

CONTROL PANEL INTERFACE INSTALLATION AND USER GUIDE

For Model 200ip and 250ip Motorcycle Pit Dynamometers

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Control Panel Interface Installation and User Guide For Model 200ip and 250ip
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Dynojet Research, Inc., 2191 Mendenhall Drive, North Las Vegas, Nevada 89031, USA.

Printed in USA.

Part Number: 98225109 Version 1 (01/05)



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CONTROL PANEL INTERFACE INSTALLATION

This document provides instructions for installing and using the Control Panel Interface (CPI) with the model 200ip/250ip motorcycle pit dynamometer. To ensure safety and accuracy in the procedures, perform the procedures as they are described.

This manual will walk you through installation procedures, basic operation, and how to maintain and troubleshoot your hardware. Appendix A contains instructions for installing the Red Head Anchors. Appendix B contains instructions for installing the motorized carriage and wheel clamp. Appendix C contains instructions for installing the safety switch should your country require one.

Document Part Number: 98225109

Version 1

Last Updated: 01-21-05

This chapter is divided into the following categories:

- Introduction, page 1-2
- Battery, page 1-7
- Blower Mounts, Support Arm, and Junction Box, page 1-10
- Routing Cables, page 1-14
- Junction Box Cover, Cable Cover, and End Cap, page 1-27
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INTRODUCTION

The Control Panel Interface (CPI) consists of a main control board which is mounted in an external box for a pit dyno or retrofit. This board provides switching and control of many functions within the dyno. The front panel of this board is accessible through the door on the external box. The user interface is through the Control Panel which is normally mounted on the side of the monitor tray. The Control Panel allows the user to control the following items:

- Optional AFR Air Pump
- Optional High Pressure Blowers
- Optional Motorized Carriage
- Starter
- Optional Wheel Clamp

The CPI main control board has an on board microprocessor which reads the user input from the Control Panel, monitors interlock and E-Stop inputs, and controls the various dyno outputs. The CPI is powered internally from the main power that is provided to the dyno. The power supplied is 240VAC 50 or 60 Hz.

CONVENTIONS USED IN THIS MANUAL

The conventions used in this manual are designed to protect both the user and the equipment.

example of convention



description

The Caution icon indicates a potential hazard to the dynamometer equipment. Follow all procedures exactly as they are described and use care when performing all procedures.



The Warning icon indicates potential harm to the person performing a procedure and/or the dynamometer equipment.

TECHNICAL SUPPORT

For assistance, please contact Dynojet Technical Support at 1-800-992-3525, or write to Dynojet at 2191 Mendenhall Drive, North Las Vegas, NV 89081.

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CONNECTING AND DISCONNECTING POWER TO THE DYNO

Many instructions in this guide will require you to connect or disconnect the power to the dyno as part of the installation process. Use the following steps to connect and disconnect power to the dyno.

Always turn the power off when connecting and disconnecting cables.

- 1 Use the main breaker to turn power on and off to the dyno.

The main breaker is located inside the power distribution assembly.

- 2 Disconnect the power plug to ensure all power has been removed from the dyno before performing certain installation procedures.

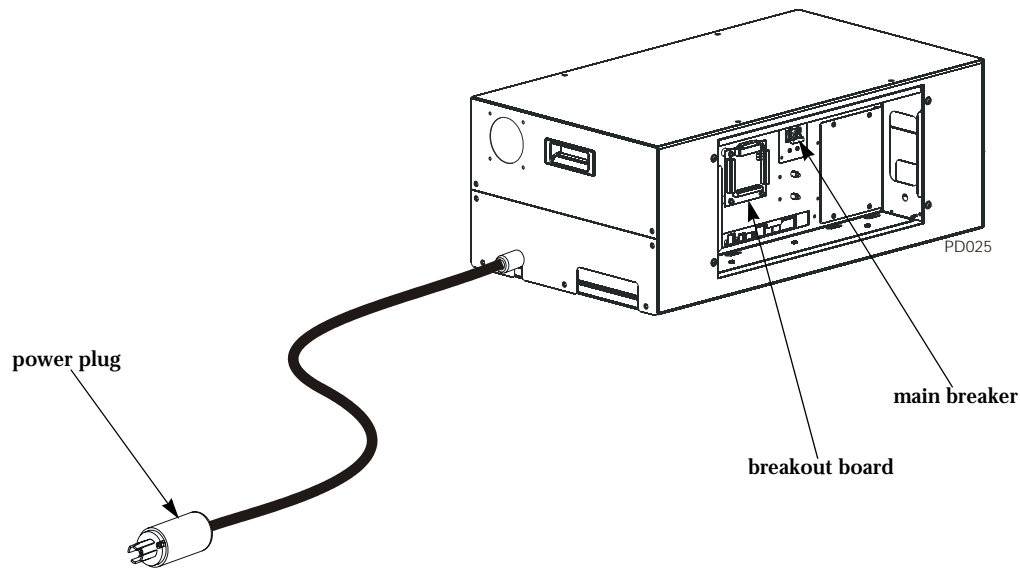


Figure 1-1: Main Breaker Location



REMOVING THE PIT COVERS

Dynojet recommends using a T30 Torx driver (Snap-On PFTx30E) or a hardened 5/32-inch hex driver (Snap-On Fa5E), for dynos with serial numbers lower than 2030152, to remove the 1/4-inch screws. A standard allen key may round off in the shallow screw head.

- 1 Remove the four 3/8-16 x 1/2-inch button-head flange screws securing the right side drum cover to the drum module and set aside.
- 2 Remove the four 1/4-20 x 1/2-inch button-head flange screws securing the right side drum cover to the drum guard bracket and set aside.
- 3 Remove the cover and set aside.

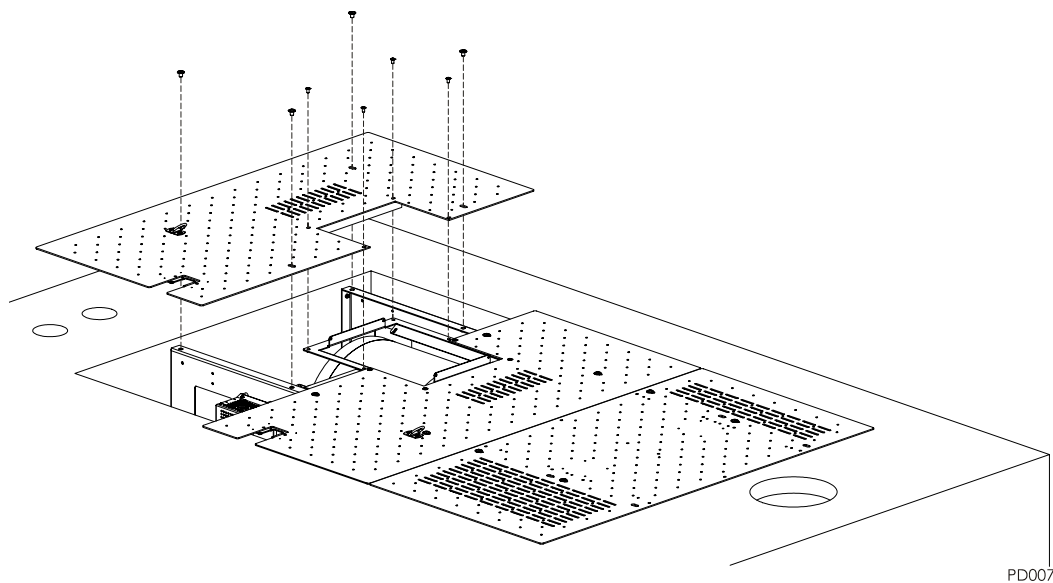


Figure 1-2: Right Side Drum Cover





- 4 Remove the four 3/8-16 x 1/2-inch button-head flange screws securing the left side drum cover and set aside.
- 5 Remove the cover and set aside.

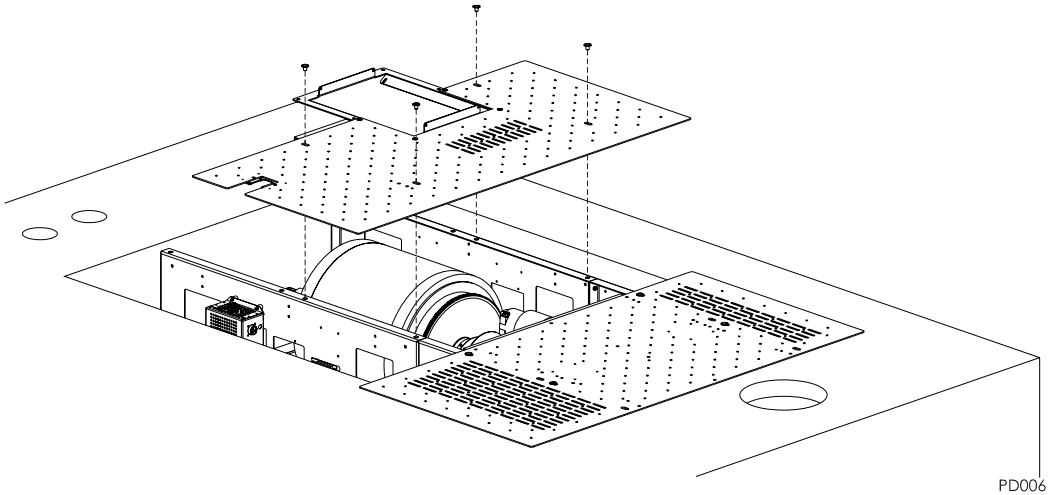


Figure 1-3: Left Side Drum Cover

- 6 Remove the four 3/8-16 x 1/2-inch button-head flange screws securing the retarder cover and set aside.
- 7 Remove the cover and set aside.

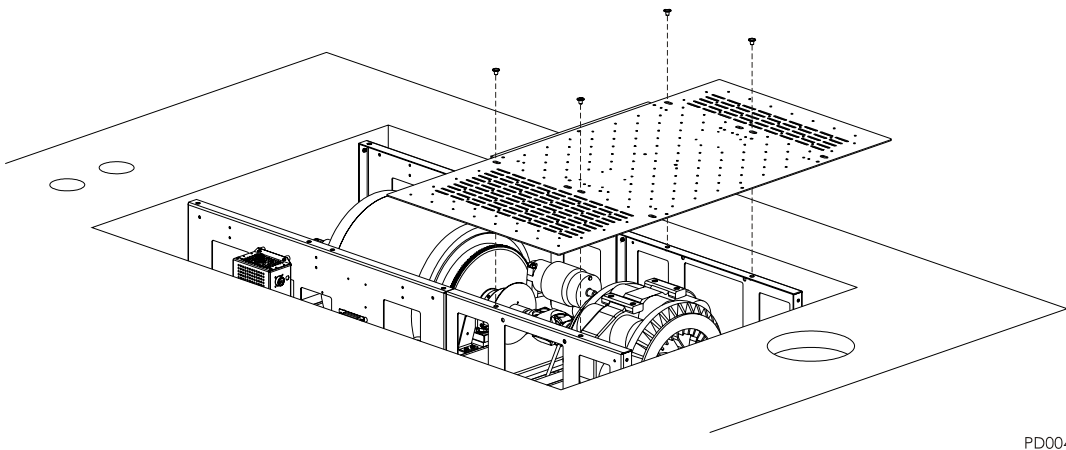


Figure 1-4: Retarder Cover



REMOVING THE CONTROL PANEL INTERFACE COVER

The Control Panel Interface (CPI) comes wired and ready to install. Should you need to re-route the cables so they come out a different side of the box, use the following instructions to access the CPI box.

- 1 Turn off the power to the dyno. Refer to “Connecting and Disconnecting Power to the Dyno” on page 1-3 for more information.
- 2 Remove the eight button-head screws securing the cover and set aside.
- 3 Remove the cover and set aside.
- 4 Open the front panel to access the breakers and Breakout board.

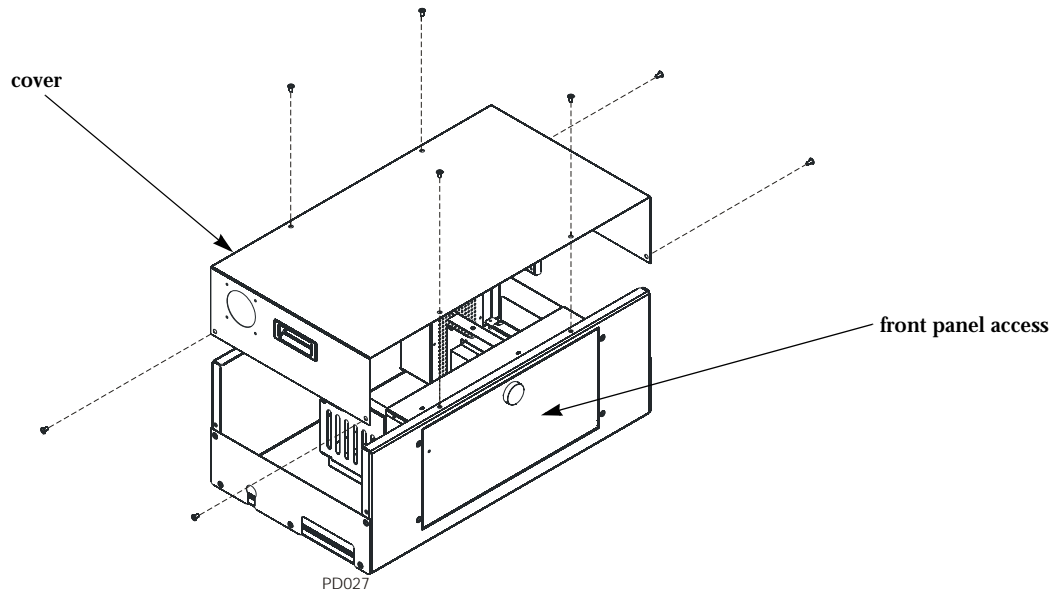


Figure 1-5: Accessing the CPI





BATTERY

For operation of the starter, motorized carriage, or optional wheel clamp it is necessary to install a car battery in the dyno. The car battery provides the necessary energy to run these components. The CPI has a built in battery charging circuit to keep the battery charged. Each time the starter, motorized carriage, or wheel clamp is used, this built in charging circuit will recharge the battery. The charging rate is sufficient to keep up with loading a bike, operating the wheel clamp, and adjusting the motorized carriage every five minutes. Recharging from use of the built in dyno starter will take longer. Do not add any external battery chargers to the car battery. If you do not wish to use the wheel clamp and the motorized carriage or operate the built in starter then it is not necessary to install the battery.

Note: If you do not install the battery make sure the positive battery cable is insulated from the chassis as the charging circuit is always providing charging current whenever the dyno main power breaker is turned on.

The battery charging circuit is active anytime the main power on the dyno is turned on. If the main breaker is turned off then the battery will not be charged. Frequent use of the starter will quickly deplete the battery and it may need several hours of the internal charging to bring the battery back to a full charge.

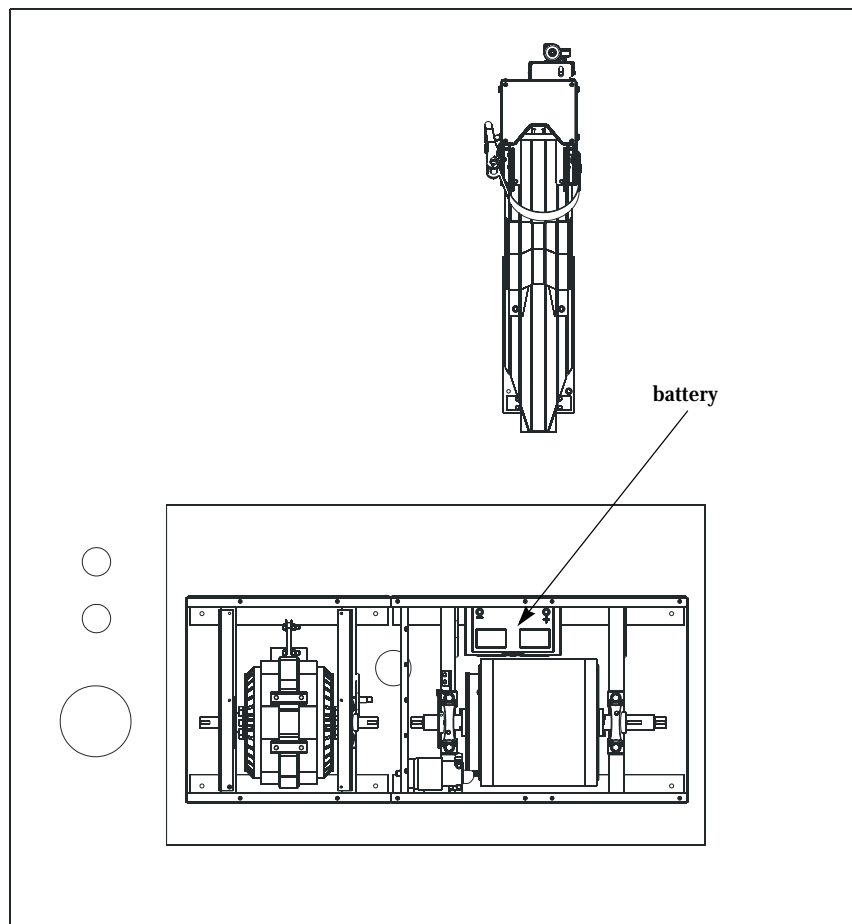


INSTALLING THE BATTERY

The model 200ip/250ip dyno is designed to carry a group 24 deep cycle discharge series battery for operating the built in starter. This battery is not included with your dyno. You will need to provide this battery.

For more information on battery requirements and battery chargers refer to “Battery Requirements” in Chapter 1 of the Model 200ip/250ip Motorcycle Pit Dynamometer Installation Guide.

- 1 Locate the red battery cable on the inside of the dyno.
- 2 Place the battery in the battery carrier on the inside of the dyno so the red cable can reach the positive (+) post on the battery and the black battery cable can reach the negative (-) post.
- 3 Secure the battery to the tray with the battery hold-down.
- 4 Refer to page 1-23 for instructions on routing and connecting the battery cable.



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Figure 1-6: Install the Battery





BATTERY GAS WARNING INSTRUCTIONS

For complete warnings, refer to the Warnings section of the Model 200ip/250ip Motorcycle Pit Dynamometer Installation Guide.



Battery Fire and Explosion Hazards

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Automotive Batteries

In operation, batteries generate and release flammable hydrogen gas. They must always be assumed to contain this gas which, if ignited by burning cigarette, naked flame or spark, may cause battery explosion with dispersion of casing fragments and corrosive liquid electrolyte. Carefully follow manufacturer's instructions for installation and service. Keep away all sources of gas ignition and do not allow metallic articles to simultaneously contact the negative and positive terminals of a battery.

Do not allow the positive and negative terminals to short-circuit. The dynamometer chassis is tied to the negative side of the battery. Do not short between the positive battery terminal or the starter connections to the chassis. In addition, make sure metal tools such as screw drivers, wrenches, and torque wrenches do not come in contact with the negative and positive terminals of the battery. Short circuiting the terminals of the battery can cause burn injuries, damage to the dynamometer, or trigger explosions.

