

Instructions



K420
Bench Cart
070-8845-03

www.tektronix.com



070884503

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Table of Contents

General Safety Summary	ii
Contacting Tektronix	iii
Introduction	1
Tools	1
Parts Identification	1
Base Assembly	5
Drawer Shelf and Drawer	11
Tilt Shelf	15
Leg Caps	20
Nylon Straps	21
Customization	22
Replaceable Parts	23
Specifications	24
日本語インストラクション	25

List of Figures

Figure 1: Identification of Small Parts	2
Figure 2: The K420 Bench Cart	4
Figure 3: Preparing the Strut for Base Assembly	6
Figure 4: Aligning the Leg Assemblies and the Strut	7
Figure 5: Installing the Casters	9
Figure 6: Preparing the Drawer Shelf	11
Figure 7: Aligning the Drawer Shelf	12
Figure 8: Installing the Drawer	13
Figure 9: Installing the Press-Stud Retainers	14
Figure 10: Preparing the Long Rails	15
Figure 11: Long Rail Alignment Marks on the Leg Assemblies	16
Figure 12: Preparing the Tilt Shelf with Handle	17
Figure 13: Aligning the Tilt Shelf with Handle	17
Figure 14: Installation of Tilt Shelf Knobs	18
Figure 15: Installing the Leg Caps	20
Figure 16: Installing the Nylon Straps with Buckles	21

General Safety Summary

Observe these safety precautions when using the K420 Bench Cart.

Keep the K420 Level

Keep the K420 level at all times, especially when it is loaded with instruments. The cart is designed to be very stable, but it can fall over if tilted to extremes. Observe this precaution especially in these cases:

- When rolling the cart across uneven floors.
- When rolling the cart through doorways with uneven thresholds.
- When lifting the cart wheels over cables.
- When rolling the cart up or down ramps.

Do Not Overload Shelves

Do not put more weight on any cart shelf than is listed in the specifications. Load the top of the cart evenly.

Observe Electrical Safety

All parts of the cart must be treated as electrical conductors, even if they appear to be nonconducting. Do not rely on the casters to provide insulation between the cart and the surface it stands on. Conversely, do not rely on the casters to provide a conductive ground path for the cart.

Test the Stability of Custom Configurations

Changes in shelf location and loading can affect the balance of the cart. If you arrange the shelves differently from the configuration described in this manual, test the cart carefully for stability before using it.

Preface

Contacting Tektronix

Phone	1-800-833-9200*
Address	Tektronix, Inc. Department or name (if known) 14200 SW Karl Braun Drive P.O. Box 500 Beaverton, OR 97077 USA
Web site	www.tektronix.com
Sales support	1-800-833-9200, select option 1*
Service support	1-800-833-9200, select option 2*
Technical support	Email: techsupport@tektronix.com 1-800-833-9200, select option 3* 6:00 a.m. - 5:00 p.m. Pacific time

* **This phone number is toll free in North America. After office hours, please leave a voice mail message. Outside North America, contact a Tektronix sales office or distributor; see the Tektronix web site for a list of offices.**

Introduction

The Tektronix K420 Bench Cart requires some assembly. This manual tells how to assemble and use the cart.

You can assemble the K420 Bench Cart by yourself, but it is easier if you have another person to help you.

You will need a large flat area to assemble the cart. The area should be level and large enough to move the various parts into place. A carpeted floor space is ideal.

Tools

You will need a 3/4 inch (19 mm) open-end wrench, or an adjustable wrench that can be adjusted to that size.

Other tools are included with the K420 Bench Cart. These include a 5/32 inch Allen wrench, a 3/16 Allen wrench, a 1/8 inch Allen wrench, and a circular bubble level.

Parts Identification

The large pieces of the K420 Bench Cart are packed separately in the shipping carton. A bag of small parts is packed in a box with these instructions. The included tools are also packed in this bag. Figure 1 on page 2 shows the small parts you will be using.

Table 1 on page 3 lists all the parts needed to assemble the cart, including the large pieces and assemblies. Take an inventory now to familiarize yourself with the parts for the assembly process.

