shut-offs. Pictured at the right is the standard configuration, with “3-Way” and “Safety” outputs. The “3-Way” connector works with most two- and three-way sorting chutes. The “Safety” connector works with a coiler-kill kit to provide an automatic coiler shutdown. When provided, the “5-Way” connector works with the Moyer 5-Way sorting chute, and “Aux” connector works with other available sorting chutes.



With the pass-through sorting option, the System provides additional “In” connectors. A cable from the gage connects to the “In” connector. The sorting equipment connects to the corresponding “Out” connector. Contact Moyer Process & Control for more information about the pass-through sorting option.

## 3 Unpacking and Installation Instructions

Before accepting shipment from the carrier, inspect all cartons for damage. If a carton is damaged, open the carton in front of the carrier and check the contents. Moyer ships parts only with approved packaging. Check carefully that no parts are lost in the packing materials. Always report any missing parts or damage to the carrier and to Moyer Process & Control immediately.

Instructions follow for installing the Feed Monitoring System. It can be installed in standalone, pass-through, and MERLIN GAGE companion styles. Instructions for installing the optional read switch are provided at the end of this chapter. **WARNING: Do not** connect power until instructed!

### 3.1 Standalone Installation

Place the Feed Monitoring System so that the operator has good access to the front of the System. Avoid subjecting the System to excessive shock, oven heat or other hazardous environments. Place the System where its use will not subject the operator to danger from moving parts. Normal coiler vibration is not considered excessive.

#### **INSTALLING THE MEASUREMENT WHEEL**

Mount the measurement wheel assembly near or on the coiler. Any location after a wire straightener is good, but not necessary. String the wire between the pulleys and the wheel. Tighten the wire against the wheel with the pulleys. The wire should be tight enough to maintain continuous contact with the wheel during the entire coiling process. (WARNING: Excessive tension may cause tooling marks to appear on the finished part.) Attach the cable from the measurement wheel to the “Encoder” socket on System.

#### **INSTALLING THE CHUTE**

Position the chute so that the back of the funnel is as close to the front of the coiler as possible. A good place for this is beneath the cutoff mechanism. Align the chute so that after cut off, the parts fall into the throat of the chute without bouncing out.

Make a mounting assembly to connect the chute to the coiler, using the included bracket. Due to the variety of coilers in the industry, the chute may require an adapting bracket. Moyer also offers a chute stand that has adjustable height from 24" from 42" and can rotate horizontally and vertically.

Sorting chutes have one or more cables that connect to the Feed Monitoring System and other equipment. A three-way chute uses a three-pin cable to connect to the System's 3-Way Sort output. A five-way chute also uses this three-pin cable, and has an additional two-pin cable that connects to the System's 5-Way Sort output. When using the coiler-kill kit, the 5-way cable to the two-pin connector on the coiler-kill kit may be necessary.

### 3.2 MERLIN GAGE Companion Installation

MERLIN GAGE companion installation is similar to pass-through installation. Place the System and the MERLIN GAGE close to each other. They should be placed in an area where the operator has good access to the front of the gages. Since the System will be operating with the MERLIN GAGE, it should be placed near the System. Since only one cable connects the System to the MERLIN GAGE, less space is needed for the System.

Disconnect the data-logger from the MERLIN GAGE's serial port, if necessary. Using the “Serial 2” port on the front of the System, connect a male-to-male serial cable to the serial port on the MERLIN GAGE. Reconnect the data-logger to the “Serial 1” port on the System. The data-logger may need to be reconfigured.

Connect all sorting chutes and safety devices to the appropriate ports on the MERLIN GAGE. **DO NOT** use the

pass-through ports or cables. With the serial cable connected, the MERLIN GAGE will handle sorting. Connect the read switch to the appropriate socket on the MERLIN GAGE, if necessary.

### **3.3 Pass-through Installation**

Pass-through installation of the system is similar to MERLIN GAGE companion operation. It does, however, require that your System be equipped with the pass-through sorting option. (Systems with the pass-through sorting option will have all eight sorting connectors on the back.) Place the System so that the operator has good access to and visibility of the front of the gage. Since the System will be operating with another piece of gaging equipment that equipment should be placed near the System. This allows operator can conveniently check and modify operating parameters for both devices.

