



# **CABINET REEL OPERATING INSTRUCTIONS**

## **MODELS**

**15, 25, 40 & 60 SERIES**

## **REEL MANUAL INDEX**

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## **OPERATING INSTRUCTIONS FOR CABINET REEL SERIES 15, 25, 40, 60**

### **INSTALLATION**

1. The reel that you have just received is fully assembled and ready to be put into position. Due to shipment vibration, the reel should be checked to be sure that all screws and bolts are tight and that all electrical components are in place inside the cabinet; visually inspect the reel for damaged parts due to shipment. If the reel was damaged in shipment, contact the carrier first to report the damage and then your distributor.

2. Install the reel on a level surface with sufficient clearance for loading and unloading the coils.

### 3. Wiring

The series 15, 25, & 40 reel is completely self contained and needs only to be plugged into a 20 amp, 120 volt, 60 Hz outlet. If an extension cord is used as a source to the reel, it should be a minimum #12 gauge wire to keep the voltage loss down and for electrical safety reasons.

The series 60 reel or series 40 reel with a 3 hp motor, although completely wire, requires a 240 volt, 1 pH, 60 Hz input. Rapid Air has provided a point of connection in the form of a fused disconnect box for this purpose. Once the input wiring is complete, the reel should be ready to run electrically.

The following pages are intended to familiarize you with the reel no matter what the size. If, after reading the manual, you have questions on the operation on the reel, we would appreciate hearing from you.

## START UP PROCEDURE

Prior to applying power to the machine the operator should review all the controls on the machine. A brief summary of the controls is listed below.

### MAIN CONSOLE & CONTROLLER

The main control console & controls are mounted on the end of the cabinet. Located on the face of the console are eight switches, one potentiometer, push-button and 2 reset switches, which are explained below.

**1. DIRECTION CONTROL - (CW-CCW) - CAUTION: DO NOT REVERSE MOTOR WHEN THE REEL IS RUNNING!** - The direction control switch selects the direction the reel will turn, clockwise or counter clockwise. Once switched there is a time delay before resuming normal operation. This is a built in safety for the machine.

**2. % SPEED POT** - The % speed pot adjusts the maximum speed that the reel will rotate and should be set to maintain a constant feed rate.

**3. ON/OFF SWITCH** - This illuminated switch is the main power switch for the controller. It must be "ON" for the machine to function.

**4. PAYOUT/REWIND SWITCH** - The payout rewind switch selects whether the dancer arm will cause the reel to function at a low speed at the bottom of the arc and increase the reel speed as the arm raises. (Payout); or cause the reel to function at a low speed at the top of the arc and increase the reel speed as the arm lowers. (Rewinds)

**5. RUN/STOP/JOG SELECTOR SWITCH** - The switch selects between Run & Jog. If in Run and the control arm is moved the coil plate will turn. If in Jog, the Jog button has to be depressed for the coil plate to turn.

**6. JOG BUTTON** - Used for intermittent movement of the coil plate, mainly for set up, speed is adjusted on the 69100076 board by potentiometer R3 on the electrical control sub panel.

### **7. DANCER ARM LOOP HEIGHT & RANGE ADJUSTMENT -**

a. Loop Range - The loop range switch adjusts the amount of travel the dancer arm will move to provide the full range of speed of the pallet reel.

b. Loop Height - This switch is used for setting the start position of the control arm. The setting determines when the reel will start turning. Each position will move the operating angle of the arm so that top-to-bottom travel is adjusted to accommodate specific material and loop height requirements.

### **8. LOOP ARM LEFT/RIGHT SWITCH**

The loop arm left right switch selects the control which side of the reel the dancer arm is controlling from. If the switch is in the wrong position the reel will run continuously at full speed.

## **9. LOOP ARM/ARM EXTERNAL SWITCH**

This switch selects either dancer arm (internal ) or “D” connector (external) speed control functions.

## **10. RESET BUTTONS**

- a. 15 amp - This is the main circuit breaker for the reel.
- b. 3 amp - this is the circuit protection for the “D” connector. Any shorts or over loads would trip this breaker.

## **11. REMOTE INTERFACE PORT “D” CONNECTOR**

This connector is used to communicate with external loop control equipment.

