ZX Motor Dimensions (Z910)

A 0.004 TIR
(0.10)

A
Max.

0.69 (17.5)

D

B

0.14 (3.50)

E

0.71 (18.0)

A 0.004 TIR
(0.10)

5.118 +0.0006 / -0.0004
(130.00 +0.014 / -0.011)

5.006 (127.15)
5.004 (127.10)

5.103 (129.62)
5.101 (129.57)

C

-A-

0.0016
(0.041)

M5 X 0.8 Tap X 0.55 (14.0) Min. DP. (4) holes
equally spaced on 6.457 (164.0) Diameter B. C.

0.3932 (9.987)
0.3922 (9.962)

Motor	A Max	B ± 0.08 (2.0)	C +.0005 (.009) / -.0004 (.004)	D +.02 (.50) / -.02 (.50)	E Min.
Z920	14.48 (367.8)	8.17 (207.6)	0.9449 (24.00)	1.967 (50.00)	1.457 (37.00)
Z930	17.18 (436.4)	12.21 (310.36)	1.260 (32.00)	3.00 (76.20)	2.457 (62.50)

Dimensions in inches (mm)

Note: Add 2.22 (56.4) to length "A" for brake option

Resolver
Thermostat
Receptacle

Motor
Receptacle

5.23 ±0.08
(132.9 ±2.0)

3.93
(99.8)

5.59 +0.13 / -0.00
(142.00 +3.3 / -0.0)

Ø.433 (Ø11.00) Dia. thru four holes equally
spaced on Ø6.496 (Ø165.00) Dia. B.C.

**Keyway Detail
Z920**

0.3149 (8.000)
0.3135 (7.964)

0.787 (20.00)
0.780 (19.80)

