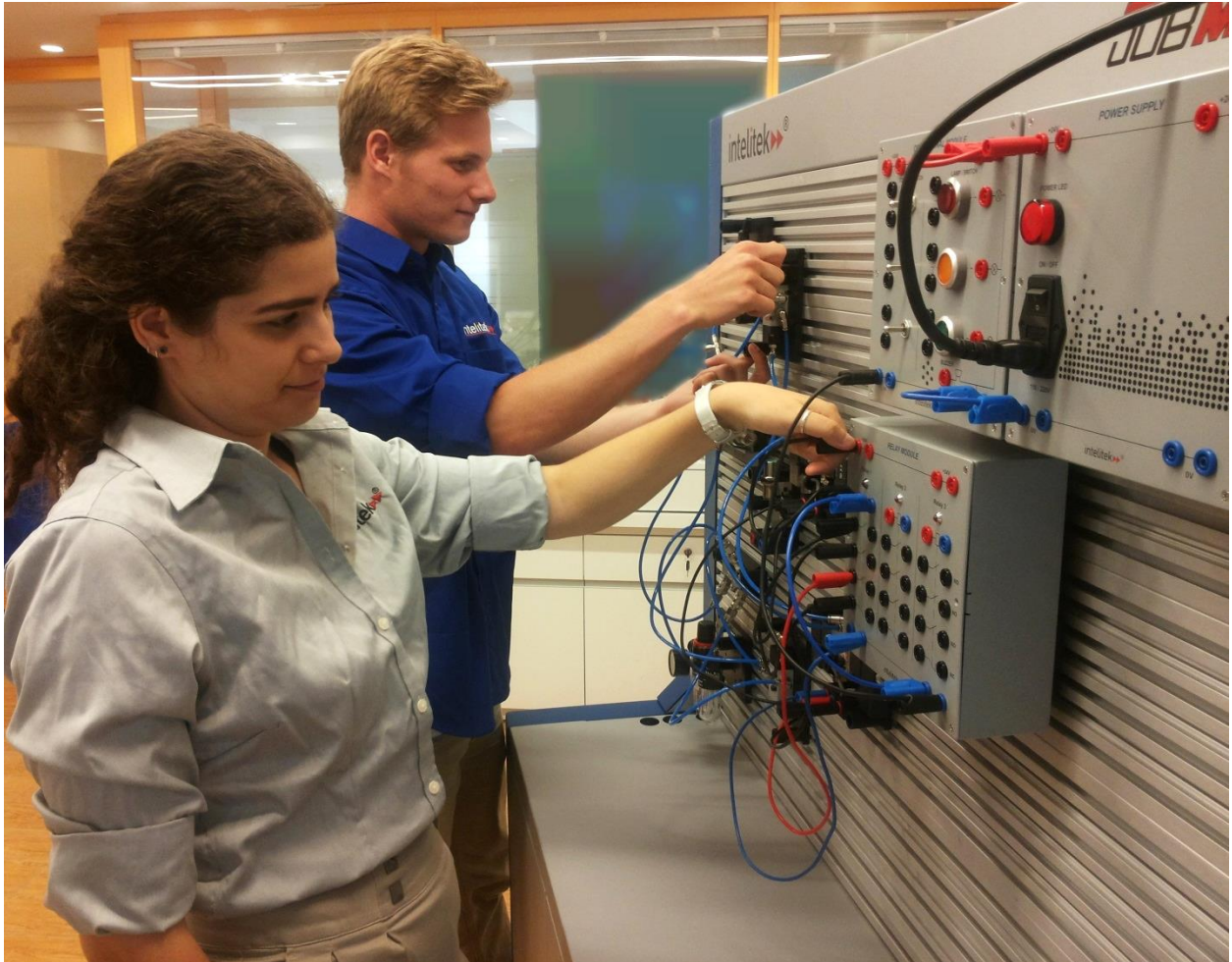


# JobMaster® Training Station

## INSTALLATION GUIDE



*Catalog #34-8000-0001 Rev. B*

*July 2017*

**intelitek** 

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JMTS Installation Guide

#34-8000-0001 Rev. B

July 2017

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# 1. Getting Started

## 1.1. OVERVIEW

Thank you for purchasing the JobMaster® Training Station! We hope that it will provide you and your students with an unforgettable educational experience.