**CAUTION:** Never plug any type of computer or non Rapid-Air equipment into this plug or severe damage will result. Always consult with the factory when installing new external controls for compatibility and wiring information.

## **ELECTRICAL COMPONENT DESCRIPTION**

69100034 board - proportional control board

69100076 board - component interface board

69100014 Motor control board (RAMM) - D.C. motor board

69100196 Motor control board (KBRG) - D.C. motor board

69100185 Motor control board (KBRG) - D.C. motor board 3 hp

## REEL SPECIFICATIONS AND MAINTENANCE

### REEL CAPACITY VALUES

| SERIES                 | 15       | 25          | 40           | 60           |
|------------------------|----------|-------------|--------------|--------------|
| COIL CAPACITY (LB.)    | 1500     | 2500        | 4000         | 6000         |
| RPM (STANDARD)         | 23       | 23          | 23           | 17           |
| STANDARD STOCK WIDTH   | 6 & 12"  | 6, 12 & 18" | 12, 18 & 24" | 12, 18 & 24" |
| COIL I.D.              | 14 - 22" | 16 - 24"    | 16 - 24"     | 18 - 25"     |
| MAX COIL O.D. STANDARD | 36"      | 36"         | 36"          | 48"          |
| OPTION                 | 48"      | 48"         | 48"          | 60"          |
| OPTION                 |          | 60"         | 60"          | 72"          |
| INPUT VOLTAGE (1 PH)   | 120VAC   | 120VAC      | 120VAC       | 240VAC       |
| MOTOR VOLTAGE          | 90VDC    | 90VDC       | 90VDC        | 180 VDC      |
| MOTOR SIZE             | 1/2 HP   | 1 HP        | 1 1/2 HP     | 2 HP         |
| LUBRICATION (GEAR BOX) | 32 OZ.   | 32 OZ.      | 32 OZ.       | 70 OZ.       |

### LUBRICATION

Type: Gear transmission oil - Use Mobil 600W cylinder oil or equivalent. Fill to the bottom edge of the oil fill hole. The capacity is listed above.

\*\* The oil should be changed every 1000 hours

## REEL DANCER ARM FUNCTIONS

All the reels manufactured by Rapid-Air have the capability of being run by proportional control {dancer arm} or non-contact loop control {electronic loop sensing}. We designed the electrical circuit so that a switch, mounted on the operator control panel, can be selected to designate internal or external control.

If the internal was selected and the reel was in the “payout” mode then the dancer arm would provide the means of controlling the speed of the reel. The higher the dancer arm was raised from the rest position, the faster the reel would rotate. When the loop, between the reel and the device it was feeding, reached the correct depth the reel would stop and wait until the arm was raised again. Reels, whether they are vertical or horizontal have one function and that is to unwind or rewind coils of material. The vertical reels, if they are correctly adjusted and maintained accomplish this task very well. Rapid Air has incorporated some adjustment means, that if set properly, can have the reel paying out continuously without starting and stopping.

There are two switches and a potentiometer that are associated with the dancer arm. One switch, labeled height, is used to control the distance that the dancer arm has to move before activating the reel. This function becomes valuable if the material is thick and will not let the dancer arm down to it's rest position. Moving the selector switch to the next height position will give the dancer arm more control because it will have to be raised higher to activate.

Second switch, labeled range, provides a means of adjusting the distance the dancer arm has to travel to achieve it's maximum speed potential. With this switch set to the lowest number the dancer arm has to travel very little to attain the maximum speed of the motor. If the switch is adjusted to the next highest number then the dancer arm will have to travel farther in it's arc to achieve the maximum speed of the motor, etc.

The two previous switches, although very important, will not completely remove the start-stop workings conditions of the reel. The third component which is very important is the percent speed potentiometer. This device limits the maximum speed that the reel can run regardless of the dancer arm position. The significance of this device becomes apparent if long feed lengths are run and the dancer arm is raised high enough to signal the reel to run at it's maximum speed and then drops because the loop is now sufficient. This causes the reel to work very hard for nothing. If by adjusting the percent speed potentiometer to 50% of the maximum speed of the reel and the material loop is sufficient to provide enough material for the next feed length and the reel does not stop trying to provide the material then the reel controls are set correctly. We want the reel to run as continuously as possible, without starting or stopping between feed

cycles. The percent speed potentiometer should have its final settings set when the coil is at its lowest point before running out of material. When a new coil is then put on the reel, the reel will run somewhat on and off until the coil becomes smaller. The reel speed will then even out until it is running continuously again. The previous example will work only if the same feed length and coil O.D. is repeated for the conditions that the reel was set up for. If a different coil O.D. or different feed length is used, then the previous settings may have to be altered.

