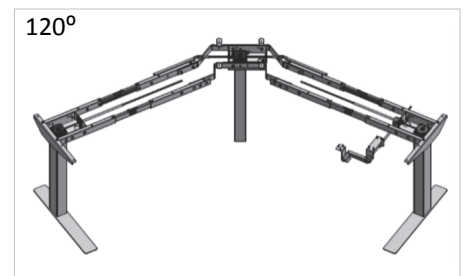
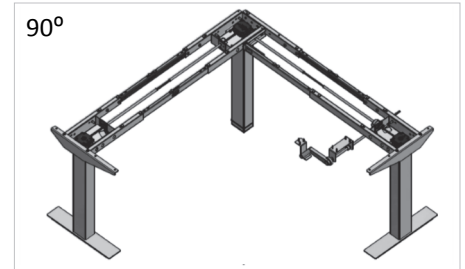
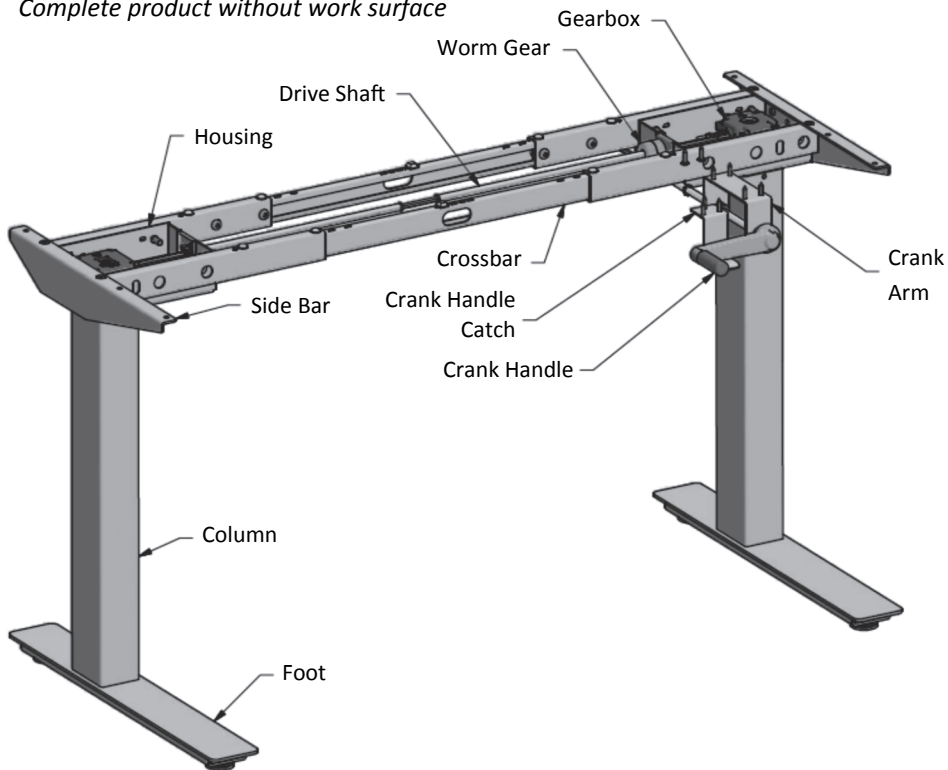