Provided on the back of the System are several connectors labeled as “Input.” These connectors allow the connection of sorting and safety signals from gaging equipment to be passed on to sorting chutes and safety shut-offs, while still allowing the System to control these signals. We call this a “pass-through connection.”

To set up a pass-through connection, disconnect the sorting and safety cutoff cables from the gaging equipment. Then, connect the pass-through cables from the connectors on your equipment to the input connectors on the System. Reconnect the sort and safety cutoff cables to the appropriate output connectors.

When the cables connect the devices in this manner, the System has the capability to “interrupt” sorting and safety signals. If a misfeed occurs, the System will sort the springs into the shortest category available, and activate the safety cutoff (if necessary). When there is no misfeed, the System will pass the sorting and safety signals from the gaging equipment directly to the chutes and cutoffs.

### **3.4 Read Switch Installation (optional)**

Normally, the integrated auto-read function will be sufficient. If not, an external read-switch may be needed. When used with a MERLIN GAGE, the System can take advantage of that read switch. Simply connect the serial cable between the Gage and the System and set the appropriate options.

The read switch assembly consists of a target mounted on a lock collar or block, and a switch mounted on a bracket. Mount the target to any shaft that makes one complete revolution per part. Mount the switch and bracket so nothing will hit it and the target will pass 0.030" (0.7 mm) to 0.080" (2 mm) from the flat on the switch. Position the assembly so the read signal will occur after the feed stops but before cut off.

On most segment type coilers, the read signal should take place at the midpoint between the end of feed and cut off. On escapement coilers, high speed coilers, or when using a rotary probe, the read must take place when the wire stops feeding. Coil a spring by hand slowly to ensure that the target does not hit anything. Cut off the spring. Connect the read switch’s three-pin plug to the System’s “READ” socket. If your System is not equipped with a read socket, please contact Moyer Process & Control for assistance.

With no other accessories attached to the System, plug in the power cord and turn on the System. Configure the System to use an external read switch (see section 4.2 for details). Coil a spring by hand and check the read signal. You should see either the green or red LED turn on when the System receives the signal. Verify that the light comes on at the correct point in the coiling cycle. Turn the System off.



## 4 Using the System

We designed the Feed Monitoring System to be simple and easy-to-use. With a display and keypad, the operator can set the small number of options necessary to use the System. In fact, most of the important options can be set using Learn Mode.

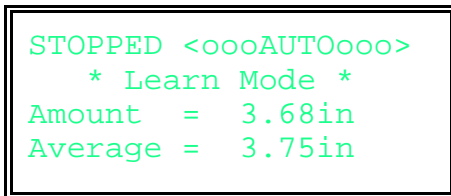
### 4.1 Set-up

Setting up the Feed Monitoring System is easy. After installing the System on your machine, plug in the power cord and turn it on. While the logo screen is being displayed, press the **0 LEARN** key. This will cause the System to enter Learn Mode.



While in Learn Mode, the System will measure the first thirty-three springs, and determine the proper minimum and maximum feed lengths. After the Learn Mode period is over, these parameters can be altered. The System will operate normally without any operator intervention after this, sorting springs using the sorting chute.

The System should come preset for metric or SAE units. If this is not so, however, the desired units can be set while the logo screen is displayed. Simply press the **Ⓢ SELECT** button to select SAE units, or the **Ⓢ SETUP** button to select metric units. Also, the desired units can be selected from the Tolerances Menu.



1 Learn Mode

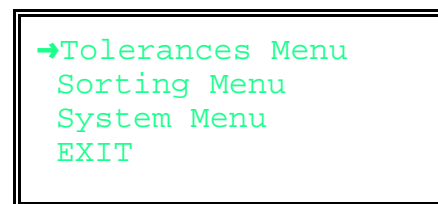
The System is equipped with a screen saver program to extend the life of the screen. The screen saver will come on when no button has been pressed for ten minutes. To switch back to the normal display, simply press the **Ⓢ SELECT** button.

The System is preset for sorting out a single spring per misfeed, and no safety shutdown. To sort out extra springs as bad, or to stop the coiler after a certain number of misfeeds, use the Sorting Menu. See the next section for details on using the menu.

