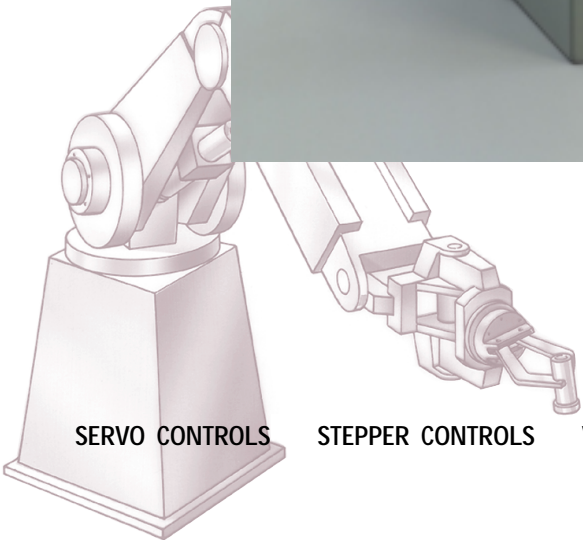


WARNER ELECTRIC®



Quadraline 7000 DC Drives



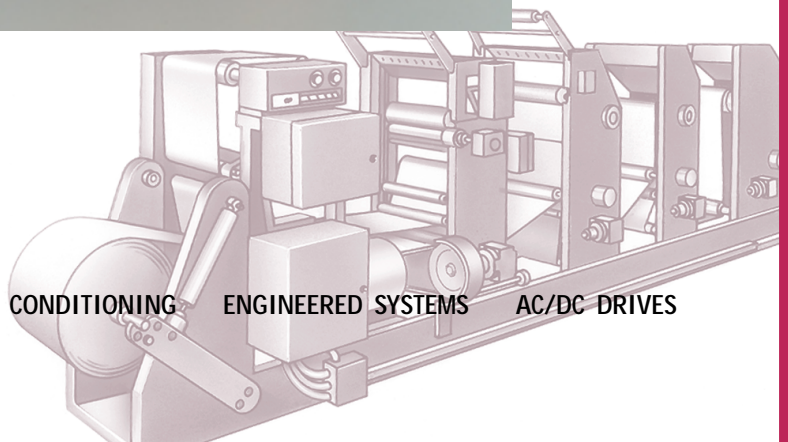
SERVO CONTROLS

STEPPER CONTROLS

VOLTAGE CONDITIONING

ENGINEERED SYSTEMS

AC/DC DRIVES



People Finding A Better Way®

ADDITIONAL WARNER ELECTRIC DC DRIVES & CONTROLS



BRONCO® II and Washdown Series DC Drives

Designed for tough rugged applications, BRONCO® II DC Drives feature speed regulation $\pm 0.5 - 1\%$, dual voltage input (115/230 VAC), output 90 or 180 VDC, $\frac{1}{4}$ to 2 HP, circuit protection, torque control, local or remote operator control, open chassis, field programmable jumpers, control relay with 3-wire start/stop circuit, jog at potentiometer speed, cast aluminium enclosure – NEMA 4, NEMA 12, and NEMA 4X. Maximum and minimum speed adjustments.



SE2000 DC Drives

This non-regenerative DC drive is designed to control shunt wound or permanent magnetic field DC motors from $\frac{1}{4}$ to 5 HP. It offers isolated 4-20mA or 0-10 VDC control signal, tachometer generator feedback, circuit protection, diagnostic capabilities, control relay, torque and slope control, and overcurrent protection. Jumper selectable to program drives for specified motor or application. Horsepower range 115 VAC to 230 VAC. Open chassis available and UL listed.



M4000 Digital 3-Phase DC Drives

The M4000 Series Digital 3-Phase DC Drive is a programmable, microprocessor based variable speed DC drive. It allows keypad control of each parameter. Digital readout provides on-line monitoring of drive operation. Ideal for many drive applications including wire and cable, packaging/converting, machinery and material handling. Improved circuit board technology has added standard features, including serial communications and a field-weakening controller for constant power and extended speed range applications.



DS9000 Digital Drive Speed Controller

The DS9000 Digital Speed Controller features long term speed accuracy, control and stability. It offers 16-bit microprocessor based, AC or DC drive control, $\pm .01\%$ accuracy, digital master or follower, analog or digital input, and two selectable sets of programmable parameters. Front panel controls include a 4-digit LED readout, keypad controls and four LED status indicators.

*Contact Warner Electric for information on our complete line of AC Drives

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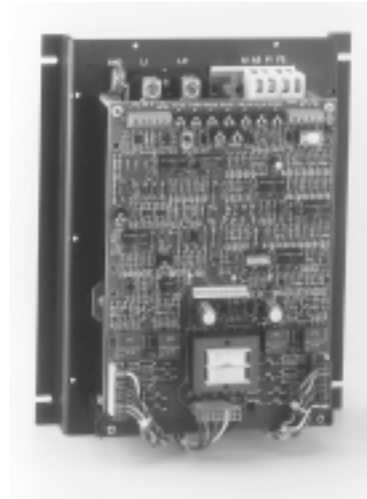
Features and Benefits

The Quadraline 7000 series is a full wave, regenerative DC drive designed to operate shunt wound or permanent magnet DC motors from 1/4 HP to 5 HP.

Regenerative drives are the ideal answer for:

- **Maintaining motor speed when an overhauling load attempts to increase the motor speed**
- **Providing continuous braking torque with no power dissipation**
- **Repeatable, controllable braking to rest**
- **Rapid, repetitive reversal of motor rotation**

The Quadraline 7000 models are packed with features, designed and manufactured to the highest quality standards and available from your local Warner Electric Motors and Controls distributor at an economical price.



Designed for either permanent magnet or wound field motors

Field supply is standard. Allows use of a wide range of motors.

Full wave four quadrant operation

Provides smooth motoring or braking torque in either direction of rotation.

Selectable features

Selected by programming jumpers to program drives for specific motor or application:

AC Supply– selects 115V or 230 VAC

Current Scaling– selects current range to match control to a particular motor HP Rating

Speed Feedback– selects armature voltage feedback or tach–generator feedback for improved speed holding

Acceleration/Deceleration Time– selects range for adjustment control up to 30 secs

Torque or Speed Control– selects mode of either motor speed or motor torque controlled by operator's potentiometer

AC Supply Frequency– allows drive to be operated on 50 Hz or 60 Hz supply

High-response drive

Wide band width allows unit to replace expensive servo drives in some applications.

Regenerative braking

Motor acts as a generator and provides braking torque.

The braking energy is returned to the AC power line, not dissipated as heat.

Electronic reversing

Allows rapid and continuous cycling without any moving parts in the control.

No mechanical contactors required.

UL® Listed Ratings

Horsepower range

115 VAC 1/4–1 HP

230 VAC 1/2–5 HP

150% full load current available for 1 minute.

Adjustments

Customer adjustments to match control to application:

Maximum speed– limits speed available at operator's control

Forward Acceleration– sets time to reach full speed in forward direction– is also reverse deceleration time

Reverse Acceleration– sets time to reach full speed in reverse direction– is also forward deceleration time

IR Compensation– improves motor speed regulation in armature feedback mode

Forward Current Limit– sets maximum current available in forward direction to limit motor overload

Reverse Current Limit– sets maximum current available in reverse direction to limit motor overload

Response– sets response characteristic of control for higher performance applications

Protection

Input AC line fuses protect control from line or load faults. MOV's protect unit from voltage transients on AC power line.

Optional features include:

- NEMA 4/12 enclosure
- Fault module
- Bi-polar isolated input module
- Independent Individual control of forward accel and decel and reverse accel and decel rates
- AC pulse tach feedback

Features and Benefits



Feature Packed

Full wave 4-quadrant operation

Provides smooth motoring or braking torque in either direction of rotation.

7 Selectable performance features

- 115V/230V AC Input
- Accel/Decel Range
- Internal/External Jog Reference
- HP Select
- Overcurrent Trip Select
 - Timed/Instantaneous/Disable
- Motor Field Type
 - PM or Shunt Wound
- Feedback Type

High-response drive

Wide-band width allows unit to replace expensive servo drives in some applications.

Electronic reversing

Regenerative braking

Motor acts as a generator and produces braking torque.

7 Control adjustments

Max. speed, forward and reverse acceleration, IR compensation, forward and reverse current limit, response characteristic.

For use with shunt wound or permanent magnet DC motors

Complete electrical protection

1/4 to 5 HP

150% full load current available for 1 min.

115/230 VAC Input

Positioning accuracy

4 quadrant control provides positioning easily adapted to specific programming needs.

Total control

Controlled acceleration and deceleration. Smooth, consistent, accurate...ideal for web tensioning applications.