Charging

Batteries being charged will generate and release flammable hydrogen gas. Charging space should be ventilated. Keep battery vent caps in position. Prohibit smoking and avoid creation of flames and sparks nearby.

Wear protective clothing, eye and face protection, when charging or handling batteries.



BLOWER MOUNTS, SUPPORT ARM, AND JUNCTION BOX

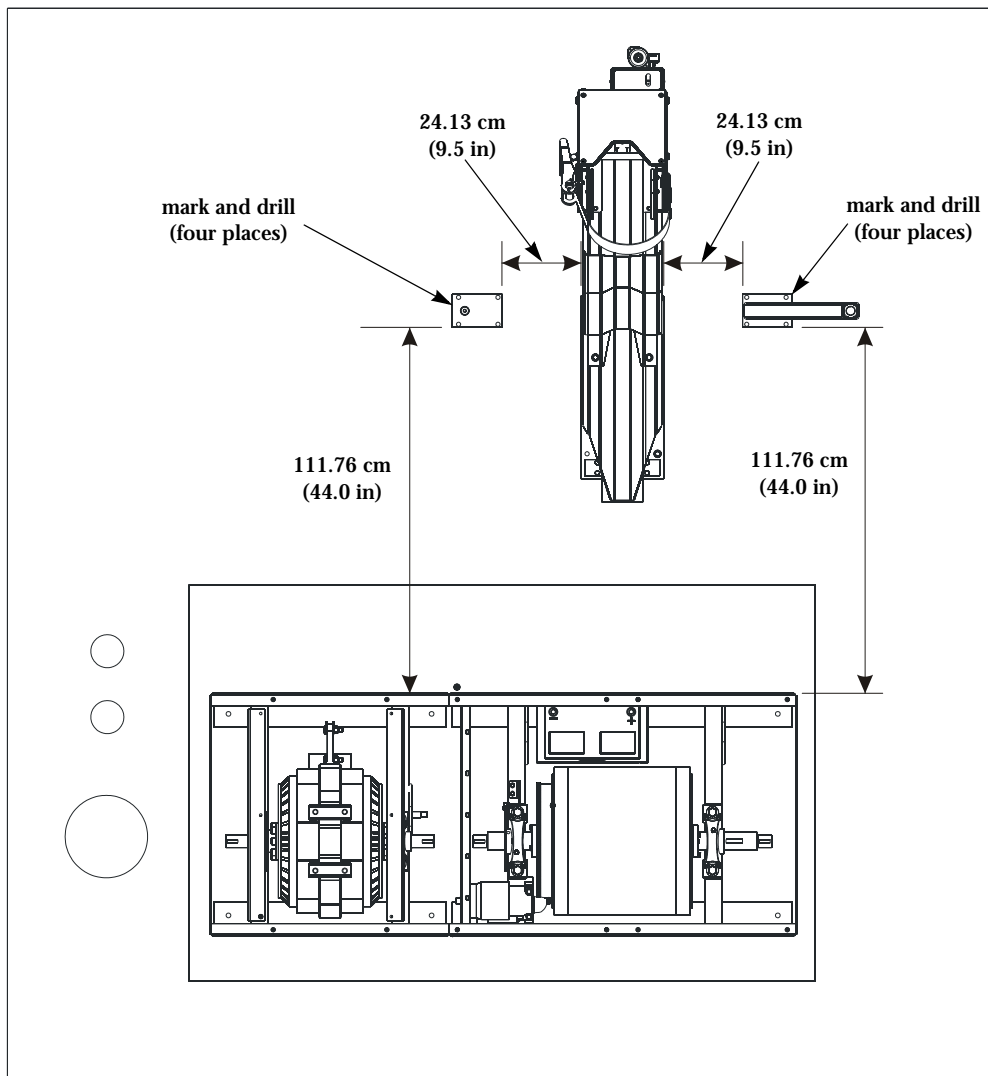
Before routing the cables, you must decide which side of the dyno to mount the monitor support arm. The choice is based on personal preference and easy access to your computer. For the following instructions, we will show the support arm and control panel mounted on the right side of the dyno.

MARK AND DRILL THE BLOWER MOUNTS AND SUPPORT ARM MOUNTING HOLES

- 1 Using the carriage mounting plate and the dyno frame as reference, position the support arm and optional blower mounts as shown.

Note: The high pressure blowers are an optional accessory. If you did not order high pressure blowers, you will not need to install the blower mounts.

- 2 Using the mounting plates as a template, mark and drill 1/2-inch holes.
- 3 Install the Red Head Anchors. Refer to Appendix A for Red Head Anchor installation instructions.



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Figure 1-7: Blower Mounts and Support Arm Placement





INSTALLING THE BLOWER MOUNTING PLATE, SUPPORT ARM, AND JUNCTION BOX

The high pressure blowers are an optional accessory. If you did not order high pressure blowers, you will not need to install the blower mounting plates.

- 1 Secure each blower mounting plate to the pit floor using four $3/8$ x 1-inch bolts and $5/16$ -inch washers.

Note: The blower mounting plate is secured under the support arm.

- 2 Secure the support arm and junction box to the pit floor using four $3/8$ x 1-inch bolts and $5/16$ -inch washers.

Note: The support arm can be mounted on either side of the dyno.

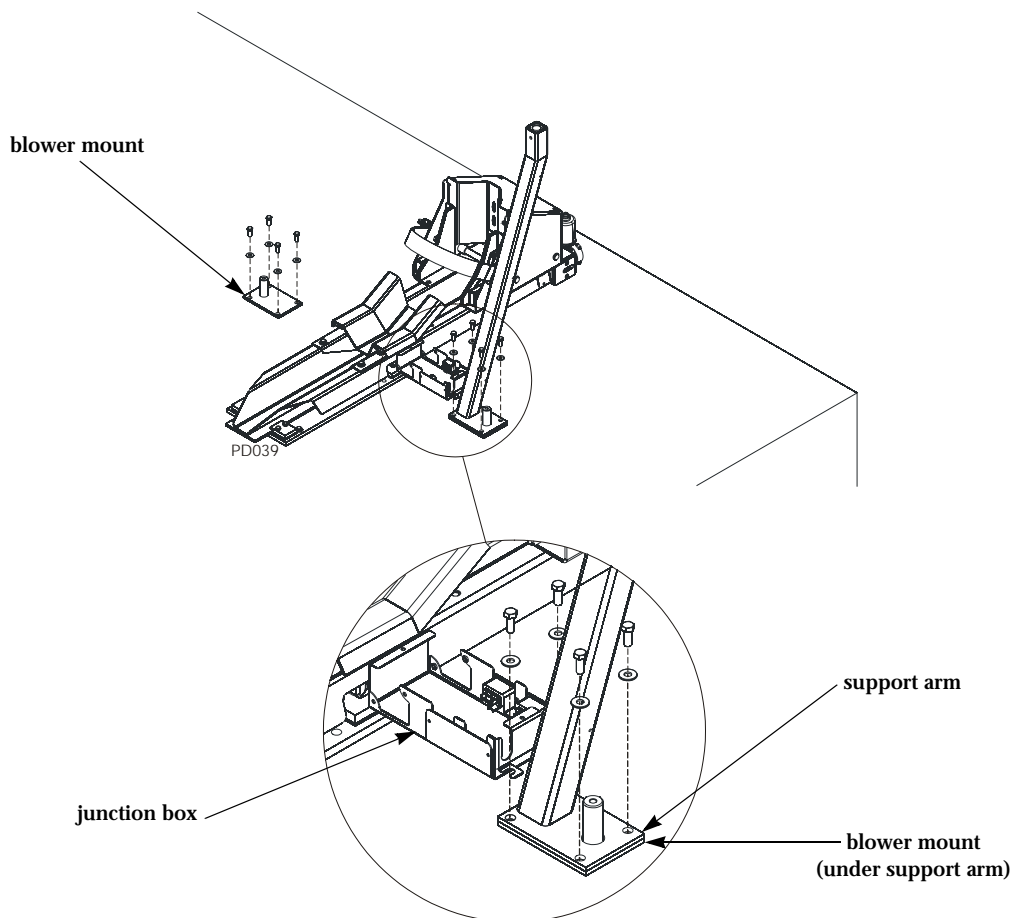


Figure 1-8: Install Blower Mounting Plates, Support Arm, and Junction Box



INSTALLING THE ARMS AND MONITOR TRAY

- 1 Insert a plastic cap in both ends of each arm.
- 2 Place a poly washer around the pin of the first arm and insert the pin into the support arm.
- 3 Place a poly washer around the pin of the second arm and insert the pin into the first arm.
- 4 Place a poly washer around the pin of the tray and insert the pin into the second arm.

Note: The monitor tray is an optional accessory. If you did not order a monitor tray, skip this step.

- 5 Check for clearance between the monitor arm and motorcycle, walls, ceiling, etc.

Note: Dynojet does not recommend placing the computer CPU on the monitor/keyboard tray since vibration can cause damage to the computer.

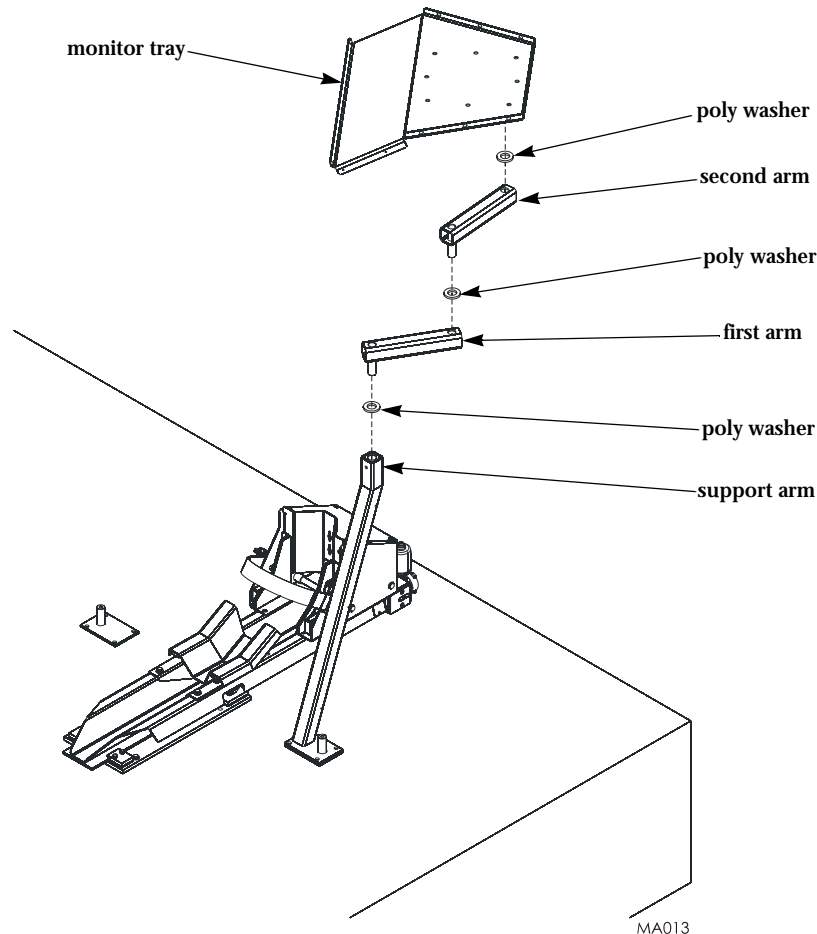


Figure 1-9: Install the Monitor Tray





INSTALLING THE HIGH PRESSURE BLOWERS

The high pressure blowers are an optional accessory. If you did not order the high pressure blowers, skip these instructions.

Repeat the following steps for each blower assembly.

- 1 Place two 1/4-inch thick poly washers around the pin on the blower mount.
 - Note:** Only use one 1/4-inch thick poly washer with the blower mount installed with the support arm.
- 2 Place the lower blower arm over the blower mount pin.
- 3 Place a 3/8-inch thick metal washer on top of the lower blower arm.
- 4 Secure the lower blower arm using the clamp lever.
- 5 Place a 1/8-inch thick poly washer around the pin on the upper blower arm.
- 6 Insert the pin on the upper arm into the lower arm.
- 7 Place a 1/8-inch thick poly washer around the pin on the blower assembly.
- 8 Insert the pin on the blower assembly into the upper arm.

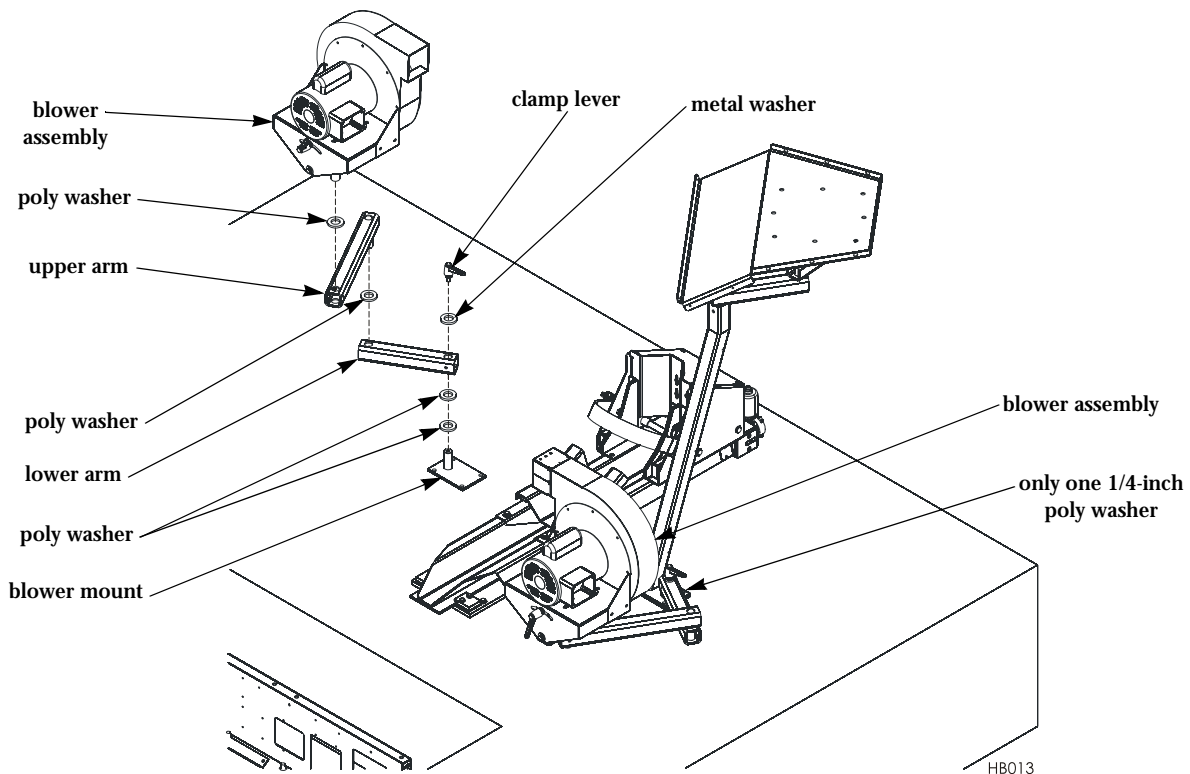


Figure 1-10: Install the High Pressure Blowers



ROUTING CABLES

For the following instructions, we will show the support arm and control panel mounted on the right side of the dyno with the Control Panel Interface (CPI) and dyno electronics on the left side of the dyno.

The CPI and dyno electronics must be placed near the conduits in the pit.

Be sure to keep the power and communications cables in different pit conduits. For the following instructions, we will designate the pit conduits as shown.

