

# **TEKCAST INSTALLATION, OPERATION & MAINTENANCE MANUAL**

Spin-Caster Installation and Wiring Instructions.....	Section 1
Basic Maintenance Procedures and Instructions for Spin-Caster Equipment.....	Section 2
Vulcanizer Installation and Wiring Instructions.....	Section 3
Melting Furnace Installation and Wiring Instructions.....	Section 4
Spare Parts.....	Section 5



**TEKCAST INDUSTRIES RI**  
a division of  
**CONLEY CASTING SUPPLY CORP.**

# **TEKCAST INDUSTRIES, INC.**

124 Maple Street, Warwick, Rhode Island 02888 USA

401-785-9500 • 800-445-7900 • Fax 401-781-9420

E-Mail: Ron@tekcast.com

Internet: www.tekcast.com

## **TABLE OF CONTENTS**

### **SECTION 1**

#### **SPIN-CASTER INSTALLATION AND WIRING INSTRUCTIONS**

1. Casting Parameter Guidelines
2. Series 100-D Digital Tekcaster
  - A) Installation and Operating Instructions
  - B) Control Panel
  - C) Technical Bulletin
  - D) Series 100D Reference Wiring

### **SECTION 2**

#### **BASIC MAINTENANCE PROCEDURES AND INSTRUCTIONS FOR SPINCASTERS**

1. Adjusting the SCR Speed Control
2. Changing The Pulley Belt
3. Air Cylinder Alignment
4. Caster/Frame Locators
5. Interlock Door Lock Delay Relay For 24" and 30" Casters
6. DC -Motor- Dayton
7. Norgren V6-Valve
8. Air Filter
9. Air Regulator - Norgren

### **SECTION 3**

#### **VULCANIZER INSTALLATION AND WIRING INSTRUCTIONS**

1. TEK Vulcanizer Installation 12R20, 18R50 and 20R50
2. Hydraulic Axle Jack # 20 ton
3. Hydraulic Axle Jack # 50 ton

### **SECTION 4**

#### **MELTING FURNACE INSTALLATION AND WIRING INSTRUCTIONS**

1. Tekcast Model DT-3 Tempco Micro Processor
2. Tekcast Model DT-3 Illustration
3. Tekcast DT-3 Wiring
4. Series G92, G93 Basotrol Valve

### **SECTION 5**

#### **SPARE PARTS FOR SPIN-CASTERS**

Spare Parts- Listing and pictures

# **SECTION 1**

## **SPIN-CASTER INSTALLATION AND WIRING INSTRUCTIONS**

1. Casting Parameter Guidelines
2. Series 100-D Digital Tekcaster- Features
3. Installation and Operating Instructions
4. Control Panel for Series 100-D
5. Technical Bulletin on Series 100-D PCB
6. Series 100D Reference Wiring

**TEKCAST INDUSTRIES RI. a division of  
CONLEY CASTING SUPPLY CORP.**



# CASTING PARAMETER GUIDELINES

The following parameters are suggested starting settings to use when casting new molds. These settings may need to be adjusted according to individual mold requirements and casting results obtained.

## METAL

### RECOMMENDED STARTING PARAMETERS - ZINC AND TIN/LEAD

MOLD SIZE (In/mm)	TIME (Min/Sec)	PRESSURE (PSI)	SPEED (RPM)
9" (229)	:30	25	550
12" (305)	:40	35	475
15" (381)	:50	45	400
18" (457)	:50	50	375
20" (508)	1:00	55	325

## PLASTIC & WAX

### RECOMMENDED STARTING PARAMETERS - PLASTIC AND WAX

MOLD SIZE (In/mm)	TIME (Min/Sec)	PRESSURE (PSI)	SPEED (RPM)
9" (229)	10:00	20	600
12" (305)	10:00	30	500
15" (381)	10:00	40	475
18" (457)	10:00	45	450
20" (508)	10:00	50	400

## SAFETY REMINDER

SAFETY REMINDER: When operating your caster, Do Not Open Door Until Machine Stops Completely.

# CASTING PARAMETER GUIDELINES

The following parameters are suggested starting settings to use when casting new molds. These settings may need to be adjusted according to individual mold requirements and casting results obtained.

## METAL

### RECOMMENDED STARTING PARAMETERS - ZINC AND TIN/LEAD

MOLD SIZE (In/mm)	TIME (Min/Sec)	PRESSURE (PSI)	SPEED (RPM)
9" (229)	:30	25	550
12" (305)	:40	35	475
15" (381)	:50	45	400
18" (457)	:50	50	375
20" (508)	1:00	55	325

## PLASTIC & WAX

### RECOMMENDED STARTING PARAMETERS - PLASTIC AND WAX

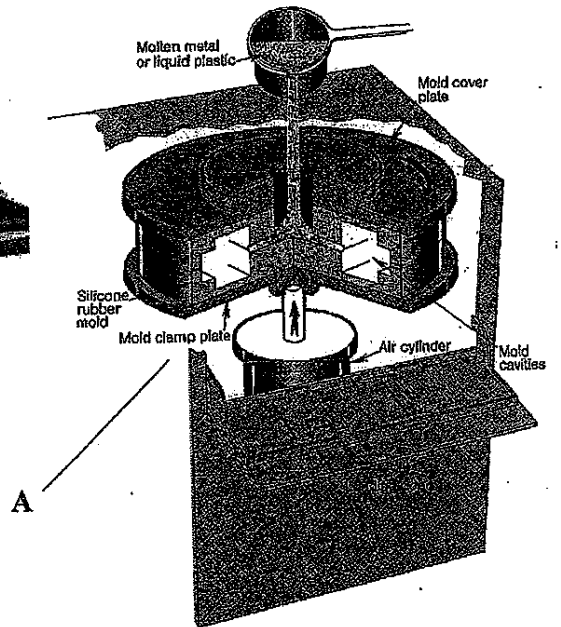
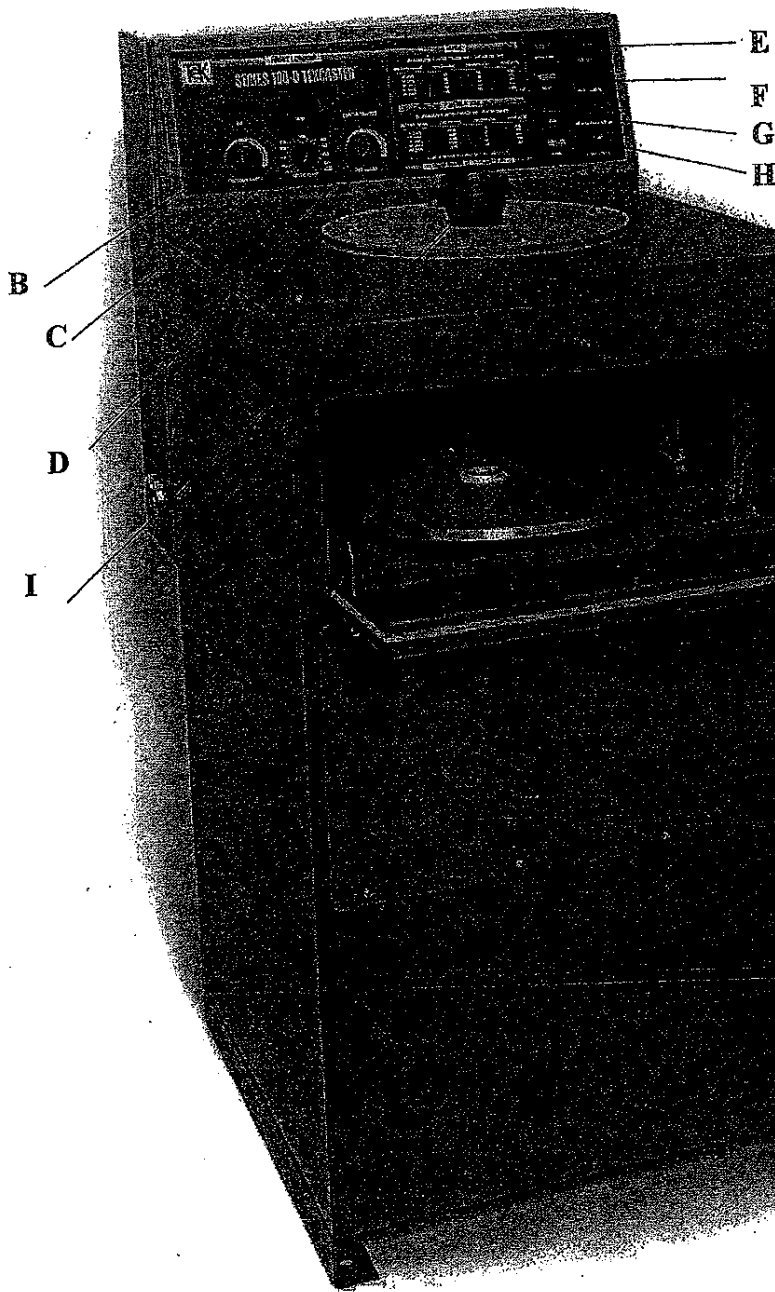
MOLD SIZE (In/mm)	TIME (Min/Sec)	PRESSURE (PSI)	SPEED (RPM)
9" (229)	10:00	20	600
12" (305)	10:00	30	500
15" (381)	10:00	40	475
18" (457)	10:00	45	450
20" (508)	10:00	50	400

## SAFETY REMINDER

SAFETY REMINDER: When operating your caster, Do Not Open Door Until Machine Stops Completely.

TEKCAST AUTOMATIC  
CENTRIFUGAL AIR CASTER

SERIES 100-D (DIGITAL) TEKCASTER



**STANDARD UNIT  
EQUIPMENT FEATURES**

- A — Patented Air Clamping System
- B — Pressure Adjust (PSI)
- C — Speed Adjust (RPM)
- D — Time Adjust (Minutes)

- E — On & Off Switch
- F — Auto/Manual
- G — Spin Direction
- H — Start/Pause Button
- I — Silicone Pouring Funnel

## OPERATION OF SERIES 100-D DIGITAL TEKCASTER INSTALLATION AND OPERATING INSTRUCTIONS

### MACHINE INSTALLATION:

Remove all packing materials and tape from machine, make sure to remove tape and cardboard from lower clamp plate.

1. The Series 100-D DIGITAL TEKCASTER is a stand alone design. No table is required. However, bolt holes have been provided on the base of your machine. We strongly recommend that your machine be secured to the floor by lag bolts. The use of adjustable lag bolts will help to level your TEKCASTER if it is required.
2. Connect machine to shop compressed air source (100 psi maximum) and to correct primary power supply voltage.

### OPERATING PRECAUTIONS:

Do NOT open "front loading" mold door until rotation has stopped completely.

Do NOT move spin direction switch while motor is running.

Do NOT operate machine with any access panel removed.

Do NOT activate clamp without mold inserted.

ALWAYS wear safety glasses or a face shield and protective casting gloves when working with, or in proximity to, this machine.

The use of properly grounded electrical outlet is required.

ALWAYS disconnect electrical power by unplugging the machine and remove air supply before performing maintenance on this machine.

Follow all recommended operating and maintenance procedures. Keep interior of machine free of flash build-up.

Shut machine off with door open at end of shift.

### CENTER LOCATING DEVICE:

This machine is equipped with a unique device called a center locator on the TEKCASTER'S mold clamp plate. This corresponds with the permanent center locator depression created when vulcanizing molds in TEKCAST's specially designed vulcanizing frames. TEKCAST vulcanizing frames are factory equipped with a center locating device that corresponds with the center locator installed on your mold clamp plate. No special adjustments are required when changing mold sizes. TEKCAST'S center locating device will accurately center and balance all size molds without individual adjustments being required. Center Locaters can easily be retrofitted on older machine models and vulcanizer frames.

### Features: 100-D DIGITAL TEKCASTER

1. This machine is equipped with a "state of the art" Micro Processor Controlled Printed Circuit Board, mounted to a custom overlay control panel.
2. Digital readouts of Time (min/sec), Pressure (PSI), and Speed (RPM).
3. The machine is equipped with combination switches for:  
AUTOMATIC/MANUAL mode  
START/PAUSE mode

4. AUDIBLE SIGNALS for:

- a. Machine on
- b. Pour Time
- c. Cycle end

5. The 100-D Digital Tekcaster has system running lights for:

- a. Power
- b. Ready
- c. Run
- d. Pour.

6. A "Tek Easy Start Reference Chart" has been provided on the front control panel of the TEKCASTER. The chart provides recommended starting parameters to use for :

7. Speed (RPM)

8. Time (Minutes/Seconds)

9. Pressure (PSI)

10. Select according to mold size and materials being cast. The operator can then adjust the settings to fine tune the mold's casting performance.

**MACHINE OPERATION OF SERIES 100-D:**

1. Front Loading Mold Door must be in open position before turning power on. Turn power switch on. The SYSTEM ON light will come on, and the digital readout of time, pressure, and speed will also come on. The machine will beep once and the digitals will reset to the last setting used prior to turning the caster off.

If required, reset: Time (time adjust),  
Pressure (pressure adjust),  
RPM (speed adjust),

**NOTE:** To turn power on with door in closed position you **MUST HAVE A MOLD LOADED IN THE MACHINE!** If a mold is not in place inside the machine and door is in a closed position when power is first turned on, damage may occur to your head and bottom plate!