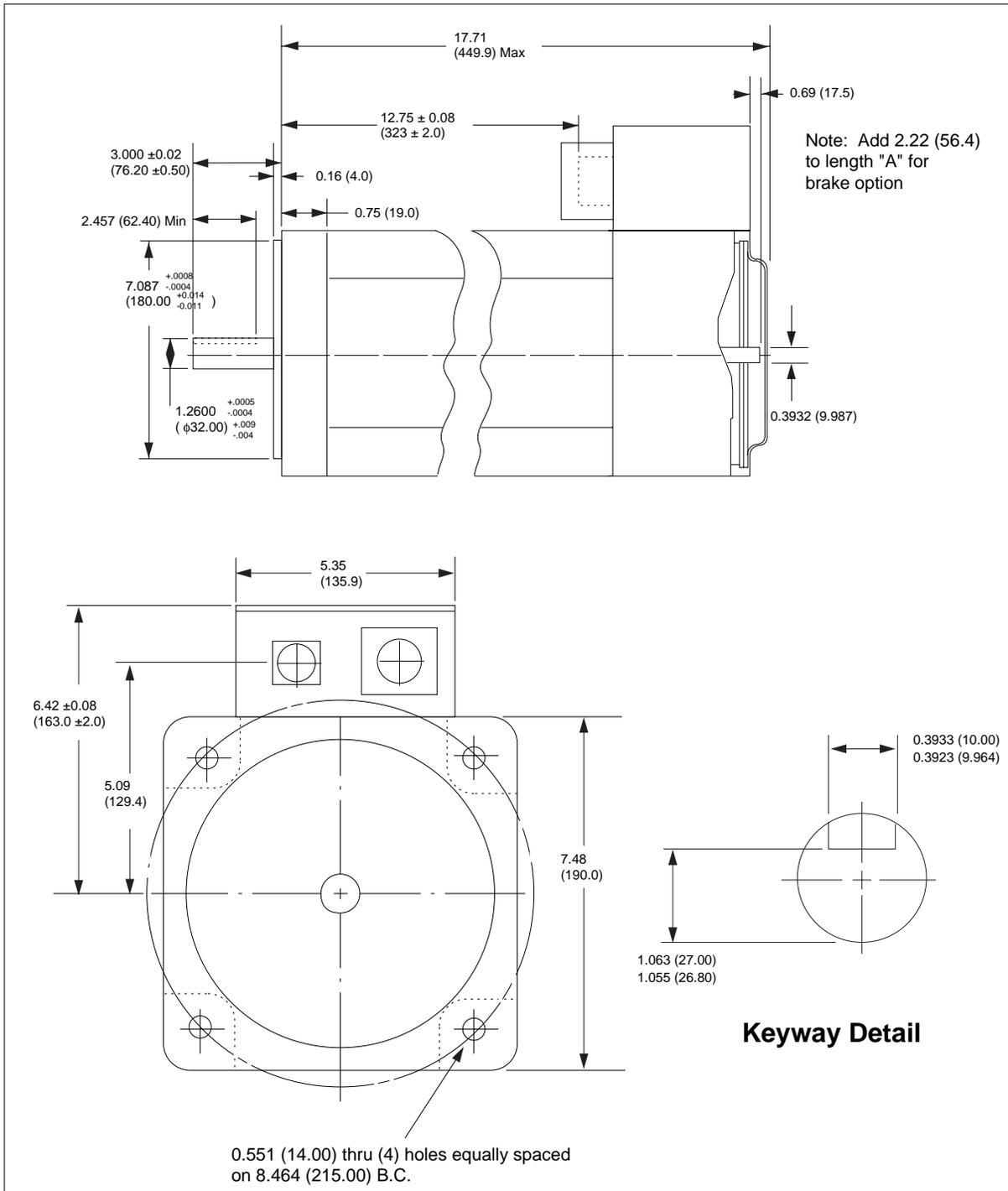**Keyway Detail
Z930**

0.3933 (10.00)
0.3923 (9.964)

1.063 (27.00)
1.055 (26.80)

ZX Motor Dimensions (Z920 & 930)

ZX Motor Dimensions (Z940)

ZX motors can produce substantial steady-state torques and rapid accelerations. A combination of these forces can shear shafts and mounting hardware if the mounting design is faulty. Rapid acceleration can produce shock and vibration loads that require heavier hardware than normally required. The motor itself, under certain load profiles, can generate low-frequency vibrations within the mounting structure as well. These vibrations can cause fasteners to loosen if they are not locked. Compumotor recommends that you use elastic nut type fasteners.

CAUTION

Vibrations produced by a cycling motor can induce metal fatigue within structural members. Have all plans reviewed by a mechanical engineer.

Couplers   Shaft misalignments are unavoidable due to fabrication tolerances. Common shaft misalignment problems include parallel, angular, and end float misalignment. ***Parallel misalignment*** is the offset of two shaft center lines where the center lines remain parallel to each other. ***Angular misalignment*** occurs when the shaft center lines are not parallel, but intersecting at some angle not equal to 0°. ***End float misalignment*** is a variance in the relative distance between the ends of the two shafts.

Couplings can help you accommodate these misalignment problems while maintaining desired torque. Several coupling types are available.

❏   Single-flex
❏   Double-flex
❏   Rigid

A single-flex coupler will correct only for angular misalignment while a double-flex handles both angular and parallel problems. Depending upon their design both types may or may not accommodate end play problems.

When joining two shafts that are fixed in the radial and angular direction, you should use a double-flex coupling. Single-flex couplings are not recommended for this type application because uncompensated parallel misalignment will eventually bend shafts and place bearings under unacceptable loads.

If only one of the shafts is free to move radially, Compumotor recommends that you use single-flex couplings. A double-flex coupling may allow too much freedom of movement leading to destructive vibration generation.

Applications that require rigid couplings are extremely limited. Rigid couplings do not compensate for any misalignments and are therefore not recommended for most applications. You should use them only if the motor is on floating mounts that allow for alignment compensation.

Ensure that any coupling you select for your application is within the range of the couplings performance specifications.

System Wiring

This section provides instructions for all ZX system wiring.

❏   Motor Connections
❏   Resolver Connections
❏   I/O[1] & I/O[2] Connections
    •   Limit Inputs
    •   Home Inputs
❏   Power Connections
❏   Encoder Connections (*for ZXF only*)

WARNING
All AC power must be disconnected prior to installation wiring. Failure to observe safety precautions may expose you to dangerous voltages.

Connections

The ZX is shipped with a pre-assembled motor cable. The motor end of the cable has an MS-type connector.

| Motor Type	Motor Cable Connector	Resolver Cable Connector
Z606 - Z606	851-Ø6EC14-5S5Ø	851-Ø6EC14-19S5Ø
Z610 - Z630	CIRØ65-18-1ØS	851-Ø6EC14-19S5Ø
Z640	CIRØ6F-22-22S	851-Ø6EC14-19S5Ø
Z806 - Z806	PT06A-14-5S	PTØ6E-14-12S
Z810 - Z840	97B-3106-24-22S MS-3057-6A 3420-12	PTØ6E-14-12S
Z910	CIRØ65-18-1ØS	851-Ø6EC14-19S5Ø
Z920 - Z940	CIRØ6F-22-225	851-Ø6EC14-19S5Ø

ZX Series Resolver and Motor Connectors

The drive end has four leads with spade terminals that should be attached prior to applying power. *The ground wire is connected at the spade terminal to an uninsulated, stranded wire that touches the motor cable shield.* Motor screw terminal connections to the ZX are marked

Motor A, B, C, and Earth. The motor connectors are the same for all Zxs.