*Chassis or NEMA 4/12 enclosure

*  Listed

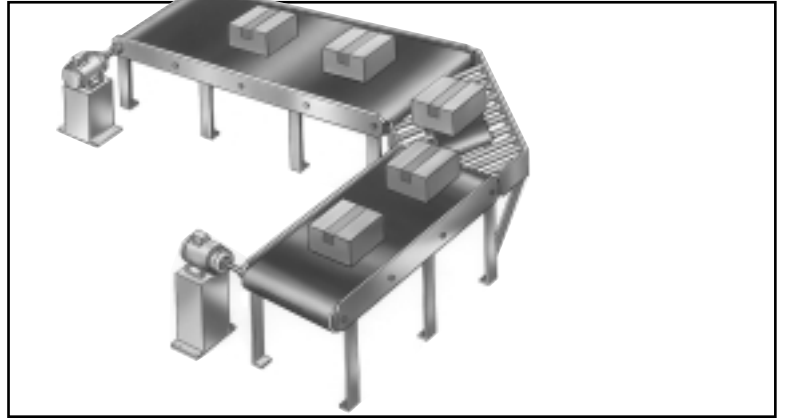
*  Listed for use in Canada

*All units except Q7006

Applications

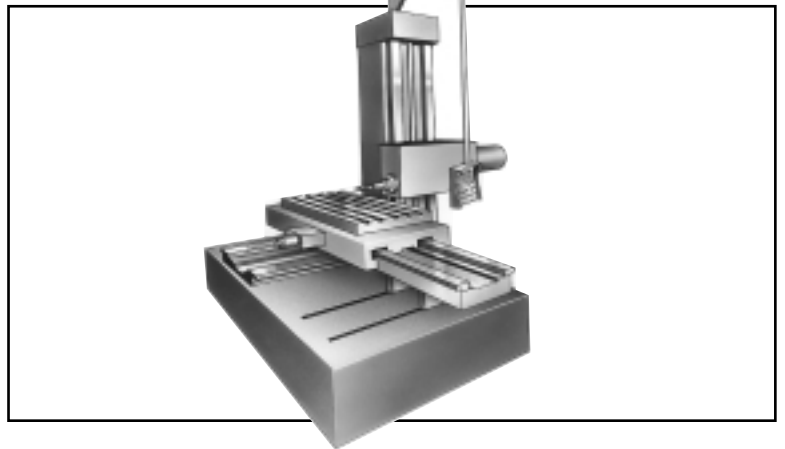
Material Handling

- Controlled acceleration
- Controlled deceleration
- Bi-directional
- Precise positioning accuracy



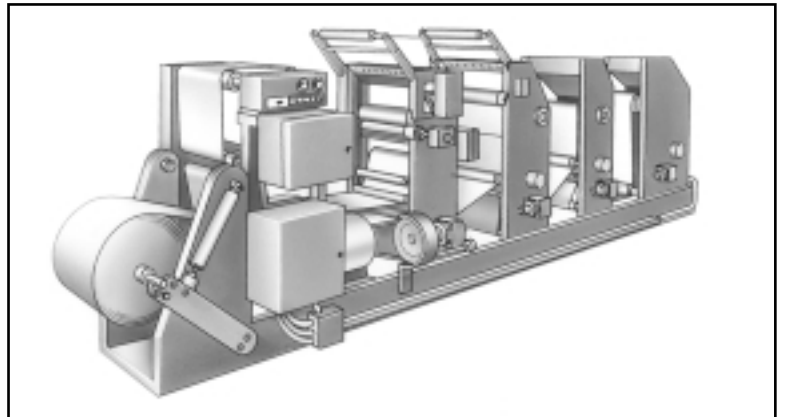
Machine Tools

- 4 quadrant control allows positioning easily adapted to specific program needs



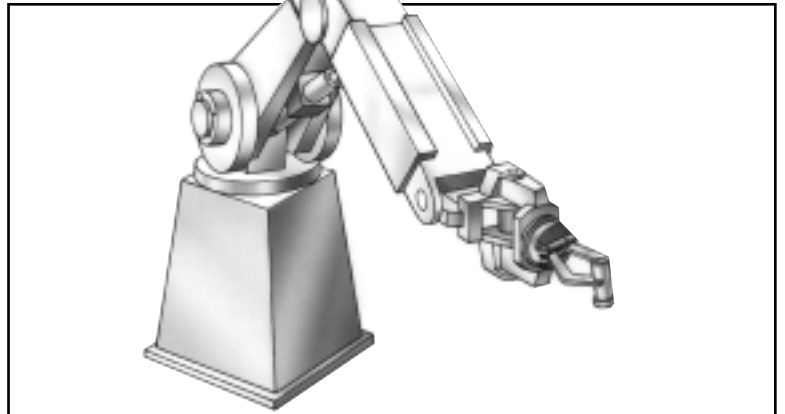
Web Processing

- Accurate web or material tensioning
- Zero position dancer (P.I.D. Gain Control)
- Smooth and consistent control in process, and during un-wind or wind-up



Robotics

- Economical alternative to sophisticated Servo control in less demanding applications
- Chassis mount for easy integration in customer control panel



Specifications

Specification	Q7006	Q7002	Q7005
Horsepower Range			
115V	1/8–1/2	1/4–1 HP	Not Used
230V	1/4–1	1/2–2 HP	3–5 HP
AC Line Input Voltage	115 or 230 V ±10%	115 or 230 V ±10%	115 or 230 V ±10%
AC Line Frequency	50/60 Hz ± 2 Hz Single Phase	50/60 Hz ± 2 Hz Single Phase	50/60 Hz ± 2 Hz Single Phase
115 VAC Supply			
Armature Voltage	0–90 VDC	0–90 VDC	Not Applicable
Field Voltage	50/100 VDC	50/100 VDC	Not Applicable
230 VAC Supply			
Armature Voltage	0–180 VDC	0–180 VDC	0–180 VDC
Field voltage	100/200 VDC	100/200 VDC	100/200 VDC
Service Factor	1.0	1.0	1.0
Duty	Continuous	Continuous	Continuous
Maximum Load Capacity	150% for 1 min.	150% for 1 min.	150% for 1 min.
Line Protection	Fuses	Fuses	Fuses
U.L. Listed	No	Yes	Yes



Q7006



Q7002



Q7005

Operating Conditions

Ambient Temperature			
Chassis Model	0–55° C	0–55° C	0–55° C
Enclosed Model	N.A.	0–40° C	0–40° C
Relative Humidity	5–95% non-condensing		
Altitude	to 3300 ft. (1000m).....		

Performance Characteristics

Speed Range	50:1	50:1	50:1
Speed Regulation (% of motor base speed) for 95% load change			
Arm. Voltage Feedback	±1% to ± 2% (depending on motor).....		
Tach. Feedback	±1/2 to 1% (depending on tach generator).....		
Acceleration (forward or reverse)			
Range A	Linear .3–3 seconds (to full speed)		
Range B	Linear 3–30 seconds (to full speed)		

Adjustments

Current Range			
(nominal–adjustable to 150%)	1.0, 1.5, 2.0, 3.0 5.0 Amps	2, 3, 4, 6, 10, Amps	15, 25 Amps
Maximum Speed	70–105% of motor base speed		
IR Compensation	Adjustable		

Options

Description

Isolated Input	Bipolar, input–output with selectable inputs for 0 to ±10 VDC, 0 to ±14 VDC, 0 to ±100 VDC, 1 to 5mA or 4 to 20mA
Fault Module	Contact outputs—trips on overcurrent, overvoltage or field loss
Independent Acceleration/ Deceleration Control	Forward acceleration, forward deceleration, reverse acceleration, reverse deceleration, 4 potentiometers
AC/Pulse Tach Feedback	Converts signals from AC tachometer or pulse generator to direction sensitive DC voltage for improved speed regulation

How to Order

In determining the components that comprise a drive system, the following selections must be made for features and options.



1. DC Motor Controller

Select HP and AC input voltage. The AC input voltage will determine motor armature and field voltage.

AC Input Voltage	Motor Voltage Arm/Field
115V	90V Arm 50/100V Field
230V	180V Arm 100/200V Field

Now select drive configuration, chassis or enclosure. If enclosure, do you want a blank front cover or operators controls? Determine which operators are required (i.e., run/jog, auto/manual) and whether they will be on a remote operators station or on the drive enclosure. From the list of standard option boards, select those required for your application.



2. DC Motor

With the motor voltage specified by the AC input voltage selected above, now determine permanent magnet or shunt wound, frame size, enclosure type (TEFC or TENV), C face, and whether a tachgenerator will be required.



3. Remote (ROS) Operator Station

If a remote operators station will be used, select which operators will be used, and the NEMA rating required.

4. Isolation Transformer

Select KVA of transformer when required by adding the total HP of all drives to be connected to the transformer. Then select model number by primary input voltage and secondary output voltage.

5. Options/Accessories

- A. Determine which options are required for your applications. This could include speed and/or load meters.
- B. Options may be mounted by the factory or field installed.

Example

A conveyer requires a 1 HP DC motor, 1750 RPM, shunt wound field, TEFC enclosure and a 7V/1000RPM tachometer. The DC drive will be chassis mount, 230 VAC single phase input, to be operated from a ROS. ROS to include forward and reverse, start/stop and a speed potentiometer. Isolation transformer from a 230 VAC input is required. The user would also like fault output contacts to activate other machine control.