Use the appropriate settings for the mold being cast. (Refer to the chart on the FRONT PANEL OVERLAY for recommended starting parameters)

2. Select AUTOMATIC OR MANUAL mode - Using the rocker switch just below the ON/OFF switch. In AUTOMATIC mode, the casting machine cycle will start automatically when the door is closed. The operator simply closes the casting machine door; the machine will start spinning automatically after a brief pause which allows the clamp plate to come up. IN MANUAL MODE, the operator will have to press the start button in order for the casting machine to start the spin cycle. The use of protective casting gloves is strongly recommended.

3. LOAD MOLD - Slide mold onto clamp plate so it locks onto the center locator.

4. TO START CYCLE - The mold door is then closed. The "READY" LIGHT will come on showing you are ready for casting.

Press START button - to activate spin cycle. (When operating your machine in the automatic mode you do not press the start button).

The "RUN" LIGHT will come on when cycle is activated. Once the caster has been started the automatic safety door lock is activated and the front door can not be opened until the spin cycle has completed.



**PAUSE FUNCTION** - If at anytime you have to stop the cycle, simply press the **START/PAUSE** button. If the caster door has been opened during the **PAUSE**, the timer resets and a new cycle will start. If the door has not been opened during the **PAUSE**, the caster will continue the cycle countdown from where the caster was **PAUSED**.

**POUR FUNCTION** - Once the caster has reached its proper set spin speed, you will hear two audible " **BEEPS**". and the "**POUR**" **LIGHT** will come on indicating also that the set speed has been reached and you are ready to pour your metal, or plastic or wax.

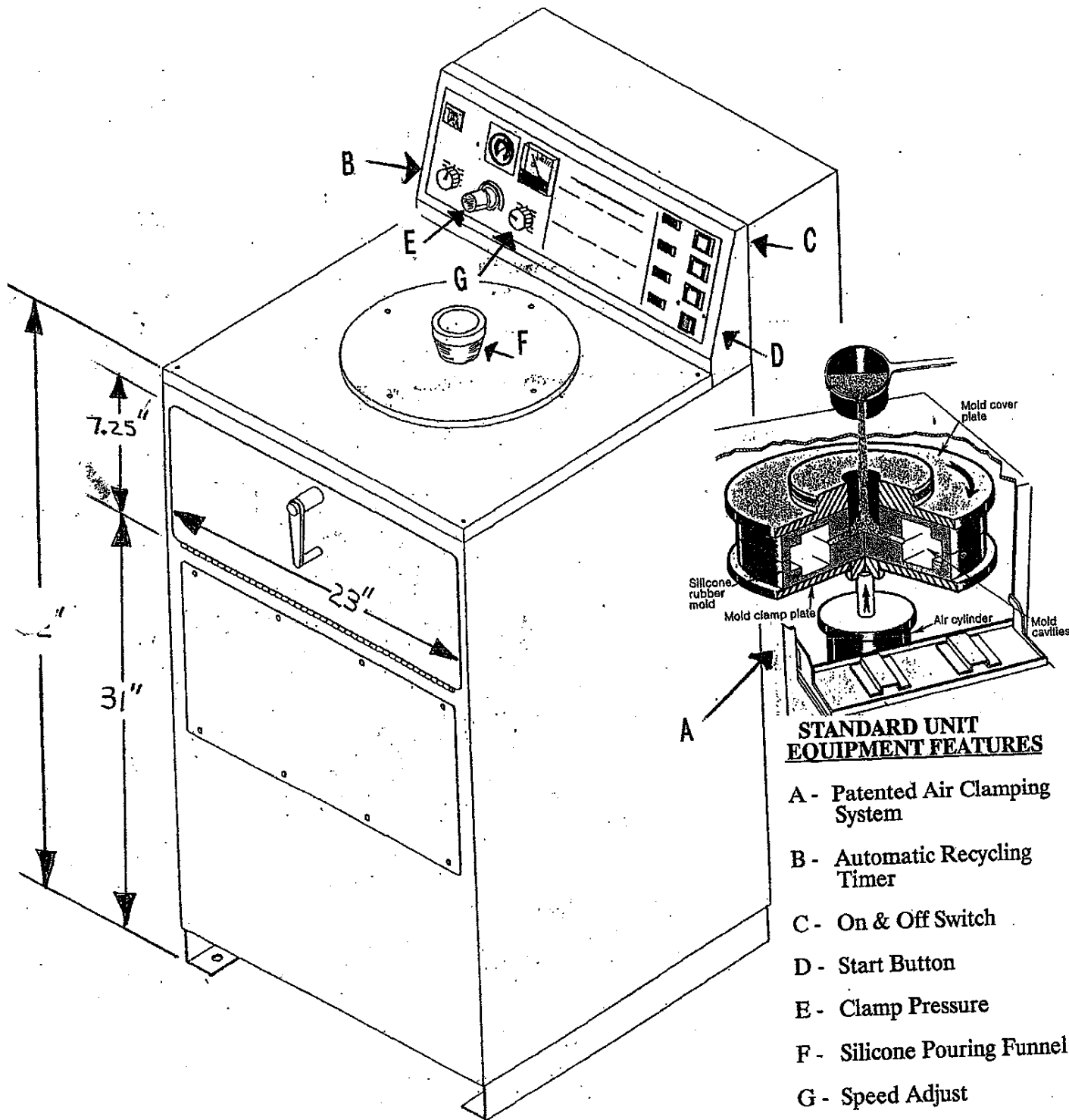
**5. TIMED CYCLE COMPLETED** - At the end of the time cycle the caster will **DYNAMICALLY BRAKE** to a complete stop. You will then hear three (3) audible beeps indicating that the spin cycle has been completed. The "**RUN**" **LIGHT** will go off and the safety door lock will release.

When the rotation has stopped, open the mold door. The "**READY**" light will go off, and the mold will drop down from the clamped position. Lift up the mold slightly and pull it out from caster.

**Mold Rotation** - May be reversed by means of the "**SPIN DIRECTION**" switch located on the front of the control panel.

**NOTE: DO NOT** reverse rotation while motor is running, motor damage will result!  
**TO INTERRUPT SPIN CYCLE:** The cycle "**START/PAUSE**" switch when pushed will shut off the motor, begin the dynamic braking and reset the timer when the door is opened. The mold will remain clamped until the mold access door is opened. Do not attempt to stop the casting cycle by opening mold door!





**FIGURE NO. 3**  
**TEKCAST AUTOMATIC CENTRIFUGAL AIR CASTER**  
**SERIES 100 D-TEKCASTER**

## SERIES 100-D DIGITAL TEKCASTER

**Date:** March 28, 1995  
**To:** All customers with a Series 100-D TEKCASTER  
**From:** John Knight, Production Manager  
**Re:** Replacement/Calibration - Series 100-D Printed Circuit Board

*Removing the Printed Circuit Board from Series 100-D TEKCASTER. (Printed Circuit Board will be referred to as the PCB in the following instructions.)*

1. Disconnect power and air supply to the TEKCASTER.
2. Locate the timer on the front control panel. Carefully unscrew the set screw on the side of the knob and then pull off the knob. Then completely unscrew the timers mounting nut that is under the knob. This must be done properly first in order to avoid any damage to the PCB.
3. Remove the back cover on the TEKCASTER.
4. Locate and remove the small diameter air hose attached to the top inlet of the pressure transducer on the upper left side of the PCB. This hose is a push-on fitted hose and can be removed by holding the pressure transducer with one hand and pulling evenly with the other hand. (Refer to Figure 1)
5. Remove all the numbered wire leads from the PCB. Please be careful to remove wires by pulling straight out holding onto the insulated spade. Do not pull on the wires themselves, this may cause the wire to come out of its crimped connection. A good pair of insulated needle nose pliers is the best tool for the removal of the wires from the PCB.
6. Locate and remove the six nuts and lock washers that secure the PCB to the mounting panel. These nuts and washers are located on each corner.
7. Carefully remove the PCB. Be sure that none of the teflon standoffs fall off the mounting studs while removing the PCB. The PCB should be pulled straight out. If for any reason there is resistance in the removal of the PCB, check to make sure all the nuts and washers have been removed, and that the timer nut on the front panel is removed. (DO NOT FORCE THE REMOVAL OF THE PCB.)

You are now ready to install the new PCB.

# INSTALLATION OF THE NEW PCB

1. Make sure that the teflon standoffs are still in place on the six mounting studs located on the back of the PCB.
2. Remove the timer nut from the new PCB. Carefully place the PCB over the six studs and secure with nuts and lock washers. Be careful not to over tighten the nuts.
3. Connect the numbered wires to their corresponding spade terminals on the PCB as shown in figure 1 (attached diagram). Make sure that the wire number is attached to the proper spade terminal number. Recheck this procedure to be sure that it is correct.
4. Install the small diameter air hose onto the top inlet of the pressure transducer. Simply push the air hose on until it seats up against the end of the inlet. No adhesive is required.
5. Install the timer nut and knob onto the timer stem located on the front panel.

You are now ready to calibrate the speed readout of the PCB.

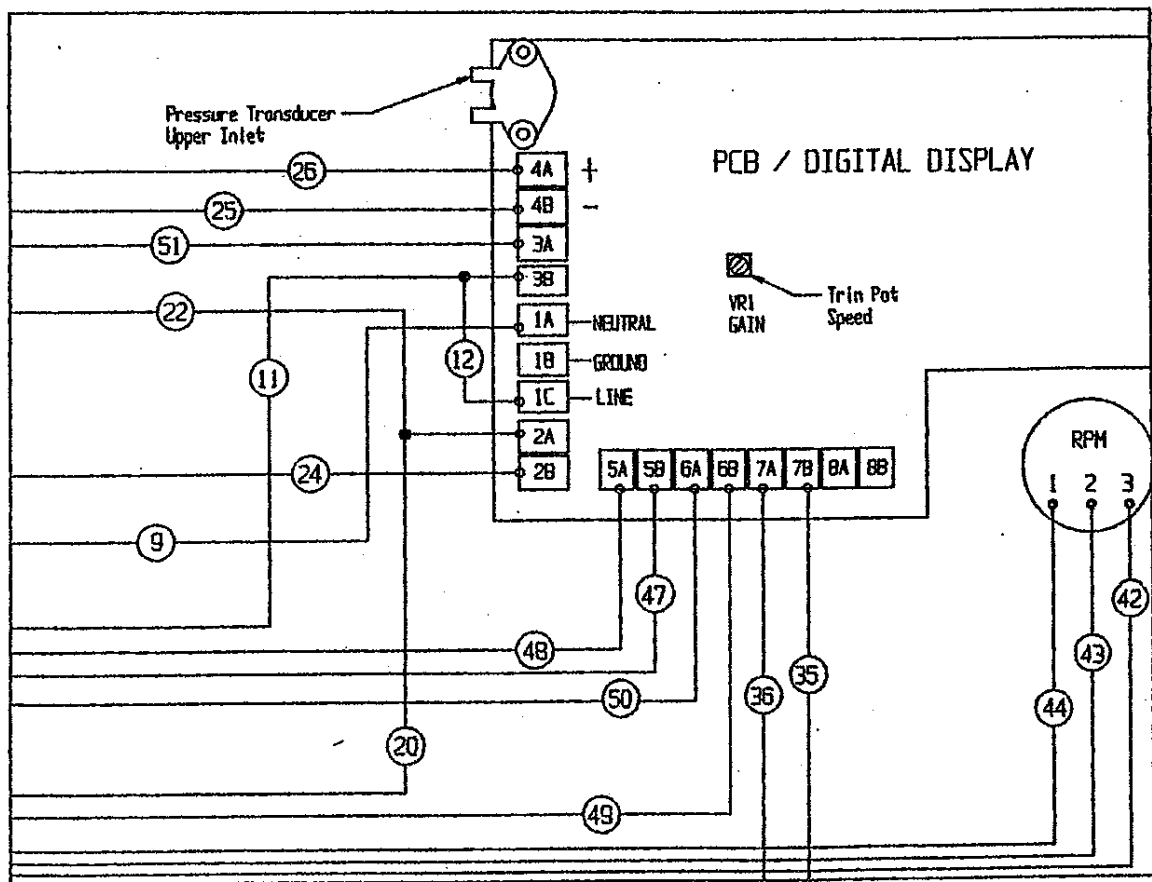
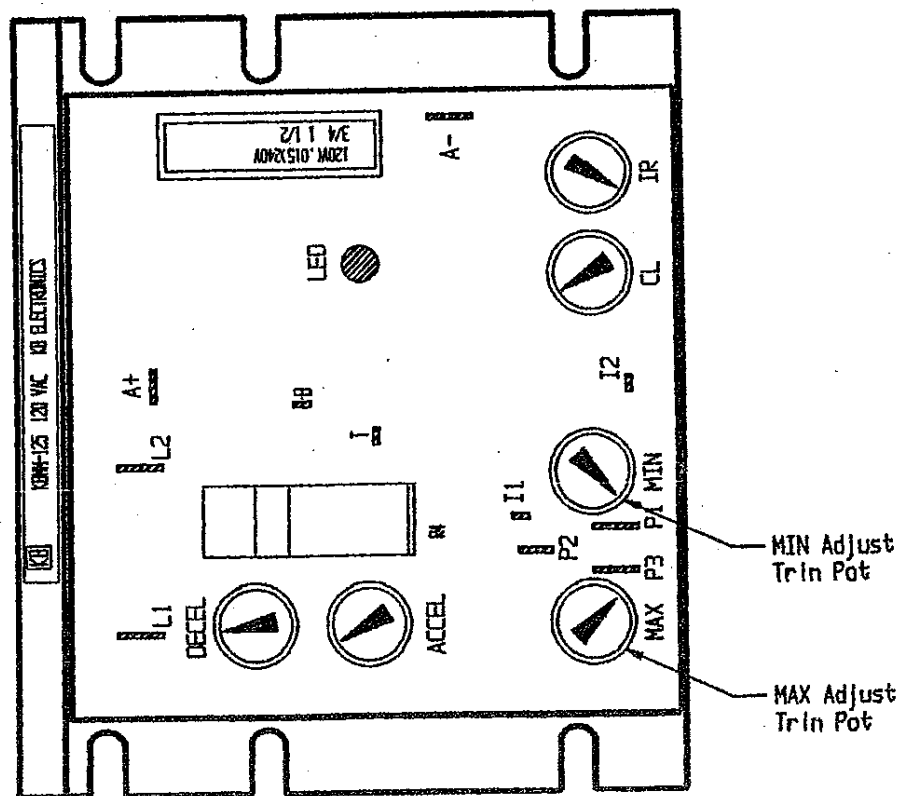


