

LOPRO® GANTRY SYSTEM ASSEMBLY MANUAL

The LoPro gantry bracket enables LoPro linear motion systems to be connected together to form gantry systems. The gantry bracket allows numerous gantry system configurations to be built by offering flexibility in the types of LoPro systems that can be assembled together and in the relative positions and orientations of the stages to each other in the assembly.

Procedures for creating the most common stage configurations for gantry systems are detailed in this manual.

Users can create other gantry system configurations by adding additional stages, reorienting the stages, and/or using other sizes/types of LoPro systems.

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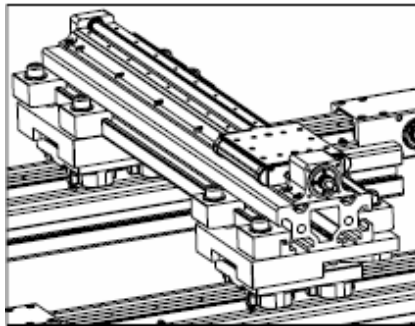
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COMPATIBILITY MATRIX

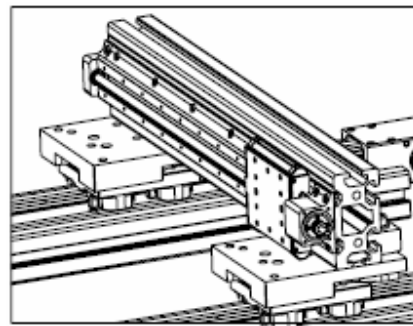
A wide variety of gantry brackets are available to form complete LoPro gantry systems. The following compatibility matrix shows which LoPro system sizes can be mated together, and in which orientations.

Additional parts may be required for complete assembly, including mounting plates, carriage screws, and clamp, T-nut or gusset fastening system parts. Please see pages 14 through 22 for more information.

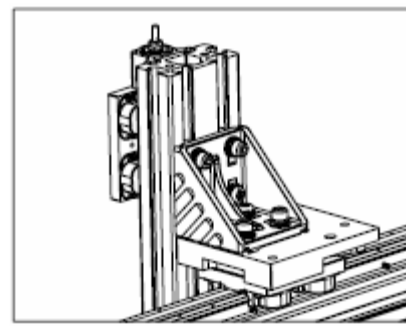
Primary Stage System Size	Secondary System Size				
	1	2 ^{1/2} S	2L	3	4
1	A, B, C, D	N/A	N/A	N/A	N/A
2	A, B, C, D	A, B, C, D	A, B, C, D	N/A	N/A
3	A, B, C, D	A, B, C, D	A, B, C, D	A, B, C, D	D ³
4	A, B ² , C, D	B ²	B	A, B, C, D	D ³



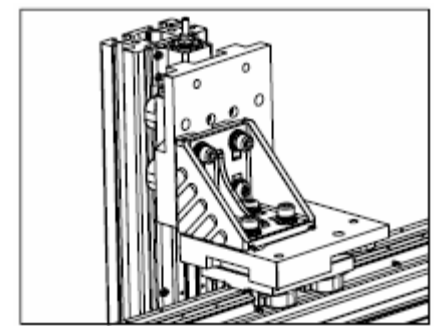
A. X-Y (Horizontal Y Stage)



B. X-Y (Perpendicular Y Stage)



C. X-Z (Z Stage Connected by Support Beam)



D. X-Z (Z Stage Connected by Carriage)

1. Size 2 lead screw or ball screw system.
2. Size 1 and 2/2S secondary stages can be mounted with T-nuts in the perpendicular orientation on size 4 mounting plates, but cannot have side clamps as reinforcement.
3. Though it is physically possible to connect size 4 systems as secondary stages, this arrangement is not recommended.

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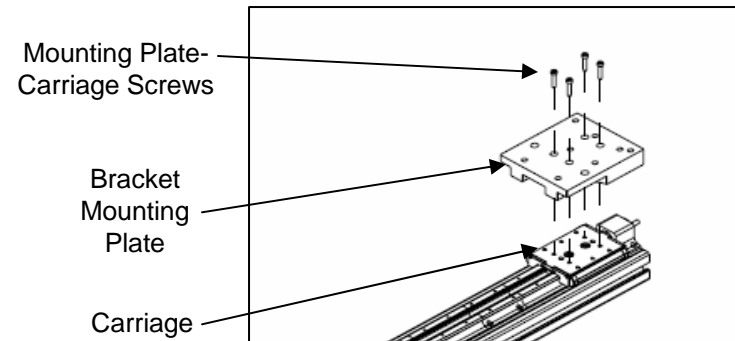
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X-Y STAGE (HORIZONTAL Y STAGE)

STEP 1

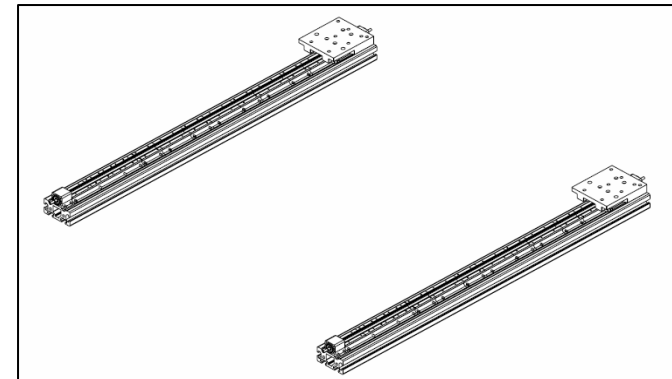
Attach the bracket mounting plates to the carriages on both X stage LoPro systems. The plates should be oriented in the same direction.

(See pages 14 through 22 for a listing of gantry bracket system components)



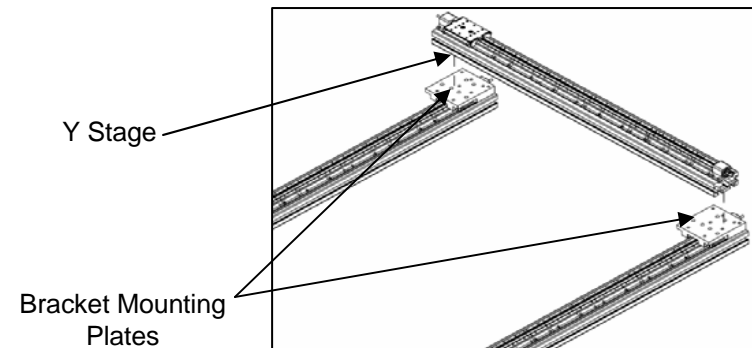
STEP 2

Position and affix the two X stage LoPro systems on their support surface(s) as desired. Ensure the systems are parallel and the two carriages are aligned with respect to the X-axis. The two X stage systems should be close enough together that the Y stage system's support beam can reach the outside edges of the mounting plates.