The JMTS Mounting Panel (Catalog number 00-1300-0003) is an adaptable, double-sided mounting panel used to instruct and practice pneumatic, hydraulic, and PLC-related content. Components such as hydraulic valves, pneumatic cylinders, and electrical modules can be attached and detached from the panel at will. The instructions for panel assembly and installation begin in the next section.

Instructions for the assembly and attachment of the optional accessories can be found in the sections toward the end of this guide.

## 1.2. LIST OF ACCESSORIES

You may have purchased additional, optional JMTS accessories. In the table below, you can find a list of these accessories, as well as the locations where you can find their instructions for assembly.

Part	Cat. No.	Assembly/ attachment Instructions
Storage Unit	00-1300-0002	N/A
Double sided mounting panel	00-1300-0003	Page 3
Mobile Bench Base for Panel (Double Sided)	00-1300-0004	N/A
Extension Table	00-1300-0005	Page 10
Monitor Mounting Arm	00-1300-0006	Page 12
Electrical Modules	10-2500 series	Page 14
Hydraulic Power Pack	22-0004-0001, 22-0004-0002	Page 17
Hydraulic Pipes Storage Bracket	00-1300-0007	Page 22
Pneumatic and Hydraulic Components	00-190 series, 00-210 series	Page 24

## 1.3. REQUIRED TOOLS

Before unpacking and assembly of the JMTS Panel, ensure that you have the following tools. These tools are not included with your purchase.

- Metric hexagonal (Allen) key set
- Phillips screw driver set
- Utility knife
- Pencil (for assembly on pre-existing table)
- Power drill (for assembly on pre-existing table)

## 1.4. UNPACKAGING

- ① **Note:** Many of the screws and washers are already assembled onto the JMITS Bench. You must first remove those screws and washers before adding on the relevant accessory.
- ① **Note:** The JMITS Bench comes wrapped in plastic in order to protect it from damage during the shipping process. Do not remove the plastic wrap until the panel is securely assembled onto the bench.
- ① **Note:** Some JMITS accessories are attached to wooden boards for shipping purposes. You must unscrew the bolts attaching the accessory to the board before you begin assembly/installation of the accessory.

### To unpack the JMITS:

1. Use a knife to remove the JMITS packaging.
2. Ensure that all JMITS accessories that you ordered are included. See the above section, 1.2 List of Accessories.

## 2. Mounting and Assembly

The JMTS mounting panel (catalog #00-1300-0003) can be mounted onto a standard table/bench or onto the JMTS Bench (catalog #00-1300-0004). The two sections below (2.1 and 2.2) describe how to mount the panel onto the respective fixtures and how to complete the assembly of the panel once it is secured (Section 2.3).

### 2.1. MOUNTING ONTO A TABLE

- Note:** This section provides instruction for attaching the JMTS panel onto an existing table in your work area. For instructions on how to mount the panel onto the JMTS Bench, see section 2.2.



- Warning:** The JMTS panel weighs approximately 80 kg (176 lbs.). It should only be lifted and moved by four people, two at each side. In addition, each step of the processes below requires at least two people, one for holding and securing the panel, and a second person for performing the step (e.g. screwing a bolt).

- Warning:** Ensure that the table or bench that you intend to use for the mounting of the panel is large and sturdy enough to support the mounting panel when it is fully loaded with hydraulic and/or pneumatic components. When fully populated with equipment, the panel can weigh up to 200 kg (441 lbs.) and can tip if the mounting is not performed properly as per the instructions below of if the table is not wide enough or sturdy enough to counter balance the weight or support the weight. Recommended surfaces should be rated to support up to 200 kg and have a width of at least 800 mm (31.5") with the panel mounted in the center (400mm on each side). The length of the surface must be at least 1300 mm (51"). You may also want to consider the properties of the table with regards to storage space, ease of access, and mobility. You will be drilling holes into the table and then securing the mounting panel with the included nuts, bolts, and washers.