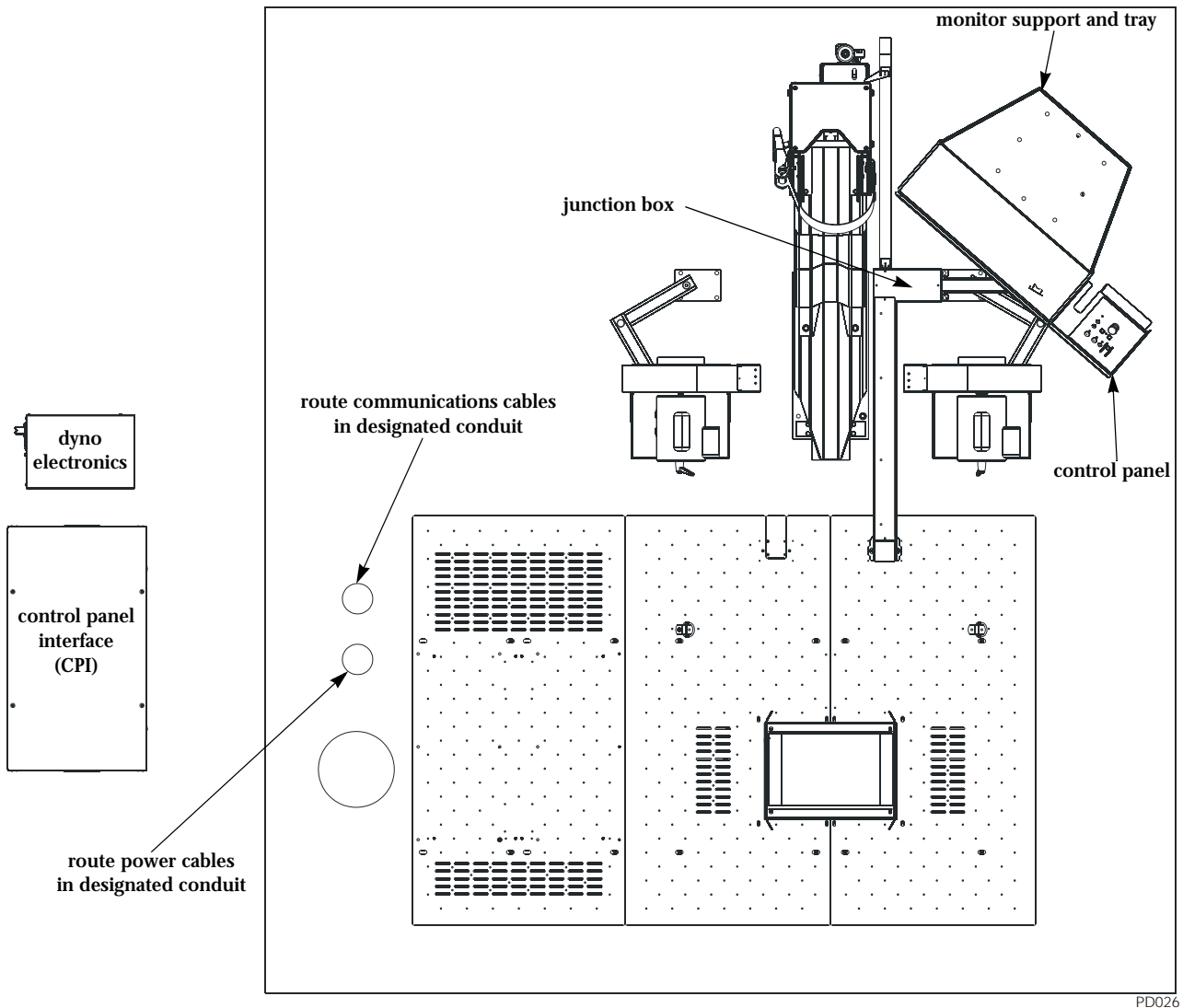


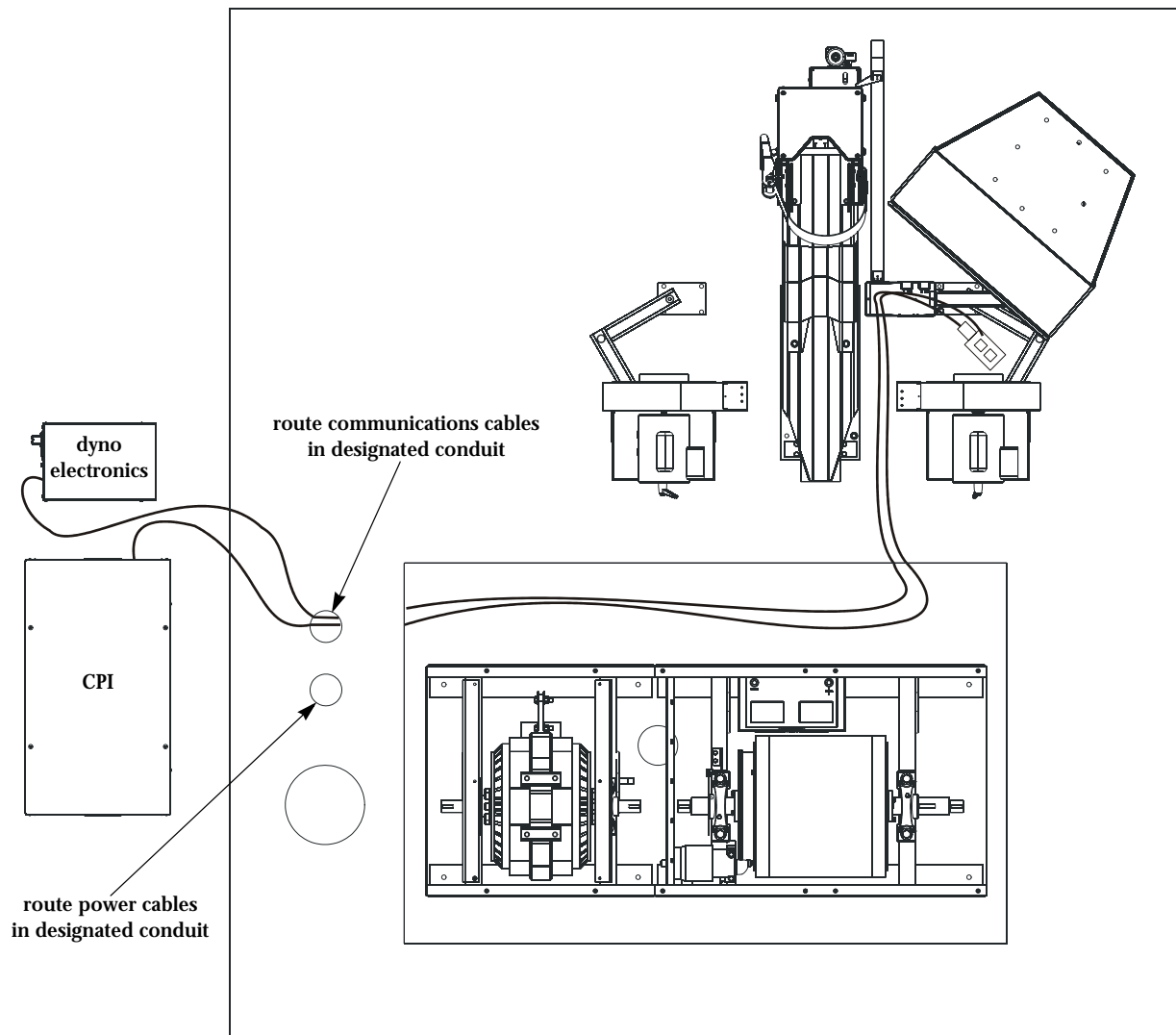
Figure 1-11: Pit Dyno Room Layout





ROUTING THE CONTROL PANEL AND PENDANT CABLES

- 1 Route the control panel cable (P/N 76951502) from the CPI through the designated communications pit conduit, through the pit, and out of the pit as shown.
- 2 Route the pendant cable from the dyno electronics through the same conduit and along the same path as the control panel cable.
Note: Be sure to keep the power and communications cables in different pit conduits.
- 3 From the pit, route both cables through the junction box.



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Figure 1-12: Route the Control Panel and Pendant Cables



- 4 Remove the control panel rear cover.
 - 4a Remove the two nuts from the top of the cover and set aside.
 - 4b Remove the screw on the top of the cover and set aside.
 - 4c Remove the screw on the side of the cover and set aside.
 - 4d Remove the four screws on the back of the cover and set aside.
 - 4e Remove the control panel rear cover and set aside.

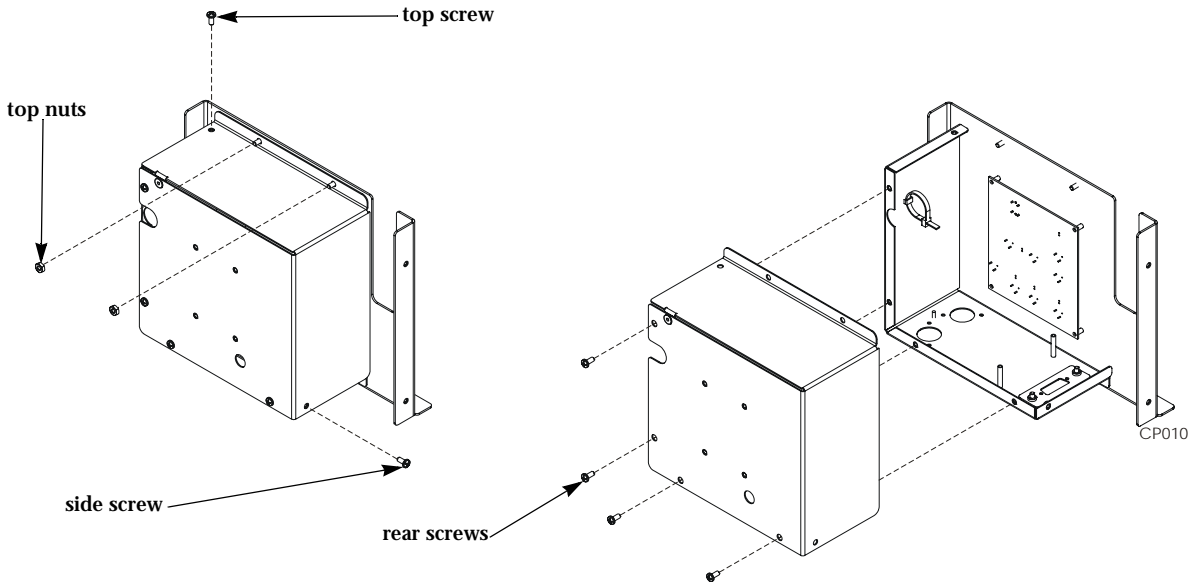


Figure 1-13: Remove the Control Panel Rear Cover





- 5 Route the control panel cable through the access hole on the side of the control panel box and through the cable tie.
- 6 Attach the control panel cable to the Button board.

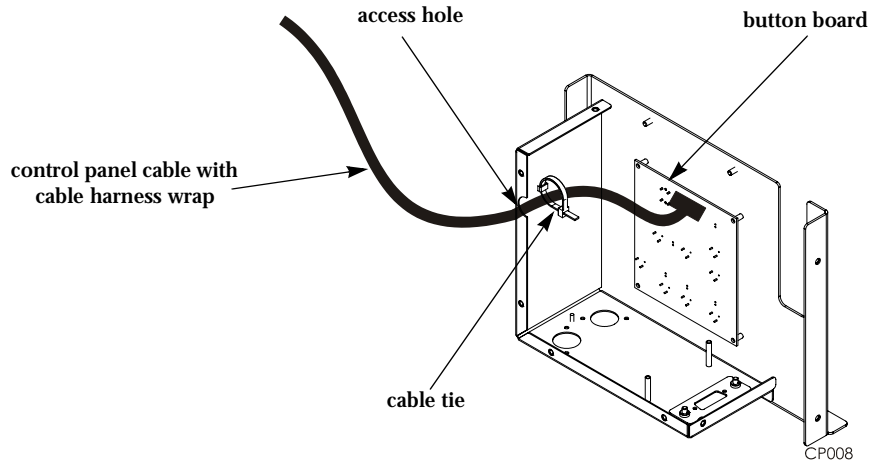


Figure 1-14: Attach the Control Panel Cable to the Button Board

- 7 Secure the rear cover to the control panel.
 - 7a Replace the four screws on the back of the cover removed earlier.
 - 7b Replace the screw on the top of the cover removed earlier.
 - 7c Replace the screw on the side of the cover removed earlier.
 - 7d Replace the two nuts removed from the top of the cover removed earlier.

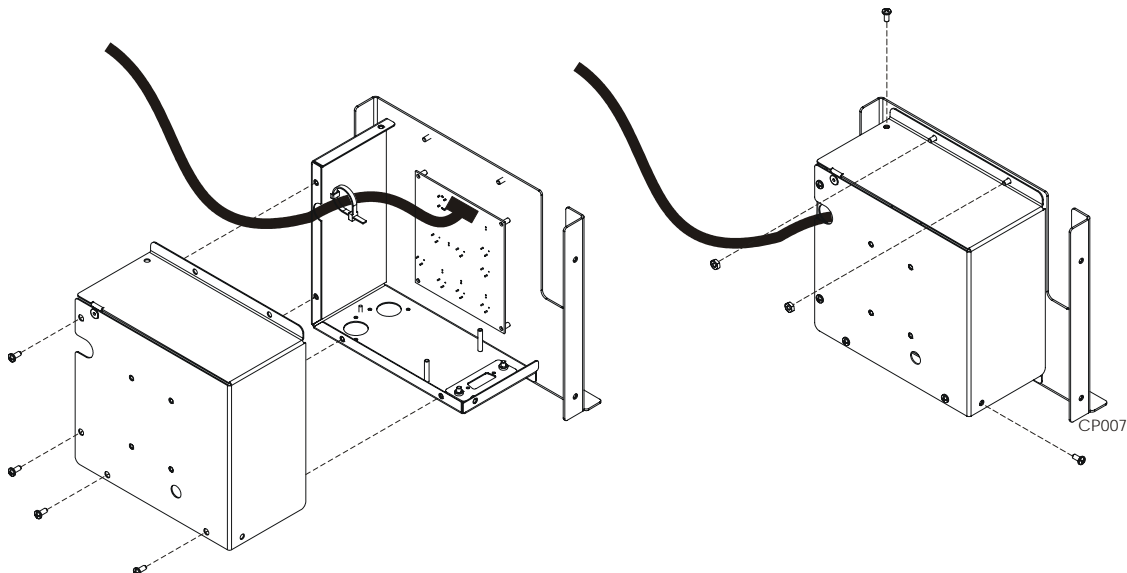


Figure 1-15: Replace the Control Panel Rear Cover



- 8 Secure the control panel to the monitor tray using two 8-32-inch screws.
Note: If you did not order a monitor tray, you will need to install the pin plate to the bottom of your control panel using four 8-32 screws. Once installed, place the pin on the control panel into the support arm where the monitor tray is.
- 9 Place the pendant in the slot on the control panel.
- 10 Route the cable bundle along the support arms with service loops to allow movement as shown below.
- 11 Using the provided cable clamps and 8-32-inch screws, attach the cable bundle to the arms and the support arm. Adjust the service loops to allow for easy movement of the monitor arms without pulling on the cables.

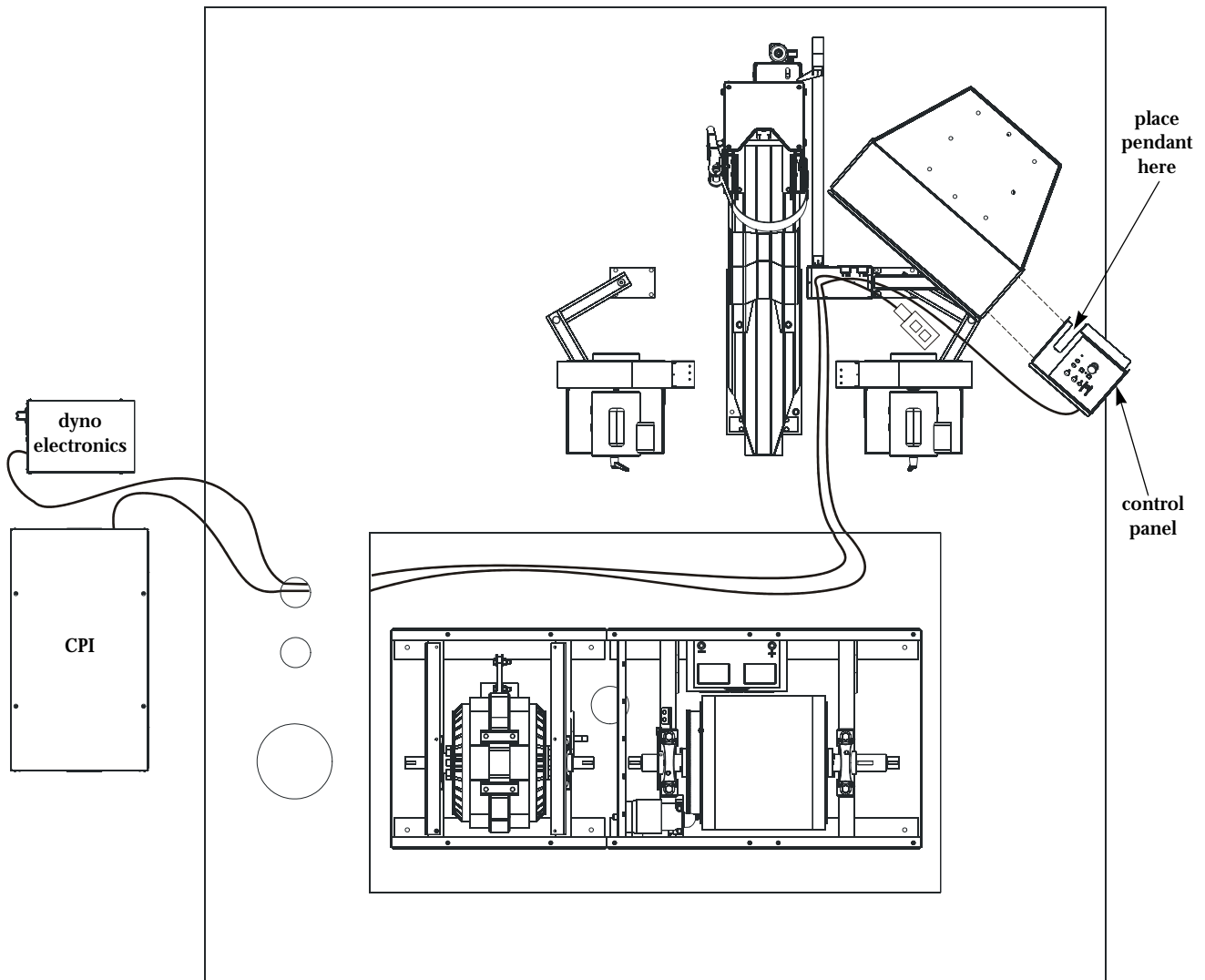


Figure 1-16: Install the Control Panel





ROUTING THE BLOWER CABLES

The high pressure blowers are an optional accessory. If you did not order this accessory, skip these instructions.

- 1 Route each blower cable (P/N 76950315) from the CPI through the designated power pit conduit, through the pit, and out of the pit as shown.

Note: Be sure to keep the power and communications cables in different pit conduits.

- 2 From the pit, route both cables into the junction box.
- 3 Attach the two blower connectors to the junction box using 4-40 screws.
- 4 Connect the cables from each blower to the connectors on the junction box.

Note: There is an extension cable (P/N 76950317) for the blower furthest from the junction box.

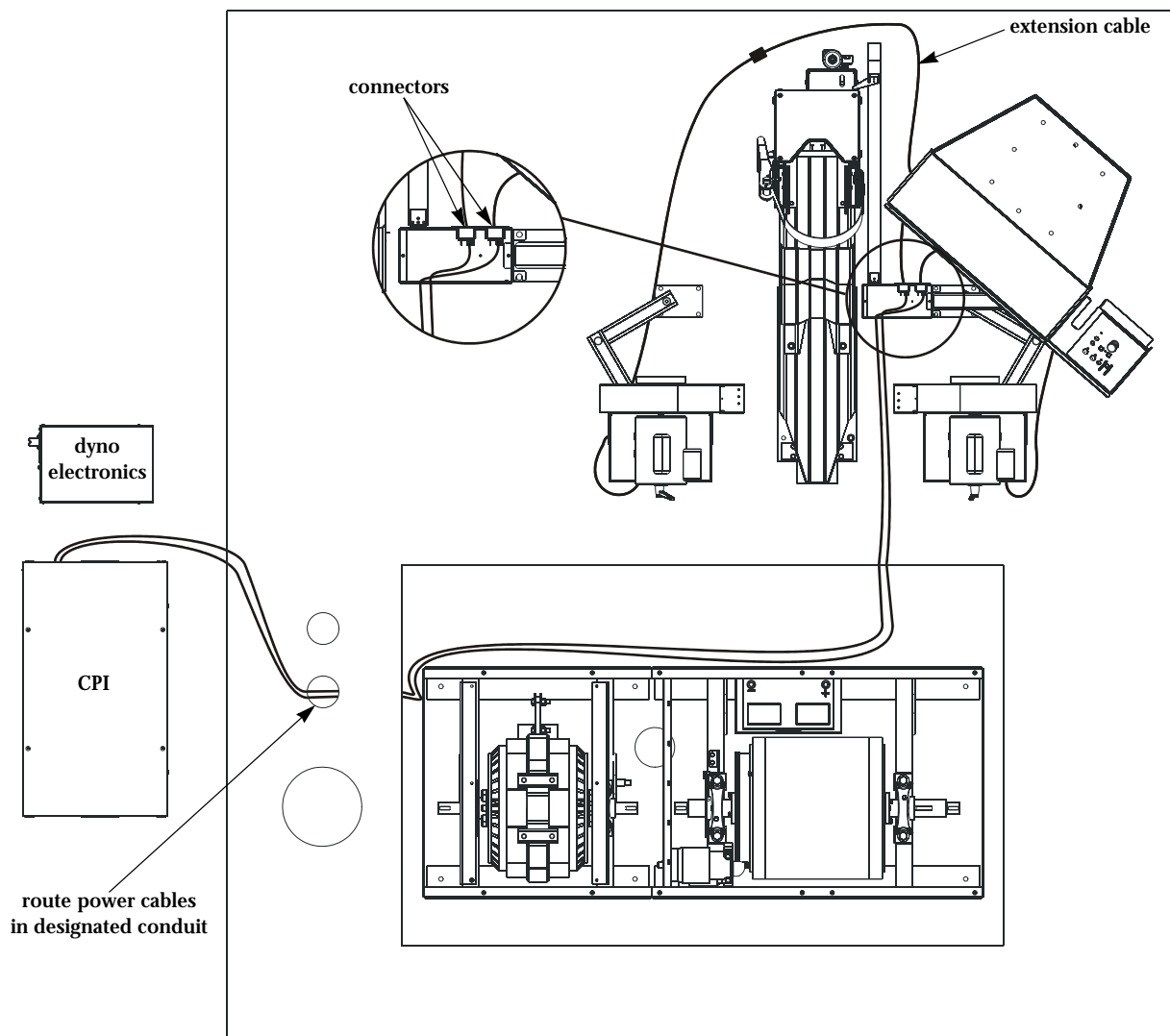


Figure 1-17: Route Blower Cables



ROUTING THE MOTORIZED CARRIAGE AND WHEEL CLAMP CABLES

The wheel clamp is an optional accessory. If you did not order this accessory, skip any steps referring to the wheel clamp cable.