STEP 3

Place the Y stage system, carriage side up, on top of the X stage bracket mounting plates and oriented perpendicular to the X-axis.



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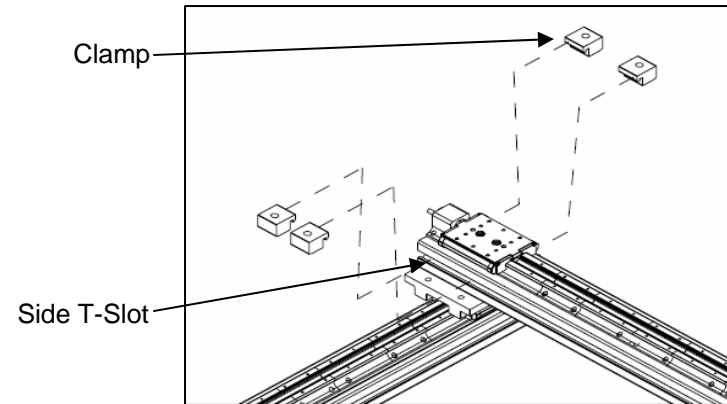
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X-Y STAGE (HORIZONTAL Y STAGE)

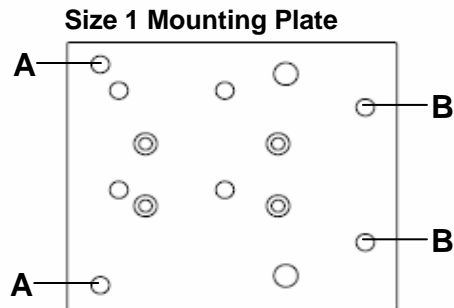
STEP 4

Hinge the clamps on the side T-slots on both sides of the Y stage system's support beam. Align the clamps with the appropriate tapped mounting holes on the mounting plate (See the following diagrams for correct mounting holes for each clamp).

Note: If the X stage has two parallel systems, always verify that matching mounting holes on both mounting plates are used for the clamps, to prevent the Y stage from being mounted askew.

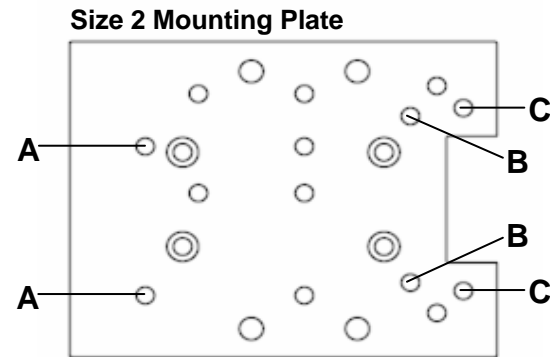


Clamp Mounting Holes



A: Side 1 Clamp Mounting Holes for Size 1 Y Stage

B: Side 2 Clamp Mounting Holes for Size 1 Y Stage



A: Side 1 Clamp Mounting Holes for Size 1 or 2 Y Stage

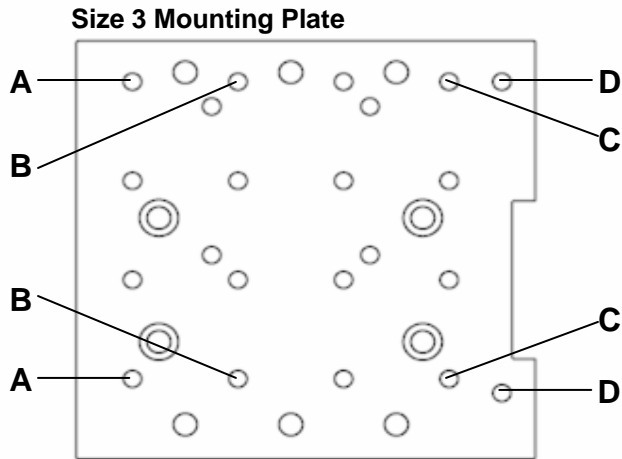
B: Side 2 Clamp Mounting Holes for Size 1 Y Stage

C: Side 2 Clamp Mounting Holes for Size 2 Y Stage

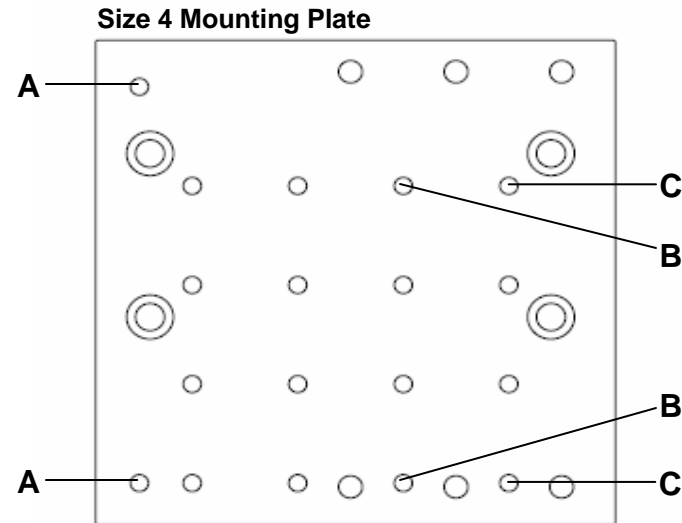
X-Y STAGE (HORIZONTAL Y STAGE)

STEP 4 (cont'd)

Clamp Mounting Holes



- A: Side 1 Clamp Mounting Holes for Size 2 or 3 Y Stage
- B: Side 1 Clamp Mounting Holes for Size 1 Y Stage
- C: Side 2 Clamp Mounting Holes for Size 2 Y Stage
- D: Side 2 Clamp Mounting Holes for Size 1 or 3 Y Stage