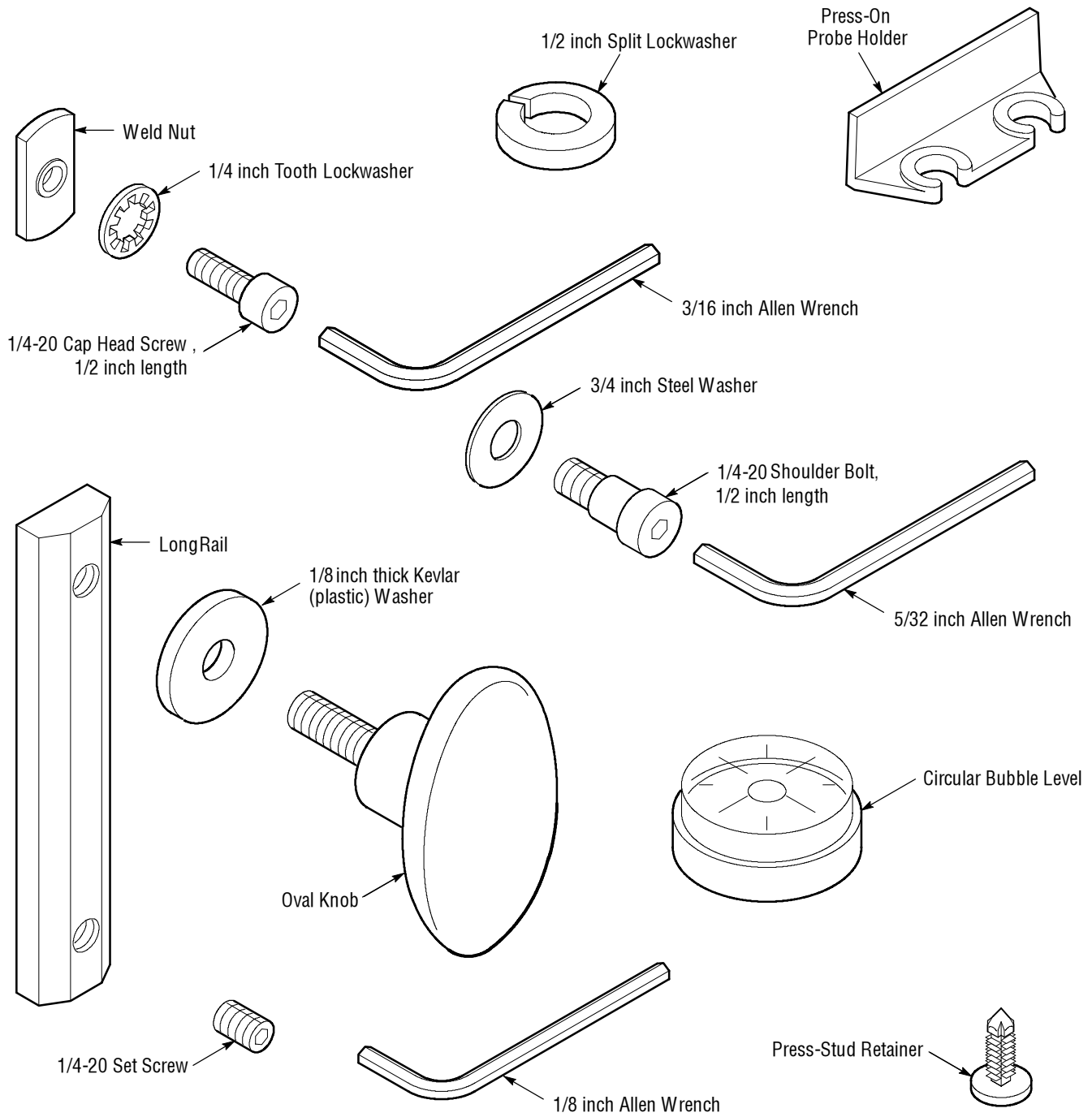


Figure 1: Identification of Small Parts

Table 1: Parts List

Quantity	Description
Large Parts	
2	Locking Casters
2	Non-Locking Casters
1	Tilt Shelf with handle
1	Drawer Shelf
1	Drawer
1	Strut
2	Leg assemblies
2	Leg Caps
2	Nylon Straps with buckles
Small Parts in Bag	
4	1/2 inch Split Lockwashers
8	1/4-20 Cap Head Screws, 1/2 inch length
2	1/4-20 Shoulder Bolts, 1/2 inch length
2	Oval Knobs
6	1/8 inch thick Kevlar (plastic) Washers
2	3/4 inch Steel Washers
8	1/4 inch Tooth Lockwashers
10	Weld Nuts
2	Long Rails
2	1/4-20 Set Screws
2	Press-Stud Retainers
1	Press-On Probe Holder
Small Tools in Bag	
1	3/16 inch Allen Wrench
1	5/32 inch Allen Wrench
1	1/8 inch Allen Wrench
1	Circular Bubble Level

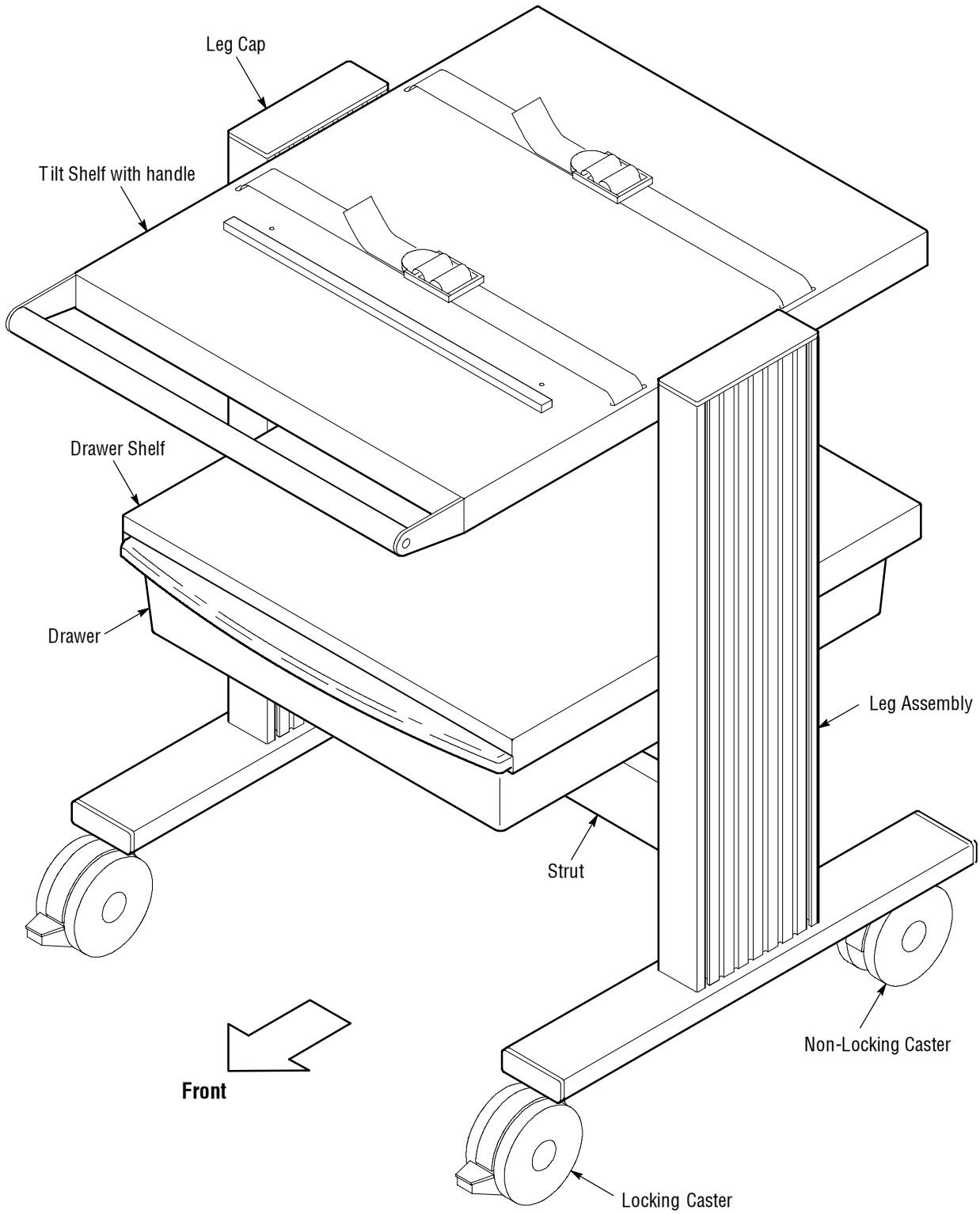


Figure 2: The K420 Bench Cart

Base Assembly

Begin assembling the cart by joining the leg assemblies using the strut, and then putting on the casters. You will use these parts:

- 2 Locking Casters
- 2 Non-Locking Casters
- 2 Extrusions
- 2 Legs
- 4 Bumpons
- 4 1/4-20 x 2 inch Screws
- 4 1 inch Fender Washers
- 1 3/16 Hex Key
- 4 1 x 3 inch End Caps
- 1 Strut
- 4 1/2 inch Split Lockwashers
- 4 1/4 20 Cap Head Screws, 1/2 inch length
- 4 1/4 inch Tooth Lockwashers
- 4 Weld Nuts

You will use a 3/4 inch (19 mm) wrench or adjustable wrench, and the 3/16 inch Allen wrench included with your cart.

1. Prepare the strut as shown in Figure 3. Position the weld nut with the raised threaded flange toward the strut. Leave each screw assembly loose; do not screw the weld nut onto the cap head screw more than one full turn.