Figure 1



## CALIBRATING THE PCB FOR SPEED

1. Resupply power and air to the TEKCASTER.
2. Attach a volt meter to the two wire leads of the DC 90 volt motor. This can be done by inserting the leads right into the wire nuts that come directly out of the bottom of the motor. Make sure that you have a good connection.
3. Set the volt meter on the DC 200 scale.
4. Turn the speed control knob counter clockwise until it stops. Loosen the small Allen Nut on the side of the speed control knob and turn until the pointer of the knob is lined up at exactly "0" and retighten the Allen Nut. Check to make sure that the speed control knob goes from 0 to 1000 RPM. Readjust if needed.
5. Place a mold in the caster and set the speed control knob to approximately 500 RPM on the speed dial. Set the pressure at approximately 40 PSI. Set timer cycle to approximately 10 minutes. Close the caster door and start spin cycle.
6. Turn the pointer on the speed knob to 900 RPM on the dial scale. Do not pay any attention to what the digital readout is, for this will be your last adjustment made in the calibration. Now go to the rear of the unit, since you will start to adjust the SCR DC motor controller (red colored—4" x 4") which is located on the component panel on the left inside panel of the control body. (Refer to figure 2 for the location of the MAX and MIN trim pots.)
7. With a small plastic screw driver, adjust the MAX trim pot on the SCR DC motor controller (See figure 2) so that the volt meter reads exactly 90 volts.



**Figure 2**

SCR DC Motor Controller. Located on the inside left control panel of the Series 100-D TEKCASTER. Shown in actual mounted position.

## CALIBRATING THE PCB FOR SPEED cont...

8. Now go back to the front of the unit and turn the speed knob on the front panel so the pointer is at 200 RPM.
9. Return to the rear of the unit and adjust the MIN trim pot on the SCR DC motor controller so it reads exactly 20 volts on the voltmeter.
10. For finer adjustments, repeat steps 7 through 9 until no further adjustment is needed, going from 900 RPM to 200 RPM on the volt meter as well as the dial scale on the front panel. Adjusting the MAX and MIN trim pots of the SCR DC motor controller is actually setting the offset and gain of the speed. Usually two to three settings will accomplish a linear reading on the voltmeter.
11. Final step! Set the speed knob back to 900 RPM. Now go back to the PCB and with a small plastic screw driver, adjust the trim pot labeled VR1 gain until the RPM readout is 900. This trim pot is located on the middle left side of the PCB. (Refer to Figure 1)

*NOTE: The last page of this bulletin is a wiring reference of the Series 100-D TEKCASTER. This wiring reference should be put into your owner's manual for future reference.*

**CAUTION: ABSOLUTELY DO NOT TOUCH TRIM POTS LABELED VR2 AND VR3. THESE ARE FACTORY SET, AND DO NOT NEED ANY ADJUSTMENT. TAMPERING WITH THESE CAN VOID THE WARRANTY OF THE PCB UNIT.**

12. This completes the calibration. Install back control body cover and resume casting.

If for any reason you have difficulty in the removal and or the calibration of the PCB, please contact our production department for assistance.

## **SECTION 2**

### **BASIC MAINTENANCE PROCEDURES AND INSTRUCTIONS FOR SPIN-CASTER**

1. Adjusting the SCR Speed Control
2. Changing The Pulley Belt
3. Air Cylinder Alignment
4. Caster/Frame Locators
5. Interlock Door Lock Delay Relay 24" and 30"  
Casters
6. DC -Motor- Dayton
7. V6-Valve - Norgren
8. Air Filter
9. Air Regulator - Norgren

**TEKCAST INDUSTRIES RI. a division of  
CONLEY CASTING SUPPLY CORP.**



## DIRECTIONS FOR VERIFICATION AND RESET OF SPEED

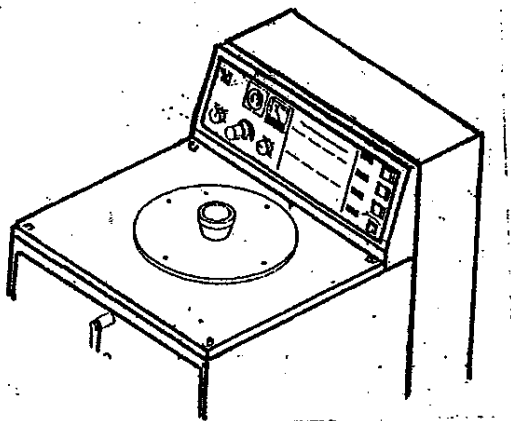
Each Spin-Caster is factory set and adjusted for the proper voltage and speeds. However, adjustments may be required due to changes from country to country in the voltage and frequency where the machines are installed.

Different steps will be listed to verify if the speed is set correctly, and how to reset it if it is not.

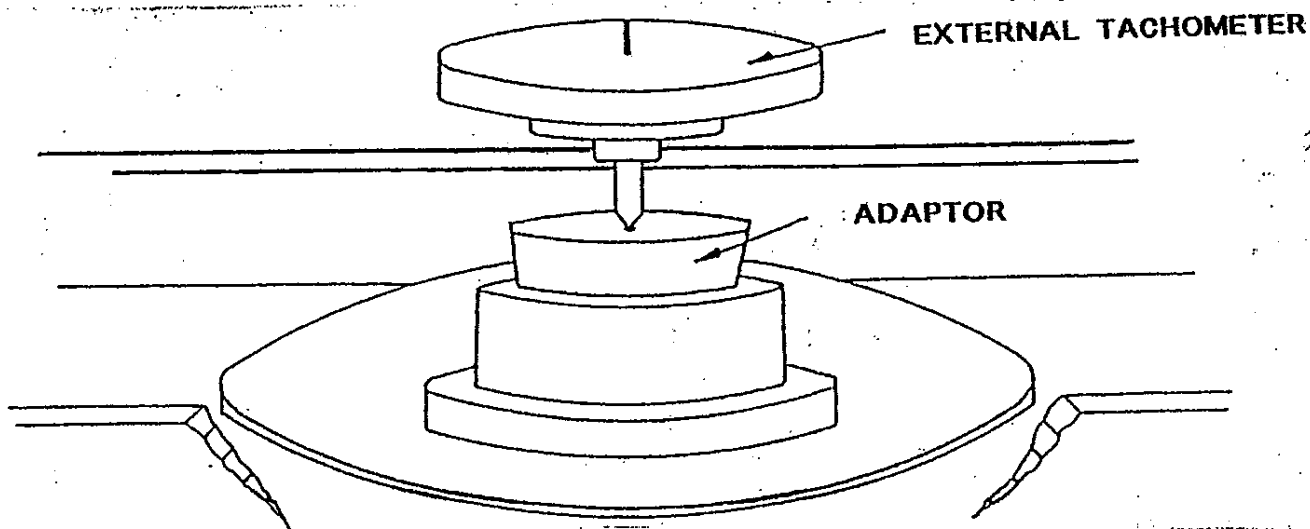
As a main tool of verification, we will use an EXTERNAL tachometer which will show us the error, either in the speed adjustment (RPM adjustment), or in the incorporated INTERNAL tachometer or both.

### STEPS

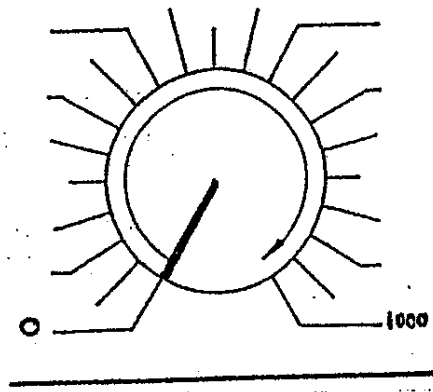
1. With the machine shut off, unscrew the 4 corner screws and lift off the top panel cover of your TEKCASTER.



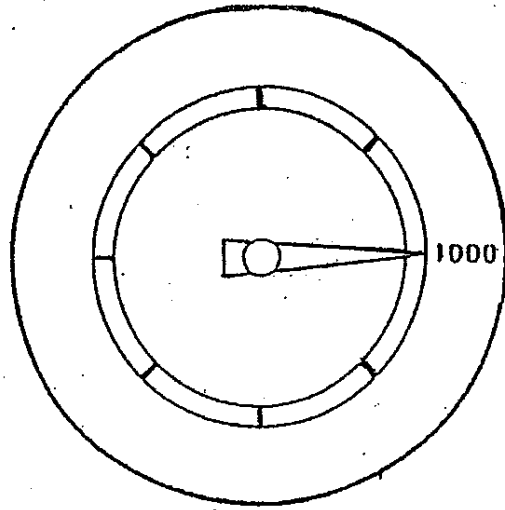
2. A hand held tachometer will be needed to verify the speed of the TEKCASTER. A small cone shaped adapter will also be required to locate the hand held EXTERNAL tachometer at exact center of the sprue opening on the head hub. This adapter can be made from an old mold or from any other type of hard material (see instructions). Make a small cut in the exact center of the adapter to assist in locating the tachometer properly. Place the adapter in the top of the sprue opening on the head hub. The hand held tachometer can now be placed in the center of the adapter, perpendicular to your machine.



3. With the RPM speed adjust dial pointing at zero (0) on your machine, turn on the machine and gradually rotate speed adjust dial of the casters INTERNAL tachometer up to 1000 RPM. Verify if the EXTERNAL tachometer also measures 1000 RPM.



**SPEED ADJUST**

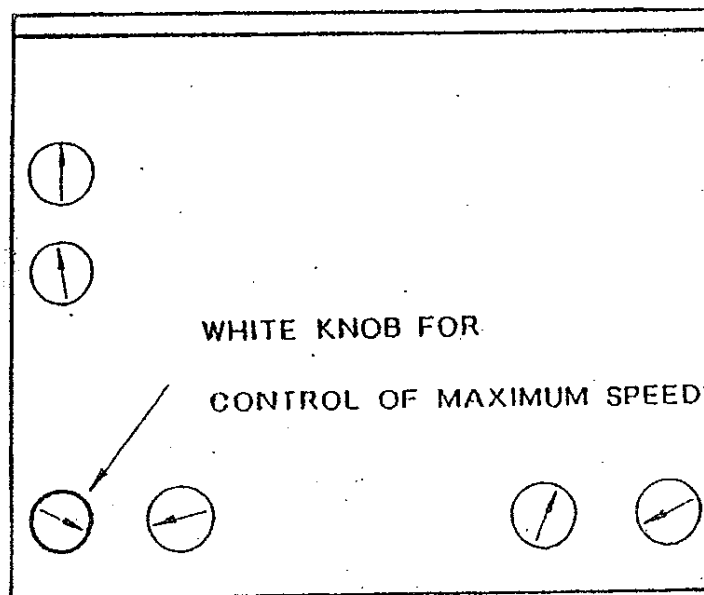


**EXTERNAL TACHOMETER**

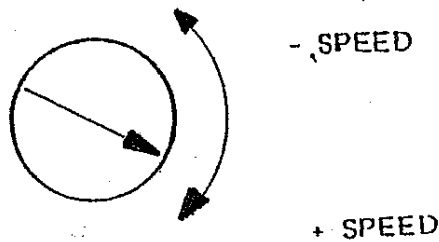
If BOTH tachometers read 1000 RPM (+ or - 10 RPM), then the maximum speed is within correct range; continue to Step #4

IF THE TWO TACHOMETER READINGS DO NOT MATCH (both should point to 1000 RPM), the following steps should be taken to correct this:

- Gradually turn down the speed and shut off the machine.
- Take off the rear control housing cover from the back of the machine and identify the little white knob on the SCR for the maximum speed control.



- c) With a little screw driver, carefully turn the white knob, clockwise if the speed shown in the EXTERNAL tachometer is lower than 1000 RPM, or counter-clockwise if the speed needs to be reduced.