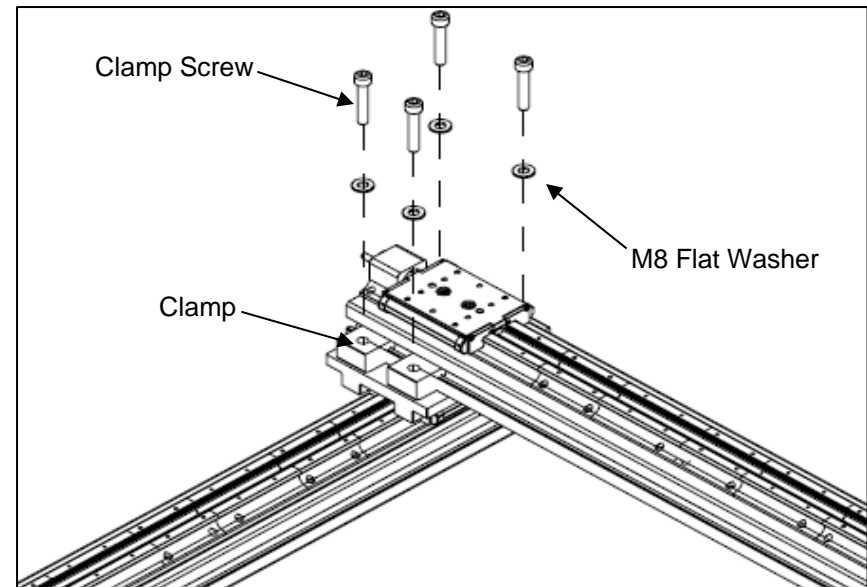


- A: Side 1 Clamp Mounting Holes for Size 1 or 3 Y Stage
- B: Side 2 Clamp Mounting Holes for Size 1 Y Stage
- C: Side 2 Clamp Mounting Holes for Size 3 Y Stage

X-Y STAGE (HORIZONTAL Y STAGE)

STEP 5

Insert a clamp screw with an M8 flat washer into the clearance hole on each clamp and bolt it into the mounting plate. It may be necessary to adjust the position of the Y stage system between turns of the screw to ensure that the clamps hold the support beam as evenly as possible.

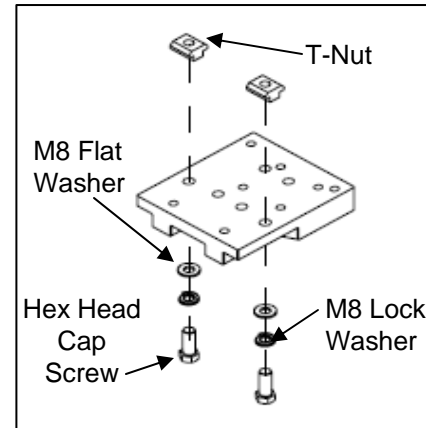


X-Y STAGE (PERPENDICULAR Y STAGE)

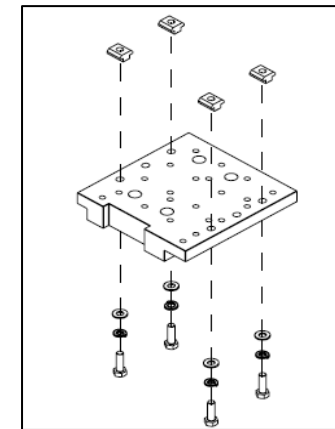
STEP 1

Insert hex head cap screws with lock and flat washers through the clearance holes from the underside of the mounting plate. Loosely screw a T-nut onto each bolt from the top side of the mounting plate to keep them in place. The T-nuts should be located at matching holes on either side of the mounting plate.

Note: Two T-nuts are to be used on each mounting plate if the Y stage is size 1 or 2S and four are to be used for all other sizes. See the following diagrams for the appropriate mounting holes for each combination of mounting plate and secondary stage size.



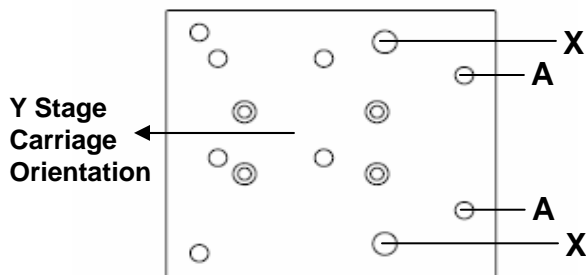
Size 1 Mounting Plate with T-Nuts



Size 3 Mounting Plate with T-Nuts

T-Nut and Clamp Mounting Holes

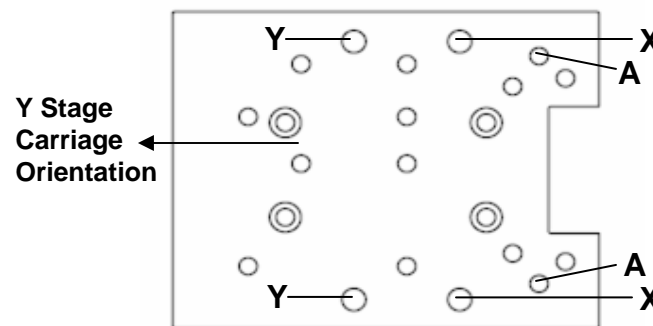
Size 1 Mounting Plate



A: Clamp Mounting Holes for Size 1 Y Stage

X: T-Nut Holes for T-Slot 1 in Size 1 Y Stage

Size 2 Mounting Plate



A: Clamp Mounting Holes for Size 1 or 2S Y Stage

X: T-Nut Holes for T-Slot 1 in Size 1, 2S, or 2L Y Stage

Y: T-Nut Holes for T-Slot 2 in Size 2L Y Stage

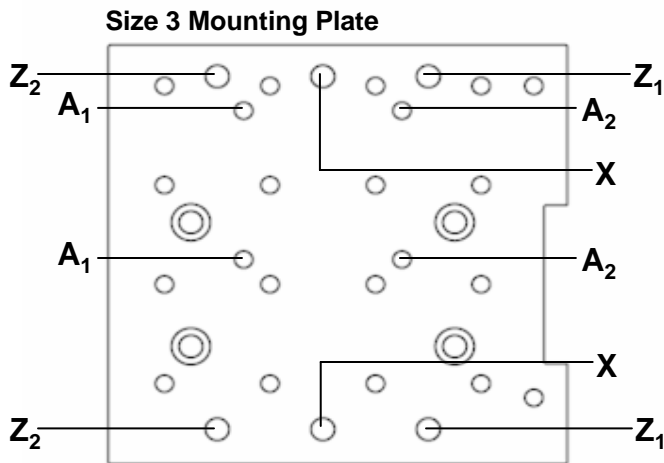
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X-Y STAGE (PERPENDICULAR Y STAGE)

STEP 1 (cont'd)

T-Nut and Clamp Mounting Holes



The size 3 mounting plate allows a secondary stage of any compatible size to be mounted perpendicularly with the carriage facing in either direction, depending on which set of clamp mounting holes or T-nut holes are used.