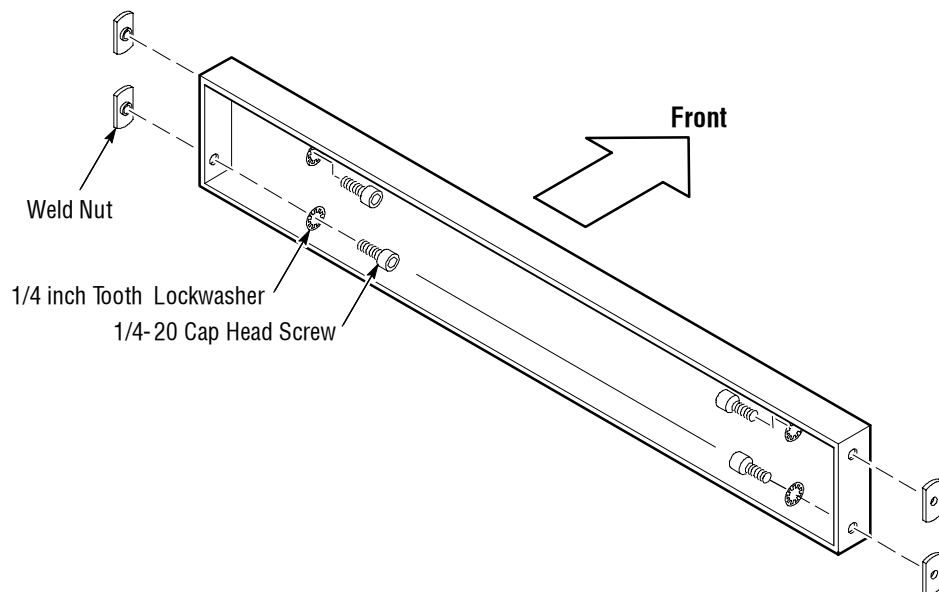


Figure 3: Preparing the Strut for Base Assembly

2. On each leg assembly, observe that there is a small, clear, plastic button on the horizontal leg bar. This button is on the inside of the cart, at the back. Position the leg assemblies as shown in Figure 4. Leave a space between the leg assemblies about equal to the length of the strut.

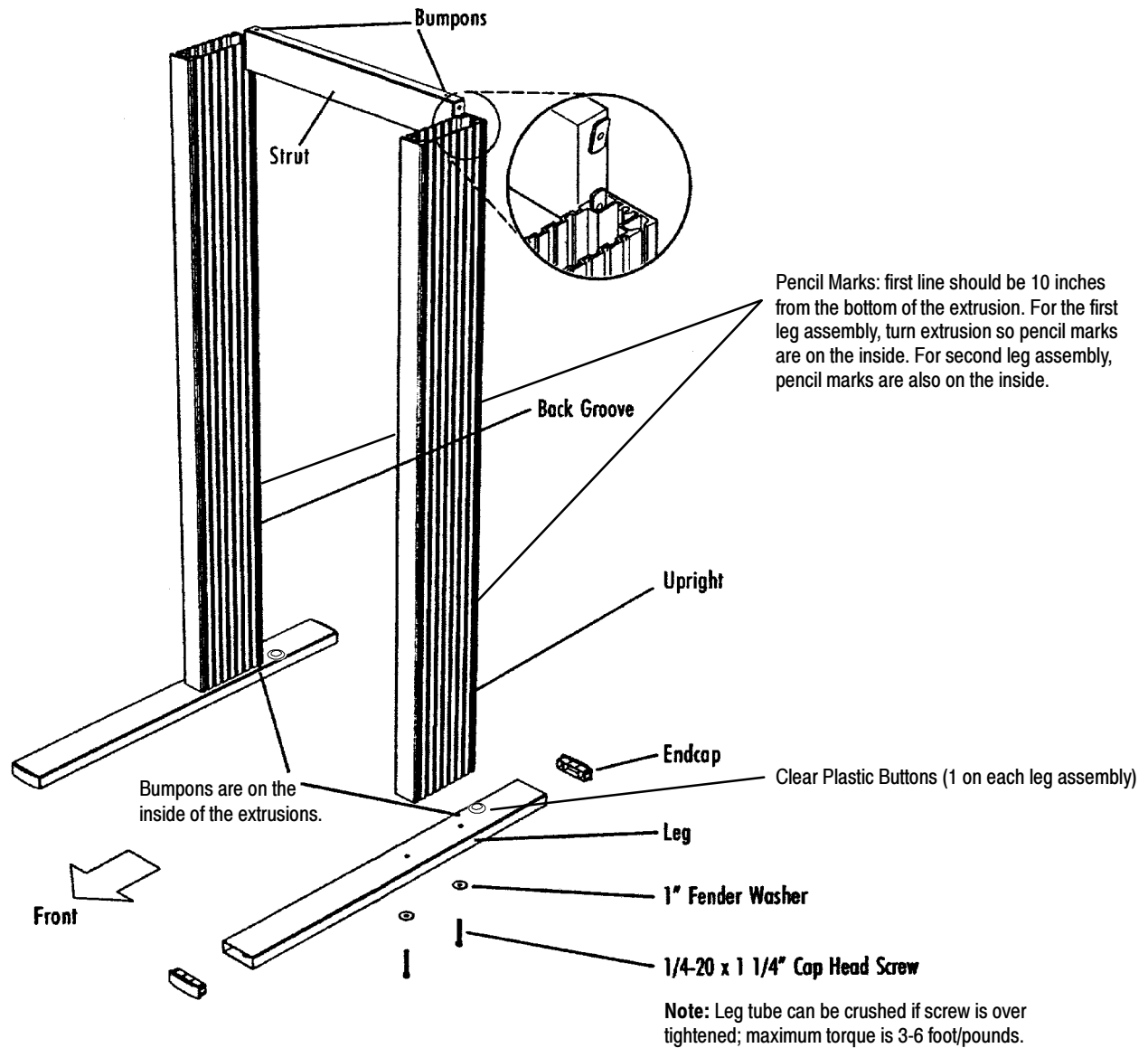


Figure 4: Aligning the Leg Assemblies and the Strut

3. Orient extrusion so the end with threaded holes is on the bottom. If shelf position pencil marks are present on one of the slotted sides of the extrusion there should be one mark 13 inches from this end. You will build two leg assemblies.
4. Place long screw through washer and insert through bottom of leg tube (side with large caster nuts) and into the extrusion. Screw will extend through top of leg tube to receive threaded ends of extrusion. Hand tighten with hex key.



CAUTION. *Leg tube can be crushed if screw is over tightened.*

Max torque is 3-6 ft-lbs. Repeat for second assembly.

5. Apply two bumpers to the top of each leg as shown in the illustration. They go on the side of the extrusion with pencil marks for each assembly.
6. Install end caps into end of each leg. Don't install end caps into extrusions.
7. Position the strut horizontally between the leg assemblies, as shown in Figure 4, with the open side of the strut to the back. Line up the weld nuts with the back groove in the leg assemblies.
8. Slide the strut down to the base of the cart, adjusting the distance between the leg assemblies as needed. When complete, make sure the strut is resting tight against the clear plastic buttons on the leg assemblies.
9. Use the 3/16 inch Allen wrench to tighten the cap head screws. Tighten them first snugly, then go back and tighten them firmly.

NOTE. *If you have a torque wrench available, tighten these and all shelf screws to 60 in.... lb (6.8 N.... m) torque.*

10. Tip the cart onto its back as shown in Figure 5, resting it on the work surface by the tops and backs of the leg assemblies.
11. Identify which casters are locking and which are non-locking. The locking casters, which go on the front of the cart, have an extra tab that you step on to lock the wheels.