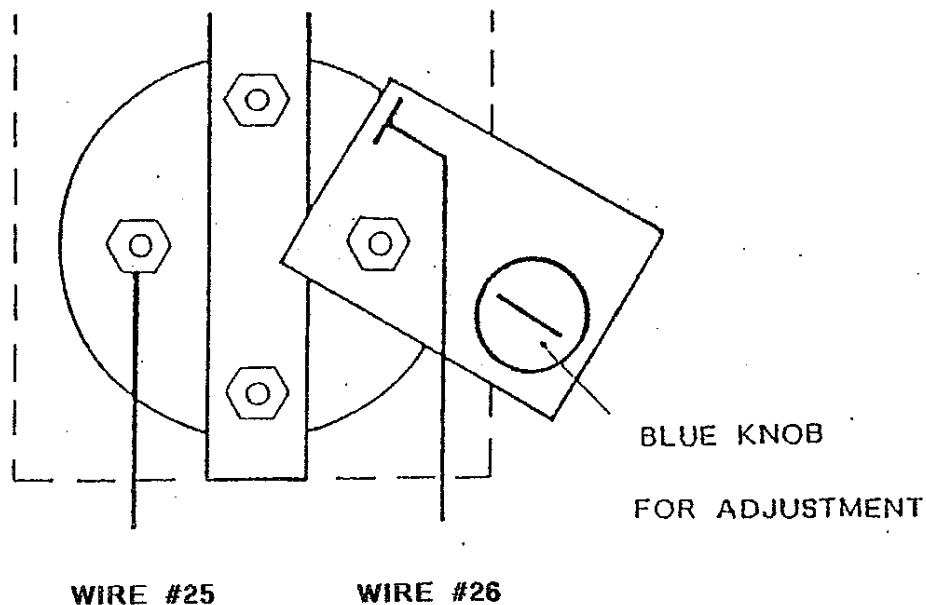


- d) Switch on the machine and turn the RPM adjustment all the way up to 1000 RPM, then verify if the EXTERNAL tachometer also reads 1000 RPM. If not, just repeat the Steps 3 (a), (c) and (d) until you get the right measure.
- 4) With the machine on, turn the RPM adjustment dial until the EXTERNAL tachometer points at 500 RPM, then verify if the RPM adjustment and the INTERNAL tachometer reading coincide with this setting.

If the three devices all measure 500 RPM, the speed setting is correct.

If there is a discrepancy in your readings - either in the RPM adjustment and the INTERNAL tachometer, follow these directions: (Remember, the EXTERNAL tachometer is the main guide, while the RPM adjustment with INTERNAL tachometer are the components to be reset.)

- 5) For the INTERNAL tachometer: this one has a blue knob in the back which is carefully moved with a screw driver with the machine spinning. Make sure the EXTERNAL tachometer points at 500 RPM, then turn the blue knob (carefully to avoid electric shocks) until the INTERNAL tachometer points also at 500 RPM.



# KBIC 240DS

## 120 VAC KB ELECTRONICS

- A. ACCELERATION START -- The ACCEL is factory set at approx. 2 seconds. To readjust to different times, set the knob to the desired position as indicated in Fig. 4.
- B. DECELERATION -- The DECEL is factory set to provide a ramp-down time of 2 seconds. To change the ramp-down time adjust the DECEL trimpot as indicated in Fig. 4.
- C. MINIMUM SPEED ADJUSTMENT -- If a higher than zero minimum speed is desired, readjust the minimum speed by turning the speed control knob to zero setting (full CCW position). Then adjust the Min. Speed Trimptot to the desired setting.

**NOTE: THE MIN. SPEED ADJUSTMENT WILL AFFECT THE MAX. SPEED SETTING. THEREFORE, IT IS NECESSARY TO READJUST THE MAX. SPEED AFTER THE MIN. SPEED.**

- D. MAXIMUM SPEED ADJUSTMENT -- Turn Speed Control Knob to full Speed (maximum CW position). Adjust max. speed trimptot to new desired setting.

**NOTE: DO NOT ATTEMPT TO ADJUST THE MAX. SPEED ABOVE THE RATED MOTOR RPM SINCE UNSTABLE MOTOR OPERATION MAY OCCUR. FOR MODERATE CHANGES IN THE MAX. SPEED THERE WILL BE A SLIGHT EFFECT ON THE MIN. SPEED SETTING.**

- E. CURRENT LIMIT (CL/TORQUE ADJUSTMENT) -- CL circuitry is provided to protect the motor and control against overloads. The CL also limits the Inrush current to a safe level during startup. The CL is factory set to approximately 1.5 times the full load rating of the motor. (CL trimptot is nominally set to approx. 65% of full CW rotation.)

To set the CL to factory specifications adjust as follows:

1. Set speed control knob at approximately 30-50% CW rotation. Set CL trimptot to full CW position.
2. Connect a DC ammeter in series with the armature lead.
3. Lock shaft of motor (be sure CL pot is in full CCW position). Apply power and rotate CL pot CW slowly until DC ammeter reads 1.5 times motor rating (do not exceed 2 times motor rating, Max. CW position)

**NOTE: IF ONLY AN AC AMMETER IS AVAILABLE, IT CAN BE INSTALLED IN SERIES WITH AC INPUT LINE. FOLLOW ABOVE INSTRUCTIONS; HOWEVER, SET AC AMPERAGE AT .75 TIMES MOTOR RATING.**

- F. IR COMPENSATION ADJUSTMENT -- IR compensation is provided to substantially improve load regulation. If the load presented to the motor does not vary substantially, the IR adjustment may be set at a minimum level (approximately ~ of full setting). The control is factory adjusted to approximately 3% regulation. If superior performance is desired (less than 1% speed change of base speed from 0 to full load), then the IR comp. should be adjusted as follows:

**NOTES: 1. EXCESSIVE IR COMP. WILL CAUSE CONTROL TO BECOME UNSTABLE, WHICH CAUSES MOTOR COGGING.**  
**2. FOR TACH FEEDBACK APPLICATIONS THE IR COMP CAN BE SET TO A MINIMUM ROTATION (FULL CCW)**

1. Set IR comp. trimptot at approximately 25% of CW rotation. Run motor unloaded at approximately 1/3 speed and record RPM.
2. Run motor with maximum load and adjust IR comp. trimptot so that the motor speed under load equals the unloaded speed per STEP 1.

TECH:KBMM-125



3. Remove load and recheck unloaded RPM. If unloaded RPM has shifted, repeat procedure for more exact regulation. The KBMM is now compensated to provide minimal speed change under large variations of applied load.

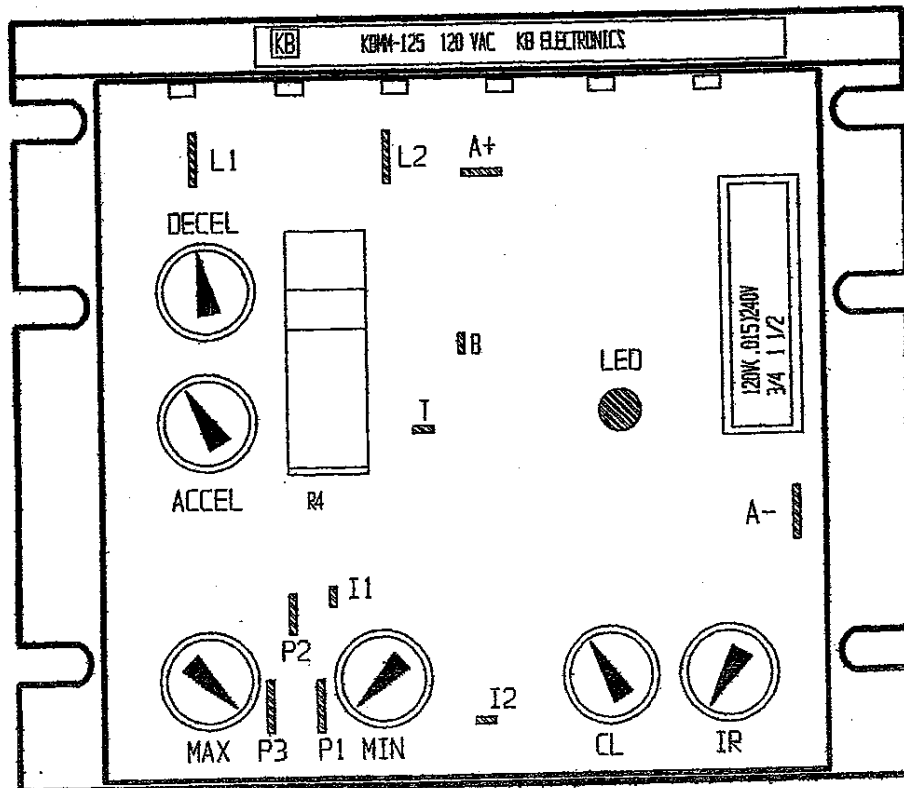
G. **AC LINE SWITCHING** -- The KBMM (TM) can be turned "on" and "off" using the AC Line. Auto Inhibit(R) circuitry contained in the KBMM (TM) automatically resets critical components each time the AC line is interrupted. This, along with Acceleration Start and CL, provides a smooth start each time the AC line is connected.

**WARNING: DO NOT DISCONNECT AND RECONNECT THE ARMATURE WITH THE AC LINE APPLIED OR CATASTROPHIC FAILURE WILL RESULT. SEE ARMATURE SWITCHING.**

H. **INHIBIT (TM) AND ARMATURE SWITCHING** -- If the armature is to be disconnected and reconnected with AC power applied the Inhibit Circuit (TM) must be simultaneously activated and deactivated. Connect I1 and I2 together to activated the control output will be electronically extinguished which eliminates arching. See Fig. (5) for Dynamic brake circuit.

**NOTE: INHIBIT IS NOT TO BE USED AS A FAILSAFE OR SAFELY SWITCH.**

I. **REVERSING AND DYNAMIC BRAKE** -- KB has developed the APRM (R) \*which provides anti-plug "instant" reversing and solid state dynamic braking. The APRM (R) is built in as standard in all KBCC-R suffix models and in all KBPB (TM) models. \*Patented



TECH:KBMM-125

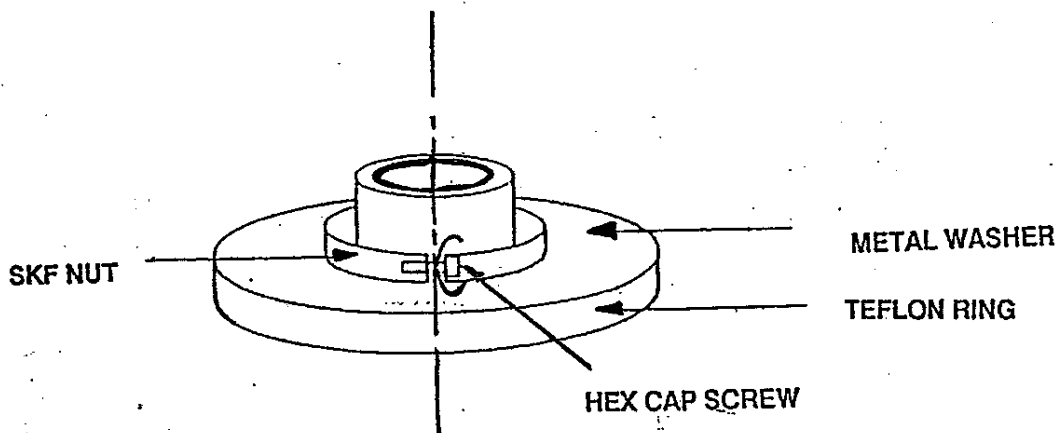
## HOW TO CHANGE THE BELT

**IMPORTANT NOTE:** Before changing the belt it is important to describe and understand what is meant by the term "clearance".

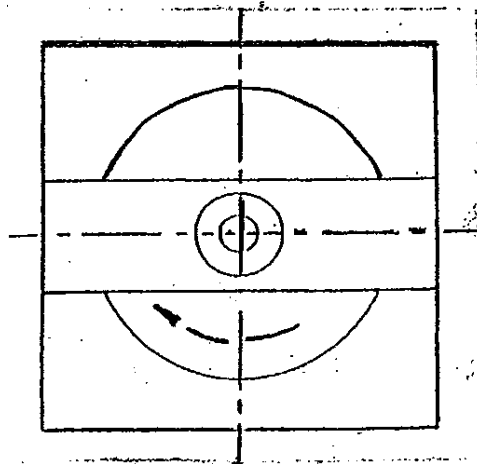
**CLEARANCE:** Is the space between the white teflon ring and the metal washer welded to the SKF nut (which holds the head)? The purpose of the clearance is to let the head spin freely and frictionless with the teflon ring. Proper assembly allows approximately 1/16" clearance between the teflon ring and metal washer. You can readily see this clearance, once the top cover of the spin-caster is opened, by turning on the machine and activating the micro-switch located next to the door causing the bottom plate to be brought up.

### STEPS:

- 1) Make sure that the Spin-Caster has been turned off, open up the top cover and take off the back panel.
- 2) Loosen the hex cap screw in the SKF nut.



- 3) Loosen the head. You will need a second person to hold the head to prevent it from dropping.



- 4) It is easy now to take off the old belt, but be careful when you pull it through the silicone flashguard to avoid tearing or displacing it.
- 5) Pass the new belt through the flashguard to position in place before tightening the head.