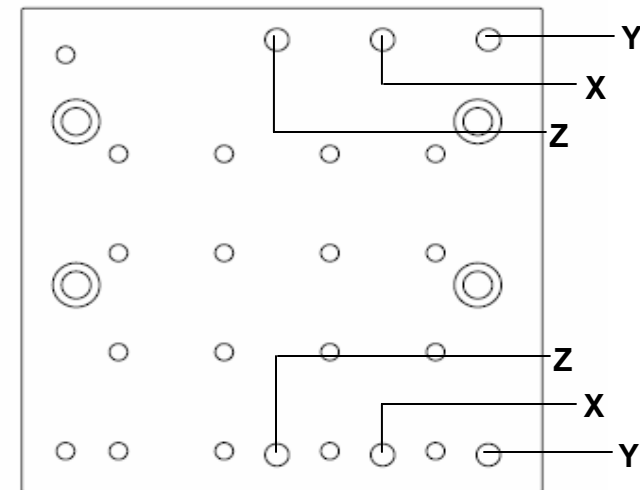
A₁ or A₂: Clamp Mounting Holes for Size 1 or 2S Y Stage

X: T-Nut Holes for T-Slot 1 in Size 1, 2S, or 2L Y Stage

Z₁ or Z₂: T-Nut Holes for T-Slot 2 in Size 2L Y Stage

Z₁ and Z₂: T-nut Holes for T-Slots 1 and 2 in Size 3 Y Stage.

Size 4 Mounting Plate



The size 4 mounting plate allows a secondary stage of any compatible size to be mounted perpendicularly with the carriage facing in either direction. Support side clamps cannot be attached, though, to any support beam on this mounting plate.

X, Y, or Z: T-Nut Holes for T-Slot 1 in Size 1 or 2S Y Stage

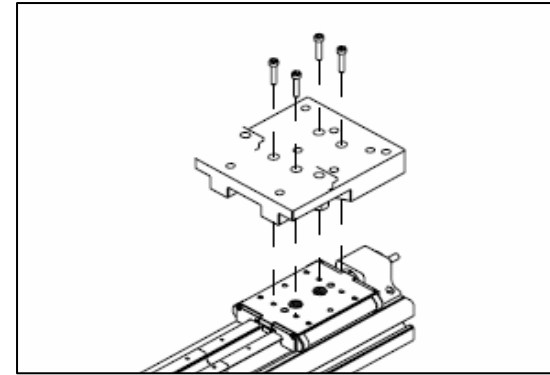
X and Y or Z: T-Nut Holes for T-Slots 1 and 2 in Size 2L Y Stage

Y and Z: T-Nut Holes for T-Slots 1 and 2 in Size 3 Y Stage

X-Y STAGE (PERPENDICULAR Y STAGE)

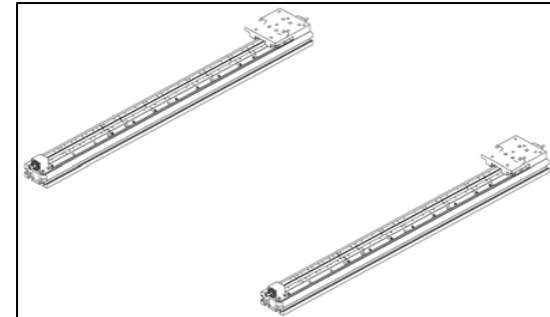
STEP 2

Attach the mounting plates to the carriages on both X stage LoPro systems.



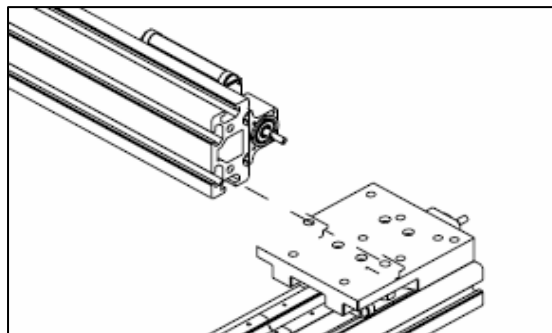
STEP 3

Position and affix the two X stage LoPro systems on their support surface(s) as desired. Ensure the systems are parallel and the two carriages are aligned with respect to the X-axis. The two X stage systems should be close enough together that the Y stage system's support beam can reach the outside edges of the mounting plates.

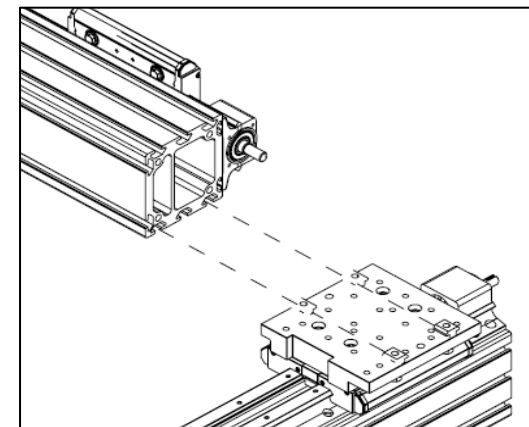


STEP 4

Orient the Y stage system so that both its carriage and support beam are perpendicular to the X stage carriages, and one end of the support beam is near one of the outermost T-nuts. Align the Y stage system so that the outermost T-nut fits into the support beam's side T-slot, then slide the Y stage system in the direction of the second X stage system, making sure all of the T-nuts on both mounting plates are captured in the T-slot.



Size 1 Y Stage



Size 3 Y Stage

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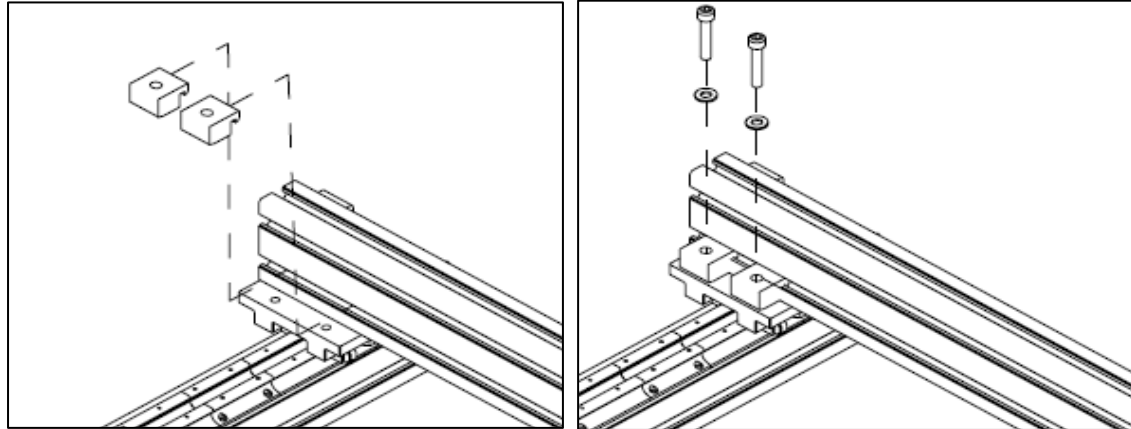
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X-Y STAGE (PERPENDICULAR Y STAGE)