### 4.2 Configuration

Many options are available which can affect the operation of the Feed Monitoring System. These options are available by pressing the **SETUP** button. The operator will be presented with three menus, with an "Exit" option to will return to the main run mode. All measuring and sorting options will continue while in **SETUP** mode.

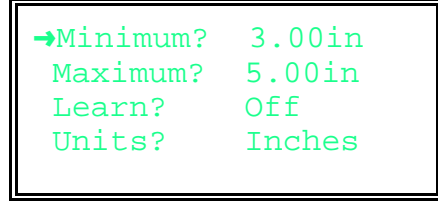
Configuration options can generally be changed with the **Ⓢ SELECT** and **Ⓢ SETUP** buttons. In the main menu, the **Ⓢ SELECT** button selects a the menu, and the **Ⓢ SETUP** button enters it. Inside menus, the **Ⓢ SELECT** button can be used either as a backspace key or as a toggle key. The **Ⓢ SETUP** key is exclusively used to go from one line to the next. Numbers can be entered at any prompt asking for a number, and the **Ⓢ SELECT** key can be used to erase the last number just entered. **NOTE:** There is a delay between sequential key-presses. If a key-press does not seem to register, try again.



2 Main Menu

### TOLERANCES MENU

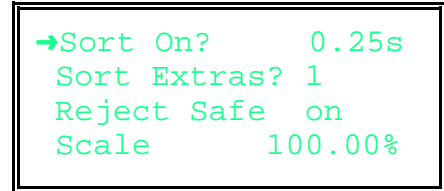
Four options are in the tolerances menu: Minimum, Maximum, Learn and Units. The **Minimum** and **Maximum** options determine the lower and upper sorting tolerances, respectively. These can either be set manually, or automatically calculated in Learn Mode. **Learn**, the third option, turns learn mode on or off. Turning on learn mode will reset the average feed and start the learning process. Turning off Learn Mode will set the tolerances using only the currently available data. The final option, **Units**, selects the use of SAE units (the “in” option) or metric units (the “mm” option).



3 Tolerances Menu

### SORTING MENU

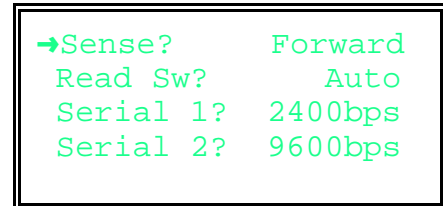
Four options are in the sorting menu: Sort On, Sort Extras, Reject Safe, & Scale. The **Sort On** option sets the “on-time” for the sorting chutes. It will *not* affect the on-time set by any other attached equipment, such as a MERLIN GAGE. The **Sort Extras** option sorts out up to eight additional springs, for a total of nine, after a misfeed occurs. This may be useful when using long feeds or painted wire, where a current slippage may suggest that a future spring will be bad. The **Reject Safe** option controls the safety cutout (“coiler-kill”) device. If this is set to zero, the System will never stop the coiler. When set to one, the coiler will be stopped after every misfeed. When set to a higher value (up to nine) will be stopped every time the selected number of misfeeds occurs. Use the **Scale** option to compensate for minor errors in measurements. As some normal wear of the encoder wheel or lubrication on the wire might effect the measurement, this value can be used to correct the output. (also see maintenance)



4 Sorting Menu

### SYSTEM MENU

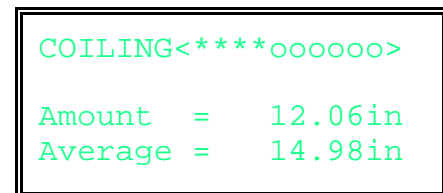
In the system menu, there are four options: Sense, Read Switch, Serial 1 and Serial 2. The **Sense** option sets whether the wire is feeding forward or reversed, relative to the orientation of the measuring wheel. This can be set automatically in learn mode. The **Read Switch** option allows the operator to choose between an automatic read operation, or a read operation using an external read switch. The final two options, **Serial 1** and **Serial 2**, allow the user to select the baud rates for the two serial ports on the front of the System. For most uses, 9600 bps should be sufficient.



5 System Menu

#### 4.3 Running

While the System is running, three things will be displayed on-screen. The top line of the display shows the current state of the coiling process. When the System stops the coiling process, it will also display if the last part was good or bad. This information is also available from the LED’s mounted above the display.