Item	Qty	Part No.
1	1	Q7006-2
2	1	MOH2210831
3	1	R1002
4	1	TRS21-020
5	1	(included as a part of item 1)

Quadraline 7000 Series

Input Line Voltage	HP	Basic On/Off			External Signal			Zero Position Dancer Control	
		Chassis	NEMA 4/12	NEMA 4/12 w/ Operators	Chassis	NEMA 4/12	NEMA 4/12 w/ Operators	Chassis	NEMA 4/12
115 VAC 1 Phase	1/8–1/2	Q7006	N/A	N/A	Q7006–1	N/A	N/A	Q7006–5	N/A
230 VAC 1 Phase	1/4–1	Q7006	N/A	N/A	Q7006–1	N/A	N/A	Q7006–5	N/A
115 VAC 1 Phase	1/4–1	Q7002	Q7022	Q7032	Q7002–1	Q7022–1	Q7042–1	Q7002–5	Q7022–5
230 VAC 1 Phase	1/2–2	Q7002	Q7022	Q7032	Q7002–1	Q7022–1	Q7042–1	Q7002–5	Q7022–5
230 VAC 1 Phase	3–5	Q7005	Q7025	Q7035	Q7005–1	Q7025–1	Q7045–1	Q7005–5	Q7025–5

Selection Information

Run/Jog–Forward/Reverse

Includes power unit, control logic and enclosure if specified with or without operator devices. Operator devices include: Start-Stop switch, Run-Jog switch, Forward-Reverse switch, single turn Speed Setting Potentiometer and Power Light.

External Signal

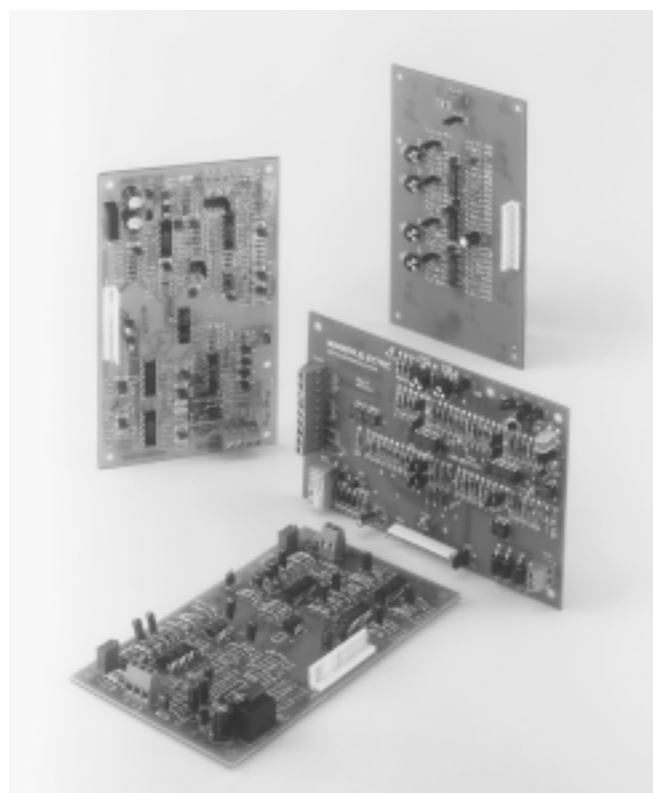
Includes power unit, control logics, isolated signal follower accepting 4–20 mA, 1–5mA, 0–±10 VDC, 0–±14 VDC or 0–±100 VDC reference signal inputs and enclosure if specified with or without operator devices. Operator devices include: Start-Stop switch, Run-Jog switch, Forward-Reverse switch, Auto-Manual switch, single turn Speed Setting Potentiometer, and Power Light.

Zero Position Dancer Control

For tension applications such as an unwind, rewind or tension infeed with a zero position dancer or load cell includes PID function. This feature is used in special applications usually involving web-processing equipment.

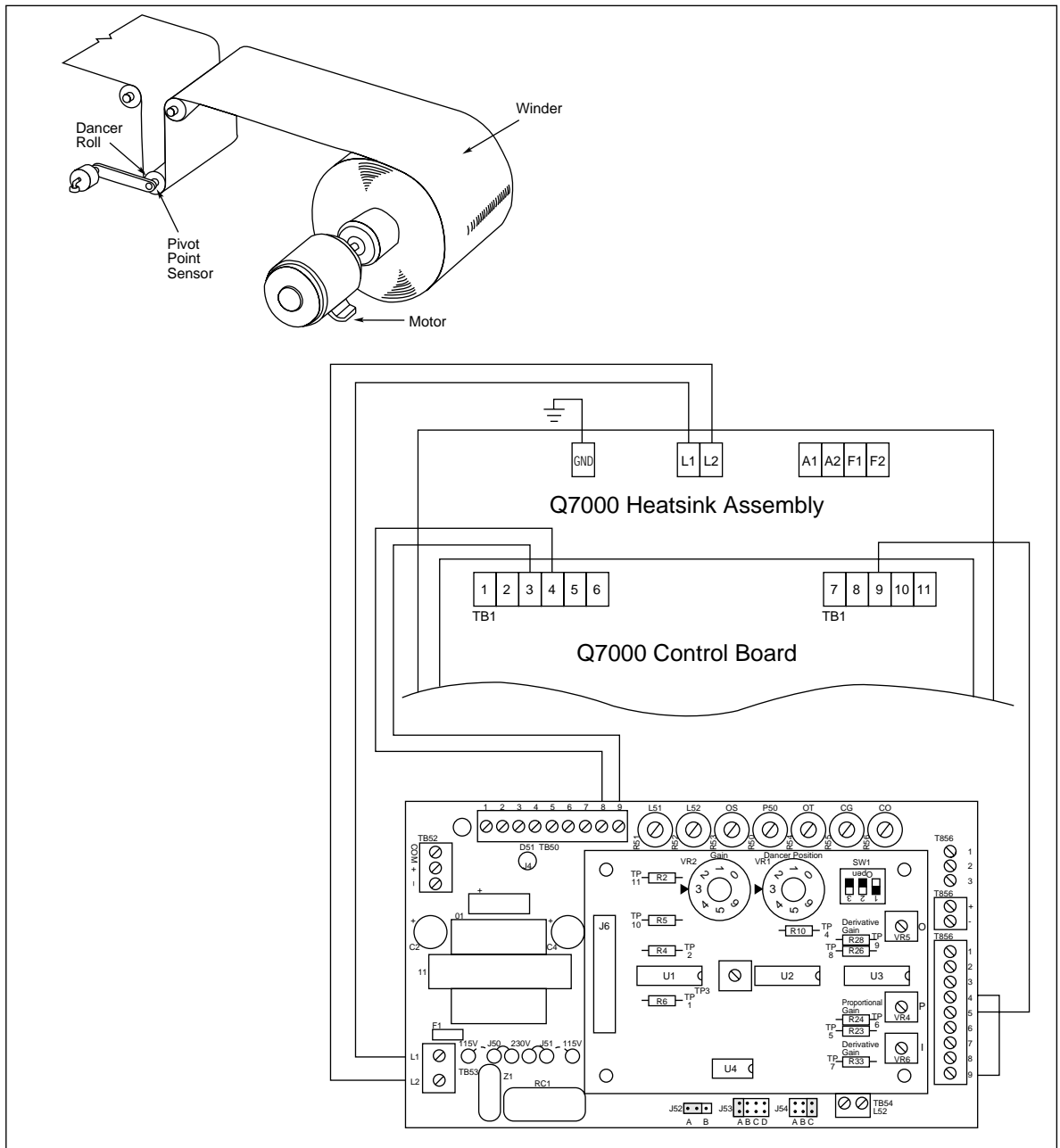
Options

Description	Factory Installed M/N Suffix	Field Installed Kits M/N
Isolated Input —Bipolar, input-output with selectable inputs for 0 to ±10 VDC, 0 to ±14 VDC, 0 to ±100 VDC, 1 to 5mA or 4 to 20 mA.	–1	Q7999–01
Fault Module —Contact outputs -trips on overcurrent, overvoltage or field loss.	–2	Q7999–02
Independent Accel/Decel Control —Forward accel, forward decel, reverse accel, reverse decel, 4 potentiometers	–3	Q7999–03
AC/Pulse Tach Feedback —Converts signals from AC tachometer or pulse generator to direction sensitive DC voltage for improved speed regulation	–4	Q7999–04
Mounting and connecting hardware for 2 option kits	Not Required	Q7098–00
Pivot Point Sensor (for use w/zero position Dancer controlled models)	–	APT 2043–00



Zero Position Dancer Control

Connection Diagram



1. General Description

The zero position dancer option board provides dancer control for either an unwind, rewind or in-feed tension control systems. In a dancer system, closed loop control is accomplished because the web completes the path between the motor and the dancer. With the zero position dancer option board, (hereafter referred to as the ZPD Board) the dancer remains in a fairly constant position throughout the run.

The purpose of the ZPD board is to stabilize the system and keep the dancer in a fixed position, thus maintaining tension within a given tolerance range.

The pivot-point sensor, coupled to the pivot point of the dancer arm, generates a signal to the ZPD board signifying the position of the dancer arm and the direction and velocity of any dancer arm movement. The Dancer Position potentiometer adjusts the dancer zero point electrically within the control. Terminals are provided for a

remotely mounted Dancer Position potentiometer.