STEP 4.1

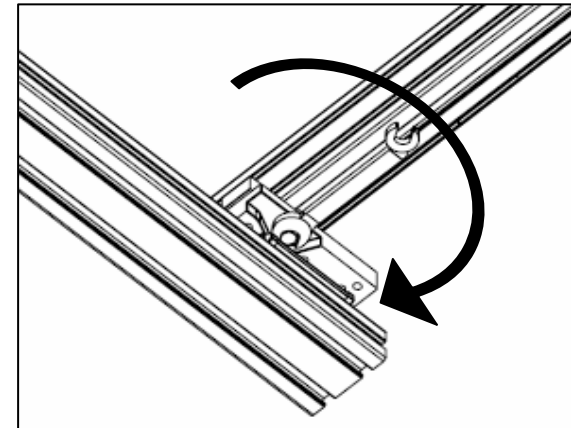
(For Size 1 and 2S Y Stages Only)

Hinge clamps on the lowest T-slot on the support beam's wide side, which should now be perpendicular to the mounting plate. Center them on the appropriate mounting holes on the mounting plate (see pg. 7) and lightly secure with the appropriate clamp screws and washers.



STEP 5

Lock down the T-nuts by using an open end wrench to tighten the hex head cap screws from the underside of the X stage mounting plates. Finish tightening the clamp screws, if applicable. It may be necessary to alternately tighten each set of fasteners, in small increments, and adjust the Y stage system's position to ensure that it is aligned properly and that the fasteners are loaded evenly.



X-Z STAGE (Z STAGE CONNECTED BY SUPPORT BEAM)

STEP 1

Position and affix the X stage LoPro system on its support surface as desired.

STEP 2

Attach the bracket mounting plates to the carriage on the X stage LoPro system.

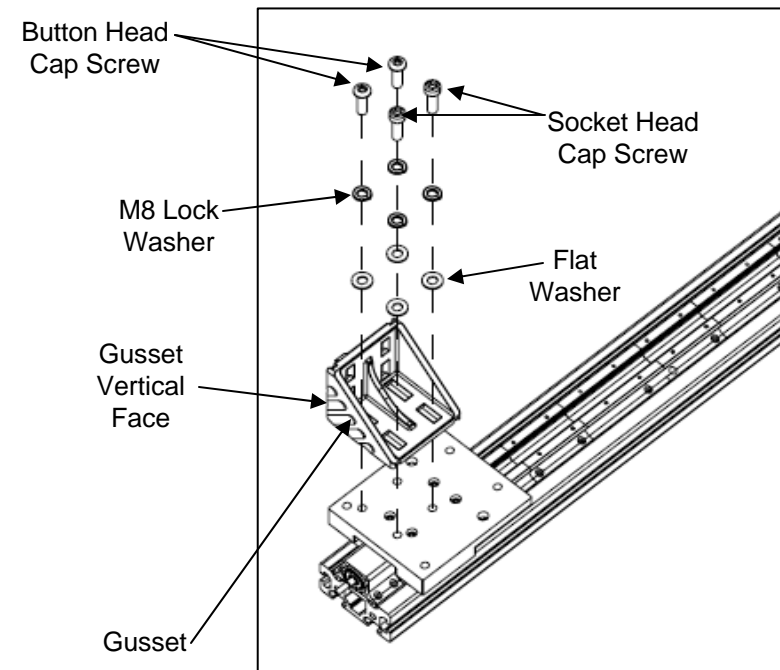
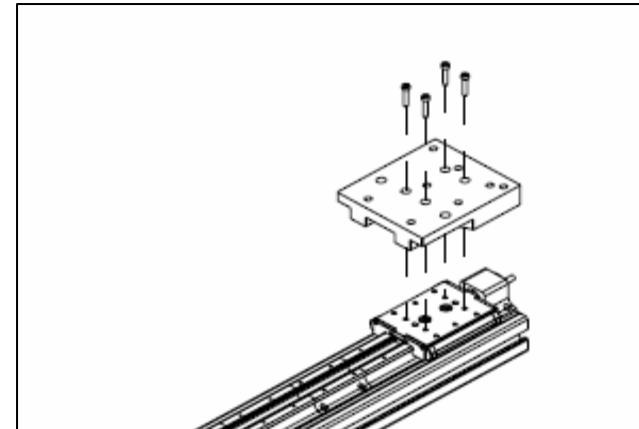
STEP 3

Attach the gusset(s) to the mounting plate with the appropriate gusset-mounting plate fasteners. The exposed vertical face(s) of the gusset(s) should extend beyond the edge of the mounting plate and be parallel with the X-axis.

Notes:

On 40X80X80 and 40X160X160 gussets, use the button head cap screws at the innermost slots on the gusset.

For secondary stages larger than size 1, two gussets need to be installed on the mounting plate. They should be side by side, with their exposed vertical faces coplanar.



X-Z STAGE (Z STAGE CONNECTED BY SUPPORT BEAM)

STEP 4

Loosely attach the T-nuts on the exterior of the gusset's vertical side with the appropriate gusset-support beam fasteners.

Notes:

On 40X80X80 and 40X160X160 gussets, use the button head cap screws at the innermost slots on the gusset.

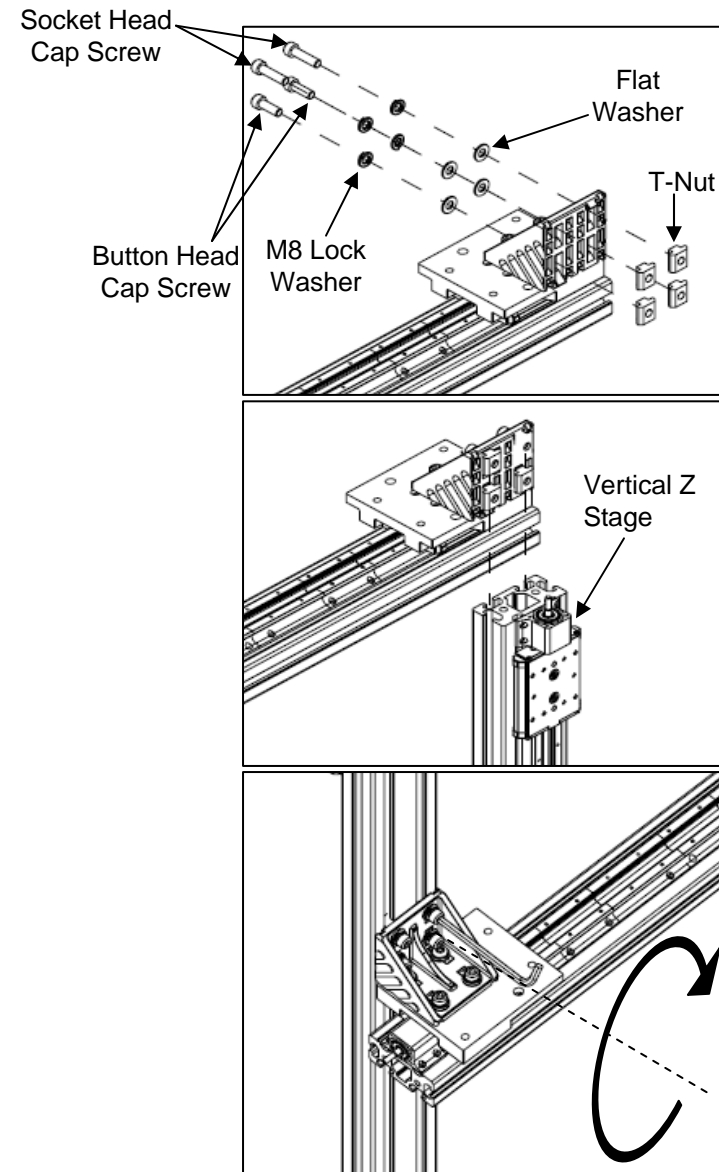
For size 3 secondary stages, the two gussets present a total of four vertical columns that the T-nuts can be attached at. The T-nuts should be installed in two columns with one empty column in between, to ensure that the T-nuts are correctly spaced for the size 3 support beam.