TECH:BELT-CHA

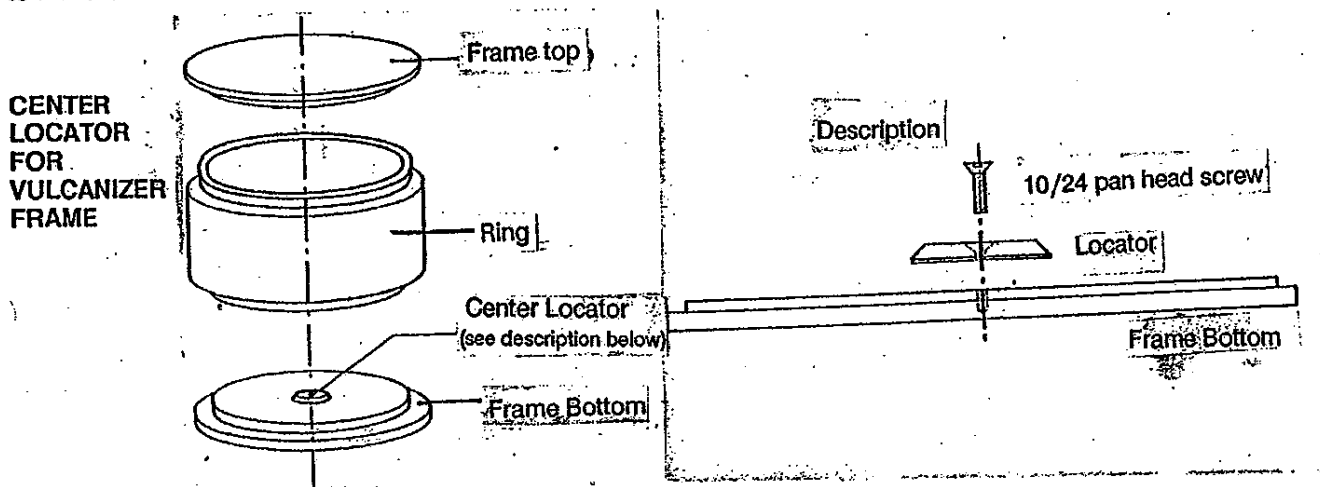
-1-

## TEKCAST NEW EQUIPMENT ADDITION SPIN-CASTER AND VULCANIZING FRAME CENTER LOCATORS

The TEKCAST Spin-Casters and vulcanizing frames are now both equipped (at no extra charge) with a unique device called a "center locator".

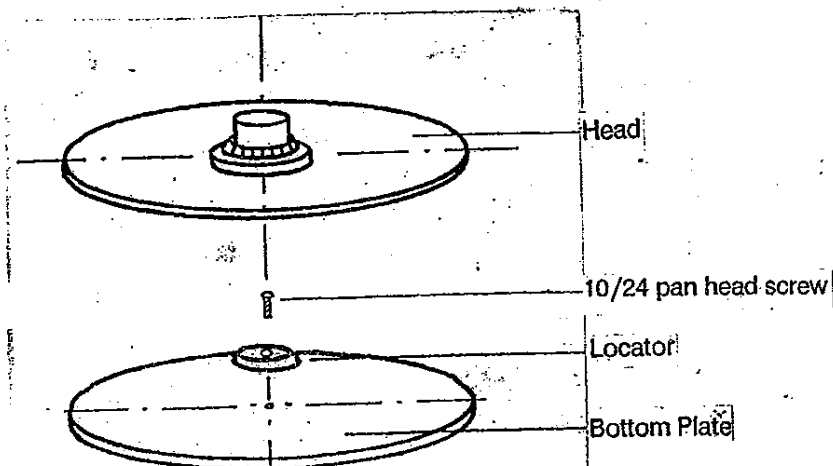
You will quickly find that this center locator can be of great help in the spin-casting of your molds and parts since it perfectly centers the mold on the spin-caster and works as follows:

**(1) Vulcanizing Frame Center Locator:** Each frame bottom now shipped by TEKCAST with a new system has a center locator installed on it. Your mold is placed into the frames in the same manner as you would normally do it. Except now, the mold after it is vulcanized will have a permanent center locator depression on its bottom. The center locator on the frames are the same type that has now been installed on the mold clamp plate of all new spin-casters, but it is 1-1/2% slightly larger. It is held on by a 10-24 (pan head) machine screw and can be unscrewed and removed should you wish to make a mold without it.



**(2) Spin Caster Center Locator:** The center of the Spin-Caster's mold clamp plate has a 10-24 machine thread that will accept a 10-24 machine (pan head) screw and the Spin-Caster center locator. This has been made 1-1/2% smaller than the vulcanizing frame center locator to compensate for the mold shrinkages. Once installed on the spin-caster, the mold is simply slid into the mold clamp plate in the same manner as you would normally do it but it will now drop over the center locator. This is similar to putting on a record or laser disc which will now center you mold perfectly. The center locators can easily be retrofitted on all existing vulcanizing frames and spin-caster. Out of balance running molds which cause machine vibrators may soon be a thing of the past.

### CENTER LOCATOR FOR SPIN-CASTER BOTTOM PLATE



To Order Locators:

**MOLD CENTERING DEVICE**

P01-220 - For Spin Caster

P02-220 - For Vulcanizer

**12-100-K MOLD CENTERING DEVICE**

SET OF 2: 1 For Spin Caster

2 For Vulcanizing Frames

With Screws

## PROCEDURE FOR ALIGNING THE MAIN AIR CYLINDER

The air cylinder alignment is probably one of the most important maintenance procedures for keeping your TEKCASTER in perfect operating condition. A well aligned cylinder makes the machine run smooth and vibration free. If an air cylinder has gone out of alignment it can and will cause vibration, which can result in excessive wear and tear on many of the spin-caster components, and the air cylinder itself.

It is very important that the alignment of the air cylinder be performed periodically as a scheduled maintenance of the spin-caster.

This simple recommended alignment procedure will improve the operation of the spin-caster, and help give you many years of trouble free performance which is important to your success with spin-casting. The following is a list of the tools that will be needed to perform the alignment, followed by the alignment procedure.

### A. Tools needed to Align the Air Cylinder

1. TEKCAST Alignment Tool (Item No. P01-083-AT)
2. 1/2" (12mm) box wrench (Long)
3. 3/8 (9mm) drive ratchet with 1/2 (12mm) socket
4. 1/4 (6mm) Allen wrench (for machine bolts on air cylinder)
5. 3/16 (4mm) Allen wrench (for SKF nut assembly)
6. 1/16 (1mm) gauge for readjusting SKF nut gap.
7. Plastic or rubber hammer (Do not use a metal hammer! it may cause damage to the air cylinder)

### B. Alignment Procedure

1. Remove the four (4) screws on the top lid of the TEKCASTER and open it, exposing the upper channel and SKF nut assembly.
2. Turn the main power switch to the on position. Place a mold in the TEKCASTER and close the front door allowing the mold to raise up against the head plate.
3. Looking from the top of the TEKCASTER with the lid open, locate the SKF nut and washer assembly directly in the middle of the top channel. With the 3/16 (4mm) allen wrench loosen the bolt on the SKF nut assembly. Then tighten the SKF nut assembly by turning it to the right (clockwise) against the teflon washer. This removes any space (gap) between the steel washer and the teflon ring.
4. Open the door on the TEKCASTER allowing the mold to drop down completely. Remove the mold, bottom plate, and the thrust bearing adapter from the TEKCASTER. Adjust the air regulator to zero (0) pressure. Turn off the spin-caster with the on/off switch.
5. Lightly loosen the three bolts that mounts and secures the main air cylinder to the lower channel. Use the ratchet, and the 1/2" (12mm) socket. Note: Just loosen the bolts 1/2-1 turn maximum so that a slight tap of a plastic or rubber hammer will allow you to move the main air cylinder slightly to the sides or forward or backwards toward you.
6. Place the alignment tool on the shaft of the main air cylinder. Refer to Fig 1.

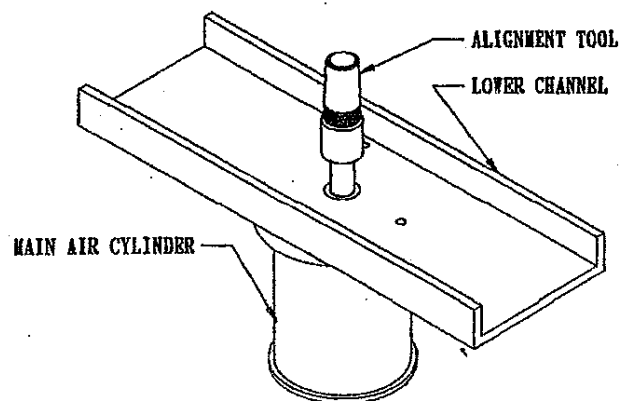


FIG 1



7. Turn on the **TEKCASTER** and increase the air pressure to approximately 3-5 PSI of pressure.
8. Locate the micro switch plunger inside and behind the front door. With the door open, press the micro switch plunger down with your finger. The main air cylinder shaft will slowly rise. When at least 1/2" (12mm) of the alignment tool is inside the sprue section of the head plate, immediately turn off the spin-caster with the on/off switch and the alignment tool will now remain inside the sprue section of the head plate.
9. The following step is best performed with two people: One to view the alignment tool looking directly down from the top of the **TEKCASTER**. The other person will move around the air cylinder. Viewing the aligning tool from the top of the **TEKCASTER** tap the air cylinder top flange until the alignment tool is perfectly centered in the sprue section. Do not use a steel headed hammer, damage to the air cylinder may result. Refer to fig 2.

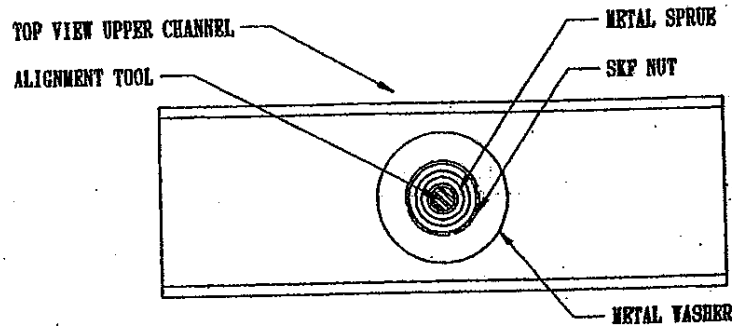


FIG 2

10. Once the alignment tool is centered in the sprue section, slowly and evenly tighten the three (3) bolts on the main air cylinder until each is completely tight.
11. Recheck that the alignment tool is still perfectly centered. If not repeat steps 9 & 10.
12. Turn the on/off switch on allowing the main air cylinder shaft and the alignment tool to drop down completely. Remove the alignment tool. Re-install the thrust bearing adapter and bottom plate.
13. With the **TEKCASTER** on/off switch on, place a mold in the **TEKCASTER** and close the door which puts the **TEKCASTER** in a ready to spin mode. Do Not press the start button.
14. Locate the SKF NUT assembly on top of the **TEKCASTER**. Loosen the bolt on the SKF nut assembly with the 3/16 (4mm) allen wrench, unscrew the SKF nut assembly (counterclockwise) until you have a cleared gap of 1/16" (1mm) between the metal washer, and the teflon ring as shown in Fig 3.

VIEW FROM TOP OF CASTER

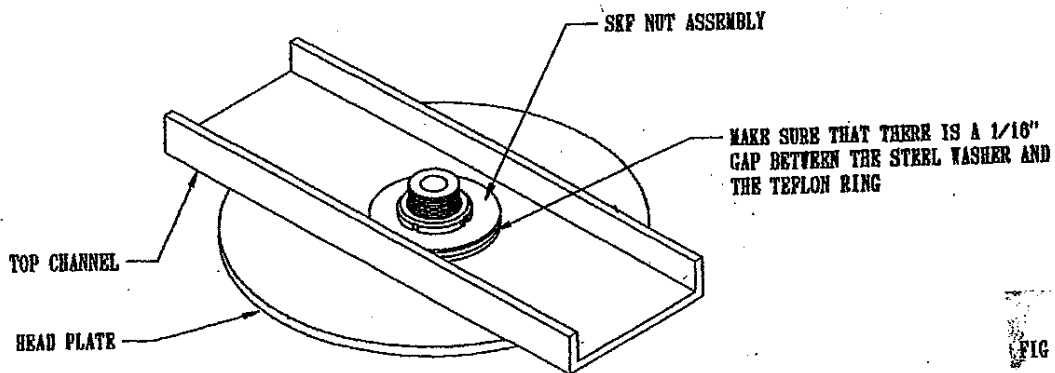


FIG 3

15. When the gap is properly set, re-tighten the allen screw on the SKF assembly. Close the top lid of the **TEKCASTER** and install the 4 (Four) cover screws and tighten them. The main air cylinder should now be fully aligned and you are ready to start spin-casting again.

For Technical Assistance call:

**TEKCAST INDUSTRIES, INC.**  
 12 Potter ave, New Rochelle, NY 10802  
 Toll free: 1-800-USA-4Tek  
 In New York: 914-576-0222  
 Fax: 914-576-0070  
 Ask for the Technical Department.

- Place the alignment tool on the shaft of the main air cylinder. Refer to Fig 1.