- Warning:** Never drag the panel, as dragging may damage it and damage the surface beneath it. Always lift the panel when moving it from place to place.

**To mount the JMTS panel onto a table or bench:**

1. Choose an appropriately sized and sturdy table.
2. Measure the midway point of the table. The JMTS mounting panel should be set equidistant from either end of the table to ensure equal access to both sides of the panel.
3. Carefully lift the panel and set it on the desired tabletop.
4. Slide the four angular brackets from the top of their conduits on the panel until they reach the top of the table.



5. Position the panel to your liking.
6. Using a hex wrench, tighten the angular bracket screws (2 per bracket, 8 in total) to secure the four angular brackets to the panel.



7. Using a pencil, mark the drilling targets on the table by tracing the mounting holes. Alternatively, drill into the mounting holes using a small drill bit (4.5 mm is recommended).

There are eight mounting holes, two in each of the angled brackets.

8. Carefully move the panel to the side.
9. Using a power drill with a 10.5 mm drill bit, drill holes in the drill targets that you made.

10. Replace the panel into position above the holes you drilled.
11. Using the M8 screws, square washers, flat washers, spring washers, nuts, and a hex wrench (below, left), secure the panel to the table via the angular brackets' and tabletop's mounting holes (below, center). The order of the assembly, from top to bottom is screw head (P/N: 301418), square washer (or spring washer P/N: 314019, if there is no square washer), JMTS angled bracket, tabletop, flat washer (P/N: 313014), spring washer (P/N: 314019), and nut (P/N: 310403). (A view from underneath the table is shown below, right.)



Skip ahead to section 2.3 Completing Panel Assembly to finish the assembly of the panel.



## 2.2. MOUNTING ONTO THE JMETS BENCH

- Note:** This section provides instruction for mounting the JMETS Mounting Panel onto the JMETS Bench. For instructions on how to mount the panel onto a pre-existing table, see above section 2.1.



**Warning:** The JMETS panel weighs approximately 80 kg (176 lbs.). It should only be lifted and moved by four people, two at each side. In addition, each step of the processes below requires at least two people, one for holding and securing the panel, and a second person for performing the step (e.g. screwing a bolt).

**Warning:** Never drag the panel, as dragging will damage it. Always lift the panel when moving it from place to place.

To mount the JMETS panel onto the JMETS Bench:

1. Carefully lift the panel and set it onto the JMETS Bench.



2. Slide the four angular brackets from the top of their conduits on the panel until they reach the top of the bench.



- ⓘ **Note:** Ensure that the brackets are aligned with the top of the table and that there is no space between a bracket and the bench. If there is a space, loosen the offending bracket and lower it as needed.



- ⓘ **Note:** The two abutments protruding from the bracket should fit snugly into their containing holes on the benchtop.

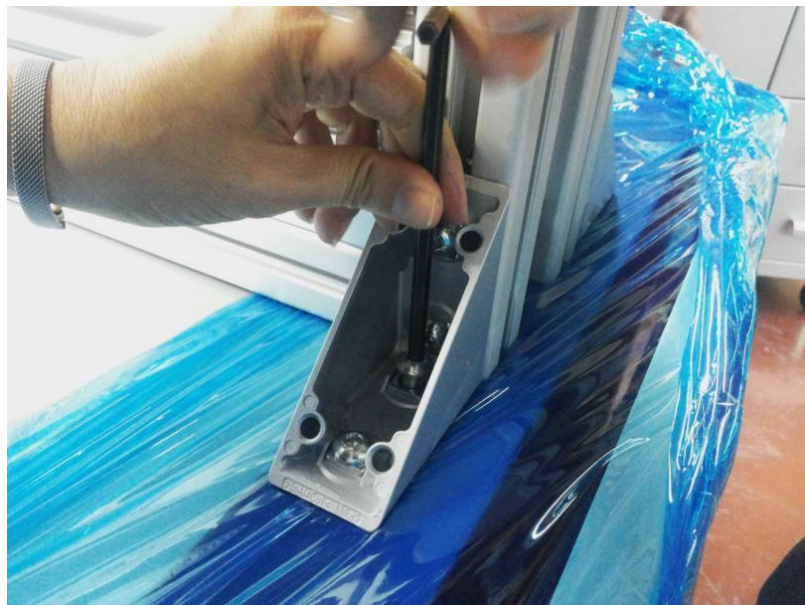


- Using a hex wrench, secure the four angular brackets to the bottom of the panel.