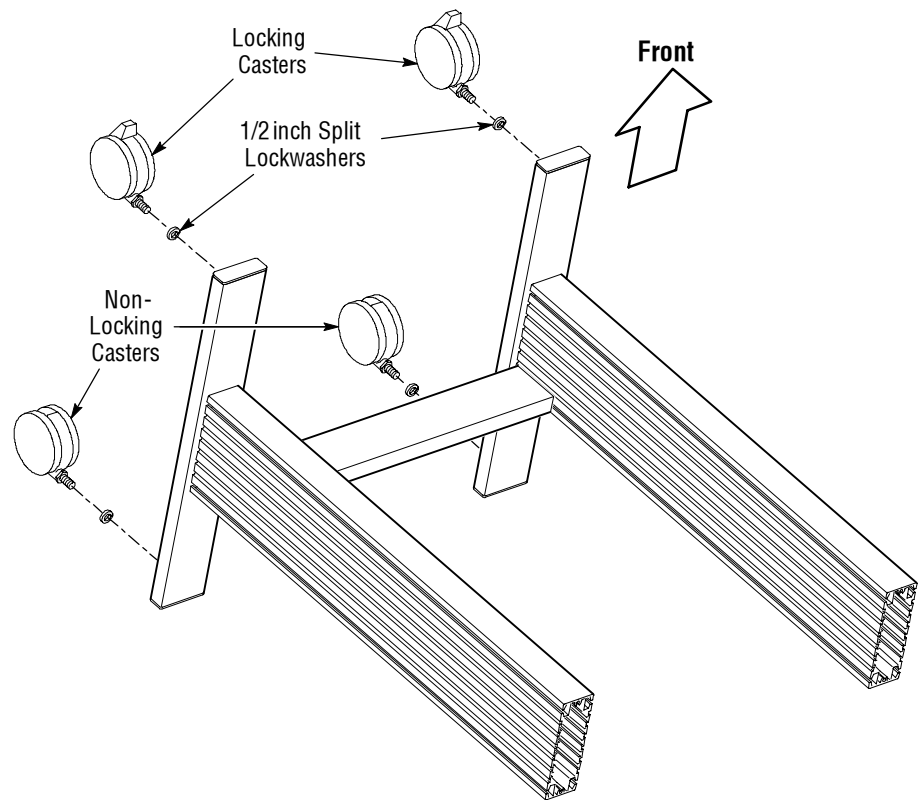


Figure 5: Installing the Casters

- 12.** On the locking casters, place a 1/2 inch split lockwasher on each threaded shaft, then install the casters into the two front holes in the bottoms of the leg assemblies. Tighten the casters only until they are snug using the 3/4 inch (19 mm) wrench.
- 13.** On the non-locking casters, place a 1/2 inch split lockwasher on each threaded shaft, then install the casters into the two back holes in the bottoms of the leg assemblies. Tighten the casters only until they are snug.
- 14.** Return the cart to the upright position.

Drawer Shelf and Drawer

Install a drawer shelf and drawer in the cart. You will use these parts:

- 1 Drawer Shelf
- 1 Drawer
- 4 1/4 20 Cap Head Screws, 1/2 inch length
- 4 1/4 inch Tooth Lockwashers
- 4 Weld Nuts
- 2 Press-Stud Retainers

You will use the 3/16 inch Allen wrench and the circular bubble level included with your cart.

1. Prepare the drawer shelf as shown in Figure 6 by installing a cap head screw, a tooth lockwasher, and a weld nut in each of the four side holes of the shelf. Leave each screw assembly loose; do not screw the weld nut onto the cap head screw more than one full turn.

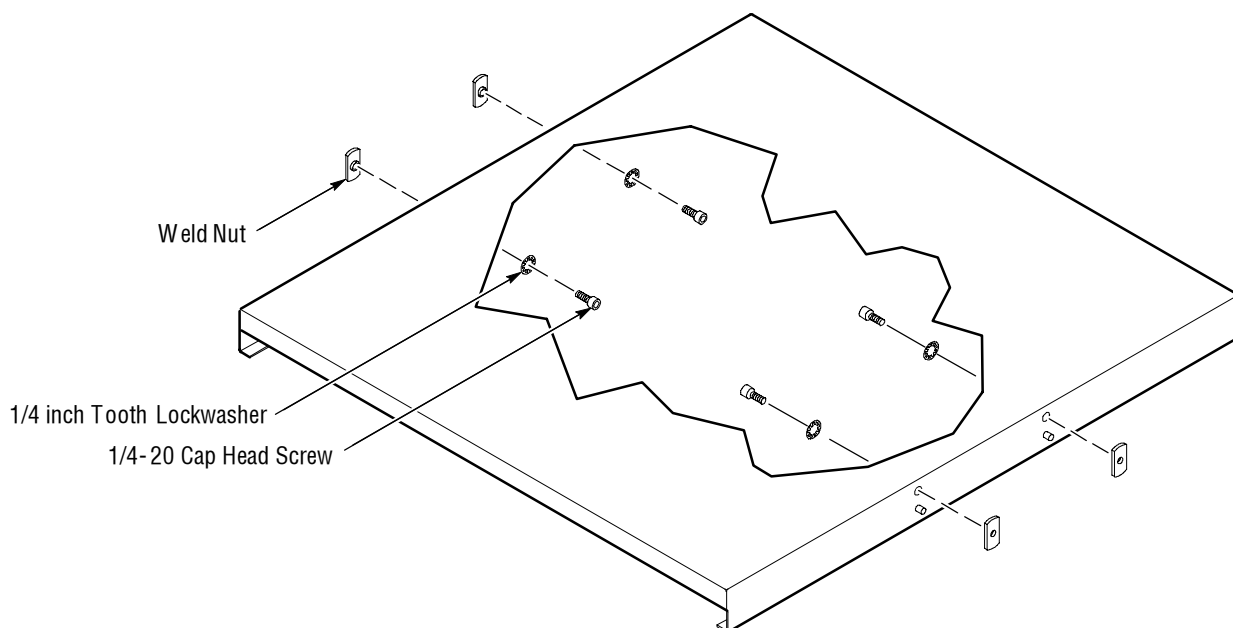


Figure 6: Preparing the Drawer Shelf

2. Position the drawer shelf horizontally between the leg assemblies, as shown in Figure 7. Position the shelf so the open edge is to the front of the cart.