STEP 5

Orient the Z stage system to a vertical position so that the bottom, wide side of the support beam faces the gusset's vertical side. Align the support beam's T-slots with the T-nuts, then slide the support beam along the side of the gusset to capture all of the T-nuts.

STEP 6

When the Z stage is at its desired position relative to the X stage system, lock the T-nuts in place by tightening their associated screws.



X-Z STAGE (Z STAGE CONNECTED BY CARRIAGE)

STEP 1

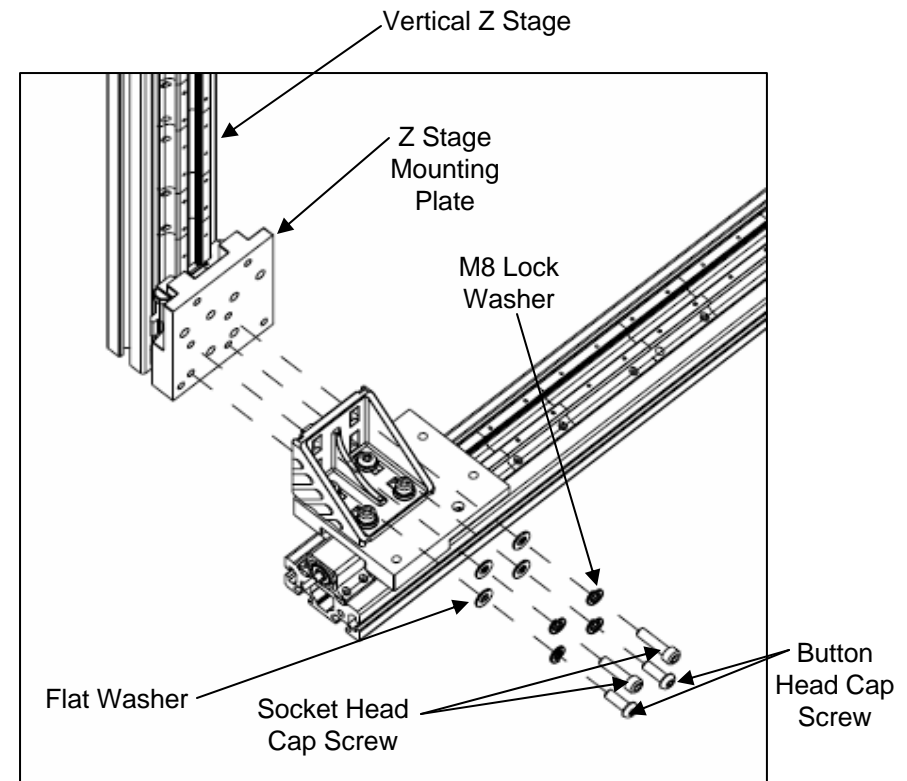
Perform steps 1-3 on page 11.

STEP 2

Orient the Z stage system so that it is vertical relative to the X-axis and place its mounting plate against the gusset's vertical side. Line up the appropriate mounting holes on the Z stage mounting plate with the gusset slots and secure the mounting plate with the appropriate gusset-mounting plate fasteners.

Note:

On 40X80X80 and 40X160X160 gussets, use the button head cap screws at the innermost slots on the gusset.



SIZE 1 GANTRY BRACKET SYSTEM PARTS

Pages 14 -22 show the components relevant to each section of the gantry bracket system. The kit for each system contains the minimum number of parts necessary to incorporate each LoPro system into any of the gantry configurations shown in this manual.*

Mounting Plate System Parts

Component	Specification	BWC Part #	QTY
Gantry Bracket Mounting Plate	Size 1	LP1GNTRYPLT	1
Mounting Plate-Carriage Screw	M4X20 DIN 912 SST Socket Head Cap Screw	SHCSM4X20SS	4

Clamp Fastening System Parts

Component	Specification	BWC Part #	QTY
Clamp	N/A	LPGNTRYCLMPMACH	4
Clamp Screw	M8X40 DIN 912 SST Socket Head Cap Screw	SHCSM8X40SS	4
Flat Washer	M8 DIN 125 SST	WADINM8SS	4

T-Nut Fastening System Parts (For Perpendicular Secondary Stages Only)

Component	Specification	BWC Part #	QTY
T-Nut	10mm Slot, M8 Thread	TNUTM10SM8T	2
T-Nut Hex Head Cap Screw	M8X22 DIN 931 or 933 SST	HXHDM8X22SS	2
Lock Washer	M8 DIN 127 SST	WARHSLCKM8SS	2
Flat Washer	M8 DIN 125 SST	WADINM8SS	2

Gusset Fastening System Parts

Component	Specification	BWC Part #	QTY
Gusset	40mm Spacing, 80mm W X 80mm L	GUST40X80X80	1
Flat Washer	M8 DIN 125 SST	WADINM8SS	8
Lock Washer	M8 DIN 127 SST	WARHSLCKM8SS	8
T-Nut for Support Beam	10mm Slot, M8 Thread	TNUTM10SM8T	4
Gusset-Mounting Plate Screws	M8X30 DIN 912 SST Socket Head Cap Screw	SHCSM8X30SS	2
	M8X30 ISO 7380 SST Button Head Cap Screw	BHCSM8X30SS	2
Gusset-Support Beam Screws	M8x22 DIN 912 SST Socket Head Cap Screw	SHCSM8X22SS	2
	M8X20 ISO 7380 SST Button Head Cap Screw	BHCSM8X20SS	2

* Kits may not contain the same number of parts as the total for all lists combined for one size, as some parts are used in multiple gantry configurations.