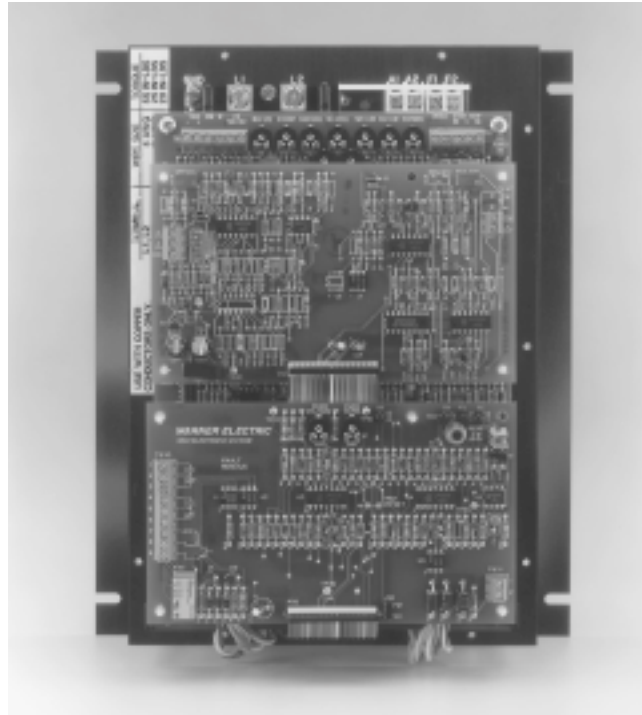
The adjustments contained on the ZPD board enable the system to be fine tuned to the exact parameters of the application to provide optimum control and stability.

2. Specifications

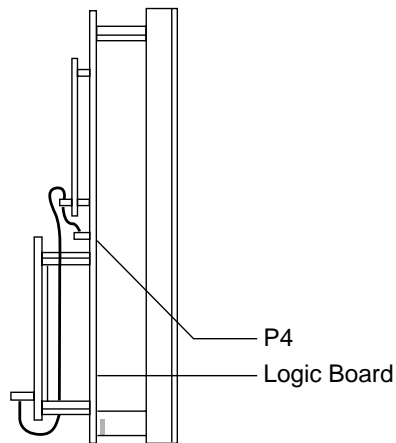
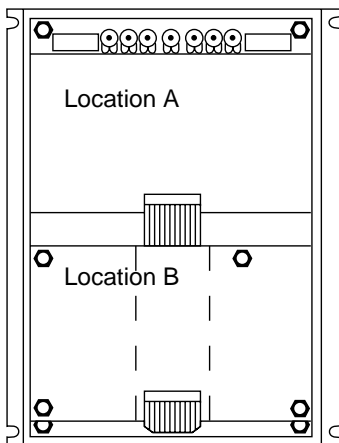
- Dancer pot (Pivot point sensor) 1k OHM min., 20k OHM max. M/N APT 2043-00

Installation

Each version of the Q7000 control except the Q7006 has provision for mounting up to two option boards. Q7006 units have room for one option board. If one option board is fitted it will be in position A in Figure A. The second option board will be fitted in position B. Reference Figure A.



**Options
Factory or
Field
Installed**

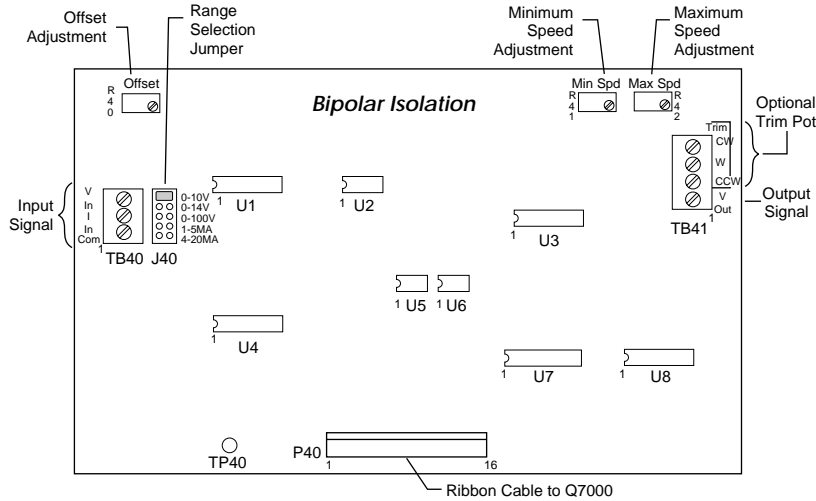


A. For field installation of one option, the correct mounting hardware will be supplied with the option kit.

B. For field installation of two options, an additional mounting kit Q7098-00 for location B is required.

Options Bipolar Isolation

Component Location



1. General Description

The Bipolar Isolation Option Board provides an isolated interface between the Q7000 and Reference control signals. The Option Board mounts easily to the Q7000 Control Board via stand-offs and a ribbon cable.

2. Specifications

Input Signals:

Current	Voltage
1–5mA DC	0 to ±10 VDC
4–20mA DC	0 to ±14 VDC
	0 to ±100 VDC
Output voltage:	0 to ±10 VDC

Operation and Adjustment

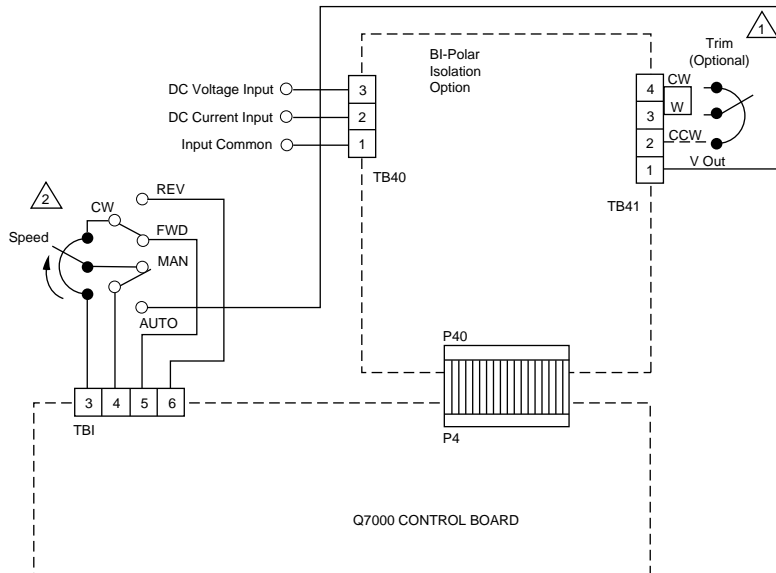
Jumper Selection

Select input range

For voltage input, connect input wires to the V IN and COM (common) positions on TB40. Jumper J40 as follows:

Jumper Position	Voltage Input Range
0–10 VDC	0 to ±10 VDC
0–14 VDC	1 to ±14 VDC
0–100 VDC	0 to ±100 VDC

Connection Diagram



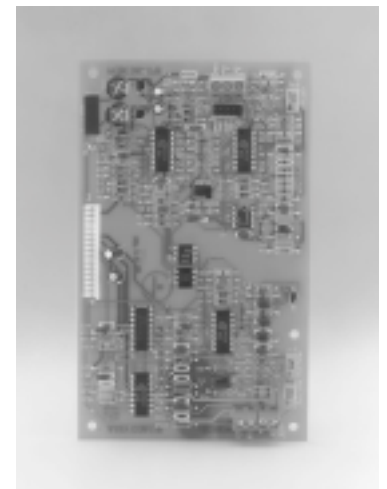
For current input, connect input wires to the I IN and COM (common) positions on TB40. Jumper J40 as follows:

Jumper Position

1–5mA DC
4–20mA DC

Ensure Jumper J41 is in position A.

1. If optional trim pot is used, remove jumper from TB41–3 and 4.
2. Mounted on the enclosure door of External Signal Models equipped with this provision.



1. General Description

The Fault Module Option Board provides adjustable overvoltage and overcurrent as well as field loss protection for the Q7000 series of DC motor controllers. The overcurrent protection can be jumpered for either instantaneous overcurrent trip or timed overcurrent trip. (An overload will eventually cause an overcurrent trip with the time to trip decreasing as the current level increases when the timed mode is selected.) An open collector transistor output is provided to indicate when an overload is present. Four Red LED's are on the board, to indicate overcurrent trip, overvoltage trip, field loss trip, and overload.

Two form C contacts are provided from the fault relay that change state in the event of a fault trip. An on-board reset pushbutton or quick connect connections are provided for resetting the drive after a fault occurs. When a fault occurs, the drive is disabled, turning off the SCR power bridge, the motor will coast to a stop. If the fault relay contacts are wired into the stop circuitry, the Stop/Start relay in the Quadraline 7000 controller will drop out.