Refer to Appendix B for motorized carriage and wheel clamp installation instructions.

- 1 Route the motorized carriage cable (P/N 76950314) from the CPI through the designated power pit conduit, through the pit, and out of the pit as shown in Figure 1-20.
- 2 Route the wheel clamp cable (P/N 76950313) from the CPI through the same conduit and along the same path as the motorized carriage cable.
Note: Be sure to keep the power and communications cables in different pit conduits.
- 3 From the pit, route both cables through the junction box as shown in Figure 1-20.
- 4 Press each cable into the cable track.
Note: The cable must be pressed into the cable track before installing the cable track ends and brackets.
- 5 Snap the cable track ends onto the cable track as shown below.
- 6 Secure the junction box cable track bracket to the cable track end using two screws and nuts.
- 7 Secure the wheel clamp cable track bracket to the cable track end using two screws and nuts

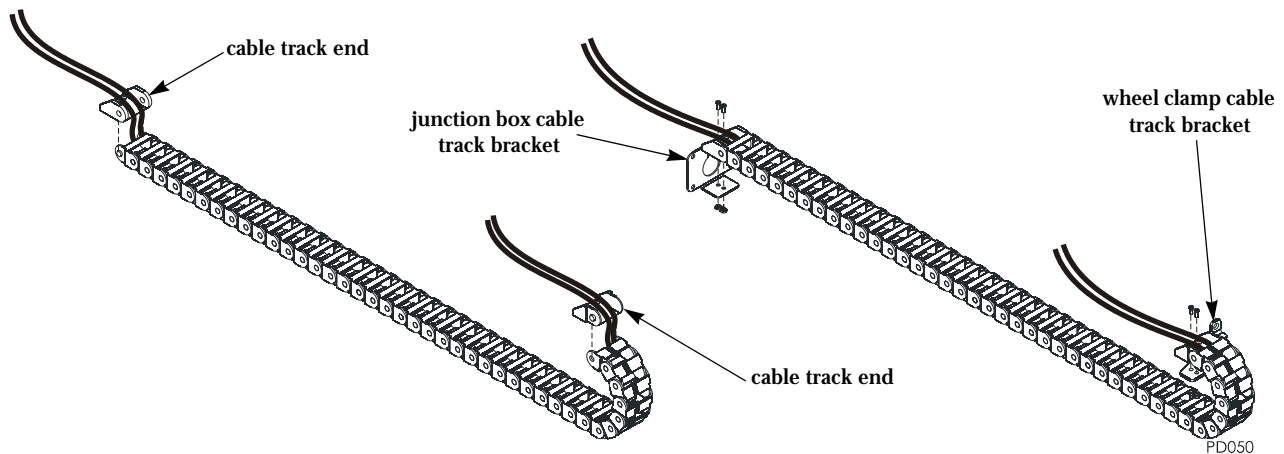


Figure 1-18: Install Cable Track Ends and Brackets





- 8 Secure the cable track bracket to the junction box using two 8-32 screws.
 - 9 Secure the cable track bracket to the wheel clamp using a 1/4-20 screw.
- Note:** If you do not have the wheel clamp, you will need to install the adapter bracket to the tire stop using the tire stop hardware.

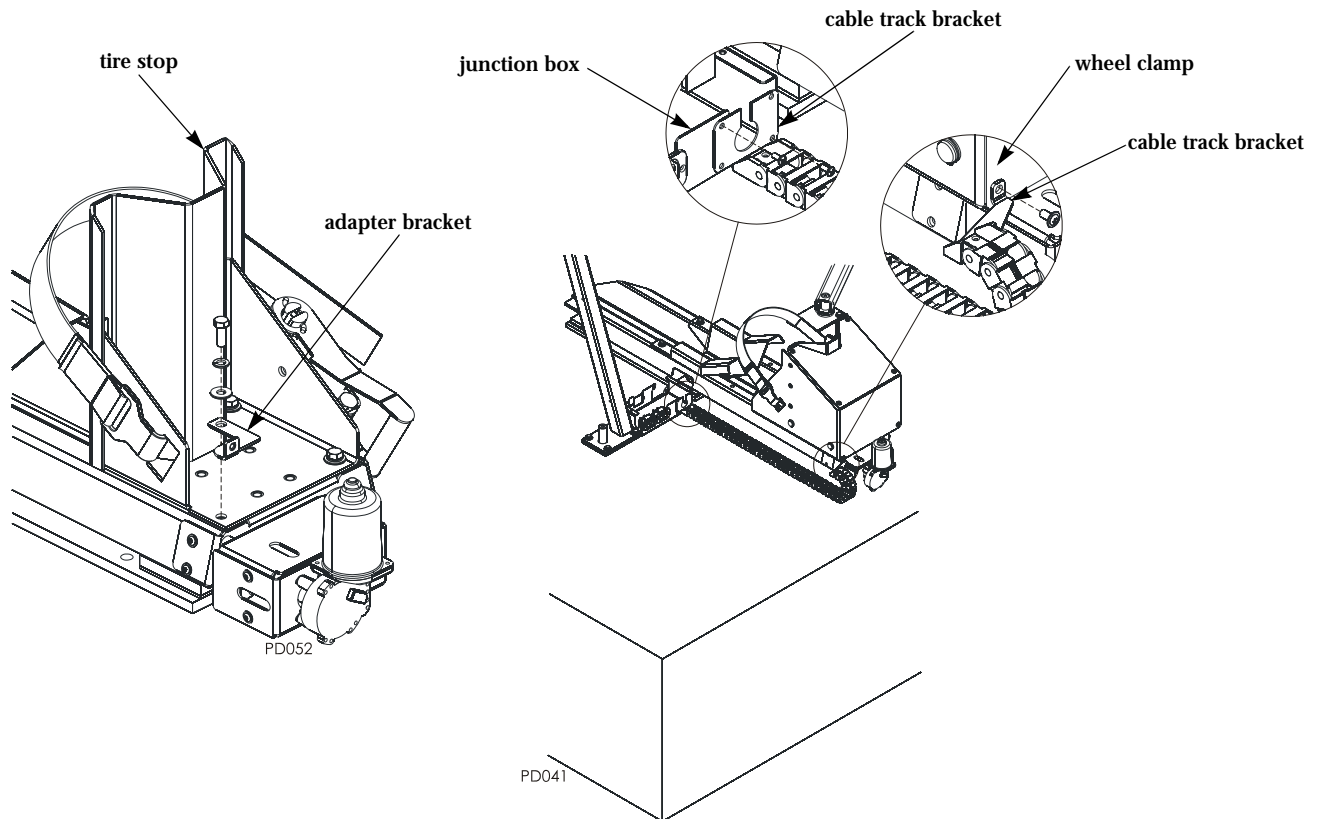


Figure 1-19: Install the Cable Track



- 10 Connect the motorized carriage cable to the motorized carriage. Refer to page B-3 for more information.
- 11 Connect the wheel clamp cable to the wheel clamp.

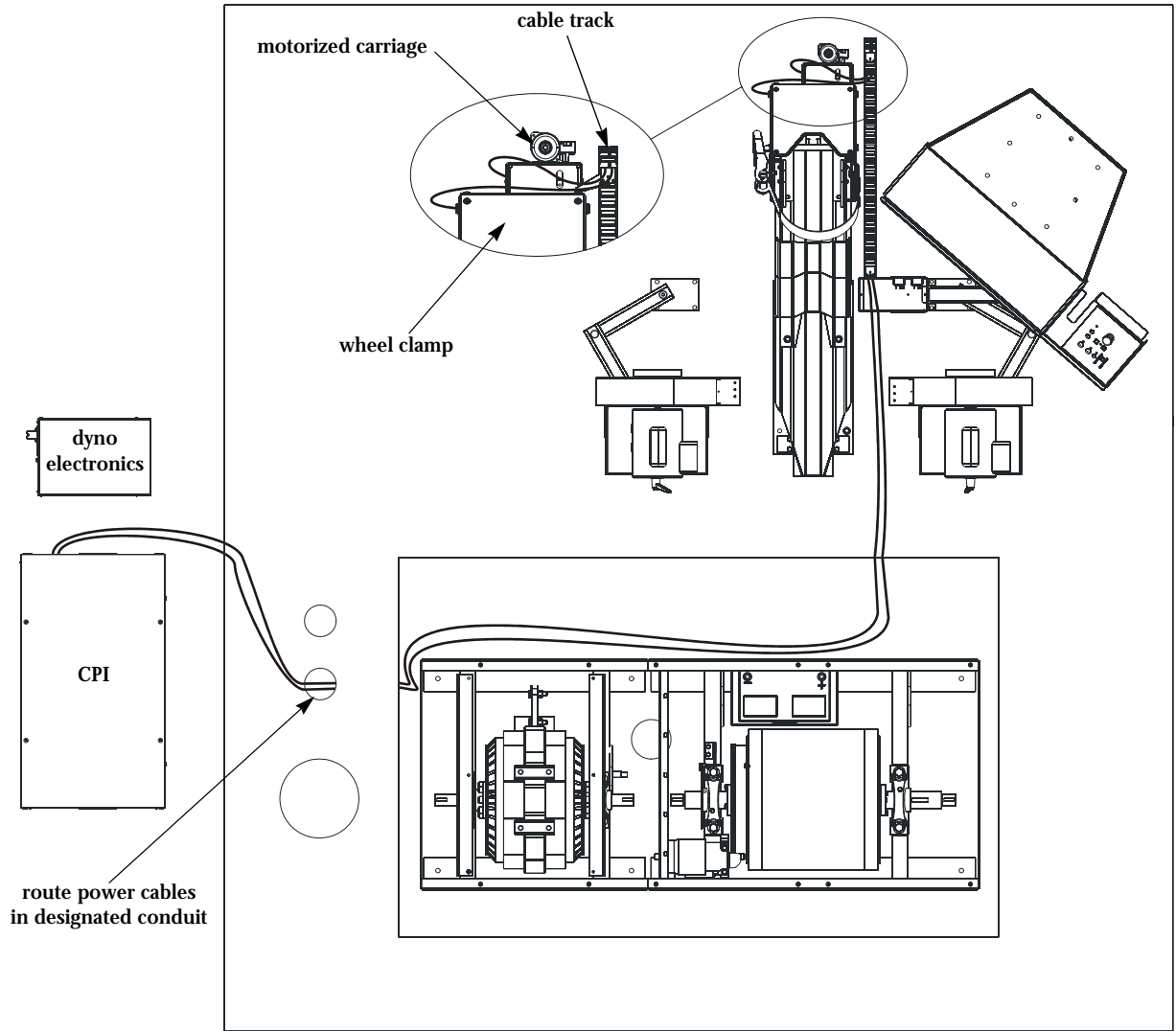


Figure 1-20: Route the Motorized Carriage and Wheel Clamp Cables



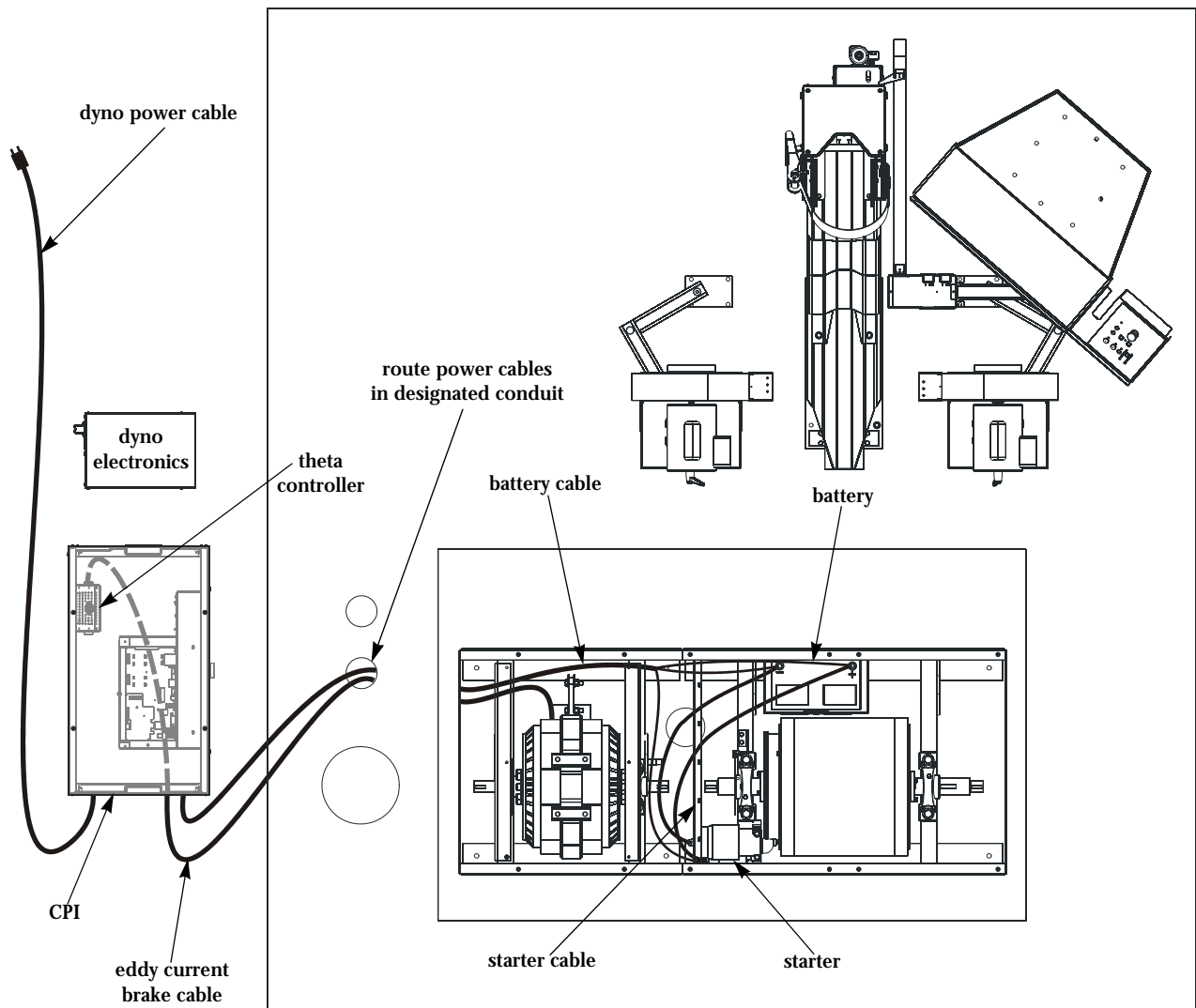


ROUTING THE EDDY CURRENT BRAKE, BATTERY, AND DYNO POWER CABLES

- 1 Route the eddy current brake cable (P/N 66952005) from the eddy current brake through the designated power pit conduit and to the theta controller.
- 2 Route the battery cable (P/N 76950312) from the CPI through the same conduit and over to the battery. Refer to the steps and Figure 1-22 on page 1-24 for instructions on connecting the battery and starter cables.

Note: Be sure to keep the power and communications cables in different pit conduits.

- 3 Route the dyno power cable from the CPI to your power source.



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Figure 1-21: Route the Eddy Current Brake, Battery, and Power Cables



- 4 Connect the battery and starter cables.
 - 4a Attach the brown cable to the positive (+) battery post.
 - 4b Attach the red battery cable to the positive (+) battery post and to the large stud on the starter solenoid.
 - 4c Attach the blue and yellow cable to the negative (-) battery post.
 - 4d Attach the black battery cable to the negative (-) battery post and to the grounding location on the starter brace.
 - 4e Attach the blue cable to the starter solenoid.

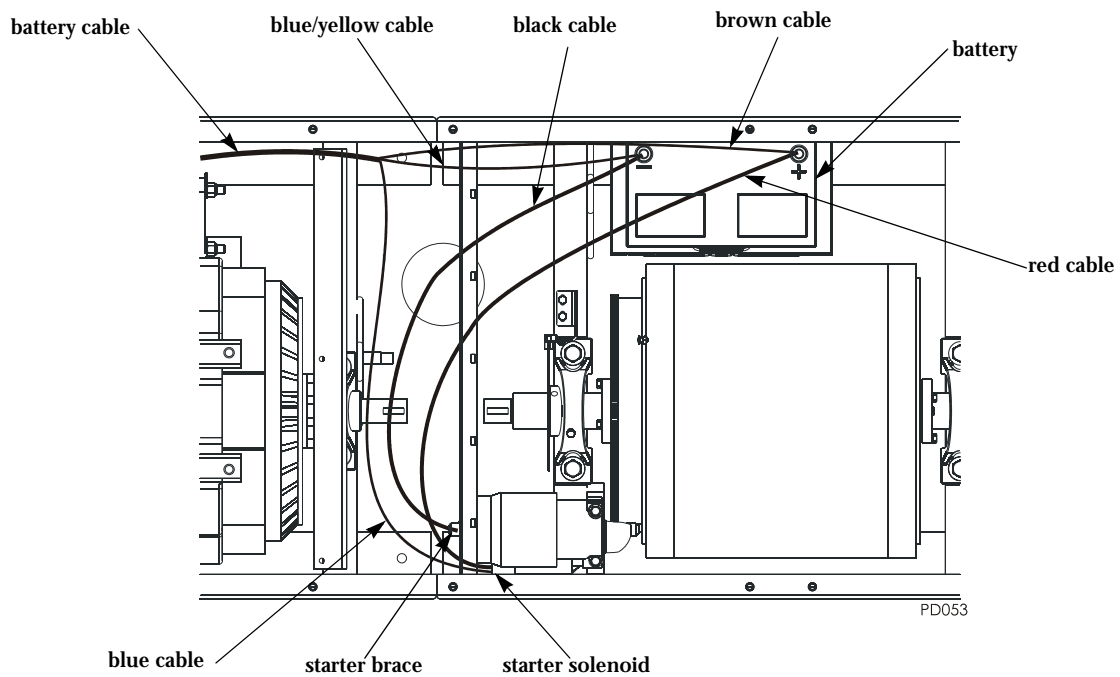


Figure 1-22: Attach the Brake and Starter Cables





ROUTING THE PICKUP CARD AND DYNO ELECTRONICS CABLES

- 1 Route the pickup card cable (P/N 66953002) from the CPI through the designated pit conduit and over to the pickup card. Attach the cable to the pickup card.
Note: Be sure to keep the power and communications cables in different pit conduits.
- 2 Route the 25-pin cable (P/N 42924251) from the dyno electronics to the Breakout board. Refer to Figure 1-1 for Breakout board location.
- 3 Route the 9-pin serial cable (P/N 42967090) from the dyno electronics to your computer.