WARNING
Never disconnect the motor cable with the power on. The motor produces lethal voltages. Be sure the motor is properly grounded to reduce the chance of electrical shock.
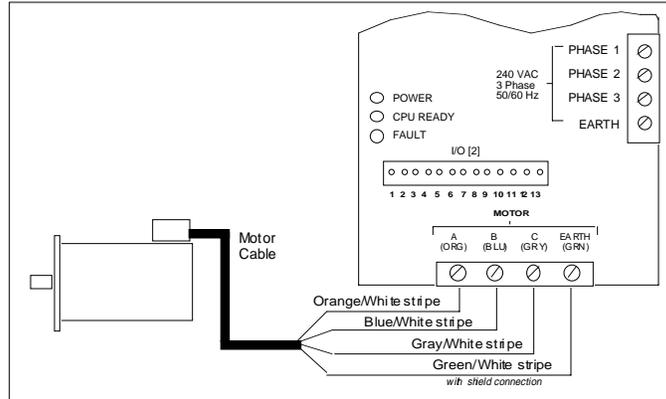

Motor Wiring Pin Out and Color Codes

The standard ZX600 Drive motor cable is a 4-conductor, 12 AWG, 25-foot cable. The standard ZX900 cable is a 4-conductor, 8 AWG, 25-foot cable. If the motor and drive must be mounted further than 25 feet apart, Compumotor can provide cables with the MS connector installed for cable lengths of up to 100 feet. Standard cables are 25, 50, and 100 feet. *To order special cables, call Compumotor's Customer Service Department (800-722-2282). These cables must be ordered separately*. Cable lengths in excess of 100 feet are not recommended. *Compumotor recommends installing the motor and resolver cables in separate conduits to minimize noise coupling as well as for safety.*

Motor Braking

If the ZX faults, for any reason, the amplifier will be disabled and the motor will freewheel. Refer to *Chapter ⑧ Maintenance & Troubleshooting*, for all fault conditions. If a freewheeling load is unacceptable, you must install auxiliary motor braking resistors.

The figure below illustrates a typical resistor braking scheme. In this scenario, the motor contactor is normally energized to provide a direct connection between the motor and drive. The motor contactor (*N.O.—normally open/N.C. —normally closed*) is controlled by the fault relay+ (**FLT+**)/fault relay- (**FLT-**) output on the ZX's **I/O[2]** connector. If the amplifier faults or if the line voltage is disconnected, the contactor connects the motor braking resistors across the motor. The braking resistors can be sized by analyzing specific applications.

☞ *Helpful Hint:*
Braking resistors provide very little braking at zero velocity. If standstill braking or emergency stopping are required, you can order the spring-type motor brake option from Compumotor (800) 722-2282. The brake is activated from a separate 24VDC supply and operates in a fail-safe mode.
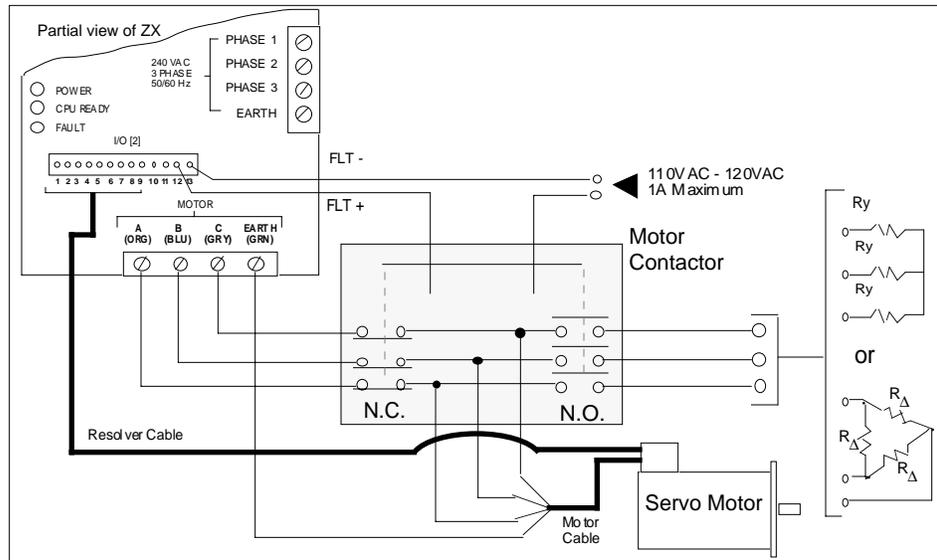
Motor Braking (Dynamic)