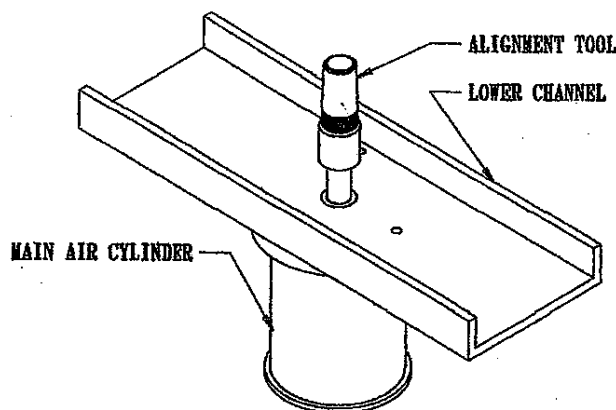


FIG 1

- Turn on the **TEKCASTER** and increase the air pressure to approximately 3-5 PSI of pressure.
- Locate the micro switch plunger inside and behind the front door. With the door open, press the micro switch plunger down with your finger. The main air cylinder shaft will slowly rise. When at least 1/2" (12mm) of the alignment tool is inside the sprue section of the head plate, immediately turn off the spin-caster with the on/off switch and the alignment tool will now remain inside the sprue section of the head plate.
- The following step is best performed with two people: One to view the alignment tool looking directly down from the top of the **TEKCASTER**. The other person will move around the air cylinder. Viewing the aligning tool from the top of the **TEKCASTER** tap the air cylinder top flange until the alignment tool is perfectly centered in the sprue section. Do not use a steel headed hammer, damage to the air cylinder may result. Refer to fig 2.

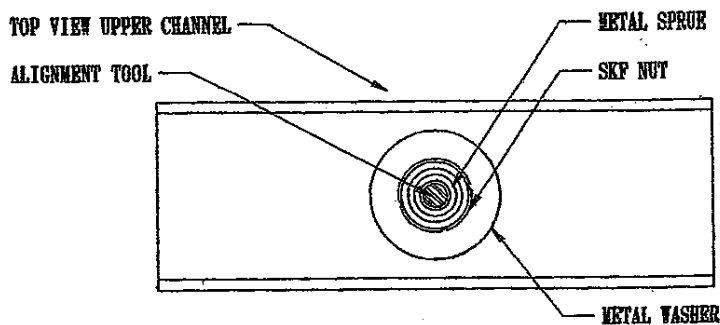


FIG 2

- Once the alignment tool is centered in the sprue section, slowly and evenly tighten the three (3) bolts on the main air cylinder until each is completely tight.
- Recheck that the alignment tool is still perfectly centered. If not repeat steps 9 & 10.
- Turn the on/off switch on allowing the main air cylinder shaft and the alignment tool to drop down completely. Remove the alignment tool. Re-install the thrust bearing adapter and bottom plate.
- With the **TEKCASTER** on/off switch on, place a mold in the **TEKCASTER** and close the door which puts the **TEKCASTER** in a ready to spin mode. Do Not press the start button.

## TEKCAST NEW EQUIPMENT (24 & 30" UNITS) ADDITION

### INTERLOCK DOOR LOCK DELAY RELAY

All our 24 and 30" "Front Loading" Spin-Caster systems are now equipped (at no extra charge) with an added safety feature of protection in addition to our normal dynamic braking system. It works in conjunction with our standard door lock feature which does not permit opening the door when the machine is spinning. But, for very large and heavy molds of 24" and above, we have added a special door lock timer and light. This will delay the door lock opening until dynamic brake is automatically activated and the mold comes to a complete stop. It can be adjusted for any set period of time from 0 seconds to 1 minute. You will now be able to independently set this depending on the size and weight of the mold and castings to allow for the spin to come to a complete stop before it allows the operator to open the door.

#### RECOMMENDED SETTINGS ARE:

20" X 1	12 seconds
24" X 3	15 seconds
30" X 1	20 seconds
30" X 3	30 seconds

#### CAUTION:

Please be advised that all spinning molds must come to a complete stop before the door is opened. Otherwise, if the door is opened beforehand the mold pressure clamp will retract and the spinning mold will drop quickly which can move it out from its center position. When used properly, this new door lock delay will protect the operator and the TEK Spin-caster from any mold or parts spinning out of the system.

TECH:NEW-24.30

Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage. Retain instructions for future reference.

# Dayton® DC Motors

## Description

Dayton PMDC motors are TEFC and feature continuous (8-hour day) duty, max. 40°C ambient, Class F insulation, ball bearings, oriented ferrite ceramic magnets and externally replaceable brushes.

## Specifications

Model	F/L RPM	90 Volt DC Models		F/L* Amps	AG Max.
		Torque (oz.-in.)	HP		
2M167D	1725	146	1/4	3.0	8.35
2M509A	1725	195	1/3	3.5	8.75
2M168D	1725	293	1/2	5.4	10.56
2M169D	1725	439	3/4	8.0	12.56
2M170D	1725	586	1	10.0	14.56

Model	F/L RPM	180 Volt DC Models		F/L* Amps	AG Max.
		Torque (oz.-in.)	HP		
4Z524B	1725	293	1/2	2.8	10.56
4Z525B	1725	439	3/4	3.5	12.56
4Z378C	1725	586	1	5.0	14.56

Motor HP and F/L torque rating only apply when the motor is used with Dayton 2M171, 5X485 or 4Z829, for 90V models and 4Z377 or 6Z812 for 180V models or other filtered full wave rectified controls with a free wheeling diode and a Form Factor not exceeding 1.3. Consult Dayton Electric Mfg. if the Form Factor is greater.

(\*) Full-load amps — average current reading from a DC ammeter @ nameplate volts.

## MAXIMUM CONTINUOUS STALL RATINGS

90 Volt PMDC Models	
2M167D	— 3.0 Amps (146 oz. in.)
2M509A	— 3.5 Amps (195 oz. in.)
2M168D	— 5.4 Amps (293 oz. in.)
2M169D	— 8.0 Amps (439 oz. in.)
2M170D	— 10.0 Amps (586 oz. in.)

180 Volt PMDC Models	
4Z524B	— 2.8 Amps (293 oz. in.)
4Z525B	— 3.5 Amps (439 oz. in.)
4Z378C	— 5.0 Amps (586 oz. in.)

### CAUTION

Stall torques of PMDC motors are many times greater than full-load torques of the motor. Caution should be taken to prevent damage to the driven mechanism as a result of the exceedingly high torques.

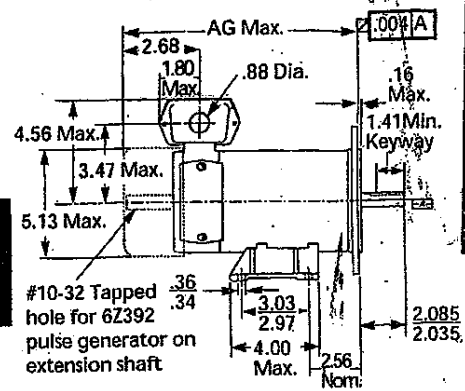


Figure 1A (in inches)

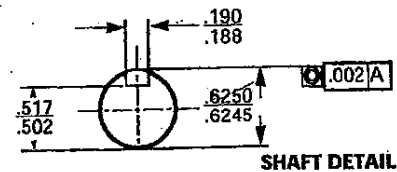


Figure 1B (in inches)

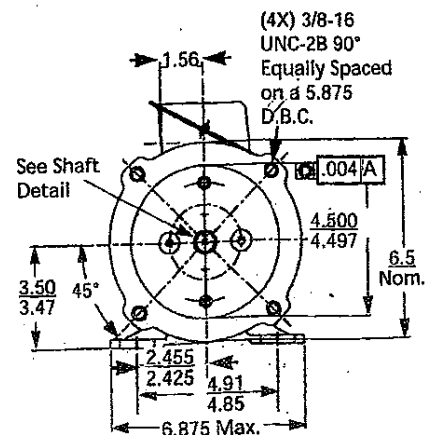


Figure 1C (in inches)

ENGLISH

ESPAÑOL

FRANÇAIS



## Replacement Parts List

Ref. No.	Description	Part Number for Models:						Qty.
		2M167D	2M168D	2M169D	2M170D	2M509A	4Z378C	
1	Fan guard	COV-1255C	COV-1255C	COV-1255C	COV-1255C	COV-1255C	COV-1255C	1
2	• Screw	SCR-1287	SCR-1287	SCR-1287	SCR-1287	SCR-1287	SCR-1287	11
3	Fan	FAN-260	FAN-260	FAN-260	FAN-260	FAN-260	FAN-260	1
4	Conduit box kit	89-1151	89-1151	89-1151	89-1151	89-1151	89-1151	1
5	• End bracket (unpainted)	BRA-4609C	BRA-4609C	BRA-4609C	BRA-4609C	BRA-4609C	BRA-4609C	1
6	Brush cover	COV-1195-1	COV-1195-1	COV-1195-1	COV-1195-1	COV-1195-1	COV-1195-1	2
7	• Brush holder	4-4600D	4-4600D	4-4600D	4-4600D	4-4600D	4-4600D	1
8	• Brush	16-121	16-121	16-121	16-121	16-121	16-121	2
9	• Brush spring	SPR-480	SPR-480	SPR-480	SPR-480	SPR-480	SPR-480	2
10	Ball bearing	BRG-594	BRG-594	BRG-594	BRG-594	BRG-594	BRG-594	2
11	Snap ring	RIN-395	RIN-395	RIN-395	RIN-395	RIN-395	RIN-395	2
12	5/16-18 Serrated nut	NUT-408	NUT-408	NUT-408	NUT-408	NUT-408	NUT-408	2
13	Armature	5-4618C-1	5-4640AC-1	5-4660BK-1	5-4680OU-1	5-4622AC-1	5-4640AD-1	1
14	Yoke & magnet assembly	27-4618A-1	27-4640V	27-4660A-1	27-4680A-1	27-4622A-1	27-4640V	1
15	Base	BAS-539	BAS-539	BAS-539	BAS-539	BAS-539	BAS-539	1
16	1/4" Washer	*	*	*	*	*	*	2
17	1/4-20 UNC-2A x 1/2" Hex bolt	SCR-1250	SCR-1250	SCR-1250	SCR-1250	SCR-1250	SCR-1250	2
18	Thru Bolt	SCR-1181-30	SCR-1181-21	SCR-1181-19	SCR-1181-20	SCR-1181-28	SCR-1181-21	2
19	Spring washer	WAS-1188	WAS-1188	WAS-1188	WAS-1188	WAS-1188	WAS-1188	1
20	Front end bracket	BRA-4670A	BRA-4670A	BRA-4670A	BRA-4670A	BRA-4670A	BRA-4670A	1
21	Space washer	WA110S17-10	WA110S17-10	WA110S17-10	WA110S17-10	WA110S17-10	WA110S17-10	1
22	Brush & spring kit	89-1175	89-1175	89-1175	89-1175	89-1175	89-1175	1
Δ	Brush cover gasket	GAS-232	GAS-232	GAS-232	GAS-232	GAS-232	GAS-232	2
•	End bracket assembly	3-4600CS	3-4600CS	3-4600CS	3-4600CS	3-4600CS	3-4600CS	1
	Complete motor no.	46183352543-1A	46405352543-1A	46606352543-1A	46807352543-1A	46224352543-1A	46405372543-2A	1

(\*) Standard hardware, available locally.

(Δ) Not shown.



ENGLISH

2M167D thru 2M170D, 2M509A,  
4Z378C, 4Z524B and 4Z525B

Dayton Operating Instructions and Parts Manual

**For Replacement Parts, call 1-800-323-0620**  
**24 hours a day - 365 days a year**

Please provide following information:

- Model number
- Serial number (if any)
- Part description and number as shown in parts list

Address parts correspondence to:

Grainger Parts  
P.O. Box 3074  
1657 Shermer Road  
Northbrook, IL 60065-3074 U.S.A.