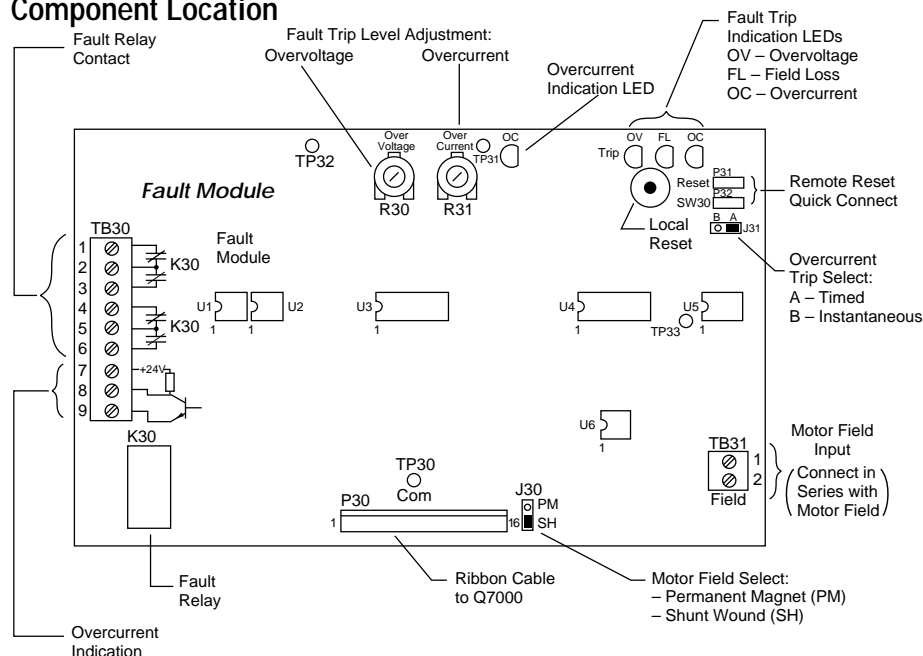
- C. Field Loss, detects loss of field current.
- D. Fault Relay, with 2 form C contacts, that is energized when power is applied and no faults are present.
- E. Open Collector Output signifying an overcurrent condition is present. Timed overcurrent trip will occur if the overload remains (Overcurrent LED D30 indicates output is on.) This circuit can handle 250mA (24 VDC max.) when the output is pulled down to zero during an overload.
- F. Four Red LEDs
 - 1. Overcurrent Trip
 - 2. Overcurrent voltage
 - 3. Field Loss Trip
 - 4. Overcurrent Present

2. Specifications

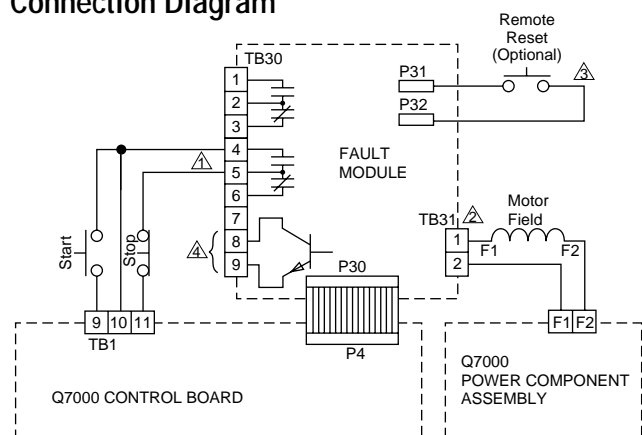
- A. Adjustable Instantaneous or Timed Overcurrent Trip. Current trip setting 30 to 150% rated current.
- B. Adjustable Overvoltage Trip. Voltage trip setting 10 to 150% rated voltage.

Options Fault Module

Component Location



Connection Diagram



Notes:

1. Fault relay contacts are shown in trip or power off condition. Connect contact in series with stop circuit as shown to activate stop function when trip occurs. If this connection is not made, control is disabled when trip occurs and will start when trip circuit is reset.
2. No connection is required for PM motor.
3. Close contacts to reset trip circuit.
4. Overcurrent indication: Open collector output sinks up to 250mA if current exceeds overcurrent level. (24 VDC max.)

Options Independent Acceleration Deceleration

1. General Description

The standard Q7000 Series DC controller has a single forward acceleration adjustment pot and single reverse acceleration adjustment pot. The Forward Acceleration pot also sets the acceleration rate in the forward direction, and the deceleration rate in the reverse direction, i.e. both of these rates will be the same. Conversely, the Reverse Acceleration pot also sets the deceleration rate in the Forward direction, again, both rates are the same.

Two modes of Accel/Decel control can be programmed with this option.

The first, or Mode A, provides two acceleration adjustment pots and two deceleration adjustment pots. This allows for independent adjustment of the forward acceleration rate, forward deceleration rate, reverse acceleration rate and reverse deceleration rate.

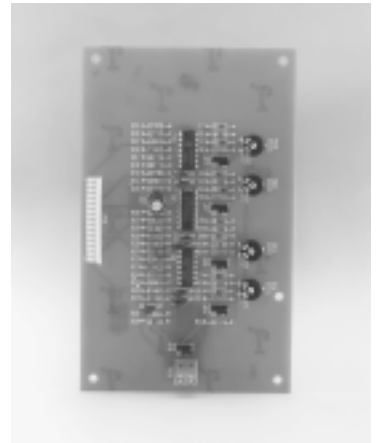
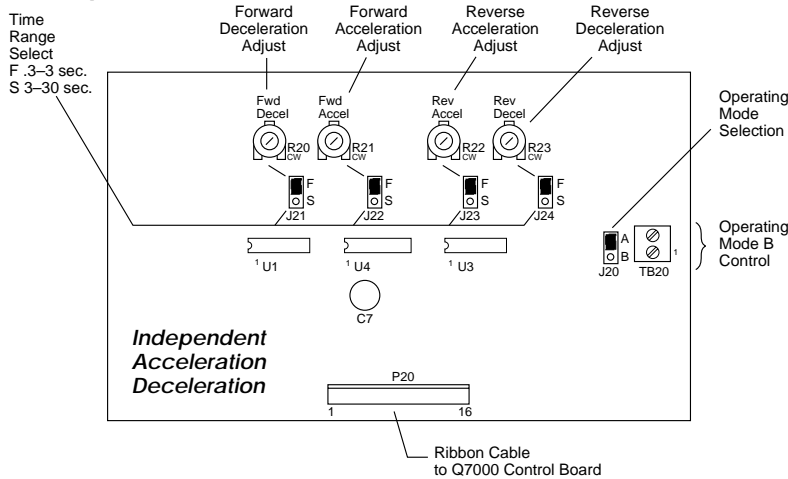
The second, Mode B, allows two different Accel/ Decel rates to be selected by an outside sourced contact closure. Like the Basic Quadraline 7000 the Forward Acceleration and Reverse Deceleration rates are identical as are the Reverse Acceleration and Forward Deceleration rates. The Mode B difference allows the ability to switch through contact change from either of two sets of adjustments, thereby giving two entirely different rates rather than the single rate allowed with the basic Quadraline 7000 controller.

The adjustment setting for acceleration determines the amount of time the motor controller will take to drive the motor from standstill or zero speed up to maximum speed. The adjustment setting for deceleration determines the time the motor controller will take to brake the motor from maximum speed to zero.

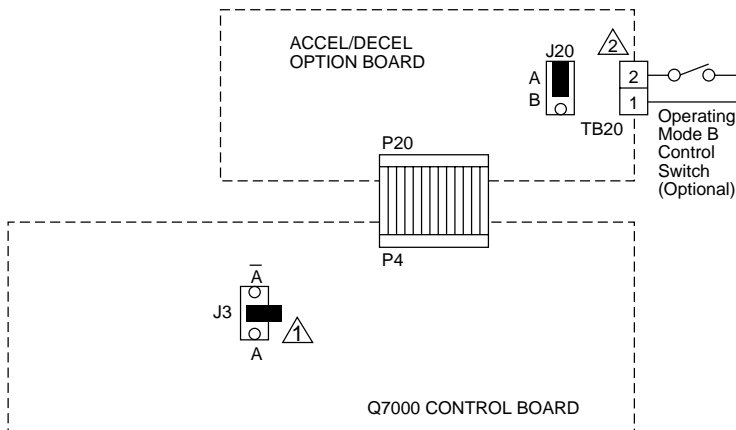
2. Specifications

- A. Accel/Decel Time Range:
Jumper Selectable for each pot
(J21–J24)
F Range .3–3 seconds (zero to full speed)
S Range 3–30 seconds (zero to full speed)
- B. Operating Modes:
Jumper Selectable (J20)
A Mode:
Acceleration Forward R21
Deceleration Forward R20
Acceleration Reverse R22
Deceleration Reverse R23
B Mode:
Pot operation in the B Mode is controlled by a contact closure or jumper on TB20.

Component Location



Connection Diagram



Notes:

1. Jumper J3 on Q7000 control board must be placed in the "center" position as shown for proper operation of accel/decel option board.
2. Reference section 2.b for description of operation modes.

1. General Description

The AC/Pulse Tach Option board allows the use of either an AC tachometer or a magnetic pulse tach for speed feedback to the Q7000. A ring tach, such as the MTK series used with the DS 9000 Digital Front End, can be used. The standard drive requires a DC analog tachometer 7 VDC/ 1000 RPM, or 50 VDC/1000 RPM, if a tachometer is to be used. If an encoder is to be used, please consult Seco Electronics for adjustment.