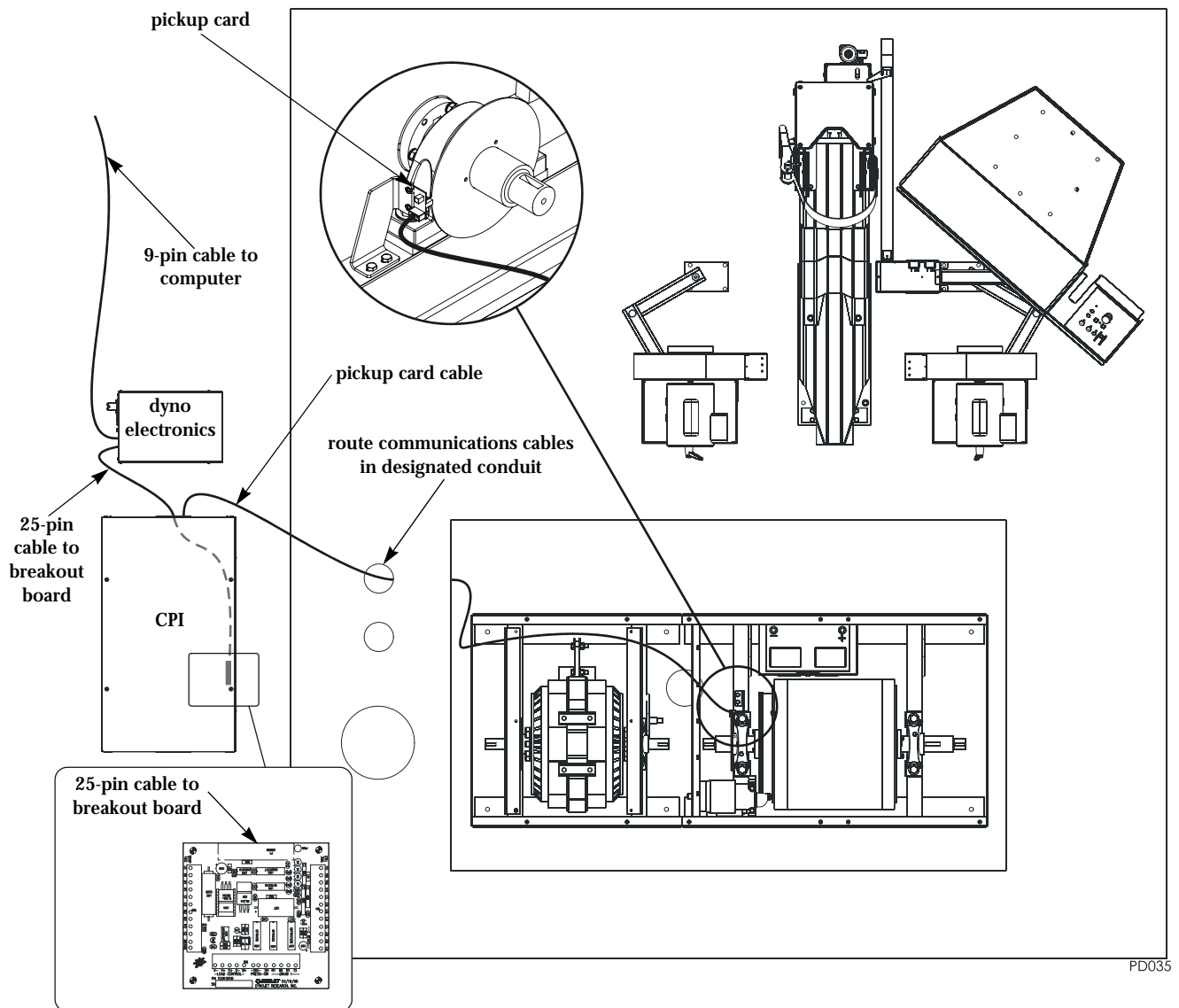
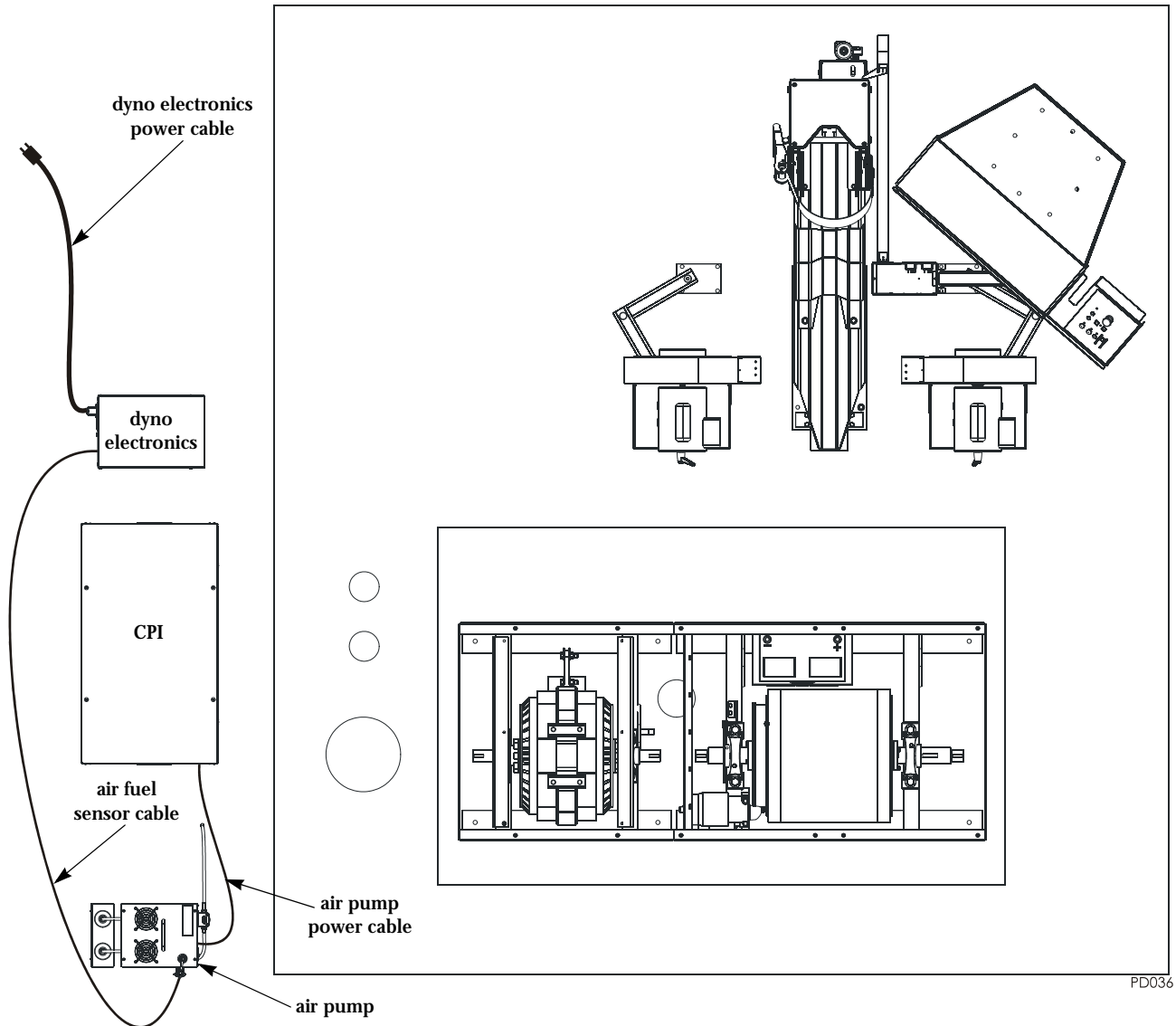


Figure 1-23: Route the Pickup Card and Dyno Electronics Cables



ROUTING THE AIR PUMP POWER, AIR FUEL SENSOR, AND DYNO ELECTRONICS POWER CABLES

- 1 Route the air pump power cable (P/N 76950318) from the CPI to the air pump.
- 2 Route the air fuel sensor cable (P/N 76950701) from the dyno electronics to the air pump.
- 3 Route the dyno electronics power cable to your power source.



PD036

Figure 1-24: Route the Air Pump and Stack Power Cables





JUNCTION BOX COVER, CABLE COVER, AND END CAP

- 1 Secure the blower connector cover to the junction box using two 4-40 screws. This cover attaches opposite the blower connectors.

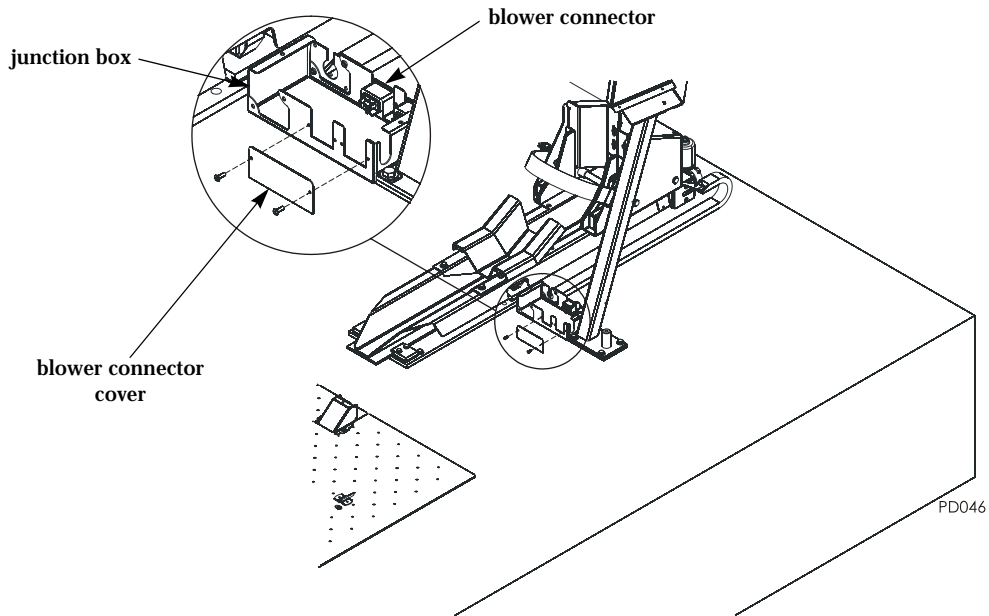


Figure 1-25: Install the Blower Connector Cover

- 2 Secure the junction box cover to the junction box using two 8-32 screws.

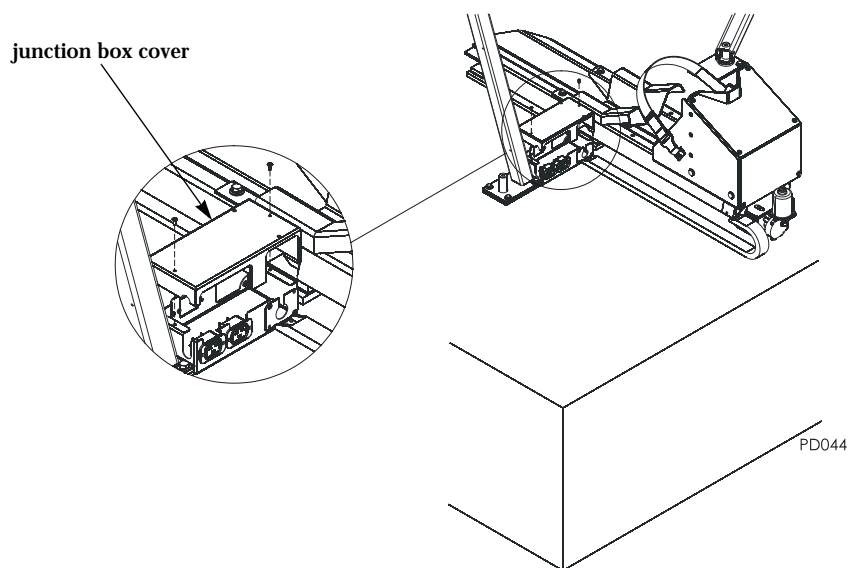


Figure 1-26: Install the Junction Box Cover



- 3 Loosely attach the end cap to the pit cover using two 1/4-20 button-head screws. Leave these screws loose.**
- 4 Secure the cable cover to the end cap and junction box using two 8-32 screws.**
- 5 Tighten the end cap screws.**

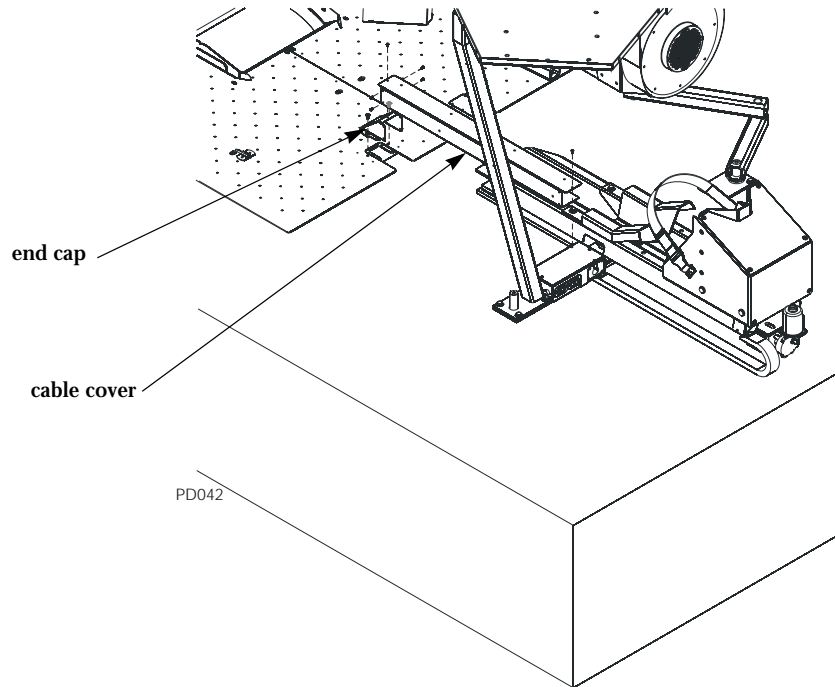


Figure 1-27: Secure End Cap and Cable Cover





TESTING THE MOTORIZED CARRIAGE AND WHEEL CLAMP

- 1 Replace the CPI cover if it was removed. Refer to page 1-6 for more information.
 - 2 Plug the dyno into the power outlet.
 - 3 Turn on the main breaker inside the CPI door.
Refer to “Connecting and Disconnecting Power to the Dyno” on page 1-3 for more information.
 - 4 Using the Control Panel, press the carriage forward and backward buttons and verify that the motor does turn.
Refer to “Using the Motorized Carriage” on page 2-5 for more information on using the Control Panel Interface.
 - 5 Place a stack of catalogs into the wheel clamp.
 - 6 Using the Control Panel, press the close button and observe that the wheel clamp does close. Hold the button until the motor turns off and the status light is on steady.
 - 7 Press and hold the right hand wheel clamp button then press the left hand button to open the clamp.
Refer to “Using the Wheel Clamp” on page 2-6 for more information on using the Control Panel.
- Note:** If your country requires you install the safety switch, please refer to the instructions in Appendix C.



USING THE CONTROL PANEL INTERFACE

This chapter will walk you through the basic operating procedures and how to maintain and troubleshoot the components associated with the Control Panel Interface (CPI). To ensure safety and accuracy in the procedures, perform the procedures as they are described.

This chapter is divided into the following categories:

- Basic Operation, page 2-2
- Power Distribution Assembly, page 2-8
- Maintenance and Troubleshooting, page 2-9





BASIC OPERATION

The control panel may be mounted to either side of the tray for easy access by the dyno user while seated on the bike. The graphics on the control panel are grouped together according to function and color coded for ease of identification. A description of the functions and displays follows:

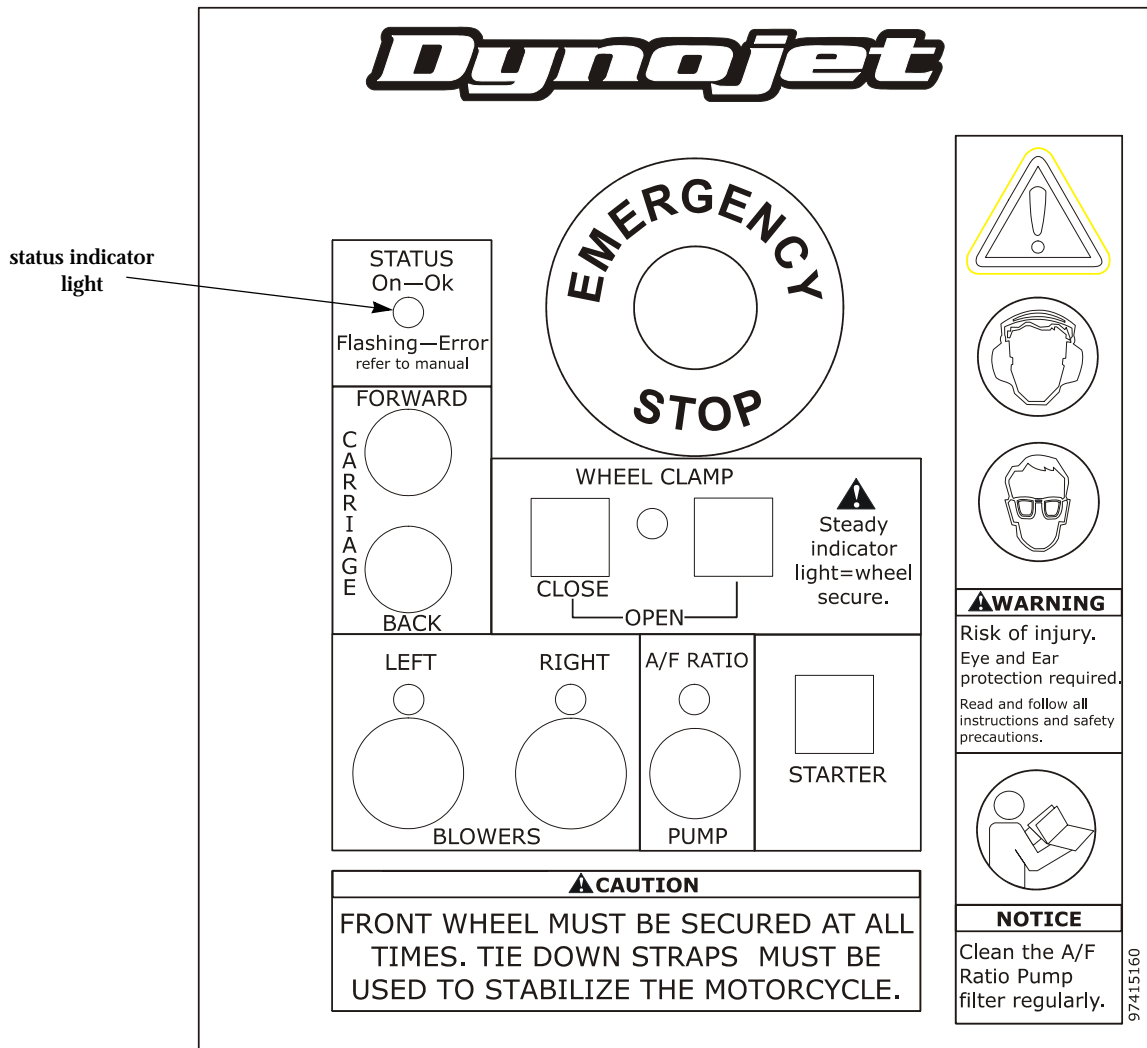


Figure 2-1: Control Panel Features





control panel feature	description
Air Fuel Ratio Air Pump	This optional accessory allows control of the internal air pump of the air fuel ratio sampling system. Refer to page 2-3 for more information.
Emergency Stop/Dyno Shutdown	Deactivates the dyno outputs whenever the button is pressed or the external E-Stop circuit is opened. Refer to page 2-4 for more information.
High Pressure Blowers (Blowers)	This optional accessory allows you to toggle the blowers on and off to control the temperature of the bike. Refer to page 2-4 for more information.
Motorized Carriage	This accessory requires the CPI and battery to operate. The motorized carriage allows you to move the bike forward and backward by remote control to center the bike's rear tire on the dyno drum. Refer to page 2-5 for more information.
Starter	Allows for spinning up the dyno drum to bump start bikes that may not have a starter. Refer to page 2-5 for more information.
Status Indicator	Provides information on the status of the CPI control and the various inputs to the CPI.
Wheel Clamp	This optional accessory requires the CPI and battery to operate. The wheel clamp allows for quicker loading and unloading of the bike. Refer to page 2-6 for more information.