- Using the included M8 screws, square washers, and a hex wrench, secure the panel to the bench via the angular brackets' and bench's mounting holes. The order of the assembly, from top to bottom is screw head, square washer, JMTS angled bracket and benchtop.

**Note:** The included M8 screws and square washers may be attached to the table, or packaged with the mounting panel, depending on the nature of your order.



Continue on to the next section in order to complete the assembly of the panel.

### 2.3. COMPLETING PANEL ASSEMBLY

Once the panel is secured to a table or to the JMTS Bench, perform the following procedure to complete the assembly of the panel.

**To complete panel assembly:**

1. Mount the blue covers to the sides of the panel. To do so, align the covers above the panel. Push them inwards at an angle and then downwards until they fit snugly onto the sides of the panel.




2. Using a Phillips screwdriver and the flat head screws (P/N: 302240) (6 per cover, 12 in total), secure the covers to the sides of the panel.




## 3. Extension Table (Side-Tray) Assembly

The JMETS Extension Table (side-tray) adds some extra working space to your JMETS Bench. The tray can be folded away easily when not in use.

### 3.1. ASSEMBLING THE EXTENSION TABLE

 **Warning:** *This step requires two people, one to hold the tray and one to screw the tray to the side of the JMETS Bench.*

 **Note:** *The included M5 screws and washers may be attached to the table, or packaged with the mounting panel, depending on the nature of your order.*

To attach the Extension Table to the bench:

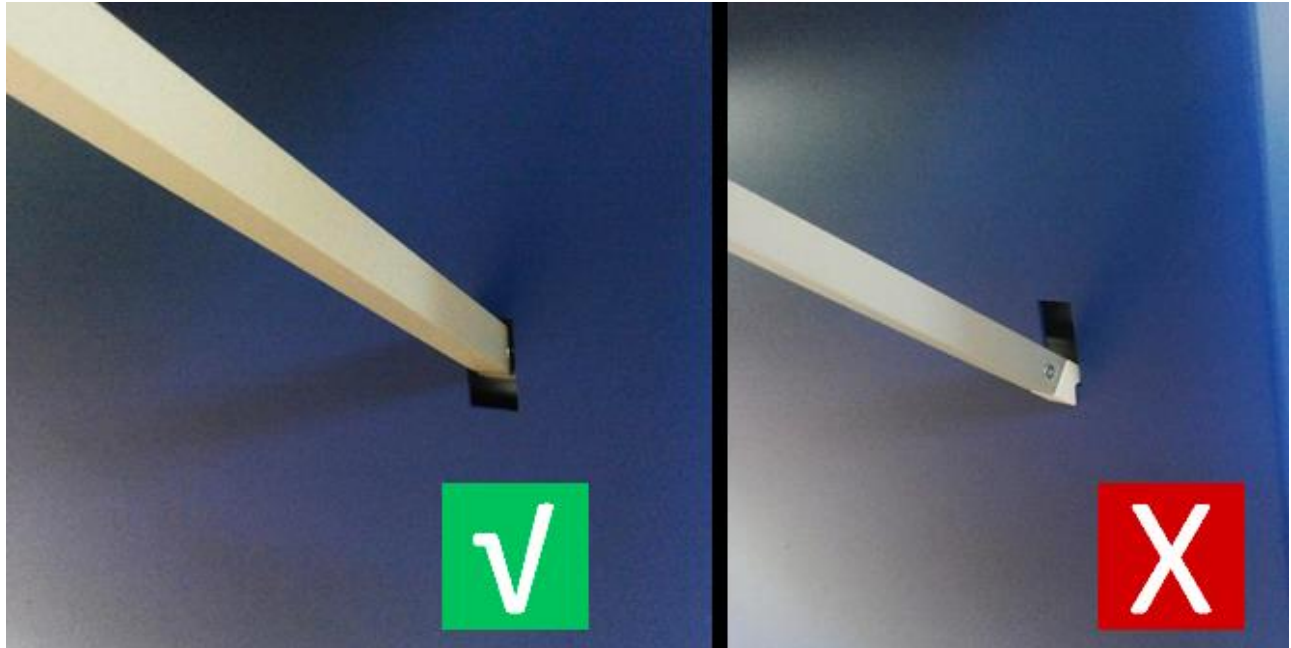
1. Hold the side-tray and align it with the holes on the side of the bench.
2. Using the included M5 screws, spring washers, and flat washers and a hexagonal key wrench, attach the side-tray to the bench. The order of the assembly, from outside inwards is screw head, spring washer, flat washer, side tray, and bench.