The following diagrams provide a means of visually helping you understand how the dancer arm function affects the motor response. The diagram also exhibits how the reel performs on payout and rewind mode and orientation of the material so that it can be threaded under the dancer arm before going to its destination to be formed or cut.

## **DANCER ARM POSITION EXPLANATION**

The dancer arm was designed to operate from either side of the reel. The main reason for this was so the reel controls could be lined up on same as the press controls.

To switch the dancer arm to operate on the opposite side that it is currently located on, first remove the counterweight if equipped with one. Turn the locking knob to disengage the lock on the dancer arm hub. Remove the dancer arm and relocate it to the other side. Turn the hub 60 degrees and insert the dancer arm into the slot and set it to the desired position. Turn the locking knob until tight on the dancer arm, Replace the counterweight if so equipped. Switch the loop arm selector slide switch from left to right side or right to left side position as required. The dancer arm is now ready for production running.

## **TO LOAD OR UNLOAD A COIL**

The Rapid Air reel is manufactured using a three arm mandrel with manual expansion as standard for all models. This coupled with three inner keeper arms or one inner coil plate and three outer keeper arms complete the coil retaining capabilities. The mandrel adjustment is accomplished by turning a crank handle located on the outer end of the mandrel.

To load a coil, turn the crank handle in a counter-clockwise rotation until the mandrel is collapsed enough to accept the inner coil diameter. Position the material coil with the back of the coil in contact with the inner coil or keeper arms. While keeping the coil weight off of the mandrels, turn the mandrel crank adjust handle in a clockwise rotation until the mandrels have tension on the I.D. of the coil. Adjust the position of the coil and recheck the coil mandrel tension. Retighten if necessary. Place the three outer coil keepers on the mandrels and fasten them down using the automatic tightening handle to make sure that they are secure. Fold the crank handle back into itself for storage. The reel is now ready for production.

To unload a coil ring, remove the three outer coil keepers and then turn the crank handle in a counterclockwise rotation until the coil is released. Unload the coil. Reinsert the coil keepers on the mandrel and fold the crank handle back into itself for storage.

Once the coil has been loaded and secured and before breaking the band on the coil, the reel should be checked so that it will operate correctly.

Turn the main power switch and select the jog function. Push in the jog button and check that the reel is rotating in the direction that the material will be feeding. If using a dancer arm for reel speed control, then set the loop arm switch to internal control. Check that the dancer arm left/right switch is in the correct position. Put the run-stop-jog selector switch in the run position and slowly raise the dancer arm to see if it is controlling the reel speed and that it is not operating too fast from zero to maximum speed for the amount of dancer arm movement. If need to be, reset the height and range switch to get a smooth transition of motor speed to dancer arm movement.

Turn off the reel and cut the coil band. Turn on the reel and jog the reel until some material has payed out. Put the reel in the run mode and have the material payout under the dancer arm to the press feed or other feeding device. This completes your reel setup.

## **TROUBLE SHOOTING GUIDE**

### **MAIN SWITCH ON BUT NOT LIT**

1. CB tripped
  - a. Reset CB
2. Unit not plugged into main power
  - a. Plug into main power source
3. No power in incoming line.
  - a. Check outlet.
  - b. Check power cord.
4. Loose wiring
  - a. Check terminals and connections.

### **MOTOR CREEPS IN STOP POSITION**

1. R1 & R3 pot on 69100034 board not correctly adjusted.
  - a. Readjust pots so table stops. Call factory.
2. Dancer arm bent.
  - a. Readjust R1 & R3 on 61000033 board.
  - b. Straighten dancer arm.

### **UNIT TURNS ON BUT WON'T JOG**

1. Selector switch not in jog position.
  - a. Select jog.
2. Jog pot on 69100076 board not adjusted correctly.
  - a. Adjust pot on 69100075 board. Call Factory.
3. Maximum speed pot on Ramm board set too low.
  - a. Adjust pot.