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SIZE 2 GANTRY BRACKET SYSTEM PARTS

Mounting Plate System Parts

Component	Specification	BWC Part #	QTY
Gantry Bracket Mounting Plate	Size 2	LP2GNTRYPLT	1
Mounting Plate-Carriage Screw	M6X20 DIN 912 SST Socket Head Cap Screw	SHCSM6X20SS	4

Clamp Fastening System Parts

Component	Specification	BWC Part #	QTY
Clamp	N/A	LPGNTRYCLMPMACH	4
Clamp Screw	M8X40 DIN 912 SST Socket Head Cap Screw	SHCSM8X40SS	4
Flat Washer	M8 DIN 125 SST	WADINM8SS	4

T-Nut Fastening System Parts (For Perpendicular Sizes 1 and 2/2S Secondary Stages Only)

Component	Specification	BWC Part #	QTY
T-Nut	10mm Slot, M8 Thread	TNUTM10SM8T	2
T-Nut Hex Head Cap Screw	M8X22 DIN 931 or 933 SST	HXHDM8X22SS	2
Lock Washer	M8 DIN 127 SST	WARHSLCKM8SS	2
Flat Washer	M8 DIN 125 SST	WADINM8SS	2

T-Nut Fastening System Parts (For Perpendicular Size 2L Secondary Stages Only)

Component	Specification	BWC Part #	QTY
T-Nut	10mm Slot, M8 Thread	TNUTM10SM8T	4
T-Nut Hex Head Cap Screw	M8X22 DIN 931 or 933 SST	HXHDM8X22SS	4
Lock Washer	M8 DIN 127 SST	WARHSLCKM8SS	4
Flat Washer	M8 DIN 125 SST	WADINM8SS	4

SIZE 2 GANTRY BRACKET SYSTEM PARTS

Gusset Fastening System Parts (For Size 1 Secondary Stages Only)

Component	Specification	BWC Part #	QTY
Gusset	40mm Spacing, 80mm W X 80mm L	GUST40X80X80	1
Flat Washer	M8 DIN 125 SST	WADINM8SS	8
Lock Washer	M8 DIN 127 SST	WARHSLCKM8SS	8
T-Nut for Support Beam	10mm Slot, M8 Thread	TNUTM10SM8T	4
Gusset-Mounting Plate Screws	M8X30 DIN 912 SST Socket Head Cap Screw	SHCSM8X30SS	2
	M8X30 ISO 7380 SST Button Head Cap Screw	BHCSM8X30SS	2
Gusset-Support Beam Screws	M8x22 DIN 912 SST Socket Head Cap Screw	SHCSM8X22SS	2
	M8X20 ISO 7380 SST Button Head Cap Screw	BHCSM8X20SS	2

Gusset Fastening System Parts (For All Size 2 Secondary Stages Only)

Component	Specification	BWC Part #	QTY
Gusset	60mm Spacing, 120mm W X 120mm L	GUST60X120X120	2
Flat Washer	M10 DIN 125 SST	WADINM10SS	8
Lock Washer	M8 DIN 127 SST	WARHSLCKM8SS	8
T-Nut for Support Beam	10mm Slot, M8 Thread	TNUTM10SM8T	4
Gusset-Mounting Plate Screws	M8X30 DIN 912 SST Socket Head Cap Screw	SHCSM8X30SS	4
Gusset-Support Beam Screws	M8X20 DIN 912 SST Socket Head Cap Screw	SHCSM8X20SS	4

SIZE 3 GANTRY BRACKET SYSTEM PARTS

Mounting Plate System Parts

Component	Specification	BWC Part #	QTY
Gantry Bracket Mounting Plate	Size 3	LP3GNTRYPLT	1
Mounting Plate-Carriage Screw	M8X30 DIN 912 SST Socket Head Cap Screw	SHCSM8X30SS	4

Clamp Fastening System Parts

Component	Specification	BWC Part #	QTY
Clamp	N/A	LPGNTRYCLMPMACH	4
Clamp Screw	M8X45 DIN 912 SST Socket Head Cap Screw	SHCSM8X45SS	4
Flat Washer	M8 DIN 125 SST	WADINM8SS	4

T-Nut Fastening System Parts (For Perpendicular Sizes 1 and 2/2S Secondary Stages Only)

Component	Specification	BWC Part #	QTY
T-Nut	10mm Slot, M8 Thread	TNUTM10SM8T	2
T-Nut Hex Head Cap Screw	M8X30 DIN 931 or 933 SST	HXHDM8X30SS	2
Lock Washer	M8 DIN 127 SST	WARHSLCKM8SS	2
Flat Washer	M8 DIN 125 SST	WADINM8SS	2

T-Nut Fastening System Parts (For Perpendicular Sizes 2L and 3 Secondary Stages Only)

Component	Specification	BWC Part #	QTY
T-Nut	10mm Slot, M8 Thread	TNUTM10SM8T	4
T-Nut Hex Head Cap Screw	M8X30 DIN 931 or 933 SST	HXHDM8X30SS	4
Lock Washer	M8 DIN 127 SST	WARHSLCKM8SS	4
Flat Washer	M8 DIN 125 SST	WADINM8SS	4

SIZE 3 GANTRY BRACKET SYSTEM PARTS

Gusset Fastening System Parts (For Size 1 Secondary Stages Only)

Component	Specification	BWC Part #	QTY
Gusset	40mm Spacing, 80mm W X 80mm L	GUST40X80X80	1
Flat Washer	M8 DIN 125 SST	WADINM8SS	8
Lock Washer	M8 DIN 127 SST	WARHSLCKM8SS	8
T-Nut for Support Beam	10mm Slot, M8 Thread	TNUTM10SM8T	4
Gusset-Mounting Plate Screws	M8X30 DIN 912 SST Socket Head Cap Screw	SHCSM8X30SS	2
	M8X30 ISO 7380 SST Button Head Cap Screw	BHCSM8X30SS	2
Gusset-Support Beam Screws	M8x22 DIN 912 SST Socket Head Cap Screw	SHCSM8X22SS	2
	M8X20 ISO 7380 SST Button Head Cap Screw	BHCSM8X20SS	2

Gusset Fastening System Parts (For All Size 2 Secondary Stages Only)

Component	Specification	BWC Part #	QTY
Gusset	60mm Spacing, 120mm W X 120mm L	GUST60X120X120	2
Flat Washer	M10 DIN 125 SST	WADINM10SS	8
Lock Washer	M8 DIN 127 SST	WARHSLCKM8SS	8
T-Nut for Support Beam	10mm Slot, M8 Thread	TNUTM10SM8T	4
Gusset-Mounting Plate Screws	M8X30 DIN 912 SST Socket Head Cap Screw	SHCSM8X30SS	4
Gusset-Support Beam Screws	M8X20 DIN 912 SST Socket Head Cap Screw	SHCSM8X20SS	4