3. Raise the side-tray until it is slightly higher than the benchtop. Use its holding arms to secure it in a horizontal position. Be careful not to damage the side of the bench when opening the holding arms.



- ① **Note:** Ensure that the holding arms are positioned in their designated holes and are not positioned on the edge of the holes.



## 4. Electrical Accessories

This section contains the following sub-sections:

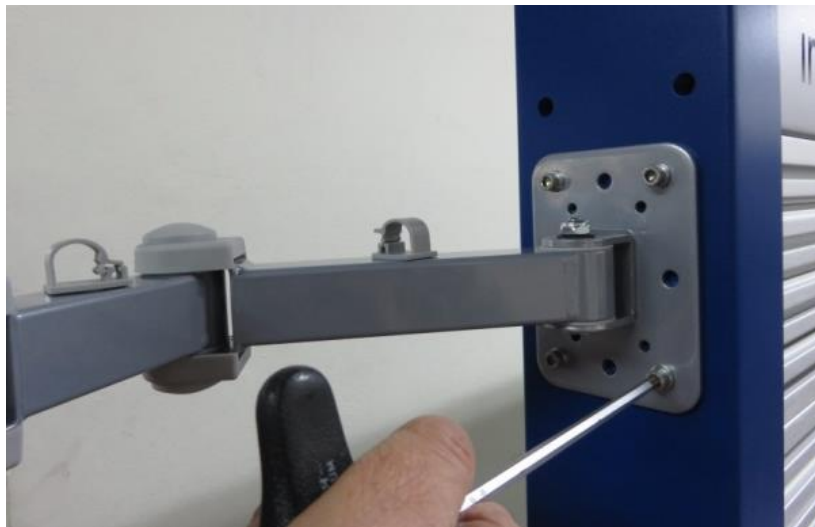
Sub-Section	Page Number
4.1 Installing the Monitor Mounting Arm	12
4.2 Installing the Electrical Modules	14
4.3 Making Electrical Connections	16

### 4.1. INSTALLING THE MONITOR MOUNTING ARM

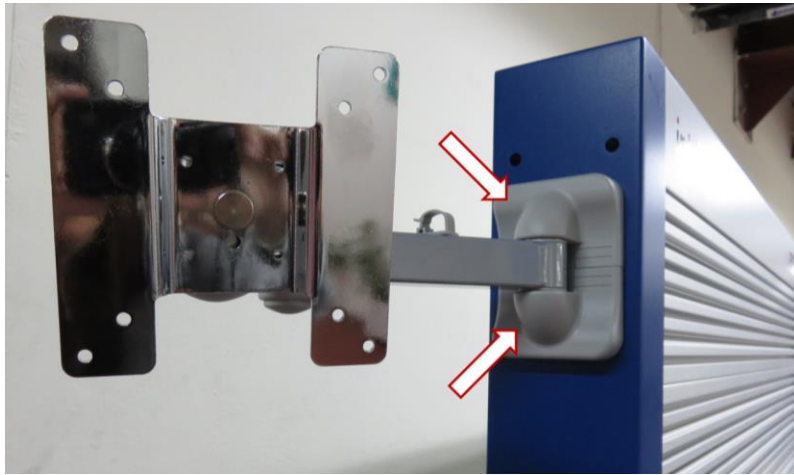
The Monitor Mounting Arm (Catalog #00-1300-0006) is an optional JMTS part that can be mounted onto the sides of the JMTS mounting panel, near the top. A monitor can be attached to the arm and then swiveled to allow viewing from different angles.