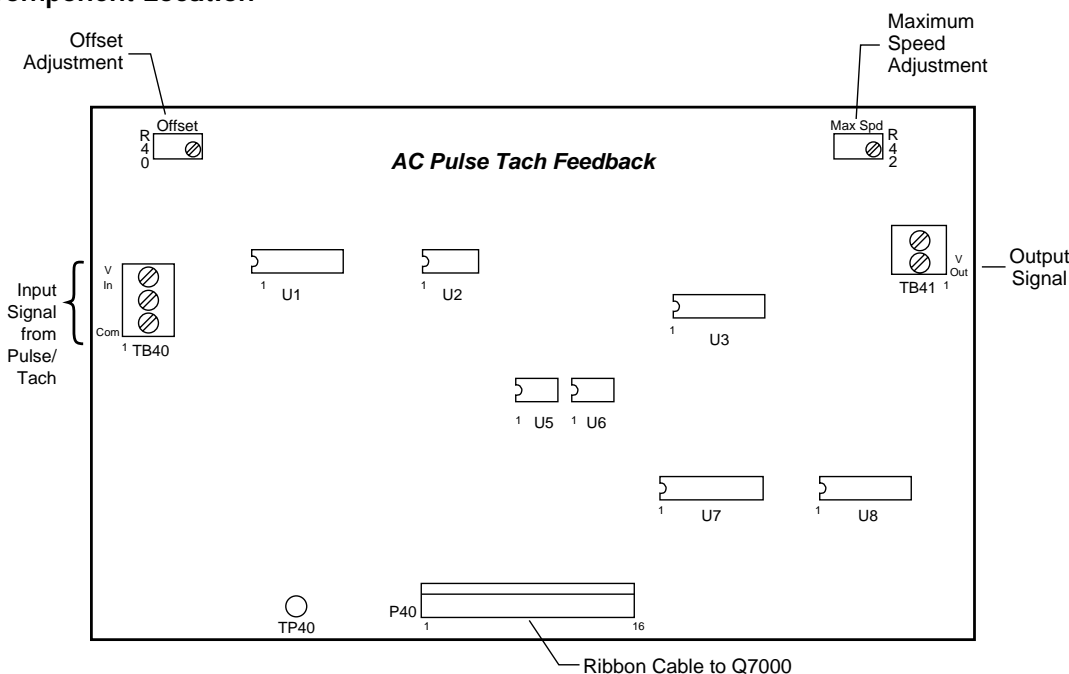
2. Specifications

- Input Signal
- Primarily designed for 60 pulse per revolution pulse tachometers. Maximum frequency input is 3600 Hz. Minimum frequency for full output voltage is 1200 Hz.
 - Maximum voltage 100V.
- Output signal
- 0 to 10 VDC.

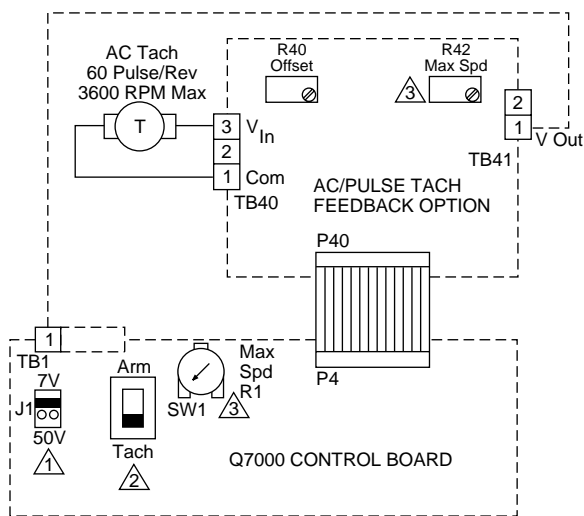


Options A/C Pulse Tach Feedback

Component Location



Connection Diagram



Notes:

- Place jumper J1 in 7V position.
- Select tach feedback mode. (SW1)
- Adjust R42, max. speed to set maximum motor speed. (R1, max. speed on Q7000 control board should be set fully CCW)

Remote Operator Stations

Remote Operator Stations (ROS)

Function	Model Number
Start-Stop Switch (2) Run-Jog Switch Forward-Reverse Switch Auto-Manswitch Single Turn Speed Pot	R1000
Start-Stop Switch (2) Run-Jog Switch Auto-Man Switch Single Turn Speed Pot	R1001
Start-Stop Switch (2) Forward-Reverse Switch Run-Jog Switch Single Turn Speed Pot	R1002
Start Pushbutton (1)(3) Stop Pushbutton Single Turn Speed Pot	R8005

Note:

- (1) NEMA 12 Enclosed with wiring to operators.
- (2) NEMA 4/12 Enclosed with wiring to terminal strips.
- (3) For non-reversing application only.

Isolation Transformers

Isolation Transformers

Single phase NEMA I Enclosed, Dry Type, No Taps, 60 Hz

HP	KVA	Primary Voltage	Secondary Voltage	Model Number
1/4	1/2	120/240	120/240	TRS21-005
1/2	1	120/240	120/240	TRS21-010
3/4	1 1/2	120/240	120/240	TRS21-015
1	2	120/240	120/240	TRS21-020
1 1/2	3	240/480	120/240	TRS42-030
2	5	240/480	120/240	TRS42-050
3	7 1/2	240/480	120/240	TRS42-075
5	10	240/480	120/240	TRS42-100

For dimensions and connection information, contact Warner Electric Motors and Controls customer service.

How to Order

Selection charts for DC motors, available from Warner Electric Motors and Controls, are listed on the following pages. For more complete specifications and dimensional information, contact Warner Electric Motors and Controls customer service.

Motor chart specify:

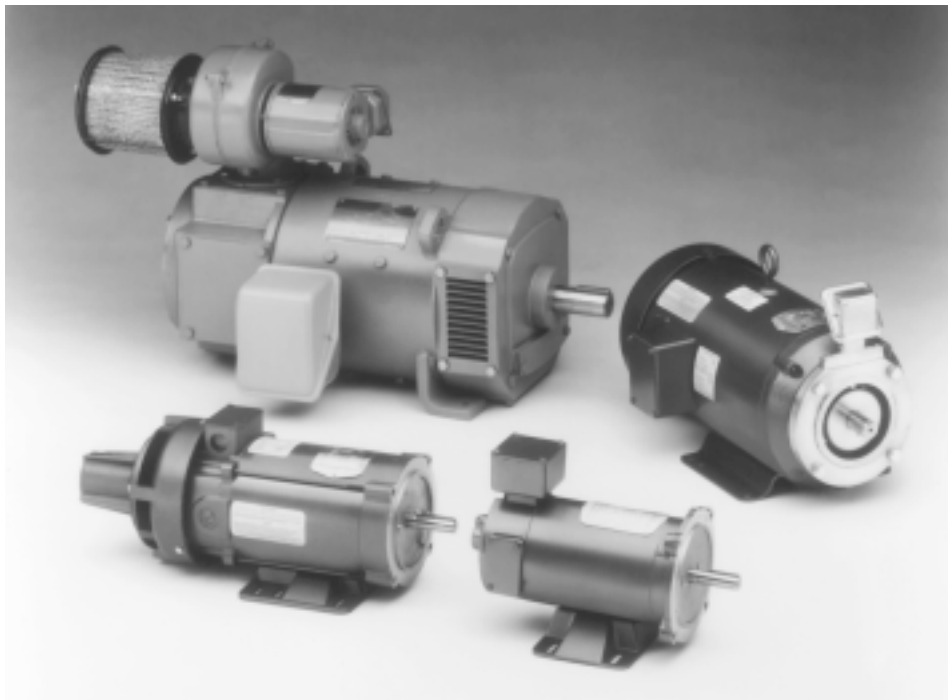
Horsepower
 Motor Type (Manufacturer)
 B=Baldor
 G=General Electric
 Frame Size
 Motor Enclosure
 TE=Totally Enclosed
 TEFC=Fan Cooled
 TENV=Non Ventilated
 'C' Face Size
 (For use with Single Phase
 Controllers only)
 Armature Voltage
 Model Number
 Motor with Tachometer
 (mounted)
 Motor without Tachometer
 Tachometer Kit

Non-Listed Motors

Non-listed motors are available, but specific information is required.

1. Motor horsepower
2. RPM
3. Frame size
4. Volts, armature
5. Volts, field or PM
6. Enclosure
7. Conduit location, F1, F2 etc.
8. Thermostat
9. Accessory endshield
10. 'C' face
11. Delivery requirements
12. Special application or environmental considerations and other important information.

Standard DC Motors



Standard DC Motors

DC Motors

1/4 to 1 Horsepower 90 VDC Armature – PERMANENT MAGNET FIELD – 1750 RPM – Totally Enclosed

HP	Motor Type	Frame Size	Enclosure	NEMA 'C' Face	Model Number		7 VDC Tachometer Kit
					Motor without Tachometer	Motor with 7 VDC/1000 RPM Tachometer (mounted)	
1/4	G	56HAA	NV	56C	MOD6110210	N/A	N/A
	B	320P	NV	56C	MOD6211200	MOD6211231	TAC 4001-13
1/2	G	56KAA	FC	56C	MOF6210210	N/A	N/A
	B	336P	NV	56C	MOF6211200	MOF6211231	TAC 4001-13
3/4	G	56PAA	FC	56C	MOG6210210	N/A	N/A
	B	428P	FC	56C	MOG6211100	MOG6211131	TAC 4001-00
1	G	56SAA	FC	56C	MOH6210210	N/A	N/A
	B	435P	FC	56C	MOH6211100	MOH6211131	TAC 4001-00

Note: All motors are capable of 20:1 constant torque speed range.