Gusset Fastening System Parts (For Size 3 Secondary Stages Only)

Component	Specification	BWC Part #	QTY
Gusset	40mm Spacing, 80mm W X 80mm L	GUST40X80X80	2
Flat Washer	M8 DIN 125 SST	WADINM8SS	12
Lock Washer	M8 DIN 127 SST	WARHSLCKM8SS	12
T-Nut for Support Beam	10mm Slot, M8 Thread	TNUTM10SM8T	4
Gusset-Mounting Plate Screws	M8X30 DIN 912 SST Socket Head Cap Screw	SHCSM8X30SS	6
	M8X30 ISO 7380 SST Button Head Cap Screw	BHCSM8X30SS	2
Gusset-Support Beam Screws	M8x22 DIN 912 SST Socket Head Cap Screw	SHCSM8X22SS	2
	M8X20 ISO 7380 SST Button Head Cap Screw	BHCSM8X20SS	2

SIZE 3 GANTRY BRACKET SYSTEM PARTS

Large Gusset Fastening System Parts (For Size 3 Secondary Stages Only)

Component	Specification	BWC Part #	QTY
Gusset	40mm Spacing, 160mm W X 160mm L	GUST40X160X160	2
Flat Washer	M8 DIN 125 SST	WADINM8SS	24
Lock Washer	M8 DIN 127 SST	WARHSLCKM8SS	24
T-Nut for Support Beam	10mm Slot, M8 Thread	TNUTM10SM8T	8
Gusset-Mounting Plate Screws	M8X30 DIN 912 SST Socket Head Cap Screw	SHCSM8X30SS	14
	M8X30 ISO 7380 SST Button Head Cap Screw	BHCSM8X30SS	2
Gusset-Support Beam Screws	M8x20 DIN 912 SST Socket Head Cap Screw	SHCSM8X20SS	6
	M8X20 ISO 7380 SST Button Head Cap Screw	BHCSM8X20SS	2

SIZE 4 GANTRY BRACKET SYSTEM PARTS

Mounting Plate System Parts

Component	Specification	BWC Part #	QTY
Gantry Bracket Mounting Plate	Size 4	LP4GNTRYPLT	1
Mounting Plate-Carriage Screw	M10X35 DIN 912 SST Socket Head Cap Screw	SHCSM10X35SS	4

Clamp Fastening System Parts

Component	Specification	BWC Part #	QTY
Clamp	N/A	LPGNTRYCLMPMACH	4
Clamp Screw	M8X45 DIN 912 SST Socket Head Cap Screw	SHCSM8X45SS	4
Flat Washer	M8 DIN 125 SST	WADINM8SS	4

T-Nut Fastening System Parts (For Perpendicular Size 1 and 2/S Secondary Stages Only)

Component	Specification	BWC Part #	QTY
T-Nut	10mm Slot, M8 Thread	TNUTM10SM8T	2
T-Nut Hex Head Cap Screw	M8X30 DIN 931 or 933 SST	HXHDM8X30SS	2
Lock Washer	M8 DIN 127 SST	WARHSLCKM8SS	2
Flat Washer	M8 DIN 125 SST	WADINM8SS	2

T-Nut Fastening System Parts (For Perpendicular Size 2L and 3 Secondary Stages Only)

Component	Specification	BWC Part #	QTY
T-Nut	10mm Slot, M8 Thread	TNUTM10SM8T	4
T-Nut Hex Head Cap Screw	M8X30 DIN 931 or 933 SST	HXHDM8X30SS	4
Lock Washer	M8 DIN 127 SST	WARHSLCKM8SS	4
Flat Washer	M8 DIN 125 SST	WADINM8SS	4

SIZE 4 GANTRY BRACKET SYSTEM PARTS

Gusset Fastening System Parts (For Size 1 Secondary Stages Only)

Component	Specification	BWC Part #	QTY
Gusset	40mm Spacing, 80mm W X 80mm L	GUST40X80X80	1
Flat Washer	M8 DIN 125 SST	WADINM8SS	8
Lock Washer	M8 DIN 127 SST	WARHSLCKM8SS	8
T-Nut for Support Beam	10mm Slot, M8 Thread	TNUTM10SM8T	4
Gusset-Mounting Plate Screws	M8X30 DIN 912 SST Socket Head Cap Screw	SHCSM8X30SS	2
	M8X30 ISO 7380 SST Button Head Cap Screw	BHCSM8X30SS	2
Gusset-Support Beam Screws	M8x22 DIN 912 SST Socket Head Cap Screw	SHCSM8X22SS	2
	M8X20 ISO 7380 SST Button Head Cap Screw	BHCSM8X20SS	2

Gusset Fastening System Parts (For Size 3 Secondary Stages Only)

Component	Specification	BWC Part #	QTY
Gusset	40mm Spacing, 80mm W X 80mm L	GUST40X80X80	2
Flat Washer	M8 DIN 125 SST	WADINM8SS	12
Lock Washer	M8 DIN 127 SST	WARHSLCKM8SS	12
T-Nut for Support Beam	10mm Slot, M8 Thread	TNUTM10SM8T	4
Gusset-Mounting Plate Screws	M8X30 DIN 912 SST Socket Head Cap Screw	SHCSM8X30SS	6
	M8X30 ISO 7380 SST Button Head Cap Screw	BHCSM8X30SS	2
Gusset-Support Beam Screws	M8x22 DIN 912 SST Socket Head Cap Screw	SHCSM8X22SS	2
	M8X20 ISO 7380 SST Button Head Cap Screw	BHCSM8X20SS	2

SIZE 4 GANTRY BRACKET SYSTEM PARTS

Large Gusset Fastening System Parts (For Size 3 Secondary Stages Only)

Component	Specification	BWC Part #	QTY
Gusset	40mm Spacing, 160mm W X 160mm L	GUST40X160X160	2
Flat Washer	M8 DIN 125 SST	WADINM8SS	24
Lock Washer	M8 DIN 127 SST	WARHSLCKM8SS	24
T-Nut for Support Beam	10mm Slot, M8 Thread	TNUTM10SM8T	8
Gusset-Mounting Plate Screws	M8X30 DIN 912 SST Socket Head Cap Screw	SHCSM8X30SS	14
	M8X30 ISO 7380 SST Button Head Cap Screw	BHCSM8X30SS	2
Gusset-Support Beam Screws	M8x22 DIN 912 SST Socket Head Cap Screw	SHCSM8X22SS	6
	M8X20 ISO 7380 SST Button Head Cap Screw	BHCSM8X20SS	2