**To attach the arm:**

1. Remove the arm and its accompanying parts from the packaging. Included are four M6 screws, four spring washers, and four flat washers.
2. Mount the arm onto the blue side cover of the JMTS panel using the M6 screws, washers, and a hex wrench. The order of assembly, from outside inwards is screw head, spring washer, flat washer, mounting arm, and JMTS panel.



3. Snap the two plastic covers to the base of the arm.



4. Attach a monitor to the mounting arm according to the instructions included in the monitor packaging.
5. Draw the monitor's power cable through the circular cable holder and down through the center of the JMTS Mounting Panel via the top of the panel. (See also section 4.3 Making Electrical Connections on page 16.)




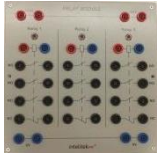


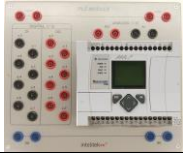

## 4.2. INSTALLING THE ELECTRICAL MODULES

### 4.2.1. Overview

The electrical modules (listed in the table below) are optional accessories that can be mounted onto the slots of the JMETS panel. The recommended location of the attachment of these modules is at the top of one of the slotted sides. The power supply module should be placed at the far left side of one of the slotted panels with the HMI module on the far right side. PLC modules should be mounted to the left of the HMI module.

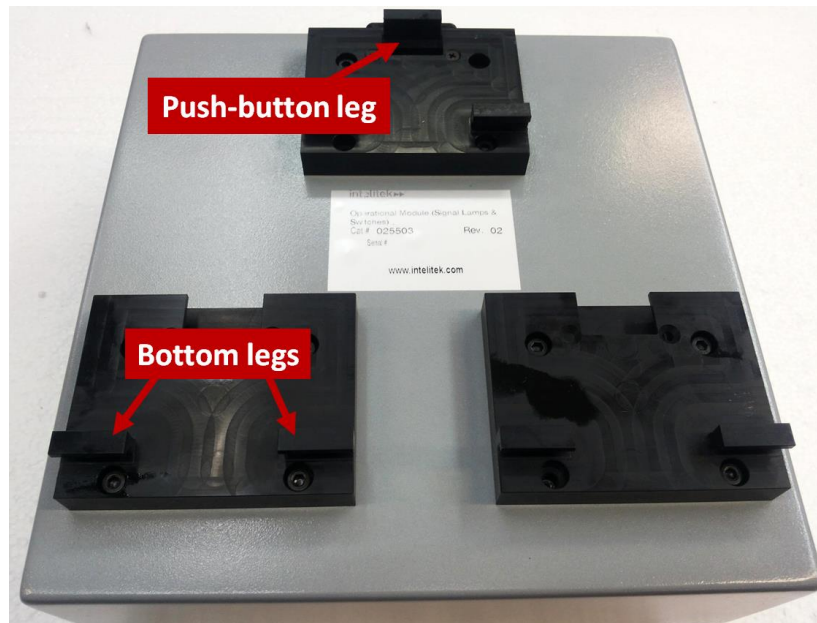
If your JMETS has a swing arm with a monitor (see section 4.1), the HMI should be mounted on the side next to the arm.

Tools are not required for the mounting of these modules.

Module	Catalog Number	Recommended Location at the Top of the Slotted Panel	Image
Power Supply Module	10-2550-1000	Far left	
Relay Module	10-2550-2000	Adjacent to Power Supply Module	
Operational Module	10-2550-3000	Center	
Siemens S7-1200 PLC Module	10-2550-4000	Adjacent to the HMI Module	
MicroLogix 1100 PLC Module	10-2550-6000	Adjacent to the Operational Module	
HMI Module	10-2550-5000	Far right	

#### 4.2.2. Mounting the Modules onto the Panel

The electrical modules have several “legs” that allow them to be inserted securely into the slots of the JMTS panel.



**To mount a module onto the panel:**

1. Insert the module’s push button leg into the upper-most slot of the panel.
2. Push the module upwards until the bottom legs are inserted into the slotted panel as well.