DC Motors

1/2 to 5 Horsepower 180 VDC Armature – PERMANENT MAGNET FIELD – 1750 RPM – Totally Enclosed

HP	Motor Type	Frame Size	Enclosure	NEMA 'C' Face	Model Number		7 VDC Tachometer Kit
					Motor without Tachometer	Motor with 7 VDC/1000 RPM Tachometer (mounted)	
1/2	G	56KAA	FC	56C	MOF7210210	N/A	N/A
	B	336P	NV	56C	MOF7111100	MOF7111131	TAC 4001-13
3/4	G	56PAA	FC	56C	MOG7210210	N/A	N/A
	B	336P	NV	56C	MOG7211100	MOG7211131	TAC 4001-10
1	G	146ATC	FC	140TC	MOH7210800	MOH7210831	TAC 4004-02
	G	56SAA	FC	56C	MOH7210210	N/A	N/A
	B	435P	FC	56C	MOH7211100	MOH7211131	TAC 4001-00
1-1/2	B	536P	FC	140TC	MOI7211100	MOI7211131	TAC 4007-01
	G	148ATC	FC	140TC	MOI7210800	MOI7210831	TAC 4004-02
2	B	548P	FC	140TC	MOJ7211100	MOJ7211131	TAC 4007-01
	G	149ATC	FC	140TC	MOJ7210800	MOJ7210831	TAC 4004-02
3	G	1412ATC	FC	140TC	MOK7210800	MOK7210831	TAC 4004-02
	B	649P	FC	180TC	MOK7211100	MOK7211131	TAC 4001-15
5	B	681P	FC	180TC	MOL7211100	MOL7211131	TAC 4001-15

Note: All motors are capable of 20:1 constant torque speed range.

Standard DC Motors

DC Motors

1/4 to 1 Horsepower 90 VDC Armature – 100/50 VDC SHUNT WOUND FIELD – 1750 RPM – Totally Enclosed

HP	Motor Type	Frame Size	Enclosure	NEMA 'C' Face	Model Number		7 VDC Tachometer Kit
					Motor without Tachometer	Motor with 7 VDC/1000 RPM Tachometer (mounted)	
1/4	B	413D	FC	56C	MOD1211700	MOD1211731	TAC 4001-00
1/2	B	420D	FC	56C	MOF1211700	MOF1211731	TAC 4001-00
3/4	B	428D	FC	56C	MOG1211700	MOG1211731	TAC 4001-00
1	B	535D	FC	56C	MOH1211700	MOH1211731	TAC 4007-00

Note: All motors are capable of 20:1 constant torque speed range.

DC Motors

1/2 to 5 Horsepower 180 VDC Armature – 200/100 VDC SHUNT WOUND FIELD – 1750 RPM – Totally Enclosed

HP	Motor Type	Frame Size	Enclosure	NEMA 'C' Face	Model Number		7 VDC Tachometer Kit
					Motor without Tachometer	Motor with 7 VDC/1000 RPM Tachometer (mounted)	
1/2	B	420D	FC	56C	MOF2211700	MOF2211731	TAC 4001-00
3/4	B	428D	FC	56C	MOG2211700	MOG2211731	TAC 4001-00
1	G	146ATC	FC	140TC	MOH2210800	MOH2210831	TAC 4001-02
	B	535D	FC	56C	MOH2211800	MOH2211831	TAC 4007-01
	G	L182ACY	NV	180C	MOH2110100	MOH2110131	TAC 4002-03
1-1/2	G	148ATC	FC	140TC	MOI2210800	MOI2210831	TAC 4004-02
	G	L186ACY	NV	180C	MOI2110100	MOI2110131	TAC 4002-03
	B	636D	FC	180C	MOI2211400	MOI2211431	TAC 4001-15
2	G	149ATC	FC	140TC	MOJ2210800	MOJ2210831	TAC 4004-02
	B	646D	FC	180C	MOJ2211400	MOJ2211431	TAC 4001-15
	G	L186ACY	NV	180C	MOJ2110100	MOJ2110131	TAC 4002-03
3	G	189ATC	NV	180TC	MOK2110100	MOK2110131	TAC 4002-03
	G	1412ATC	FC	140C	MOK2210800	MOK2210831	TAC 4004-02
	B	7544D	FC	210C	MIK2211100	MOK2211131	TAC 4001-06
5	G	CD2110ACY*	NV	210C	MOL2110700	MOL2110731	TAC 4002-03
	B	9143D*	FC	256UCZ	MOL2211100	MOL2211131	TAC 4001-08

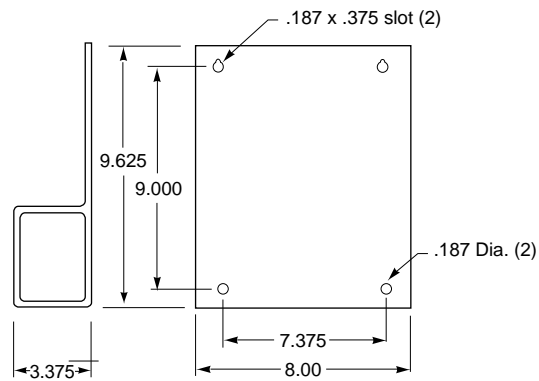
*These motors have 1-1/8" shaft diameter.

Note: All motors are capable of 20:1 constant torque speed range.

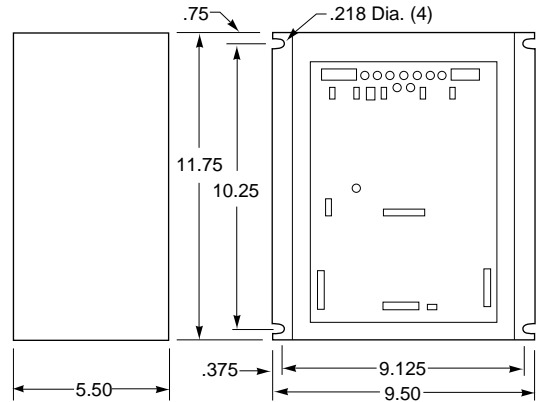
Dimensions

Chassis

Q7006 Series



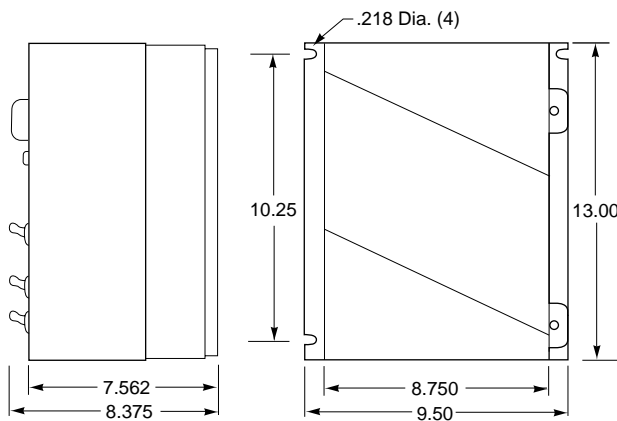
Q7002/7005 Series



Dimensions are listed in inches.

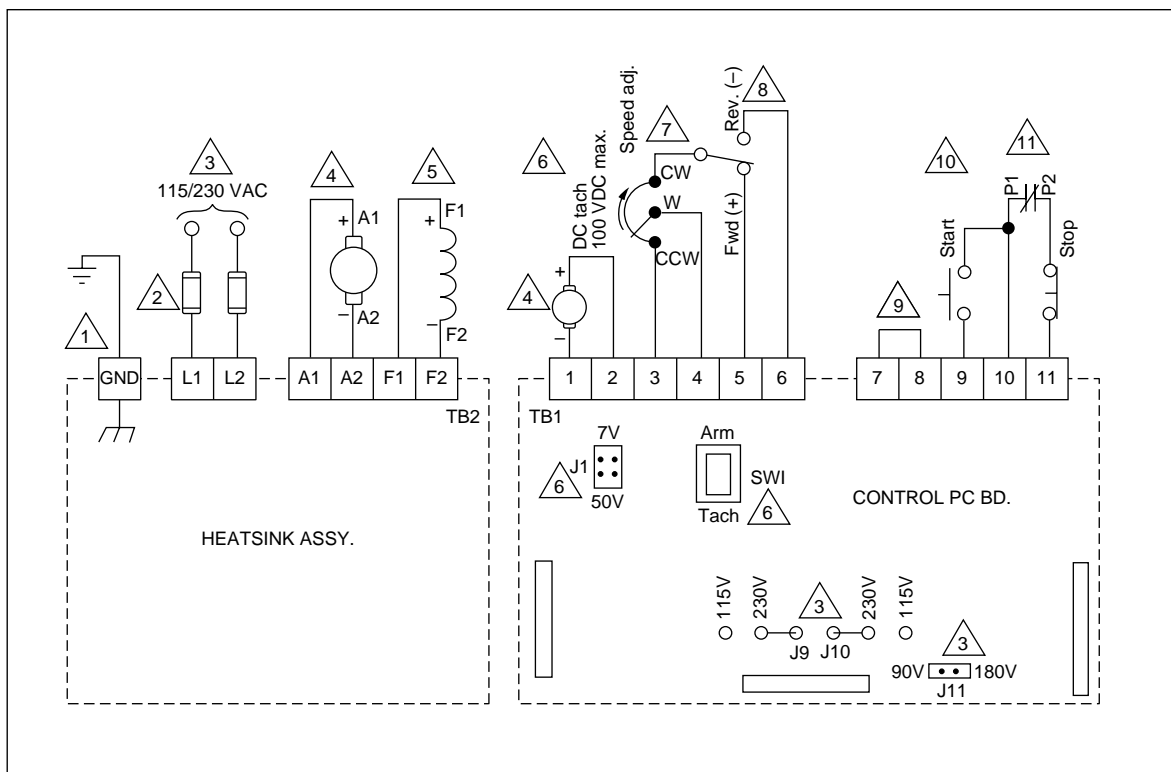
Enclosed

Q7002/7005 Series



Dimensions are listed in inches.