### **UNIT ON BUT MOTOR WON'T RUN. (ARMATURE VOLTAGE PRESENT - ON RAMM BOARD)**

1. Check motor wiring and fuse.
  - a. Replace motor cord or correct motor wiring. Call Factory.
2. Check motor.
  - a. Worn brushes or motor defective. Call Factory.

### **UNIT ON BUT MOTOR WON'T RUN. (NO ARMATURE VOLTAGE ON RAMM BOARD)**

1. Selector switch not in run position.
  - a. Turn selector switch to run position.
2. If running with a dancer arm control.
  - a. Check that the external/loop arm switch is in the external position.
3. If running with external control.
  - a. Check that the external/loop arm switch is in the external position.
4. Height switch setting too high.
  - a. Set height setting to "O".
5. Percent speed pot set too low.
  - a. Adjust percent speed pot to 100%.

6. Fuses blown.
  - a. Check fuses & circuit breaker.
7. No AC voltage at DC drive board.
  - a. Check wiring.
8. Check signal voltage between P2 to I2 on DC drive.  
0-6 VDC - Ramm  
0-9 VDC - Regen Drive  
While moving the dancer arm.
  - a. If there is a signal, check continuity between I1 & I2  
If no continuity, replace D.C. drive or call factory.
9. Check line voltage input of 69100033 board, 120 VAC, TB-1.
  - a. Check wiring. Call factory.
10. Check pico fuse 6910033 board (f1).
  - a. Replace fuse, 1 amp pico fuse - call factory.
11. Check for 0-12 VDC between pin #1 (+V) and pin #2 (GND) of panduit connector TC3 on board #69100033.
  - a. If no voltage present call factory.
12. Check for DC voltage between pin #6 (V0) and pin #2 GND of panduit connector TC3, on board #69100033, while moving the dancer arm from minimum to maximum position.
  - a. If voltage is present, turn power off and check the ribbon cable connections between panduit connector #TC3 of 69100033 board and panduit connector TB-4 of 6910076 board. This should be a continuity check for tight connections. Call factory for assistance.
  - b. If voltage is not present move on to step 12.
13. Check voltage between pin #5 of B-6 & pin #3 of B-5 on 6910007 board while moving the dancer arm from minimum to maximum position.
  - a. If voltage varies 2.5- volt from minimum to maximum position, the dancer arm pot is OK, but the 69100076 board could be defective. Call factory.
  - b. If voltage does not vary when moving the dancer arm from minimum to maximum position - call the factory for assistance.

## 69100034 TAUT STOCK OUTPUT

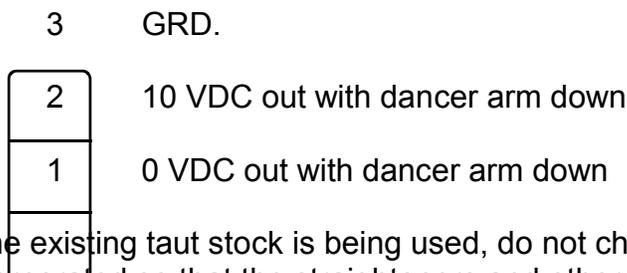
The 69100034 - proportional control board has a taut stock output. This output must be wired to a solid state relay as the Max current draw is 20 ma. The solid state relay's contact can then be incorporated into the electrical control circuitry.

The output can be wired so that the relay is either on or off with the dancer arm down. When the dancer arm reaches the set point for taut stock, the relay switches state.

The taut stock height set point is set by raising the dancer arm to a position that the material is taut and then adjusting pot R7 so the output changes state. Lower and raise the dancer arm a few times to check that the set point repeats and then the task is finished.

The potentiometer that is located just below the taut stock terminal strip is used for presetting the Max voltage output requirement for a particular drive. A Ramm DC drive board needs 6 VDC for Max motor speed so turn the pot fully counter—clockwise. A minarik drive board needs 10 VDC for Max motor speed so turn the pot fully clockwise.

The following is a brief wiring diagram for the taut stock.



If the existing taut stock is being used, do not change anything. This change was incorporated so that the straighteners and other equipment without the direction board have a taut stock option.