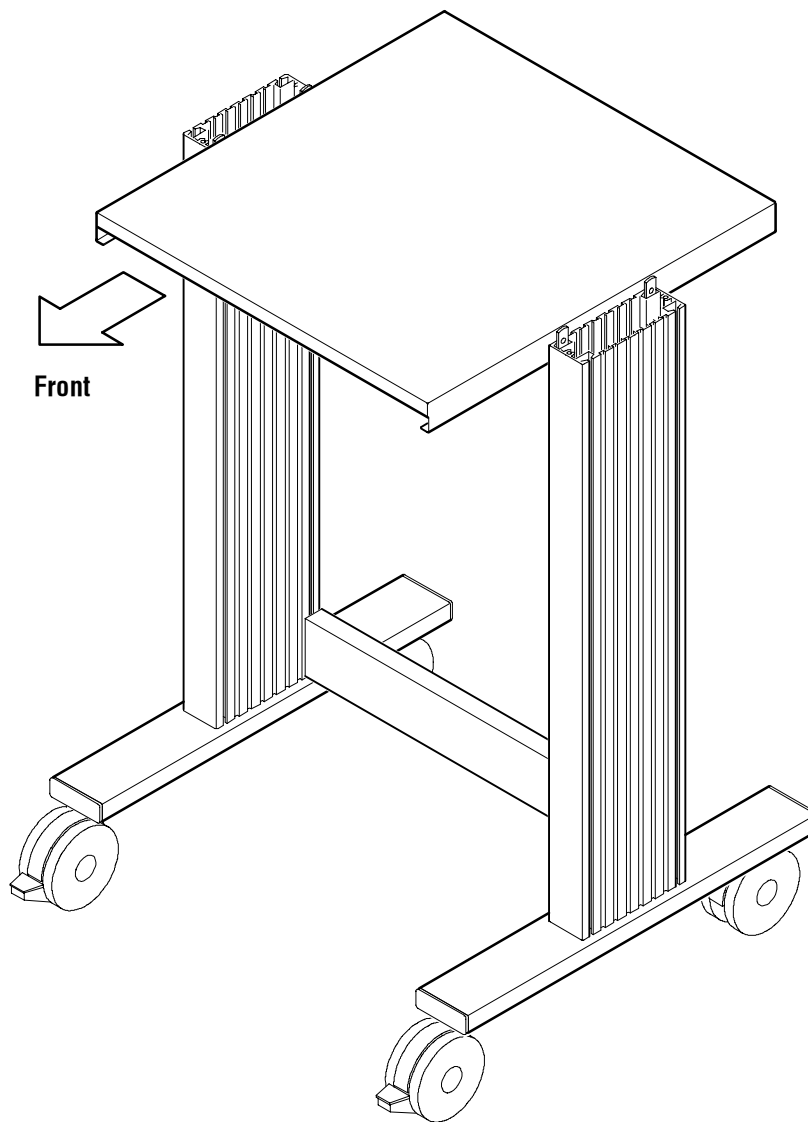


Figure 7: Aligning the Drawer Shelf

3. Slide the drawer shelf down to into the position shown in Figure 8. (A light pencil line has been marked on the insides of the leg assemblies at this position.) Slide the drawer shelf slowly between the leg assemblies to avoid scratching the paint. Use the circular bubble level to make sure the shelf is level.

If you have another person helping you, that person can hold the shelf at the proper height as you tighten the screws. If you are assembling the cart by yourself, tighten each screw in turn just enough to hold, and then adjust the heights one by one until the shelf is positioned properly.

4. Use the 3/16 inch Allen wrench to tighten the cap head screws. Tighten them first snugly, then go back and tighten them firmly.

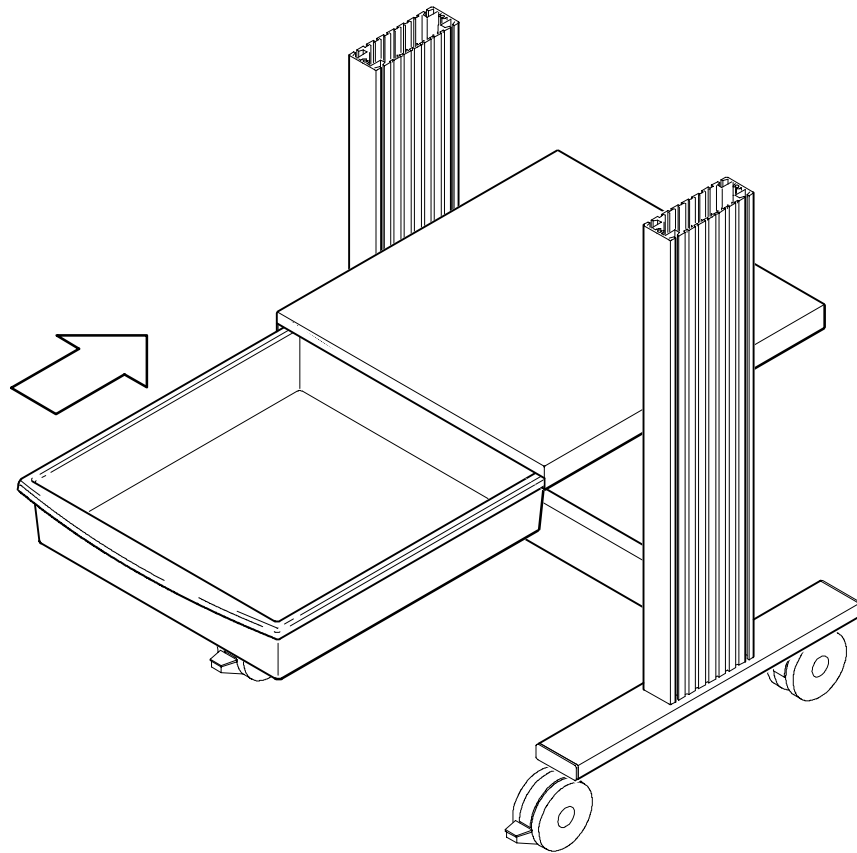


Figure 8: Installing the Drawer

5. Slide the drawer in underneath the drawer shelf as shown in Figure 8. Position the drawer so that the curved edge is to the front of the cart. Slide the drawer into the shelf until it stops.
6. Use your thumb to press into place the two press-stud retainers at the bottom of the drawer rails, as shown in Figure 9.