Connection Diagrams

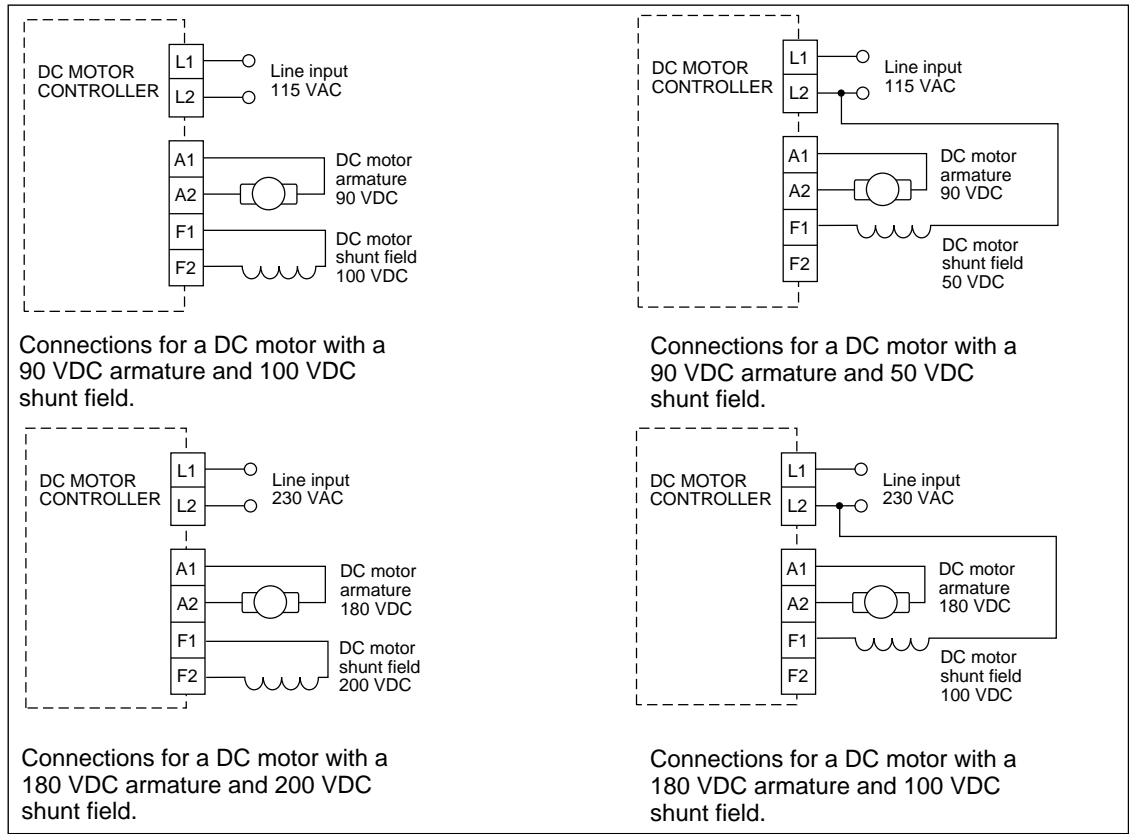


Notes:

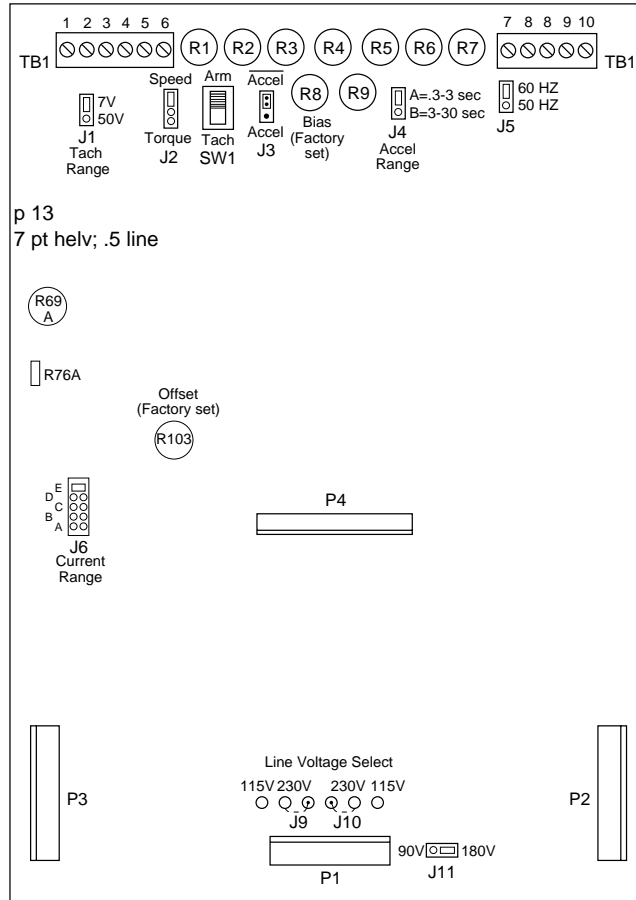
1. Ground control per local and national codes.
2. Customer supplied line fuses; size for protection of AC line wiring and transformer per local and national codes.
3. Programming jumpers J9, J10, and J11 on control board must be positioned for 115 or 230 VAC line.
4. Polarity shown is for positive speed reference voltage at TB1-4 (fwd direction).
5. For PM motors, no connection is necessary to F1 and F2.
6. DC tachometer (7VDC/1000 RPM or 50 VDC/1000 RPM) is optional; when used, select tach feedback mode (SW1) and tach voltage level (J1).
7. Speed adjust potentiometer: 2K Ω to 10K Ω .
8. Selector switch determines direction of motor rotation. For Bi-directional operation without switch. Connect CCW potentiometer lead to TB1-6.
9. TB1-7 and 8 must be connected together to enable control; jumper is factory installed. Open this circuit to disable control.
10. Start (n.o.) and stop (n.c.) momentary pushbuttons are used for conventional 3-wire control. If 2-wire control is required, connect maintained switch or contact between TB1-9 and TB1-11.
11. If motor thermostat (P1, P2) is available, connect in series with stop pushbutton as shown.

Connection Diagrams

Shunt Field Connections for DC Motors



Adjustment Locations



- R1—Max speed
- R2—IR comp
- R3—Fwd accel
- R4—Rev accel
- R5—Fwd I limit
- R6—Rev I limit
- R7—Response
- R9—Zero Speed

Recommended Spare Parts

Description	Warner Electric Part Number		
	Q7002	Q7005	Q7006
Control Board Assembly*	SPC35933-00	SPC35933-00	SPC35933-00
Line Fuse (F1, F2)	PFU1017-01 226636-001 (Buss JJN-30A)	PFU1017-00 226636-000 (Buss JJN-60A)	PFU1010-00 104364-022 (MDA-15A)
Control Fuse (F3)	PFU1004-00 (AGC.25A)	PFU1004-00 (AGC.25A)	PFU1004-00 (AGC.25A)
SCR Module	SPATY4018-00	SPATY4017-00	-
Field Bridge	226122-000 PDI5005-00	PDI5005-00	-
MOV	202956-014 PSU2002-00	PSU2002-00	-
Power Board Assembly	-	-	SPC36019-00
Zero Position Dancer Control Board Assembly	Q7999-05	Q7999-05	Q7999-05
External Signal Option Control Board Assembly	Q7999-01	Q7999-01	Q7999-01
Fault Module Option Control Board Assembly	Q7999-02	Q7999-02	Q7999-02
Independent Accel/Decel Option Control Board Assembly	Q7999-03	Q7999-03	Q7999-03
AC/Pulse Tach Feedback Control Board Assembly	Q7999-04	Q7999-04	Q7999-04

* When replacing the Control Board Assembly, it is essential that all of the set-up jumpers and adjustment potentiometers on the new board are identical to those on the board being replaced. It may be necessary to re-adjust the potentiometers on the new board for correct operation. See Section 3.0 of this Manual.

Service

It is intended that the Quadraline 7000 should be serviced by replacing major sub-assemblies. The Replacement Parts List lists all of the sub-assemblies required to service Quadraline 7000 drives. It is recommended that users keep these parts readily available to support the drive's critical applications.

For additional assistance or the name of your closest authorized service center, contact Warner Electric Motors and Controls customer service at (800) 787-3532.

Recommended Spare Parts

Service

SUPPORTED BY DANA CORPORATION

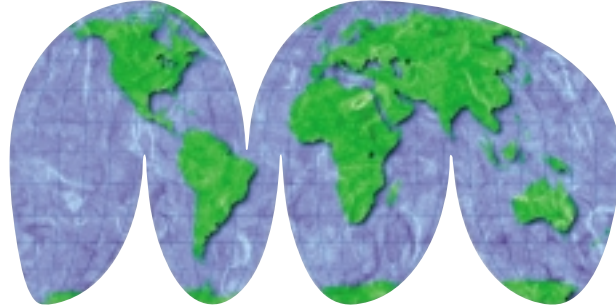
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WARNER ELECTRIC MOTORS AND CONTROLS DIVISION

Division Office
640 Avis Drive, Suite 200
Ann Arbor, MI 48108

Bristol Plant
383 Middle Street
Bristol, CT 06010

Systems Center
13500-J South Point Blvd.
Charlotte, NC 28273

International - Europe
Lausanne, Switzerland
La Pierreire
CH-1029 Villars-Ste-Croix,
Switzerland