6 Coiling Display

If you are using the auto-read feature, the System will automatically conduct a “read” a fraction of a second after the feed stops moving. Excessive vibration, or a “feed-pause-feed” operation may make use of the auto-read feature impossible. In this case, using an external read switch is necessary.

It is possible to feed back the read signal generated by the auto-read feature to a MERLIN GAGE or other equipment. This is done via a serial port hookup, and may require additional software upgrades. Please contact Moyer Process & Control Co., Inc. for assistance.

If a misfeed is detected, the red LED will light up and the sorting chute will be activated. The sorting chute will remain activated for a number of seconds, as determined by the “Sort On” parameter in Sorting Menu. Also, if the “Reject Safe” option is in effect, then the coiler will shut down after the set number of misfeeds.

Under normal conditions, if no misfeed is detected, the green LED will become light up. The sorting chute will revert to being controlled by the attached MERLIN GAGE or other equipment, if applicable. If, however, the “Sort Extras” option was activated in the Sorting Menu, the System can sort up to eight additional (nine total) springs as bad after a misfeed occurs. While the System is sorting these extra springs, the red LED will remain lit.

```
STOPPED<oooBAD!ooo>  
Critical Misfeed  
Amount = 1.02in  
Average = 6.34in
```

### 7 Coiler Kill Warning

## 5 Serial Interface

### 5.1 Data Collection

When the System is operating, feed data is available on the “Serial 1” port. After every seventh part, the System writes out feed length data. When a MERLIN GAGE is attached to the “Serial 2” port, that data is also available on the “Serial 1” port.

### 5.2 Moyer MERLIN GAGE

The MERLIN GAGE now has a remote control protocol that can be used via the serial port. The Feed Monitoring System uses this protocol to control the GAGE. To enable it, set the GAGE’s dwell time to “CNC2.” Four commands control the GAGE:

- @** Force a “read” of the spring length.
- B** The current spring is bad.
- G** The current spring is good.
- K** The current spring is bad, shut down the coiler

The MERLIN GAGE will also output the ‘@’ character when it receives a signal from the read switch.

## 6 Maintenance

The Feed Monitoring System generally requires little maintenance. The screen and keypad should be kept clean and free of debris to allow the operator to identify the symbols shown. **Do not** use the system as a shelf for food or beverages.

### 6.1 Chute Maintenance

#### GENERAL MAINTENANCE

Ensure that the rubber stripping on the end of each flap is present. The stripping helps absorb the shock of operation and increases the life of flaps. Lubricate the bronze bushings with a general purpose lubricant such as WD-40. This should be done every 500 hours of operation under normal use, or every 250 hours of operation if used with an in-line oven.

Adjust solenoids when loud buzzing is heard when the flap is activated. This buzzing is a result of a solenoid out of adjustment. If immediate attention is not given, the solenoid may burn out and damage the gage.

#### ADJUSTMENT OF AC SOLENOIDS

Before shipment, we adjust all solenoids for proper operation. During normal use, these solenoids might need to be adjusted. Otherwise, the flapper will not fully close when the solenoid is energized. Also, there will be loud buzzing when the solenoid is energized. Solenoid vibration and buzzing will seriously shorten the life of the solenoid and associated circuitry. If either condition exists, the following adjustments should be made.

**WARNING:**

**THERE IS A RISK OF ELECTRIC SHOCK THAT MAY CAUSE PERSONAL INJURY OR DEATH. REMOVAL OF COVER AND SOLENOID ADJUSTMENTS SHOULD ONLY BE DONE BY QUALIFIED PERSONNEL ONLY.**

**CAUTION:**

**DAMAGE TO SNUBBER CIRCUIT BOARD MAY RESULT BY ACCIDENTLY SHORTING SOLENOID TO GROUND.**

Adjustment of 3-way chute solenoids and the long and short solenoids on 5-way chutes can be accomplished using the sort output of a MERLIN GAGE or other gage. Using the same sort output and a jumper wire can accomplish adjustment of the very long and very short solenoids of a 5-way chute.