If the total load inertia is less than five times the rotor inertia, non-inductive 200 watt power resistors can be used as the braking resistors. For a *wye* configuration, use 5Ω or more ($R_Y = 5Ω$). For a *delta* configuration, use 15Ω or more ($R_\Delta = 15Ω$). If quicker stopping action is required, the braking resistors can be lowered, but you must increase their power ratings.
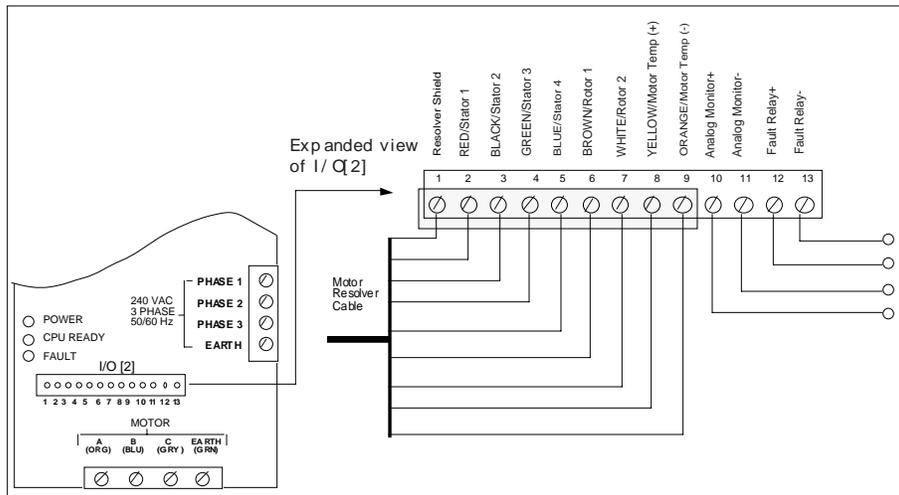
Wiring the Motor
Brake Option
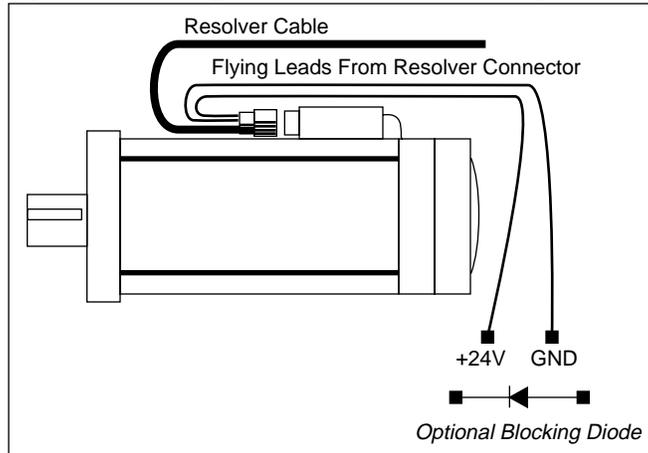
Wiring Z Series Motor Braking Option (-B)

Apply +24V to one of the flying leads from the resolver connector, and GND to the other lead (this energizes a coil that releases the brake). It may be necessary to place a blocking or flyback diode across the brake coil to prevent noise spike from falsely triggering other devices when the brake is engaged or disengaged (a 1N4936 should be sufficient). ***Install the diode between the wires as shown in the figure above.***

Resolver Connections

The ZX is equipped with a pre-assembled 25-foot resolver cable. The motor end of the cable includes an MS-type connector, Amphenol (part **#PT06E-14-12S**). The drive end of the cable is a screw terminal connector (**I/O[2]**).

☞ **Helpful Hint:**
All ZXs have the same resolver connector.

Resolver Pin-Out I/O[2]