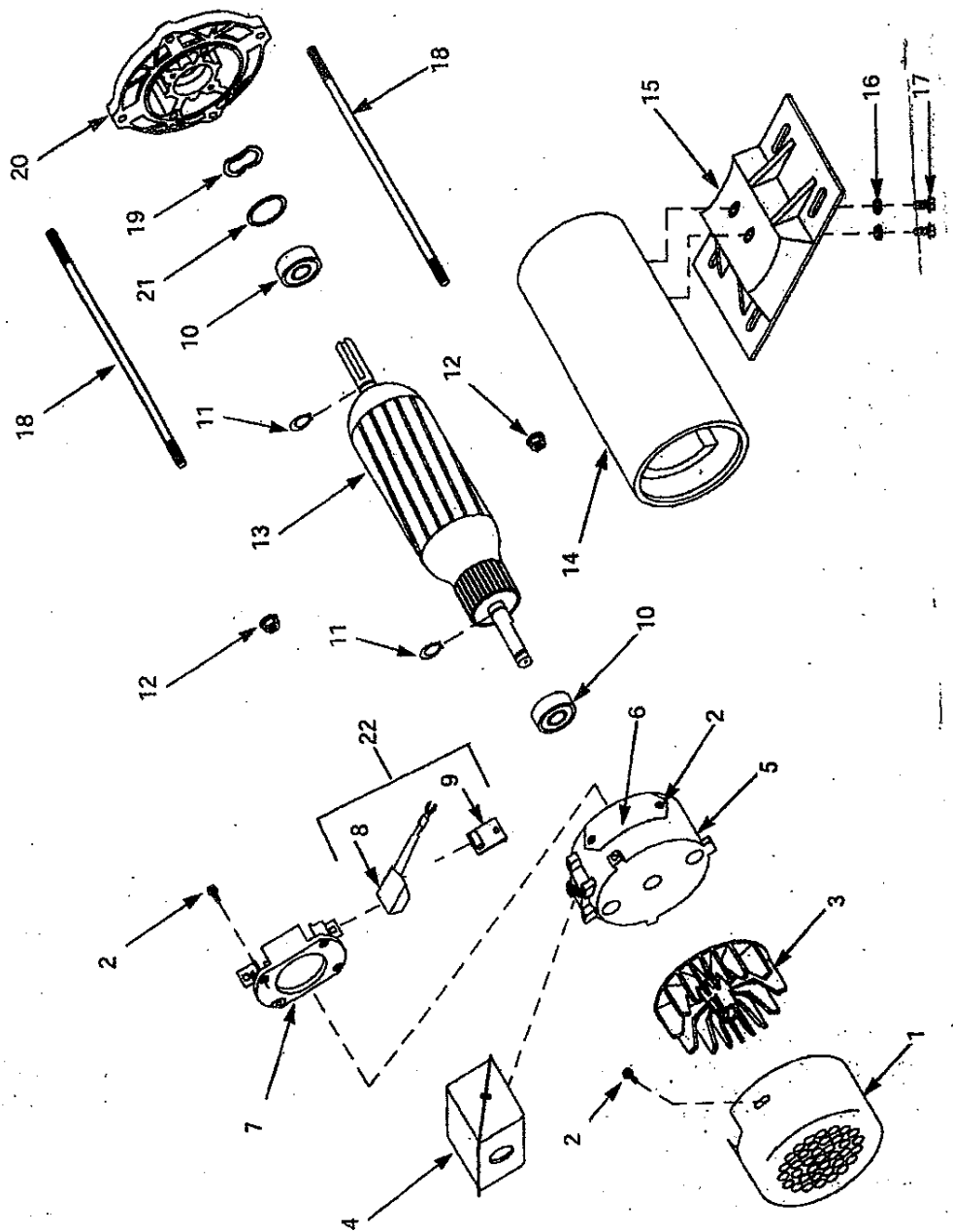


Figure 10 - Replacement Parts Illustration

# Models 2M167D thru 2M170D, 2M509A, 4Z378C, 4Z524B and 4Z525B

## Troubleshooting Chart

Symptom	Possible Cause(s)	Corrective Action
Unit fails to operate	<ol style="list-style-type: none"> <li>1. Open circuit breaker or blown fuse in Control</li> <li>2. No AC power</li> <li>3. Defective motor, or Control</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace fuse or reset circuit breaker</li> <li>2. Contact power company</li> <li>3. Repair or replace</li> </ol>
Unit fails to operate when used with Dayton Control	<ol style="list-style-type: none"> <li>1. Control master speed potentiometer set near zero</li> <li>2. RUN/STOP or FORWARD/OFF/REVERSE switch in STOP/OFF position</li> </ol>	<ol style="list-style-type: none"> <li>1. Rotate speed potentiometer CW</li> <li>2. Move switch to RUN, FORWARD or REVERSE position</li> </ol>
Intermittent rotation of output shaft	<ol style="list-style-type: none"> <li>1. Motor brushes worn or not making contact with commutator</li> <li>2. Worn commutator</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace brushes</li> <li>2. Resurface commutator or replace armature assembly</li> </ol>
Excessive noise	<ol style="list-style-type: none"> <li>1. Bearings worn</li> <li>2. Belt or chain tension too high</li> <li>3. Overhung load exceeds rating and causes bearing wear</li> <li>4. Motor brushes worn</li> <li>5. Worn commutator.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace bearings</li> <li>2. Adjust tension</li> <li>3. Correct load and/or replace bearing</li> <li>4. Replace brushes</li> <li>5. Resurface commutator or replace armature assembly</li> </ol>

**NOTE:** Motor full-load amp ratings should not be exceeded.

**CAUTION** To avoid brush/motor problems, brushes must be checked periodically for wear. Brushes must be replaced when worn to 9/16" when measured on long side. Replacement brushes must be Dayton brand. Reinspection of brushes should not exceed 500 hours.

### LIMITED WARRANTY

**DAYTON ONE-YEAR LIMITED WARRANTY.** Dayton® DC Motors, Models covered in this manual, are warranted by Dayton Electric Mfg. Co. (Dayton) to the original user against defects in workmanship or materials under normal use for one year after date of purchase. Any part which is determined to be defective in material or workmanship and returned to an authorized service location, as Dayton designates, shipping costs prepaid, will be, as the exclusive remedy, repaired or replaced at Dayton's option. For limited warranty claim procedures, see PROMPT DISPOSITION below. This limited warranty gives purchasers specific legal rights which vary from jurisdiction to jurisdiction.

**LIMITATION OF LIABILITY.** To the extent allowable under applicable law, Dayton's liability for consequential and incidental damages is expressly disclaimed. Dayton's liability in all events is limited to and shall not exceed the purchase price paid.

**WARRANTY DISCLAIMER.** Dayton has made a diligent effort to provide product information and illustrate the products in this literature accurately; however, such information and illustrations are for the sole purpose of identification, and do not express or imply a warranty that the products are MERCHANTABILITY, or FIT FOR A PARTICULAR PURPOSE, or that the products will necessarily conform to the illustrations or descriptions. Except as provided below, no warranty or affirmation of fact, expressed or implied, other than as stated in the "LIMITED WARRANTY" above is made or authorized by Dayton.

**PRODUCT SUITABILITY.** Many jurisdictions have codes and regulations governing sales, construction, installation, and/or use of products for certain purposes, which may vary from those in neighboring areas. While Dayton attempts to assure that its products comply with such codes, it cannot guarantee compliance, and cannot be responsible for how the product is installed or used. Before purchase and use of a product, review the product applications, and all applicable national and local codes and regulations, and be sure that the product, installation, and use will comply with them.

Certain aspects of disclaimers are not applicable to consumer products; e.g., (a) some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you; (b) also, some jurisdictions do not allow a limitation on how long an implied warranty lasts, consequently the above limitation may not apply to you; and (c) by law, during the period of this Limited Warranty, any implied warranties of implied merchantability or fitness for a particular purpose applicable to consumer products purchased by consumers, may not be excluded or otherwise disclaimed.

**PROMPT DISPOSITION.** Dayton will make a good faith effort for prompt correction or other adjustment with respect to any product which proves to be defective within limited warranty. For any product believed to be defective within limited warranty, first write or call dealer from whom the product was purchased. Dealer will give additional directions. If unable to resolve satisfactorily, write to Dayton at address below, giving dealer's name, address, date, and number of dealer's invoice, and describing the nature of the defect. Title and risk of loss pass to buyer on delivery to common carrier. If product was damaged in transit to you, file claim with carrier.

Manufactured for Dayton Electric Mfg. Co., 5959 W. Howard St., Niles, Illinois 60714 U.S.A.

E  
N  
G  
L  
I  
S  
H



# Dayton® DC Motors

E  
N  
G  
L  
I  
S  
H

## Operation (Continued)

The use of the Dayton 2M171, 5X485 or 4Z829 Control is recommended with Models 2M167D, 2M168D, 2M169D, 2M170D and 2M509A.

The Dayton 4Z377 or 6Z812 Control is recommended with Models 4Z378C, 4Z524B and 5Z525B.

## PRECAUTIONS DURING OPERATION

1. PM motors may be operated continuously without damage as long as nameplate amps are not exceeded.
2. PM motors typically will gradually increase in RPMs slightly from stop mode over the first couple of hours, depending on operating conditions.
3. Motor brushes need periodic inspection and replacement as wear indicates. Inspect brushes after initial 200 hours of operation. See "Brush Maintenance and Commutator Care" for more details.
4. Use of PM motors with unfiltered power supplies or pure DC with no current limiting circuitry can result in damage of the drive mechanism and driving motor because stall torques of the PM motor will exceed full-load torque ratings by many times.
5. PM motors are not intended for instant reversing applications. PM motors can be dynamically braked and reversed at some low armature voltage (10%), but should not be plug-reversed with full armature voltage.

Dynamic braking is provided on the 2M171, 5X485, 4Z829 and 6Z812 controls. The 4Z377 control does not provide dynamic braking.

## Maintenance

### BRUSH MAINTENANCE & COMMUTATOR CARE

**▲ WARNING** Always disconnect power source before servicing!

**▲ CAUTION** To avoid brush and motor problems replacement brushes must be Dayton brand.

Periodic inspection of both motor brushes should be made to determine brush wear.

Brushes are a consumable product and wear rates will vary depending on a number of factors, i.e. application, environment, current drawn, etc. Brush material, spring tension, etc. have been selected by the manufacturer to give optimum brush life under generic conditions. Each application will determine the life of the brushes and motor.

Brush life can be anticipated by monitoring the motor brush wear in the specific application. Brush inspection is recommended every 200 hrs. Adjustment of its time frame is at the discretion of the customer to determine a proper preventive maintenance schedule. During each inspection de-energize the motor and vacuum out the brush/commutator area. Excessive brush dust accumulation can lead to premature motor failure. However, each application will vary and proper maintenance must be determined by the customer.

Dayton approved brushes must be replaced by reordering through GPO Customer Service Department. After two brush changes, consult a competent motor repair station for possible commutator refinishing.

**▲ CAUTION** The motor is extremely hot after it has been under continuous operation. Allow enough time to cool before replacing brushes (approximately 45 minutes to 1 hour).

1. Remove the motor from the system.
2. Refer to Figure 10, remove the four hex head screws (Ref. No. 2) from brush cover (Ref. No. 6).

**NOTE:** The motor may have to be rotated slightly in order to have access to the hex head screws:

3. Push brush spring retainer (Ref. No. 9) inward and up or down until tang is free of slot. Loosen the #6-32 screws of brush lead and slide brush (Ref. No. 8) out.
4. Install new brush and tighten the #6-32 screw on brush lead. Also connect red and black lead wires to this same screw making sure these leads are routed as found originally.

**▲ CAUTION** The red and black lead wires are to be kept as far away as possible from any moving parts. Push brush spring retainer (Ref. No. 9) forward with riveted tip toward the brush holder retaining bracket until the tang engages the slot. Check pigtail so it is not grounded or bound so that the brush will have free movement for brushwear.

5. Replace brush cover (Ref. No. 6) and put screws (Ref. No. 2) back in place.
6. The motor is now ready to be replaced into the system.





## Norgren Installation Instructions V60-V62 Series Directional Control Valves

### Operating Specifications

**Fluids:** filtered, nonlubricated or lubricated, compressed air or vacuum

**Valve Working Pressure Ranges:**

Air, and Solenoid Operators with External Pilot

Supply: Vacuum to 145 psig (10 bar).

Solenoid Operated Valves with Internal Pilot Supply\*:

Standard Solenoid 116 psig (8 bar)

Twin Solenoid 145 psig (10 bar)

### Minimum Pilot Pressures

Primary Operator	Secondary Return Oper.	Min. Press. psig (bar)
Solenoid	Spring	29 (2)*
Solenoid**	Solenoid**	29 (2)*
Air	Spring	29 (2)
Air	air	29 (2)

\* Solenoid Operators must be externally piloted if the supply pressure to the main valve is below the minimum pilot pressure listed in the table above.

\*\* Can be standard solenoid or twin solenoid (Check maximum pilot pressure.)

### Maximum Pilot Pressure

Operator Type	Max. Press psig (bar)
Standard Solenoid	116 (8)
Twin Solenoid	145 (10)
Air Pilot	145 (10)

### Temperature Range (Ambient & Inlet):

Solenoid Operated Valves: 14° to 122°F † (-10° to 50°C):

Air Operated Valves: 14° to 122°F (-10° to 50°C)

† With dew point of supply air less than air temperature below 35°F (2°C)

### WARNINGS

Do not use these valves to control a power press clutch or brake

These products are intended for use in industrial pneumatic systems. They are designed and tested for use in industrial pneumatic systems. They are designed and tested for use with filtered, lubricated compressed air at pressures and temperatures within specified limits.

For use with fluids other than air, for non-industrial applications or for life support systems, consult Norgren. These products must not be used in applications which do not fully comply with all operating specifications.

Compressed air systems may contain lubricants or contaminants which can attack materials utilized in the manufacture of these products cause failure. The user is cautioned to be certain that his compressed air system is fully compatible with the materials utilized in these products.

**High Energy Level** – Compressed air system contain high levels of stored energy. Any attempt to connect, disconnect or repair these products when a system is under pressure can lead to serious personal injury. Do not attempt to install, operate or repair these products unless you are trained in the proper techniques for working with fluid power systems, or are under competent supervision.

**Code Compliance** – the user of these products is cautioned to conform to all applicable electrical, mechanical, and other codes in the installation and operation of these products.

**Failure Modes** – Through misuses, wear or malfunction, these valves and related accessories can fail in modes which can simultaneously pressurize all ports to the highest applied pressure level. They can also fail to respond as expected upon the application or removal of operator signals. These failure modes must be considered in the use of these valves and related accessories, and all appropriate safeguards to prevent personal injury or property damage in the event of such failure must be provided.

**Repair and Conversion** – Any time these valves are disassembled for repair or conversion to a different configuration, the reassembled valve and accessory must be checked for leakage and proper function prior to installation.

**Electric Shock** – To avoid electrical shock and the possibility of serious or fatal injury, always disconnect electrical power before servicing an electrically actuated valve.

### INSTALLATION

#### Valve Exhaust

Adequately sized mufflers should be used in valve exhaust ports. Valves should not be mounted with unprotected exhaust ports facing upward. If exhaust is to be piped away, piping should be installed horizontally or at a downward angle from the valve to provide adequate drainage and minimize the accumulation of debris in the air line.

#### Pilot Supply

If the valve inlet pressure is less than the specified minimum pilot pressure for the type solenoid operator used, and external pilot supply must be provided.