USING THE AIR FUEL RATIO AIR PUMP

The CPI allows control of the optional internal air pump that is part of the air fuel ratio (AFR) sampling system. This air pump is built into the dyno to draw exhaust gases over the AFR sensor. The button on the control panel allows the dyno user to turn this pump on and off. The indicator light on the control panel will illuminate when power is provided to the pump.

If the pump does not run, check the following:

- Verify the switch on the pump assembly is on.
- Verify fuses F3 and F4 on the CPI board.
- If the E-Stop button is pressed or the external E-Stop circuit is open then the AFR pump will not run.

Refer to the Air Fuel Ratio Module Installation and User Guide for proper operating and maintenance procedures (P/N 98295110). Failure to follow proper procedures may result in inaccurate data or damage to the equipment. This manual can be found on your WinPEP CD or at www.dynojet.com/manuals.shtml.



USING THE EMERGENCY STOP/DYNO SHUTDOWN

The emergency stop/dyno shutdown button is designed to deactivate the dyno outputs whenever the button is pressed or the external E-Stop circuit is opened. When E-Stop is activated the blowers will be turned off, the motorized carriage will stop, and the wheel clamp will stop. The starter will be deactivated as well as the AFR air pump and the retarder will be de-activated. If the dyno is properly equipped with the air brake option, the air brake will be applied stopping the dyno drum. If the air brake is not installed the drum will freewheel. During an E-Stop condition the Status Indicator light will be flashing with two short blinks on and long pause off.

USING THE HIGH PRESSURE BLOWERS

The CPI allows the dyno operator to toggle the optional high pressure blowers on and off from the control panel. If the E-Stop is activated the blowers will be automatically turned off. The indicator light by each button will light up when that blower output is turned on. If the toggle switch on the blower is turned off the blower will not operate even if the CPI output is on.



The blower outlets on the front of the dyno are designed to only work with Dynojet provided blowers. Connecting other electrical loads or other blowers to the outlets on the dyno may damage the dyno and void the warranty.

If the blower indicator light on the control panel is on but the blower is not running, perform the following steps.

- 1 Verify the switch on the blower is on.
- 2 Verify the blower power plug is firmly plugged into the dyno.
- 3 Verify the blower circuit breakers in the power distribution assembly.

If the button on the breaker is extended, an overload has occurred and the breaker has tripped. Press in the breaker button to reset the breaker. If the breaker continues to trip, contact Dynojet.

UNDERSTANDING INTERLOCKS

The interlock circuit provides inputs for normally closed switches which open when it is not safe to run the dyno. Typically these switch inputs will be tied to safety gates and safety switches that are required in Europe. If the Interlock circuit is open the Status Indicator light will blink on and off with the on time equal to the off time. This will continue until this circuit is closed or an overriding E-Stop condition is sensed. In a dyno configured to comply with CE requirements the interlock signal will activate the drum air brake.





USING THE MOTORIZED CARRIAGE

This accessory requires the CPI and battery to operate. Use the control panel to activate the motorized carriage allowing you to center the bike's rear tire on the dyno drum.

The motorized carriage and wheel clamp cannot be activated at the same time.

Note: When operating the motorized carriage with a bike on the dyno, make sure the bike is in neutral.

Note: Always loosen or remove the bike tie-down straps before moving the carriage. Replace and tighten the straps when the bike is in the proper position.



Never perform a dyno run if the tie-down straps are not in place or they are damaged.

If the carriage movement is slow during parts of its travel, investigate and correct the source of the problems. If you reach the end of travel of the carriage or the carriage binds and you continue to hold down the carriage movement button, the motor will draw too much current and blow the carriage fuse F2. There is a short time delay built into the button operation to allow the carriage motor to coast to a stop before it moves in the opposite direction. This delay is needed to prevent the motor from drawing too much current by rapidly reversing the motor.

USING THE STARTER

The built in starter allows you to use the momentum of the drum to start motorcycles that are not equipped with an on-board starting system. The starter requires a battery to operate. Refer to page 1-7 for more information on the battery.

If the E-Stop button is pressed, the starter will not engage. If the interlock circuit is open, the starter will not operate.

- 1 Make sure the dyno brakes are not activated.
- 2 Verify the bike is in neutral or disengage the clutch.
- 3 Press and hold the green starter button until the drum reaches maximum speed.
- 4 Release the green starter button.
- 5 Use the momentum of the drum to start the bike.

Note: Do not re-engage the starter while the drum is turning.



USING THE STATUS INDICATOR

The status indicator provides information on the status of the CPI control and the various inputs to the CPI.

- **Status: Off**—indicates the CPI may not be receiving power due to the dyno being turned off or lack of power being applied to the dyno.
- **Status: Steady On**—indicates all inputs into the CPI are okay for normal dyno operation and the CPI is receiving power.
- **Status: Blinking**—If the status indicator light is flashing with two short blinks on and a long pause off, the Emergency Stop circuit is open. This can be caused by the red button on the control panel being pressed or an external E-Stop (Emergency Stop) condition is being fed to the CPI board. The E-Stop circuit must be closed to allow for normal dyno operation.
- **Status: Blinking**—If the status indicator light is blinking with equal on and off time, the interlock signal into the CPI board is open. This signal monitors the condition of optional safety switches that will be attached to safety guards or the dyno room door when guards are not used; this will allow dyno operation only when the guards are in place or the door is closed. The E-Stop circuit takes precedence over the interlock input.

USING THE WHEEL CLAMP

This optional accessory requires the CPI and battery to operate. The wheel clamp allows for quicker bike loading and unloading. The internal mechanism in the wheel clamp closes on the bike's front wheel and tire to a calibrated amount of pressure securing the bike. The indicator light between the wheel clamp buttons provides status of the current state of the wheel clamp.



WARNING

Pinch hazard. Keep hands, body parts, and other loose items clear. Failure to follow these instructions can result in serious injury or equipment damage.



WARNING

Risk of injury. Be sure the wheel clamp is free and clear of any obstruction. Do not operate the dyno if the wheel clamp indicator light is not on steady.





CLOSING THE WHEEL CLAMP

CAUTION

Do not run into the edges of the wheel clamp pads with the bike tire. Make sure the wheel clamp is sufficiently open before loading the motorcycle.

- 1 Once the bike's front tire is fully seated in the clamp, press and hold the close button (left hand yellow square button).

As you hold the button, the wheel clamp mechanism will close on the bike's wheel and tire. The wheel clamp status light will blink as the clamp is closing.

WARNING

For proper and safe operation, the wheel clamp must grip the wheel as well as the tire. If the front tire is too wide to allow the clamp pads to grip the wheel, you must use the wheel strap.

- 2 Continue to hold the button down as the clamp applies pressure to the wheel and tire. During this process, the CPI is monitoring the current that is going to the wheel clamp.

When the wheel clamp has reached sufficient clamping force to secure the bike, the current drive to the wheel clamp is cut and the wheel clamp indicator light will turn on steady indicating that the wheel is secured.

WARNING

Do not operate the dyno if the wheel clamp indicator light is not on steady.

- 3 Pull back on the bike to verify the bike is secured.
- 4 Adjust the carriage to align the rear bike tire on the dyno drum.
- 5 Secure the bike with the tie-down straps.

WARNING

Never perform a dyno run if the tie-down straps are not in place or they are damaged.

OPENING THE WHEEL CLAMP

- 1 Press and hold the right hand yellow square button first, then press the left hand yellow button. The wheel clamp will start opening.

The status indicator light will be blinking to indicate the wheel is not secured and a dyno run should not be attempted.

- 2 Continue to open the clamp far enough to allow the next bike to be loaded easily.



POWER DISTRIBUTION ASSEMBLY

The Power Distribution Assembly, inside the CPI, has three circuit breakers to protect the internal dyno circuits, the main dyno circuit breaker and two blower circuit breakers.

MAIN CIRCUIT BREAKER

The main circuit breaker is rated for 240VAC at 30A and all of the power into the dyno passes through this breaker. In the event of a major overload or failure this breaker will trip. This breaker also provides the main disconnect for the dyno. When the handle is in the up position the dyno is connected to the incoming power. When the handle is in the down position all power into the dyno is turned off.



Even if this breaker is turned off there is still the potential for lethal voltages to be present in the power distribution assembly. Always disconnect the main power plug before removing the covers.

HIGH PRESSURE BLOWER CIRCUIT BREAKERS

The high pressure blower (blower) circuits are protected by the two 15A breakers. In the event of a motor failure or other failure with the blowers these breakers could trip. The white button pops out to indicate the circuit has tripped. Pressing in the white button will reset the breaker. The top breaker protects the right blower circuit (right side of dyno as you are sitting on the bike) and the bottom breaker protects the left blower circuit. These breakers do not provide a manual disconnect.

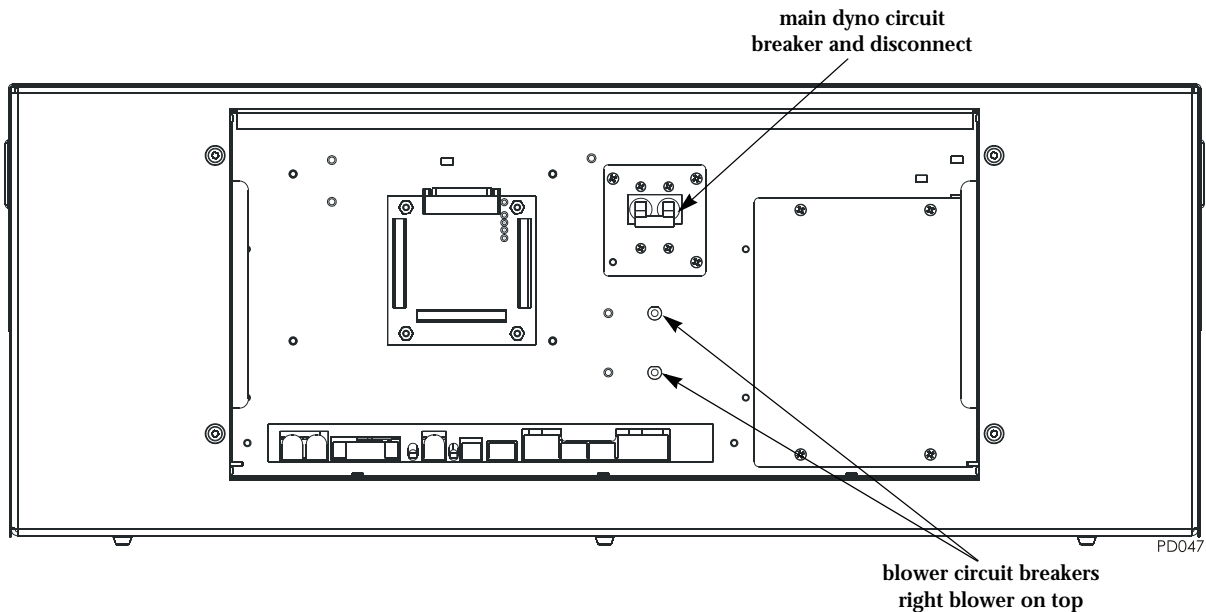


Figure 2-2: Power Distribution Assembly Circuit Breakers





MAINTENANCE AND TROUBLESHOOTING

This section contains basic maintenance and troubleshooting information for the wheel clamp and power distribution assembly fuses.

WHEEL CLAMP

- Make sure the bike tire and wheel are clean to reduce the possibility of scratching the rim.
- Keep the wheel clamp pads clean using Isopropyl Alcohol. Do not allow any products to be applied or transferred to the wheel clamp that could interfere with the gripping action.
- If you run the clamp all the way open against the hard stops, the CPI will turn off the motor before any damage can occur.
- Follow the prescribed service for the wheel clamp lubrication for frequency and type of lube. Grease or lube the screw and slides monthly or every 500 bikes.
- Do not run into the edges of the wheel clamp pads with the bike tire.
- If the wheel clamp movement is binding for any reason, stop using the wheel clamp and correct the problem. It is possible for the wheel clamp to bind and give a false indication that the wheel is clamped.
- If the wheel has been clamped and the wheel clamp indicator light is on steady then the dyno power is turned off or the E-Stop activated, the wheel clamp indicator light will go back to the blinking state as the clamp status is unknown. Pressing the clamp button again will secure the clamp.
- If the E-Stop circuit is open or the Emergency Stop button is pressed, the wheel clamp will not operate.



TROUBLESHOOTING POWER DISTRIBUTION ASSEMBLY FUSES

Fuses F3 and F4 fuse the 240VAC as it enters the CPI board. One fuse for each leg of the 240VAC. If either of these fuses are blown there will be no power to the CPI board or any of the accessories. The Status Light on the board as well as the button panel will be off. Replace with a 5x20 mm 3A fast blow fuse.

Fuse F5 provides protection for the DC power that is produced by the on board power supply and routed to the CPI board. If this fuse is blown there will be no power to the CPI board or any of the accessories. The Status Light on the board as well as the button panel will be off. Replace with a 5x20 mm 3A fast blow fuse.

Fuse F6 provides protection for the power that is provided for the 12VDC accessories from the dyno owner installed car battery. This also protects the charging circuit to the battery. If this fuse is open the motorized carriage and the wheel clamp will not function. Replace with a 15A mini auto fuse.

Fuse F1 protects the wheel clamp drive circuit. If this fuse is open the wheel clamp motor will not activate. Replace with a 15A mini auto fuse.

Fuse F2 protects the motorized carriage drive circuit. If this fuse is open the motorized carriage motor will not activate. Replace with a 15A mini auto fuse.

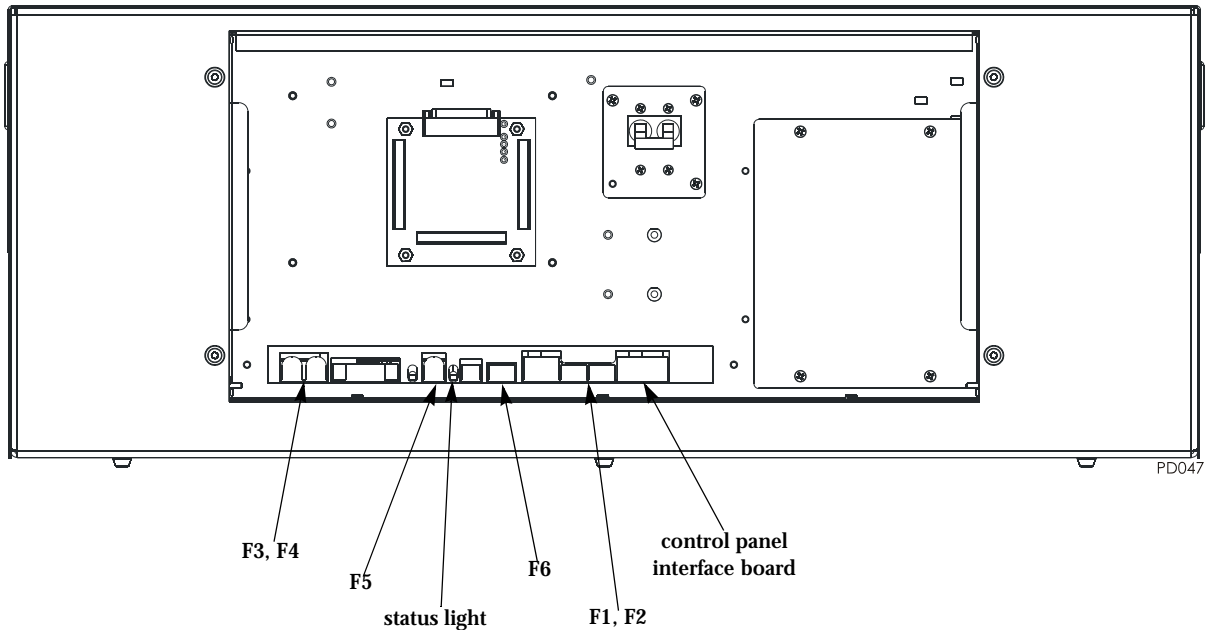


Figure 2-3: Power Distribution Assembly Fuses





RED HEAD ANCHOR INSTALLATION

This appendix contains instructions for installing the Red Head Multi-Set™II Anchors. The anchors will be used to secure the dyno to concrete. To ensure safety and accuracy in the procedures, perform the procedures as they are described. Be sure to read and understand the warnings included in this appendix.

WARNINGS



Always wear safety glasses and other necessary protective devices or apparel when installing or working with anchors.



ITW Ramset/Red Head Multi-Set II Anchors are designed to operate properly only when installed with ITW Ramset/Red Head brand Setting Tools.

The use of a 24 to 40 ounce hammer is recommended for expanding Multi-Set II anchors.

The use of carbide drill bits manufactured with ANSI B94. 12-77 drill bit diameter requirements is recommended for installation of this anchor.

Not recommended for use in lightweight masonry material such as block or brick.

Use of core drills is not recommended to drill holes for use with this anchor.

Not recommended for use in new concrete which has not had sufficient time to cure.

Anchor spacing and edge distance requirements (anchor installation locations) are the responsibility of the engineer of record.