**To remove a module from the panel:**

1. Push the module upwards until the bottom legs are free of the panel.
2. Pull the module outwards and then downwards to remove it.

### 4.3. MAKING ELECTRICAL CONNECTIONS

All electric connections should be made to a power bar that can be installed in the cabinet of the JMTS Bench.

Use plastic ties to mount a multiple outlet power bar (power bar and ties are not provided) onto the bracket inside the cabinet. Draw it through the hole of the cabinet floor and plug it into an electrical wall socket.



Draw the Power Supply Module's power cable and any other electrical cables through the center of the JMTS Mounting Panel via the top of the panel. Plug the cable(s) into the power bar.



## 5. Hydraulic and Pneumatic Accessories

### 5.1. HYDRAULIC POWER PACK SETUP

#### 5.1.1. Standard Power Pack Installation

The hydraulic power pack (110V, catalog #22-0004-0001 or 220V, catalog #22-0004-0002) is the hydraulic pump used for powering the hydraulic components of the JMTS. The pack is installed in the larger cabinet of the JMTS Bench.

- ❗ **Note:** This section only describes how to install the power pack onto the JMTS. Before continuing with the steps below, read the **Hydraulic Power Pack for JMTS User Guide**, catalog #0200407, which describes the general power pack setup.
- ❗ **Note:** This section describes the installation of a single hydraulic power pack to power components on one side of the JMTS panel. To power components on both sides of the panel, you require a second power pack. After reading this section, see also section 5.1.2 Installing a Second Hydraulic Power Pack on page 21.
- ❗ **Note:** If you do not have a JMTS Bench, secure the power pack(s) to a surface adjacent to your JMTS panel.

To install the hydraulic power pack into the cabinet of the JMTS Bench:

1. Disconnect the On/Off switch unit from the power pack.
2. Set the power pack onto the floor of the bench's cabinet. Align its four mount holes to the four holes on the floor of the cabinet.



3. Secure the power pack using the provided M6 screws, washers, nuts, and seals included in the packaging. The order of assembly, from *bottom to top* is screw head, flat washer, bench floor, rubber seal, power pack mounting bracket, flat washer, spring washer, and nut.



4. Ensure that the power pack is secured and does not wobble.
5. Carefully remove the three black caps from side of the table where you want to power the hydraulic components. Pop these caps off from underneath the benchtop.



6. Draw the ON/OFF switch unit's cord through the hole closest to the panel. Reconnect the cord to the power pack.



7. Using cutters, cut a slit in one of the black plastic holding rings that are included in the set of hydraulics components. Wrap the ring around the ON/OFF switch unit's cord and secure the ring in the hole.



8. Draw two hydraulic pipes (recommended length: 2 m) through the two benchtop holes farthest from the panel.



9. Connect the two pipes to the hydraulic power pack: one to the inlet (T) port and one to the outlet (P) port.
10. Repeat step 7 for each of the two pipes.
11. Plug the hydraulic power pack into the power bar that you mounted onto the inside of the cabinet. (See section 4.3 Making Electrical Connections on page 16).
12. Place the oil tray on the benchtop adjacent to the panel. The tray is used to catch any oil leakage that may occur.



To set up a second power pack, continue on to the next section.

### 5.1.2. Installing a Second Hydraulic Power Pack

Powering hydraulic components on both sides of the panel requires two power packs. In order to make space for a second power pack in the cabinet, the shelf and divider must be removed.



Secure the second power pack to the JMETS Bench floor using the second set of four holes (yellow squares, shown above). This power pack should face the opposite direction from the first power pack.

This procedure for securing the power pack is described in detail above in section 5.1.1 Standard Power Pack Installation on page 17.




## 5.2. INSTALLING THE PIPE HOLDER

The pipe holder is used to hold the hydraulic pipes when they are not in use.