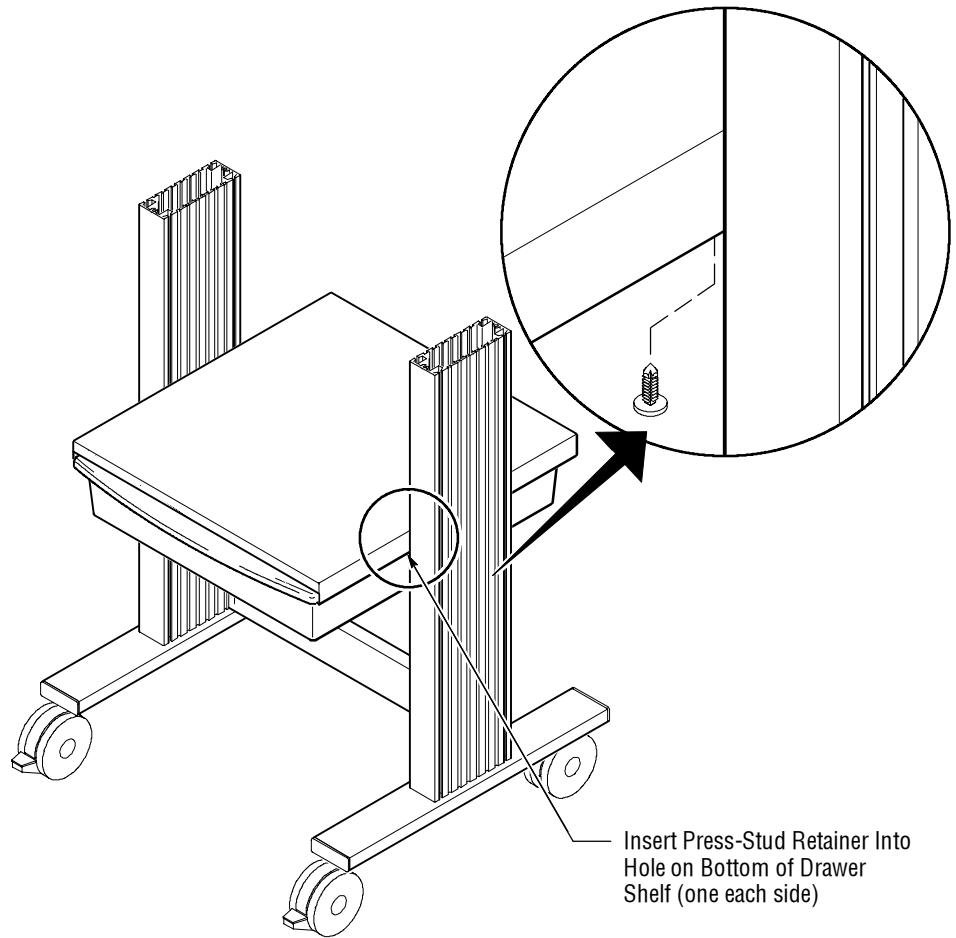


Figure 9: Installing the Press-Stud Retainers

Tilt Shelf

Install a tilt shelf with handle in the cart. This shelf should be installed at the height of the tops of the leg assemblies. You will use these parts:

- 1 Tilt Shelf with Handle
- 2 Long Rails
- 2 1/4 20 Set Screws
- 2 Weld Nuts
- 2 1/4 20 Shoulder Bolts, 1/2 inch length
- 6 1/8 inch thick Kevlar (plastic) Washers
- 2 3/4 inch Steel Washers
- 2 Oval Knobs

You will use the 5/32 inch and 1/8 inch Allen wrenches and the circular bubble level included with your cart.

1. Prepare each of the two long rails by installing a set screw in one of the threaded holes, as shown in Figure 10. Insert the set screw, positioned with the hexagonal wrench hole out, into the side of the long rail with the bevels. Do not screw the set screw all the way in to the long rail; only thread it far enough to get it started.

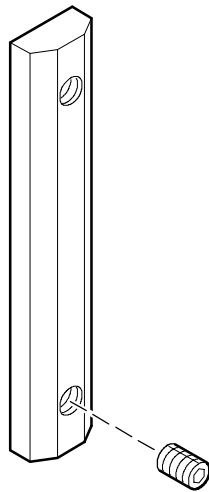


Figure 10: Preparing the Long Rails

2. Slide one long rail down the front channel each leg assembly with the set screw at the bottom. Position the long rail so that its top edge is about two inches below the final tilt shelf height. Figure 11 shows the alignment marks that you will find on the leg assemblies. Align the tops of the long rails with these marks. Tighten the set screws using the 1/8 inch Allen wrench.

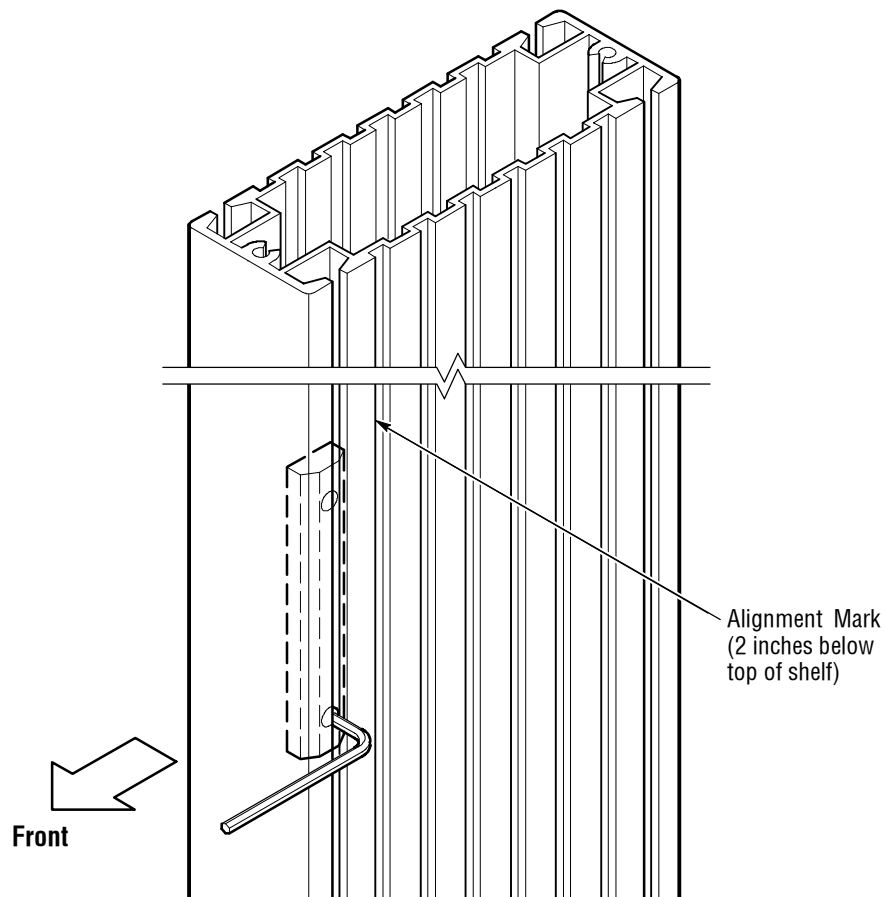


Figure 11: Long Rail Alignment Marks on the Leg Assemblies

3. Prepare the tilt shelf with handle as shown in Figure 12, by installing a shoulder bolt, a steel washer, a Kevlar washer, and a weld nut in each of the two back holes of the tilt shelf. The front holes are curved slots; use the back holes opposite them. Place the washer on the outside of the shelf, between the shelf and the leg assembly. Leave each screw assembly loose; do not screw the weld nut onto the shoulder bolt more than one full turn.