CONTACT INFORMATION FOR ITW RAMSET/RED HEAD

Contact ITW Ramset/Red Head at 1-630-350-0370, or 1300 North Michael Drive, Wood Dale, IL 60191.





INSTALLATION

Use the table below to determine the catalog number, drill bit size, minimum hole depth, and setting tool catalog number.

catalog number	drill bit size	minimum hole depth	setting tool catalog number
Carbon Steel RM-38/RL-38 (9.5 mm)	1/2-inch	1 5/8-inch (41.2 mm)	RT-138

Use the following instructions to install the Red Head anchors.

- 1 Drill the hole in the concrete the same outside diameter as the anchor being used to any depth exceeding minimum embedment.

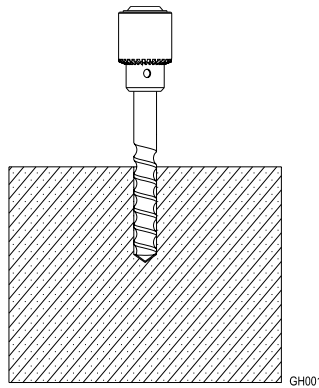


Figure A-1: Red Head Anchor—Drill the Hole

- 2 Insert the anchor.

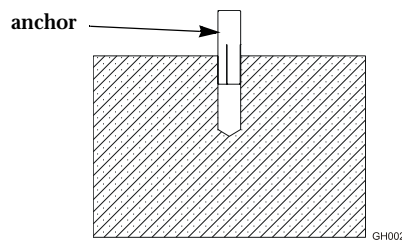


Figure A-2: Red Head Anchor—Insert the Anchor





- Using a hammer, drive the anchor flush with the surface of the concrete, or below the surface if the hole depth exceeds minimum embedment.

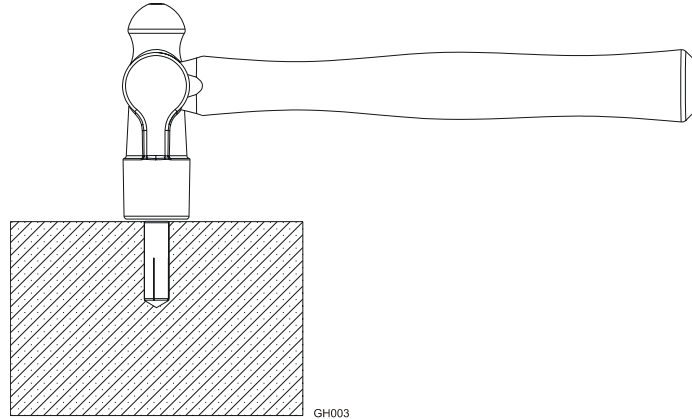


Figure A-3: Red Head Anchor—Drive the Anchor Flush

- Using a hammer, expand the anchor with the setting tool. The anchor is properly expanded when the shoulder of the setting tool is flush with the top of the anchor.

Note: Use only Ramset/Red Head setting tools to insure proper installation.

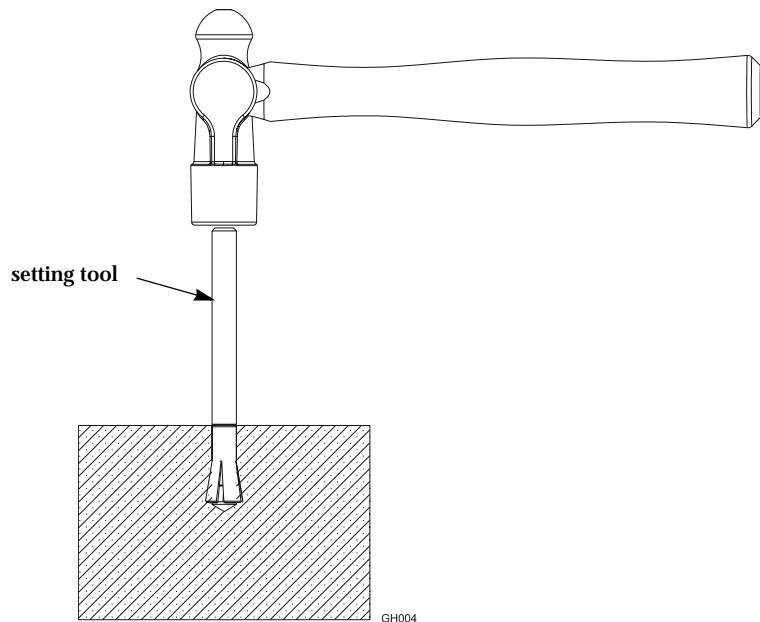


Figure A-4: Red Head Anchor—Expand the Anchor



MOTORIZED CARRIAGE AND WHEEL CLAMP INSTALLATION

This appendix provides instructions for installing the motorized carriage and wheel clamp assemblies to the model 200ip/250ip motorcycle pit dynamometer. To ensure safety and accuracy in the procedures, perform the procedures as they are described.





MOTORIZED CARRIAGE

The motorized carriage allows you to easily adjust for various wheel bases distances with the press of a button.

Refer to “Using the Motorized Carriage” on page 2-5 for more information on using the motorized carriage.

INSTALLING THE MOTORIZED CARRIAGE

- 1 Insert the coupler jaw on the carriage screw making sure the inside of the coupler jaw is flush with the end of the carriage screw.
- 2 Secure the coupler jaw with the set screw.
- 3 Secure the motor mount to the carriage using two 1/4-20 x 1-inch bolts and two 1/4-inch lock washers. The motor mount is installed in front of the flange bearing.

Note: The flange bearing must be facing so the grease zerk is accessible (facing down).

Note: Dynojet recommends using a 1/4-inch ratchet drive with an extension and a 7/16-inch shallow socket to secure the flange bearing bolts.

Note: If the motor mount is already installed, skip this step and continue.

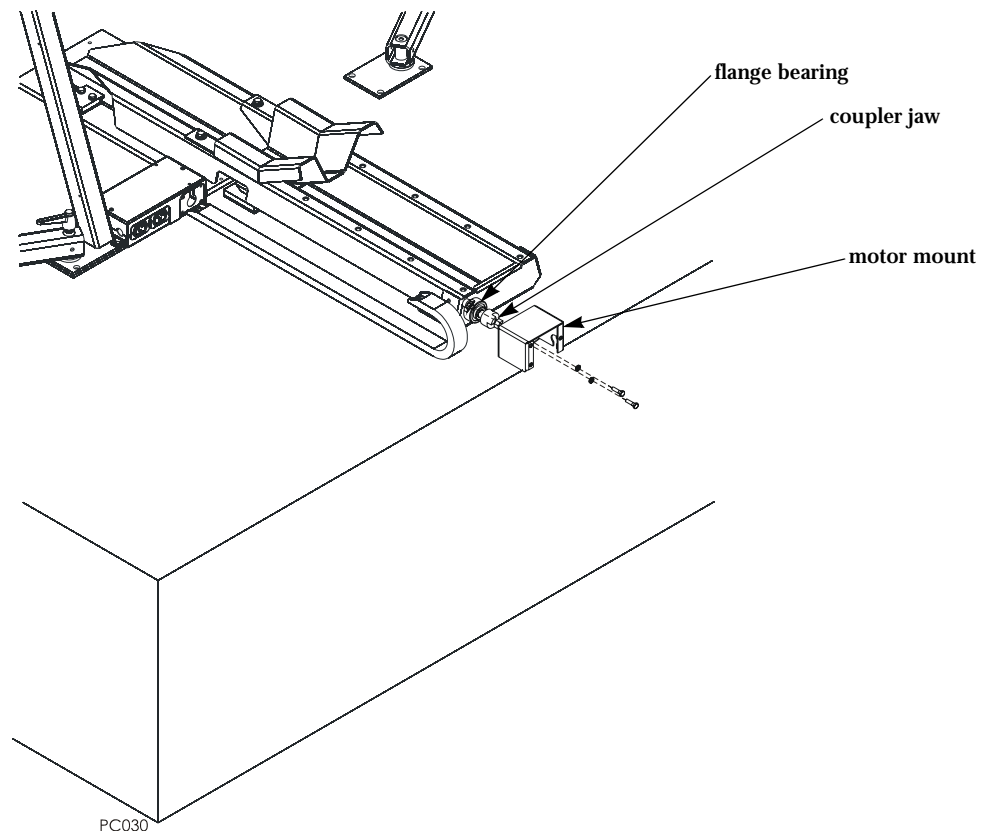


Figure B-1: Install the Motor Mount





- 4 Bring the motorized carriage cable (two-pin connector) from the cable track over to the motor mount. This cable was routed on page 1-19.
- 5 Secure the strain relief to the side of the motorized carriage motor mount.

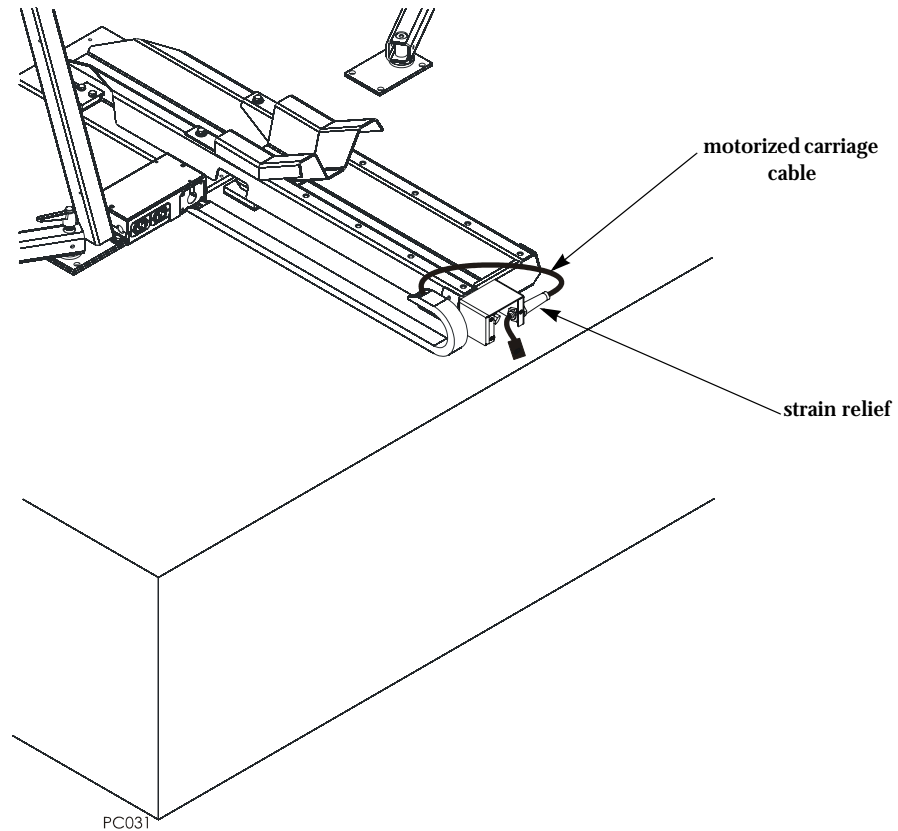


Figure B-2: Secure Strain Relief and Cable



- 6 Insert the plastic coupler spider on the carriage screw half of the coupler.
- 7 Place the motorized carriage motor assembly near the motor mount and plug the motor connector into the motorized carriage cable.
- 8 Turn the carriage screw to align the coupler jaws with each other and slide the coupler jaws together until the motor assembly cover is flush with the motor mount.
- 9 Secure the motor assembly cover to the motor mount with three 1/4-20 x 1/2-inch button-head screws.

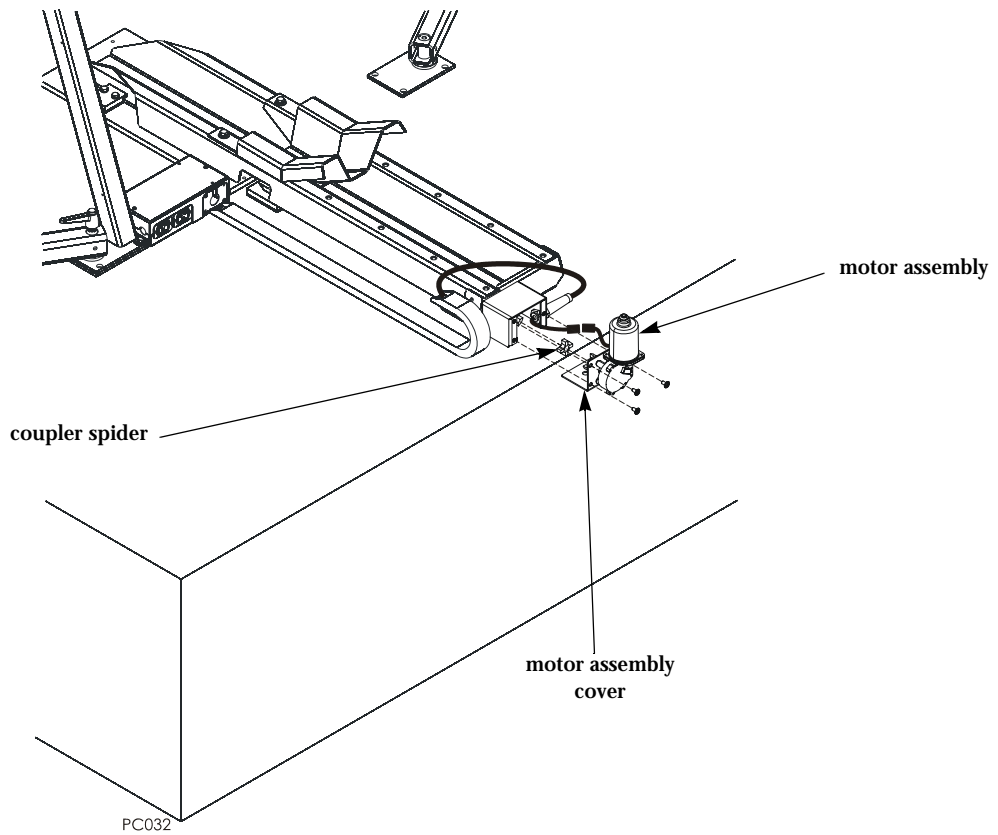


Figure B-3: Assemble the Motorized Carriage





WHEEL CLAMP

The wheel clamp allows you to easily adjust for various wheel thicknesses with the press of a button.

Refer to “Using the Wheel Clamp” on page 2-6 for more information on using the wheel clamp.

- 1 Remove the six 1/4-20 x 1-inch screws securing the wheel clamp cover. Remove the cover and set the cover and screws aside.

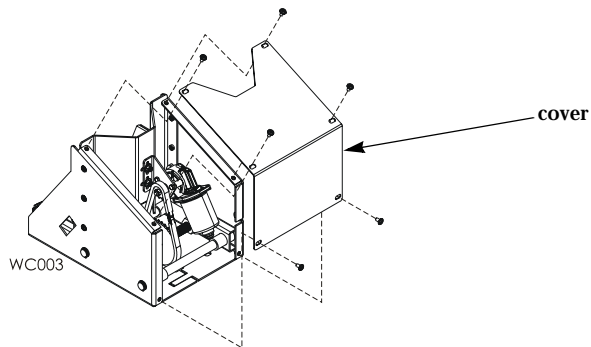


Figure B-4: Remove the Wheel Clamp Cover

- 2 Place the wheel clamp on the carriage. Align the four holes on the wheel clamp with the holes on the carriage.
- 3 Secure the wheel clamp to the carriage using four 3/8-16 x 1/2-inch bolts.

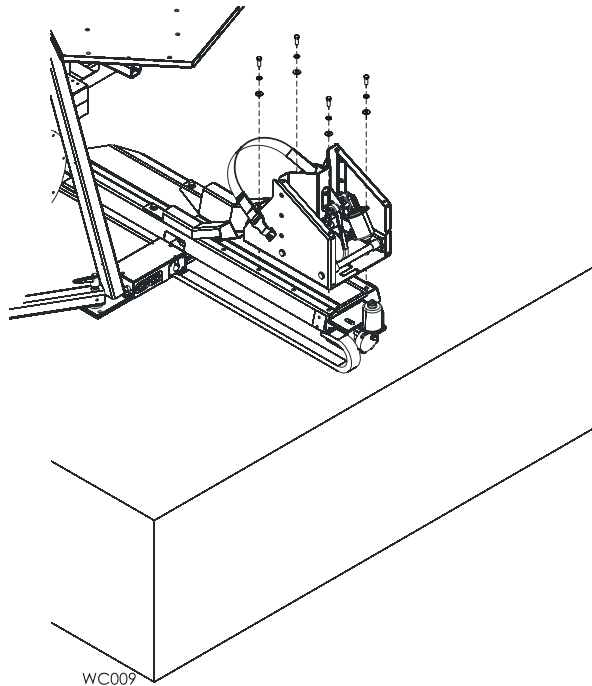


Figure B-5: Secure the Wheel Clamp to the Carriage



- 4 Bring the wheel clamp cable (three-pin connector) from the cable track over to the wheel clamp. This cable was routed on page 1-19.
- 5 Install the wheel clamp cable strain relief to the side of the wheel clamp.
- 6 Plug the wheel clamp cable into the connector on the wheel clamp motor.
- 7 Replace the wheel clamp cover.

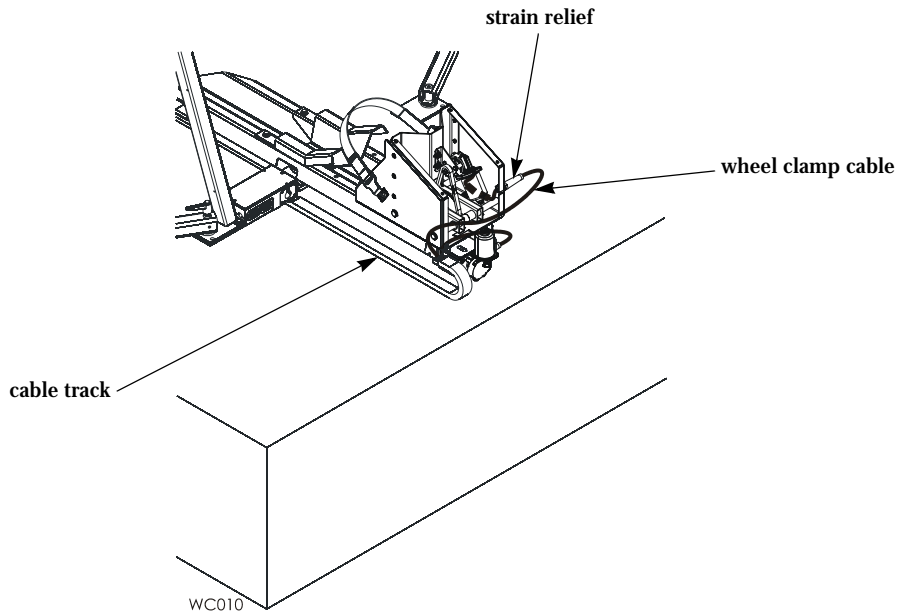


Figure B-6: Secure the Strain Relief and Cable





SAFETY SWITCH INSTALLATION

This appendix provides instructions for installing the safety switch with the model 200ip and 250ip motorcycle pit dynamometer (dyno) and the Control Panel Interface (CPI). To ensure safety and accuracy in the procedures, perform the procedures as they are described.