#### CHUTE SOLENOID ADJUSTMENT

1. Remove the solenoid cover. Under the cover, wires are attached to the solenoid. These wire should be supported to reduce the strain on these wires.
2. Loosen the solenoid adjustment screws on the solenoid to be adjusted.
3. To energize the solenoid, plug the 3-pin plug into the sort output of a MERLIN GAGE or other test equipment. When using a MERLIN GAGE for this purpose, put the gage into *Hardware Test* mode (see manual), hold the "ENT" key and rotate the sort knob until the solenoid is energized.
4. Move the solenoid in the horizontal plane until the flap **just reaches** the opposite side, but not enough to cause a loud buzzing of the solenoid. Some slight tilting of the solenoid may be necessary to achieve this condition. For proper adjustment, ensure that no part of the solenoid is touching the front plate of the chute. Remove any excess plastic material from the solenoid with a small fine-tooth file.

NOTE: When the flap is fully closed, the rocker arm should be in the 6-o'clock position.

## 6.2 Troubleshooting

### *The screen is blank*

First, check to make sure that power is connected, and that the power switch is turned on. Also, make sure that all connections are tight. If the System still does not respond, call Moyer Process & Control for service.

### *There is garbage on the screen*

Wait a few seconds; if the “garbage” persists, try turning off the power and then turning it back on. If that still does not solve the problem, call Moyer for service.

```
AxjriaDFJi35js:dE;fj
eãU3x6jzfv;jiAw3r51-
fji3j2+アシerf=3r5`;a
aαロララjta39451j:AK3eJ
```

### 8 “Garbage” Display

### *The measurement wheel is moving, but the counter stays at zero!*

First, try changing the “Sense” parameter in the “System” menu. The next time the measurement wheel moves, the counter should increase. If that does not work, try cycling the power. If that does not resolve the problem, or if the menu proves inaccessible, contact Moyer for assistance.

### *Numbers are flowing all over the place!*

Turn off the system, and then turn it back on while holding down the ‘4’ key on the keypad. Release the ‘4’ key when the main run screen appears. The System will completely reset, and will be in “Learn Mode.”

```
5inPPED <oooGOODooo>
Amount = 7.21in
Average =59232351.7
```

### 9 Trailing Numbers

### *I am having trouble with serial communication!*

Remember that Serial 1 is a “straight” connection, for use with PCs, whereas Serial 2 is a “crossover” connection, for use with the MERLIN GAGE. If necessary, use a “null-modem” adapter to convert from one type to the other. This can normally be obtained from an electronics supply catalog or retail outlet.

### *There are constant lines on the screen, or there are missing dots...*

It would appear that the display screen is worn or damaged. Please return the unit to Moyer Process & Control for service.

### *Do I have the latest software revision?*

When the feed monitor has been reset, the logo screen will be displayed. In the lower-right part of the screen, the latest software revision number is displayed. For example, “REV:0311” indicates that the software was last updated in November of 2003. Call Moyer Process & Control Co. to find out what the latest software revision is.

```
* MOYER Process & *
* Control Co, Inc. *
* Feed Monitor *
* (C)2003 REV:0311 *
```

### 10 Logo Screen

### **6.3 Calibration**

#### ***Frequency and Scope***

As the Wire Feed Monitor is generally used for slip detection, measurements are often considered relative in nature. The measurement you see assumes that you are using a 12.000" wheel (without wear) and that you do not have any squirm or slippage. When more precise measurements are required, or as part of an ongoing preventative maintenance program, you may want to implement a scheduled calibration. I would suggest every six to twelve months, or as needed.

#### ***Procedure 1***

Set the Scale value to 100.00%, coil 30 springs of known wire content, and compare known feed to displayed measured average feed. Calculate a new "Scale" value where  $\text{Scale} = (\text{actual feed}) / (\text{measured feed})$ . Coil another 30 springs to verify the accuracy.

#### ***Procedure 2***

Coil 30 springs of known wire content, and compare known feed to measured average feed as displayed. Calculate a new "Scale" value where  $\text{Scale} = (\text{Old Scale}) (\text{actual feed}) / (\text{measured feed})$ . Coil another 30 springs to verify the accuracy.

**WARNING!**

Beware of copy-“cat” gages.  
Only Moyer Gages  
Provide Moyer Quality!