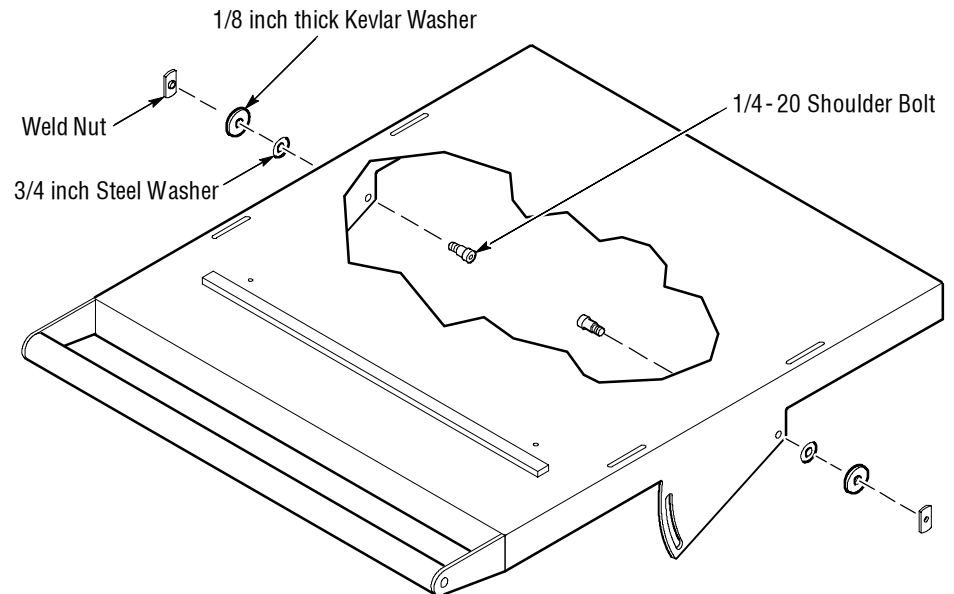


Figure 12: Preparing the Tilt Shelf with Handle

4. Position the tilt shelf with handle horizontally between the leg assemblies, as shown in Figure 13. Make sure the curved slots under the shelf are toward the front of the cart.

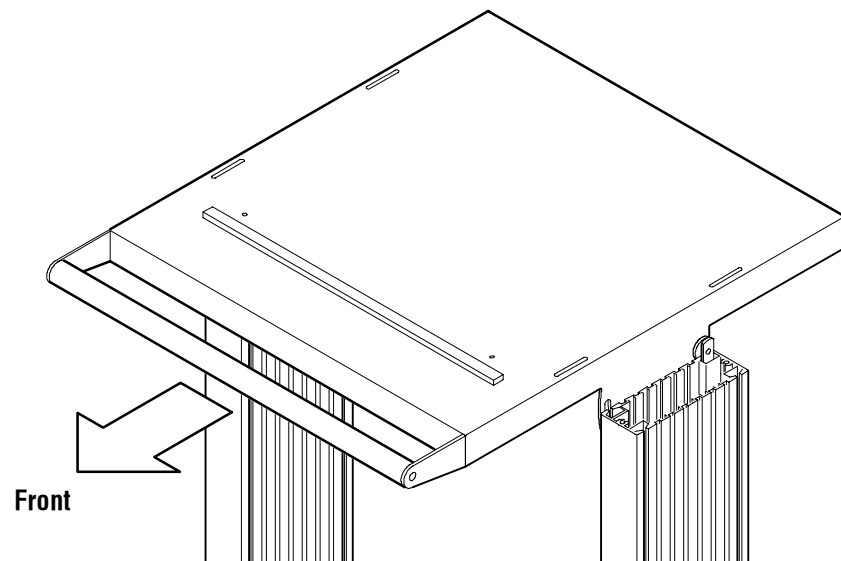


Figure 13: Aligning the Tilt Shelf with Handle

5. Slide the tilt shelf with handle down to its position at the height of the top of the leg assemblies. Slide the tilt shelf slowly between the leg assemblies to avoid scratching the paint.

If you are assembling the cart by yourself, you will find it helpful to tighten the shoulder bolts on the back of the tilt shelf finger tight. This will hold the shelf in place as you assemble the front adjustment knobs.

If you have another person helping you, that person can hold the shelf at the proper height as you perform the following steps.

6. Place a Kevlar washer on the stud of each oval knob. On each side of the tilt shelf, hold an additional Kevlar washer between the shelf and the leg assembly and pass the stud of the oval knob through the shelf slot, the additional washer, and into the top hole of the long rail. Figure 14 shows this in detail.

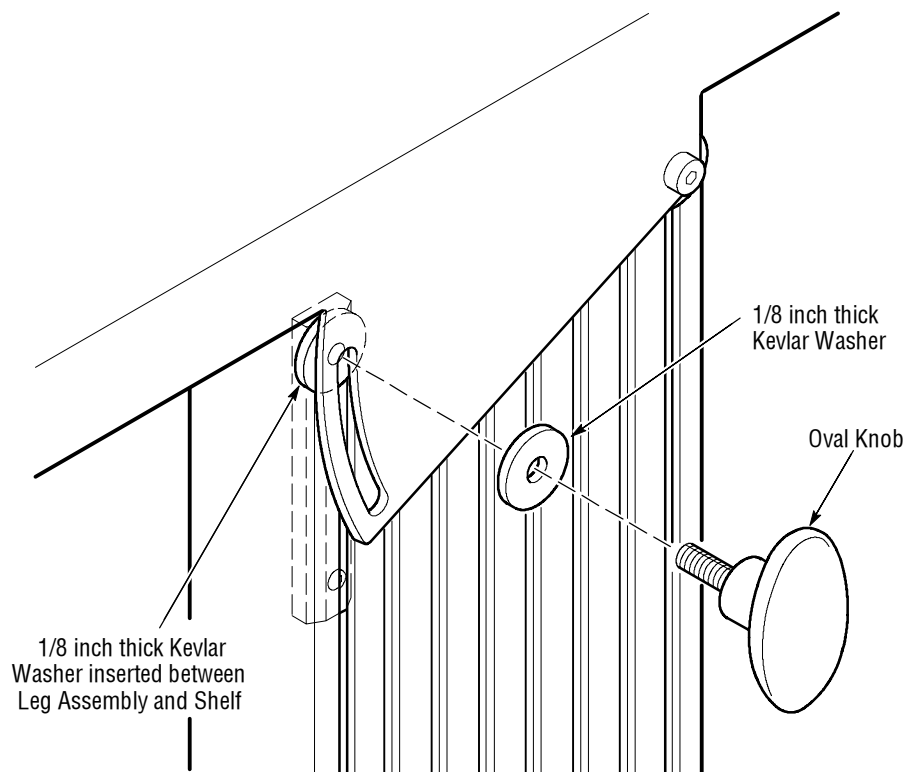


Figure 14: Installation of Tilt Shelf Knobs

7. With the adjustment knobs slightly loose, adjust the tilt of the tilt shelf down as far as possible. The top of each adjustment slot should touch the knob shaft. Tighten the adjustment knobs hand tight.

- 8.** If you previously tightened the shoulder bolts at the back of the tilt shelf, loosen them now so that you can adjust the level of the tilt shelf in step 9.
- 9.** Use the circular bubble level to adjust the tilt shelf to be level. When it is level, use the 5/32 inch Allen wrench to tighten the shoulder bolts at the back of the tilt shelf.

Leg Caps

Install the two leg caps in the tops of the leg assemblies. You do not need any tools to install the leg caps.

Press a leg cap into the top of each leg assembly as shown in Figure 15. You may need to press them into place with the heel of your hand.