INSTALLING THE SAFETY SWITCH

Safety requirements of your local country may require that a safety switch is installed. Be sure to follow the safety requirements specific to your country. The safety switch requires the air brake to work. This switch is located on the dyno room door; when the door is open, the air brake is locked. This prevents the dyno from being used when the door is open.

- 1 Open the front panel access and turn off the main breaker.
- 2 Unplug the dyno power cable.

Refer to “Connecting and Disconnecting Power to the Dyno” on page 1-3 for more information.

- 3 Remove the eight button-head screws securing the cover and set aside.
- 4 Remove the cover and set aside.

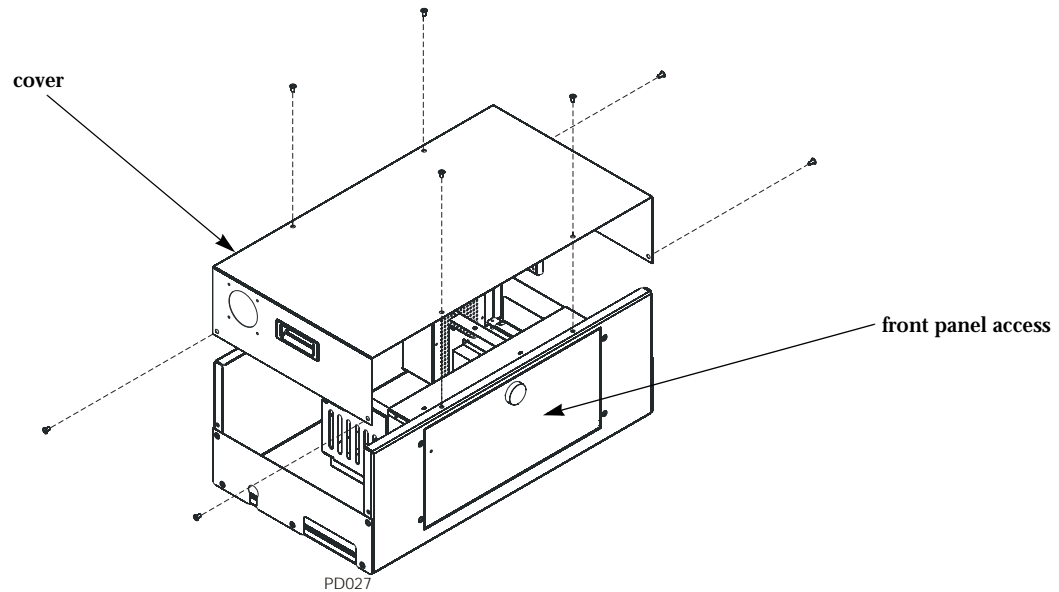


Figure C-1: Accessing the CPI





- 5 Loosen the screws that hold the jumper wires in place and remove the wire.
- 6 Route the black and yellow wire from the safety switch through the dyno.
Make sure the switch will not get caught in any moving components or chafed on any edges.
- 7 Attach the yellow wire to the 1A position on the J2 connector.
- 8 Attach the black wire to the 6B position on the J4 connector.

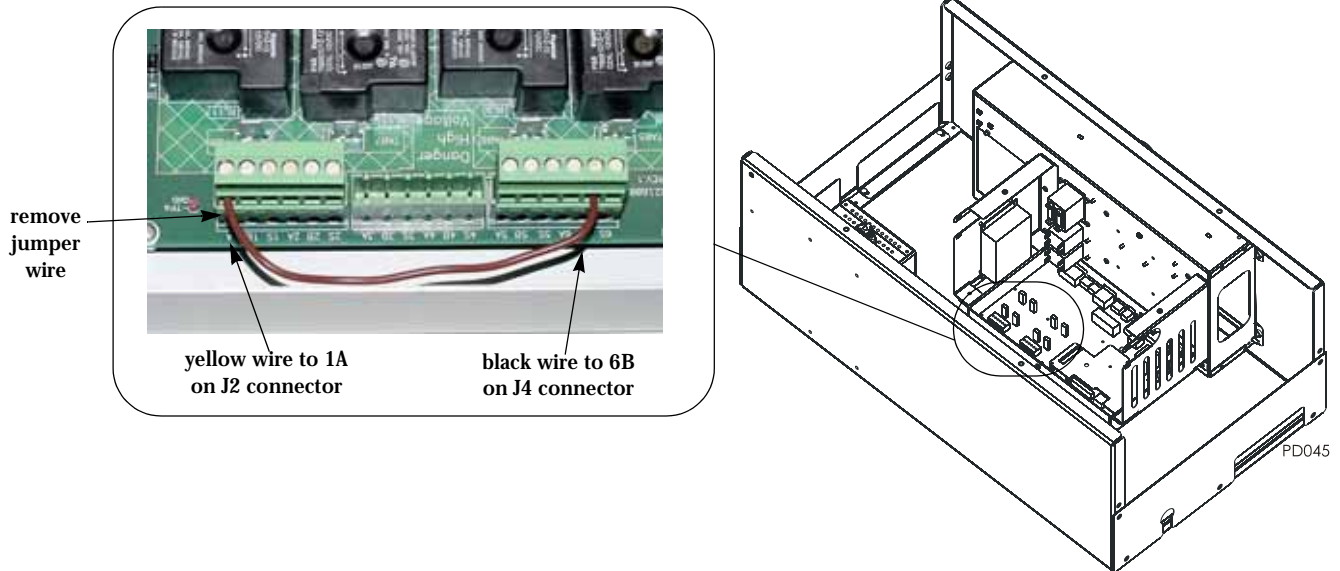


Figure C-2: Wire the Safety Switch

- 9 Replace the control panel interface cover using the screws removed earlier.
- 10 The safety switch needs to be mounted at the entry of the dyno room.
- 11 Plug the dyno into the power outlet.
- 12 Turn on the main breaker inside the power distribution assembly door.
Refer to “Connecting and Disconnecting Power to the Dyno” on page 1-3 for more information.
- 13 Open the safety switch by allowing the plunger to extend.
The air brake should be applied holding the drum and the status light on the Control Panel will be flashing.
- 14 Depress the safety switch and the air brake will release and the status light will be on steady.



POWER REQUIREMENTS

This appendix contains the power requirements and instructions for all dyno installations. To ensure safety and accuracy in the procedures, perform the procedures as they are described.





POWER REQUIREMENTS AND INSTALLATION—NORTH AMERICA, JAPAN, AND LOCATIONS USING 60 HZ POWER

The following power requirements and instructions are for North America, Japan, and locations using 60 Hz power. Refer to “Power Requirements and Installation—Excluding North America and Japan” on page D-6 for all other locations.

The model 200ip/250ip dynamometer requires a dedicated 240VAC single phase power outlet rated for 30A for proper operation. **Failure to follow these instructions could result in personal injury or damage to the dyno.** Connecting the dyno to the incorrect voltage will void the dyno warranty. Contact Dynojet with any questions.

The model 200ip/250ip dynamometer requires a dedicated wall receptacle which must be wired for operation and is included with the dyno or may be shipped in advanced in a separate package. The dyno is equipped with a ten foot power cord with a twist lock plug pre-wired on the end. The power cord is located at the front of the dyno, but is shipped inside of the dyno. Refer to Figure 1-1 for the location of the power cord and page 1-23 for instructions on routing the power cord.

The dedicated wall receptacle is a twist lock four wire grounded 30A NEMA L14-30 type and must be wired in accordance with local building codes and requirements. Installation may require a licensed electrician and must conform to UL and NEC safety standards.

Note: If you are installing your dyno in North American or Japan and the dyno is not equipped with twist lock four wire grounded plug, contact Dynojet before attempting to connect the dyno.

Local and national electrical codes require a grounded receptacle box.

- This circuit should have a dedicated 30A double pole circuit breaker.
- The dyno should be the only device connected to this circuit.
- It may be necessary to install a delayed trip breaker due to the inrush current drawn by the high pressure blowers.

INSTALLING THE WALL RECEPTACLE

The wall receptacle is included with your dyno and is shipped in a box in the center of your dyno or may be shipped in advance in a separate package.

The wall receptacle is a single phase 240 volt 30A dedicated circuit with a neutral connection and a ground. The neutral connection is required to split the 240 volt into two 120 volt connections internal to the dyno.

The cable carrying the power to this receptacle should be ten gauge or larger. Check with local building codes for the correct size.

- 1 Connect one of the 240V legs to the X terminal (gold colored screw).
- 2 Connect the other 240V leg to the Y terminal (gold colored screw).
- 3 Connect the neutral conductor to the W or WH terminal (silver screw).
- 4 Connect the ground conductor to the green grounding screw.





TESTING FOR CORRECT VOLTAGES

You must test the receptacle for proper voltages before the dyno is connected to the outlet.

CAUTION

If the voltage readings do not match the following table, DO NOT connect the dyno. You must have a licensed electrician correct the power connection. Connecting the dyno to the incorrect voltage can result in damage to the dyno and will void the dyno warranty. Contact Dynojet with any questions.

Using a voltmeter that is capable of measuring AC voltage, measure between the points listed below and verify that the correct voltages are present.

probe 1	probe 2	desired voltage measurement
2	4	225V to 250V
1	4	108V to 130V
1	2	108V to 130V
1	3	< 5V
3	box	< 5V

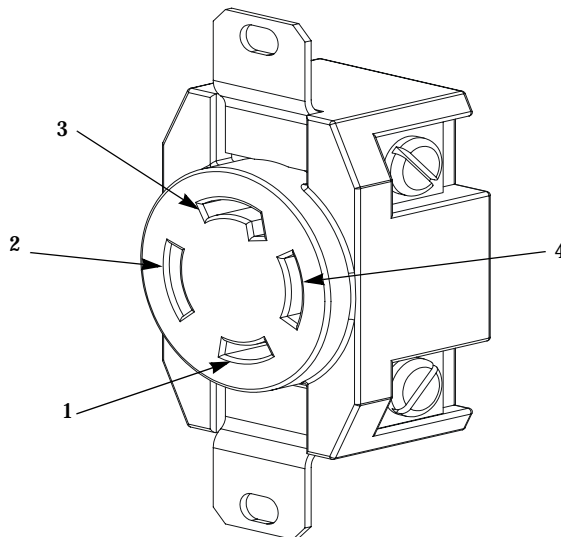


Figure D-1: Dedicated Power Receptacle



REPLACING THE POWER PLUG

Use the following instructions to replace the four wire plug and socket.

The plug and socket configuration must be rated for at least 240VAC 30A and have a minimum of four conductors.

The power cord that attaches to the dyno has four conductors internally and their colors are brown, blue, black, and green/yellow.

- 1 Connect 240VAC single phase power between the brown and the blue wire connection points.
- 2 Connect the green/yellow wire to the ground connection point.
- 3 Wrap the black wire with the white tape to denote that it is a neutral connection and connect it to the neutral connection point.
- 4 Refer to the previous table for testing and probe the new connections as follows:
 - blue wire as location #2
 - brown wire as location #4
 - black wire as location #1
 - green/yellow wire as location #3.

HARD WIRING TO THE BUILDING

Use the following instructions to wire the dyno directly to the building.

The dyno must connect to a two pole disconnect switch to allow the removal of all power to the dyno for servicing. This box may contain fusing, circuit breakers, or the circuit protection may be upstream in the building power system. The circuit must be protected to 30A with slow blow fuses or time delayed circuit breakers.

The power cord that attaches to the dyno has four conductors internally and their colors are brown, blue, black, and green/yellow.

- 1 Remove the dyno power plug and connect 240VAC single phase between the brown and the blue wires through the disconnect switch.
- 2 Connect the green/yellow wire to the ground connection.
- 3 Wrap the black wire with white tape to denote that it is a neutral connection and connect it to the neutral connection.
- 4 Refer to the previous table for testing and probe the new connections as follows:
 - blue wire as location #2
 - brown wire as location #4
 - black wire as location #1
 - green/yellow wire as location #3





CONNECTING THE DYNO

- 1 Turn off the main circuit breaker on the dyno. This is the large breaker in the center of the power distribution assembly behind the door on the left hand side of the dyno. Refer to page 1-3 for breaker location. Off is the down position.
- 2 Once you verify the voltages on the receptacle, connect the dyno to the receptacle.
- 3 Connect the high pressure blowers to the dyno. For more information on installing and connecting the blowers, refer to page 1-11 and page 1-19.
- 4 Turn on the main dyno breaker. Refer to page 1-3 for breaker location.
- 5 Test the blowers for operation.
- 6 Turn on the dyno electronics and verify operation.



POWER REQUIREMENTS AND INSTALLATION—EXCLUDING NORTH AMERICA AND JAPAN

The model 200ip/250ip dynamometer (excluding North America and Japan) requires a dedicated wall receptacle which must be wired for operation and is included with the dyno or may be shipped in advanced in a separate package. The dyno is equipped with a ten foot power cord with a three-pin IEC plug pre-wired on the end. The power cord is located at the front of the dyno, but is shipped inside of the dyno. Refer to Figure 1-1 for the location of the power cord and page 1-23 for instructions on routing the power cord.

The model 200ip/250ip dynamometer requires a dedicated 240VAC **single phase** power outlet rated for 30A for proper operation. **Failure to follow these instructions could result in personal injury or damage to the dyno.** Connecting the dyno to the incorrect voltage will void the dyno warranty. Contact Dynojet with any questions.

The dedicated wall receptacle is a three-pin IEC grounded 30A type and must be wired in accordance with local building codes and requirements. Installation may require a licensed electrician to conform to applicable safety standards.



If you are installing your dyno in a location other than North America or Japan and the dyno is not equipped with a three pin IEC grounded plug, contact Dynojet before attempting to connect the dyno.

Local and national electrical codes will require that the box containing the receptacle is grounded.

- This circuit should have a dedicated 30A double pole circuit breaker.
- The dyno should be the only device connected to this circuit.
- It may be necessary to install a delayed trip breaker due to the inrush current drawn by the high pressure blowers.





INSTALLING THE WALL RECEPTACLE

The wall receptacle is a single 240 volt 30A dedicated circuit with a ground.

The cable carrying the power to this receptacle should be 4.0 mm² (ten gauge) or larger. Check with local building codes for the correct size.

- 1 Connect one of the 240V legs to the N terminal (white).
- 2 Connect the other 240V leg to the L terminal (no color).
- 3 Connect the ground conductor to the green terminal.

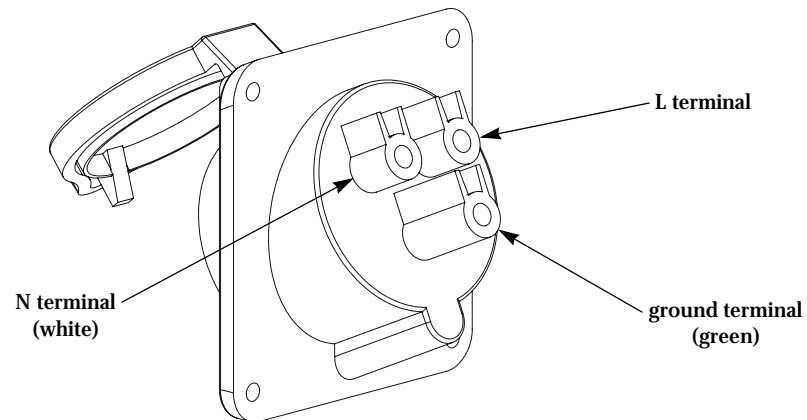


Figure D-2: Wiring the Wall Receptacle



TESTING FOR CORRECT VOLTAGES

You must test the receptacle for proper voltages before the dyno is connected to the outlet.

Using a voltmeter that is capable of measuring AC voltage, measure between the points listed below and verify that the correct voltages are present.

probe 1	probe 2	desired voltage measurement
1	3	220V to 250V
2	box	< 5V

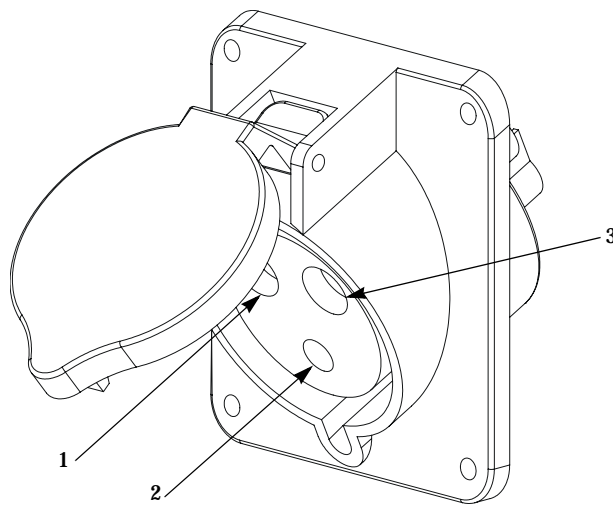


Figure D-3: Testing the Wall Receptacle





REPLACING THE POWER PLUG

Use the following instructions to replace the plug and socket.

The plug and socket configuration must be rated for at least 240VAC 30A and have a minimum of three conductors.

The power cord that attaches to the dyno has four conductors internally and their colors are brown, blue, black, and green/yellow.

- 1 Connect 240VAC **single phase** power between the brown and the blue wire connection points.
- 2 Connect the green/yellow wire to the ground connection point.
- 3 Cut off the black wire.
- 4 Refer to the previous table for testing and probe the new connections as follows:
 - blue wire as location #1
 - brown wire as location #3
 - green/yellow wire as location #2

HARD WIRING TO THE BUILDING

Use the following instructions to wire the dyno directly to the building.

The dyno must connect to a two pole disconnect switch to allow the removal of all power to the dyno for servicing. This box may contain fusing, circuit breakers, or the circuit protection may be upstream in the building power system. The circuit must be protected to 30A with slow blow fuses or time delayed circuit breakers.

The power cord that attaches to the dyno has four conductors internally and their colors are brown, blue, black, and green/yellow.

- 1 Remove the dyno power plug and connect 240VAC single phase between the brown and the blue wires through the disconnect switch.
- 2 Connect the green/yellow wire to the ground connection.
- 3 Cut off the black wire.
- 4 Refer to the previous table for testing and probe the new connections as follows:
 - blue wire as location #1
 - brown wire as location #3
 - green/yellow wire as location #2



CONNECTING THE DYNO

- 1 Turn off the main circuit breaker on the dyno. This is the large breaker in the center of the power distribution assembly behind the door on the left hand side of the dyno. Refer to page 1-3 for breaker location. Off is the down position.
- 2 Once you verify the voltages on the receptacle, connect the dyno to the receptacle.
- 3 Connect the high pressure blowers to the dyno. For more information on installing and connecting the blowers, refer to page 1-11 and page 1-19.
- 4 Turn on the main dyno breaker. Refer to page 1-3 for breaker location.
- 5 Test the blowers for operation.
- 6 Turn on the dyno electronics and verify operation.





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