- ① **Note:** *The pipe holder is assembled on the side of the JMTS Bench that has the cabinet used to house the hydraulic power pack.*



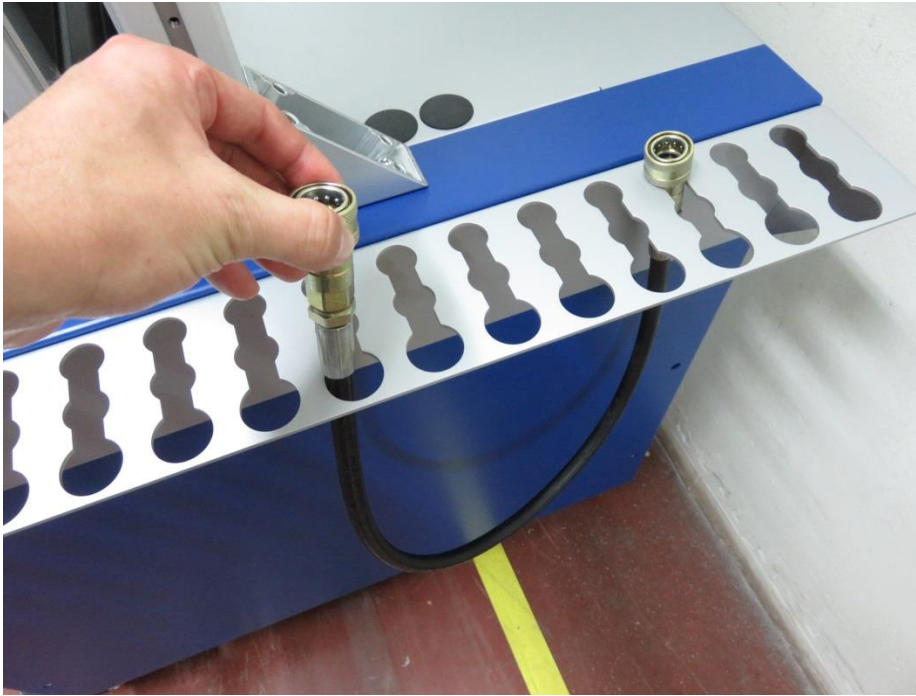
 **Warning:** *Assembly of the pipe holder should be performed by two people, one to hold the pipe holder in place, and one to secure it with the screws and washers.*

To install the pipe holder:

- Secure the pipe holder to the side of the JMTS Bench using its accompanying M6 x 40 and M6 x 35 screws and washers. The M6 x 40 are used for the upper two holes, and the M6 x 35 screws are used for the lower two holes. The order of the assembly, from outside inwards, is screw head, spring washer, flat washer, pipe holder, and JMTS Bench.



Pipes are stored by drawing them through the large, circular area of the holes and sliding them inwards towards the JMTS Bench.



### 5.3. MOUNTING COMPONENTS

Pneumatic and Hydraulic components are easily attached to the panel.

The components are mounted on special plates that can be attached to the panel. Do not remove the components from these plates.

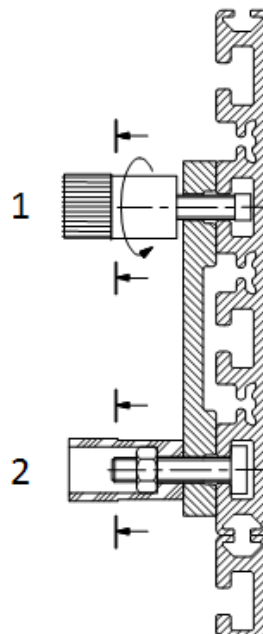
The plates have pairs of bolts and nuts. The nuts are mounted in black plastic casings which allow them to be tightened and loosened by hand and then further tightened with a hex wrench. The heads of the bolts are shaped to fit into the slots of the panel.

- ① **Note:** *There are two types of slots on the panel. Mount the components by inserting their bolts into the thinner slots.*



**To attach a component to the panel:**

1. Unscrew the bolts on the mounting plate two-thirds of the way.
2. Push the bolt head all the way into the slot at a horizontal position (position 1), and turn the bolt until the bolt head is positioned vertically (position 2).



3. Tighten the bolt by turning it clockwise until the component is held securely.
4. Further tighten the component using a hex driver. This step is mandatory for hydraulic components and optional for pneumatic components.