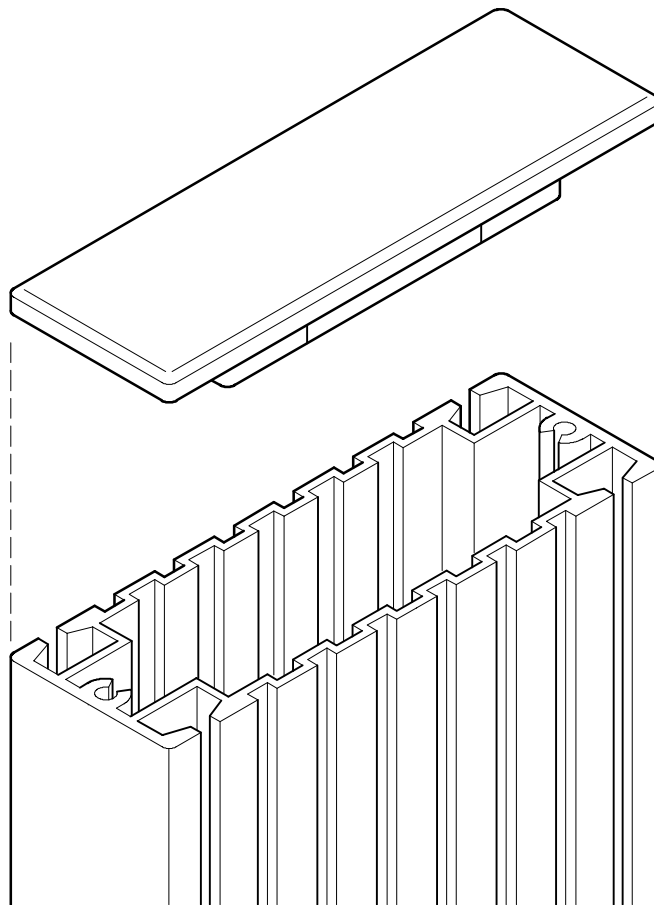


Figure 15: Installing the Leg Caps

Nylon Straps

The last assembly step to finish your cart is to install the two Nylon straps with buckles. You do not need any tools for this step.

Many of the shelves of your cart have slots for installing Nylon straps. Full-size shelves have slots for two straps each, and half shelves have slots for one strap each. You should install your straps in the shelves you will be using to hold instruments. Always use straps to hold equipment on tilting shelves.

Install the Nylon straps as shown in Figure 16. Note the routing of the strap through the buckle. This routing allows you to tighten the strap around an instrument by pulling on the free end of the strap. To loosen a strap, pull up on the tab of the buckle.

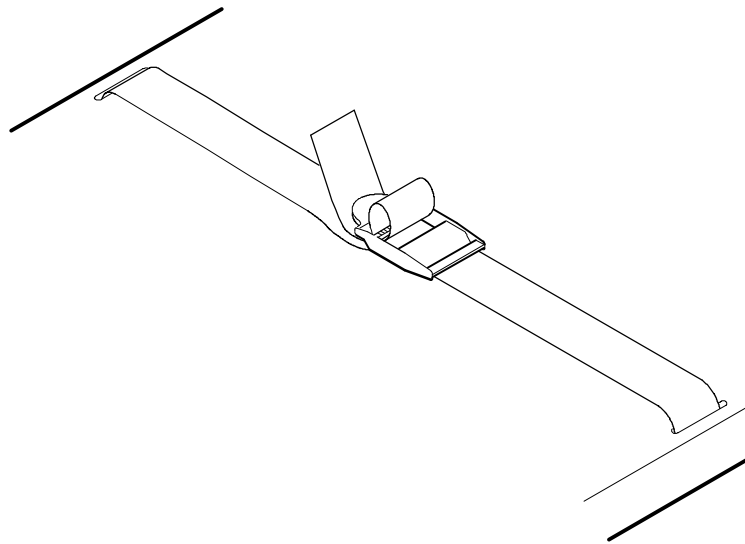


Figure 16: Installing the Nylon Straps with Buckles

Customization

You can customize your cart in several ways:

- You can adjust the heights of any of the shelves. First remove all equipment from the cart. Loosen the four screws associated with the shelf (or for tilting shelves, the shoulder bolts, oval knobs, and set screws), adjust the height, level, and retighten.
- You can move the Nylon straps to any shelf where they are needed.
- You can apply the press-on probe holder anywhere on the cart that is convenient. Once applied, it cannot be moved. Make sure the place you are applying it is clean and dry. Peel the backing from the sticky tape and press holder into place.
- Tilting shelves can be tilted by loosening the two oval knobs, tilting the shelf to the desired position, and retightening the oval knobs.
- Tilting shelves have a retaining bar on the shelf surface; placing instrument feet in front of this bar helps prevent the instrument from sliding down the tilted surface. You can move this bar to one of two different positions to accommodate the instruments you are using.
- You can rearrange the configuration of the shelves by disassembling the cart and reassembling it in a different order. Remember to build the cart from the bottom, shelf by shelf.



WARNING. *Changes in shelf location and loading can affect the balance of the cart. If you arrange the shelves differently from the configuration described in this manual, test the cart carefully for stability before using it.*

Replaceable Parts

Contact your Tektronix representative to order replacement parts. Within the United States and Canada, you can call 1-800-TEK-WIDE (1-800-835-9433).

You can order the following parts to repair the K420 Bench Cart:

- Locking Caster, Tektronix part number 401-0691-00.
- Non-Locking Caster, Tektronix part number 401-0690-00.
- Nylon Strap with Buckle, Tektronix part number 346-0261-00.
- Replacement bar handle with foam cover and set screws, Tektronix part number 367-0452-00.
- Package of assorted small hardware and leg caps, Tektronix part number 016-1259-00. Table 2 lists the parts included in this package.

Table 2: Parts Included with Tektronix Part Number 016-1259-00

Quantity	Part Description
2	Leg Caps
2	1/2 inch Split Lockwashers
4	Weld Nuts
2	Long Rails
8	1/4 inch Tooth Lockwashers
8	1/4 20 Cap Head Screws, 1/2 inch length
6	1/8 inch thick Kevlar (plastic) Washers
2	Oval Knobs
2	1/4 inch 20 Set Screws
2	3/4 inch Steel Washers
2	1/4 20 Shoulder Bolts, 1/2 inch length
2	Press-Stud Retainers

If you intend to mount a TDS/TLA5000 series instrument to cart models K420 or LACART, you will need a mounting bracket kit, Tektronix part number 407-4996-00.

The mounting bracket kit is included when you order TDS5XXX Option 1K (adds K420 cart and bracket kit). For TLA5000 series instruments you must order the mounting bracket kit separately (Tektronix part number 407-4996-00).

Specifications

The K420 Bench Cart meets the specifications in Table 3. Table 4 shows additional characteristics.

Table 3: Performance Specifications

Parameter	Specification
Loading Limit, Shelves	34 kg (75 lb)
Loading Limit, Drawer	6.8 kg (15 lb)
Shelf Tilt Top Shelf	0° to +26°

Table 4: Physical Characteristics

Parameter	Typical Characteristic
Overall Dimensions	
height	771 mm (30.7 in)
width	635 mm (25.0 in)
depth	620 mm (24.4 in)
Top Shelf Dimensions	
width	502 mm (19.8 in)
depth	533 mm (21.0 in)
Drawer Shelf Dimensions	
width	508 mm (20.0 in)
depth	533 mm (21.0 in)
Drawer Dimensions	
width	496 mm (19.5 in)
depth	559 mm (22.0 in)