**NORGREN**

**R01, R04, R06\*, R07, R08, R11, R14, R15, R16\*, R17, R18, R43\*, R46, R64, R68, R72, R73, R74, R91\*, 11-002, 11-009\*, 11-044\*, 11-111, 20AG**

**UI-200**  
9/00  
Supersedes 12/97

**GENERAL PURPOSE REGULATORS (ENGLISH)**

Contact your Norgren supplier for complete instructions and kits.

**Installation - Shut off air pressure. Install in air line:**

- with air flow in direction of arrow on body. In some cases *IN* may be stamped next to the inlet port.
- upstream of lubricators, and cycling valves. Reverse flow regulators can be installed upstream or downstream of cycling valves,
- as close as possible to the device being served,
- at any angle.

**Adjustment - Turn adjustment clockwise to increase and counterclockwise to decrease outlet pressure setting. To reduce pressure, first reduce to a pressure less than that desired, then increase to the desired outlet pressure.**

**Warning**

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed on the product label.

If outlet pressure in excess of the regulator pressure setting could cause downstream equipment to rupture or malfunction, install a pressure relief device downstream of the regulator. The relief pressure and flow capacity of the relief device must satisfy system requirements.

Before using with fluids other than air, for nonindustrial applications, or for life support systems, consult Norgren.

- \* Non-relieving models with brass or plastic body may be used in water service.

**REGOLATORI PER IMPIEGHI GENERICI (ITALIAN)**

Contattare il Vostro fornitore Norgren per istruzioni complete e ricambi.

**Installazione - Togliere la pressione dell'aria. Posizione sulla linea:**

- Con il flusso aria in direzione della freccia riportata sul corpo. In alcuni casi si potrebbe trovare la parola *IN* stampata vicino alla connessione in entrata,
- A monte dei lubrificatori e delle valvole di controllo. I regolatori con flusso contrario possono essere installati sia a valle che a monte delle valvole di controllo,
- Il più vicino possibile all'apparecchio che deve essere alimentato,
- In qualsiasi posizione.

**Regolazione - Girare il dispositivo di regolazione in senso orario per aumentare e in senso antiorario per diminuire la pressione di taratura. Per ridurre la pressione, prima di tutto portare la pressione al di sotto del valore desiderato, poi aumentarla fino al valore richiesto.**

**Avvertenze**

Questi prodotti sono adatti esclusivamente all'impiego su sistemi industriali ad aria compressa. Non impiegare in presenza di pressioni e temperature superiori a quelle riportate sulla targhetta.

Se un aumento della pressione in uscita rispetto al valore di taratura dovesse causare rotture o malfunzionamento nell'impianto a valle, installare una valvola limitatrice di pressione a valle del regolatore. La pressione e la capacità di scarico della valvola limitatrice devono soddisfare i requisiti di sicurezza del sistema.

Prima dell'impiego con altri fluidi che non siano aria, per applicazioni non industriali, o in apparecchiature medicali consultare la Norgren.

- \* Modelli senza scarico di sovrappressione, con corpo in ottone o in plastica, possono essere impiegati per acqua.

**REGULADORES PARA APLICACOES GERAIS (PORTUGUESE)**

Consulte seu fornecedor Norgren para instruções completas e kits de reparo.

**Instalação - Desligue a pressão de ar. Instale na linha de ar:**

- Com o fluxo de ar na direção da seta do corpo. Em alguns casos *IN* pode estar gravado próximo ao orifício de entrada,
- Antes dos lubrificadores e válvulas de controle direcional. Os reguladores de fluxo bi-direcionais podem ser instalados antes ou depois das válvulas de controle direcional,
- Tão próximo quanto possível do dispositivo que está sendo atendido,
- Em qualquer ângulo.

**Regulagem - Gire no sentido horário para aumentar e no sentido anti-horário para diminuir a pressão de saída desejada. Para reduzir a pressão, primeiro reduza-a para um valor menor do que desejado e posteriormente aumente até a pressão final.**

**Advertências**

Estes produtos devem ser usados somente em sistemas de ar comprimido industrial. Não os use onde pressões e temperaturas excederem aqueles listados nas etiquetas dos produtos.

Se a pressão de saída for superior à estabelecida podendo causar danos ao equipamento, instale um dispositivo de alívio de pressão após o regulador, que atenda aos requisitos do sistema.

Antes de usar outros fluidos para aplicações não industriais ou para sistemas de suporte à saúde, consulte a Norgren.

- \* Modelos sem alívio, com corpo de latão ou plástico podem ser usados em sistemas de água.

**REGULADORES DE USO GENERAL (SPANISH)**

Contacte con su proveedor Norgren para instrucciones completas y kits.

**Instalación - Cerrar la presión de aire. Instalar en la línea del aire**

- el caudal de aire deberá seguir la dirección de la marca en el cuerpo, en algunos casos la palabra *IN* puede estar impresa al lado de la conexión de entrada
- situarlo antes de los lubricadores y las válvulas de ciclo. Los reguladores de caudal reversible pueden instalarse antes o después de las válvulas de ciclo.
- lo más cerca posible del aparato al que está conectado
- en cualquier ángulo

**Regulación - Girar el pomo de regulación en el sentido de las agujas del reloj para aumentar el nivel de presión de salida y en sentido contrario para reducirla. Para disminuir la presión, reducir en primer lugar a un nivel inferior al requerido; después aumentar hasta la presión de salida deseada.**

**Advertencia**

Estos productos se han diseñado para su uso exclusivamente en sistemas industriales de aire comprimido. No usar estos productos en instalaciones en las que las presiones y temperaturas puedan superar las que figuran en la etiqueta del producto.

Si la presión de salida es superior al nivel de presión del regulador, podrían producirse roturas o fallos en los equipos situados después del mismo. En este caso, instalar un aparato con escape de presión después del regulador. La capacidad en cuanto a presión de escape y caudal del mecanismo de descarga deberá satisfacer las necesidades del sistema.

Consultar con Norgren antes de utilizar estos productos con fluidos que no sean el aire, en aplicaciones no industriales o en sistemas de seguridad.

- \* Modelos sin escape, con cuerpo de bronce o de plástico, pueden ser utilizados en sistemas de agua.

**汎用レギュレータ (JAPANESE)**

詳細及びキットに関しては供給元にお問い合わせ下さい。

**取付方法:**

- 空気圧力を閉じます。
- 本体上の矢印に気流方向を合わせます。入口のポートのとなりには IN と記されている場合があります。
- ルブリケータ、バルブの一次側に取付。逆流レギュレータはバルブの一次側、二次側どちら側でも取付可能。
- 保護する機器に出来るだけ近い位置に取付けます。
- どの角度でも取付けられます。

**調整:**

圧力設定を上げるには調整ノブを時計方向に、圧力設定を下げるには反時計方向に回します。高い設定値から低い設定値に変更する場合は、目的の圧力よりも低く下げた後、目的の圧力値まで上げるようにして下さい。

**注意事項:**

当該製品は工業用圧縮空気システムのみ使用できるように作られています。製品ラベル記載以外の温度、圧力では使用出来ません。

出力圧力がレギュレータの設定圧力を超え、レギュレータの二次側にある機器が壊れたり、作動不良が生じる恐れがある場合は、レギュレータの二次側にリリーフバルブを取付けて下さい。減圧装置の減圧および流量はシステムの要求値に合わせなければなりません。

空気以外の媒体や工業用以外の用途、又は生命維持システムに当該製品を使用する場合は、ノルグレン社までお問い合わせ下さい。

- \* ノンリリーフタイプの真ちゅうまたはプラスチックボディではウォーターで使用可能な場合があります。

**通用减压阀 (CHINESE)**

需维修配件和全部使用说明, 请与诺冠供应商联络。

**安装 -**

先关闭气路, 然後安装减压阀于气路。

- 气体流向与机体上的箭头指向一致, 有时入口端有 IN 标记。
- 置减压阀于油雾器和循环阀之前, 反向流减压阀置于循环阀之前或之後。
- 尽量接近所服务的设备。
- 安装角度不限。

**调节 - 顺时针转动以增大压力, 逆时针转动以降低压力. 降低压力时, 先将压力降至所需压力之下, 然後调高血压至所需压力.**

**警告 - 本产品仅限于工业压缩空气系统. 请勿在超出产品标牌所示的压力和温度范围之外使用. 如果输出压力超过设定压力会导致减压阀下游的设备失灵或爆裂, 则应在减压阀下游安装安全阀. 安全阀的溢流压力和流量必须满足系统的要求.**

欲将本产品用于空气以外的流体, 非工业用途或医疗设备, 请先与诺冠接洽。

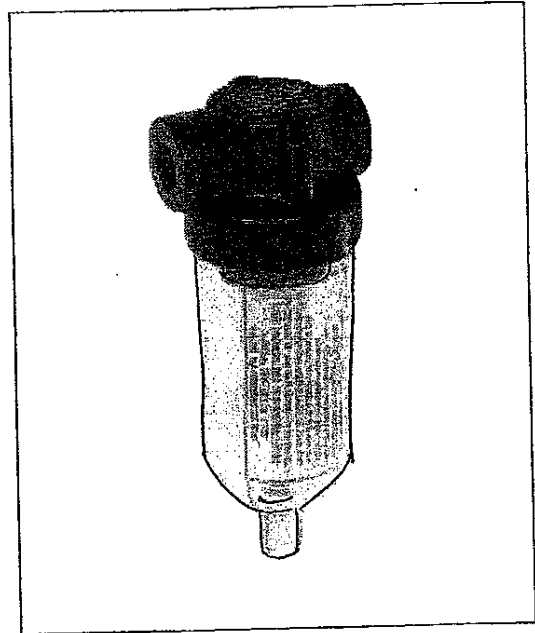
- \* 在水压情况下, 可以使用铜或塑料的非弹性减压阀。





**Miniature Series 07 General Purpose Filter  
1/8" and 1/4" Port Sizes**

- Compact design
- Protects air operated devices by removing liquid and solid contaminants
- Screw-on bowl reduces maintenance time
- Can be disassembled without the use of tools or removal from the air line



**Ordering Information.** Models listed include PTF threads, automatic drain, transparent bowl and 5 µm element.

Port Size	Model Numbers	Flow scfm (dm <sup>3</sup> /s) *	Weight lbs. (kg)
1/8"	F07-100-A1TA	19 (9)	0.28 (0.13)
1/4"	F07-200-A1TA	24 (11.5)	0.28 (0.13)

\* Approximate flow at 90 psig (6.3 bar) inlet pressure and 5 psig (0.35 bar) pressure drop.

**Alternative Models**

Port Size	Substitute
1/8"	1
1/4"	2

Option	Substitute
Not applicable	0

Option	Substitute
Not applicable	0

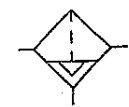
TEKCAST #  
200 - M1TA  
F07 - ★★ - ★★

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Bowl	Substitute
Transparent	T
Metal	M

Element	Substitute
5 µm	1
40 µm	3

Drain	Substitute
Automatic	A
Manual	M

**ISO Symbols**


Auto Drain



Manual Drain

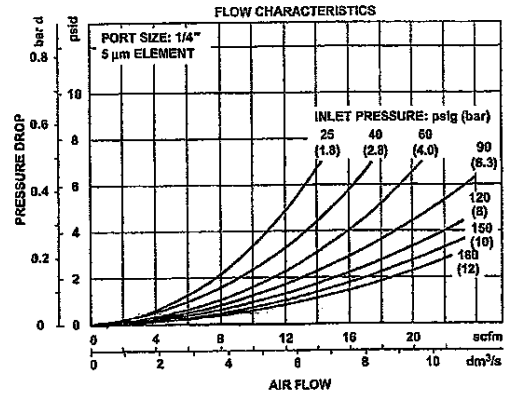
See Section ALE-25 for Accessories



**Technical Data**

Fluid: Compressed air  
 Maximum pressure:  
     Transparent bowl: 150 psig (10 bar)  
     Metal bowl: 250 psig (17 bar)  
 Operating temperature:<sup>\*</sup>  
     Transparent bowl: -30° to 125°F (-34° to 50°C)  
     Metal bowl: -30° to 175°F (-34° to 80°C)  
<sup>\*</sup> Air supply must be dry enough to avoid ice formation at temperatures below 35°F (2°C)  
 Particle removal: 5 µm or 40 µm filter element  
 Air quality: Within ISO 8573-1, Class 3 and Class 5 (particulates)  
 Typical flow at 90 psig (6.3 bar) Inlet pressure at 5 psig (0.35 bar) pressure drop:  
     1/8" Ports, 5 µm element: 19 scfm (9 dm³/s)  
     1/4" Ports, 5 µm element: 24 scfm (11.5 dm³/s)  
 Nominal bowl size: 1 fluid ounce (31 ml)  
 Drain connection: 1/8" pipe thread  
 Automatic drain operation: Spitter type drain operates momentarily when a rapid change in air flow occurs or when the supply pressure is reduced.  
**Materials**  
 Body: Zinc  
 Bowl  
     Transparent: Polycarbonate  
     Metal: Zinc (without sight glass)  
 Element: Sintered polypropylene  
 Elastomers: Neoprene & nitrile

**Typical Performance Characteristics**



**Service Kits**

Item	Type	Part number
Service kit	5 µm element	3652-17
	40 µm element	3652-18
Replacement drains	Manual	773-03
	Automatic	3654-02

Service kit includes element, element gasket, and bowl o-ring.

All Dimensions in Inches (mm)