Tone Handcrank and Extended Handcrank

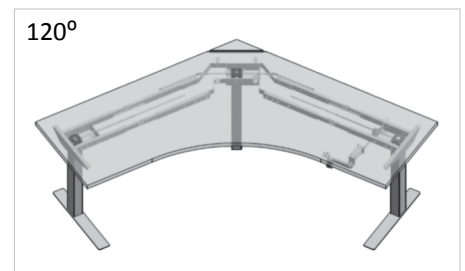
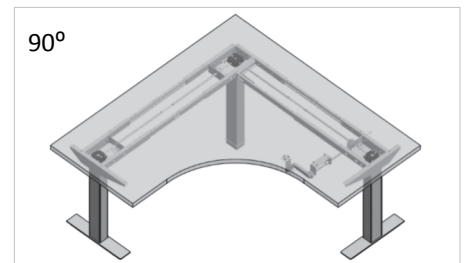
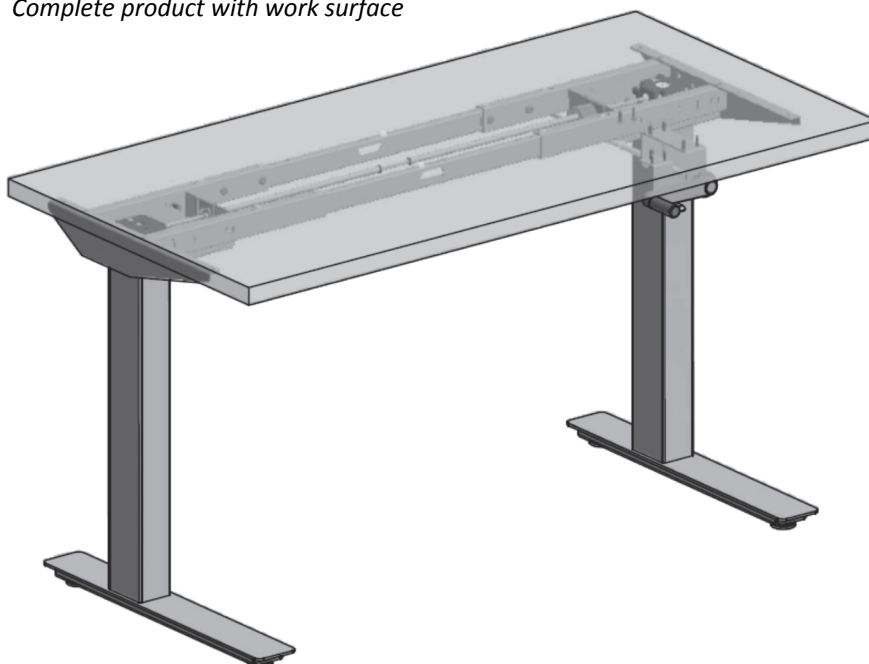
Note that these instructions show generic parts. Parts included in individual tables may differ in appearance and functionality but the assembly principle is the same.

Caution: No impact drivers or other high-torque equipment are to be used!

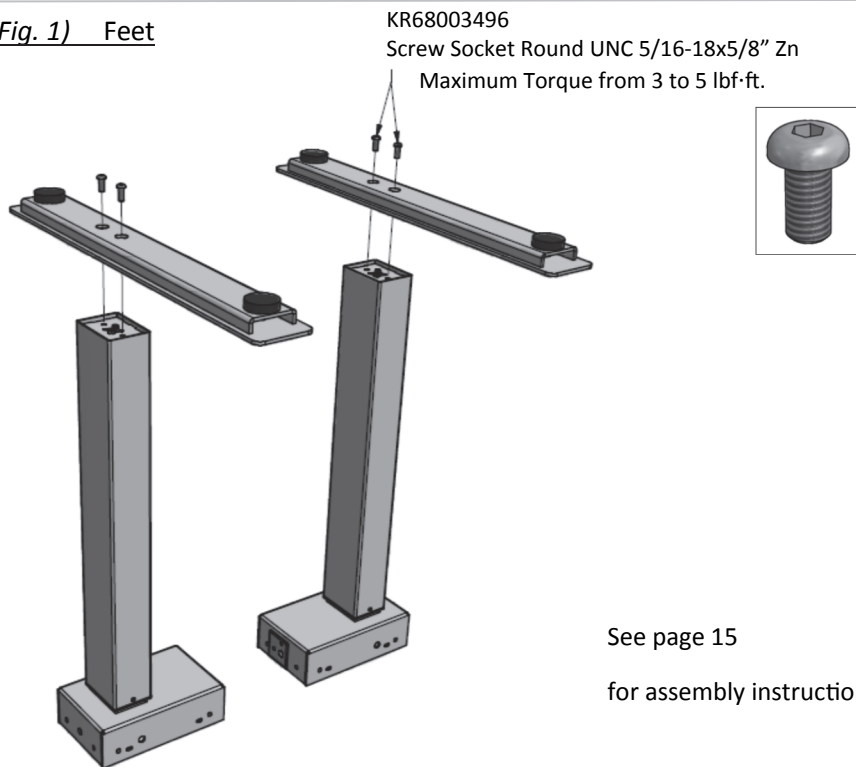
Complete product without work surface



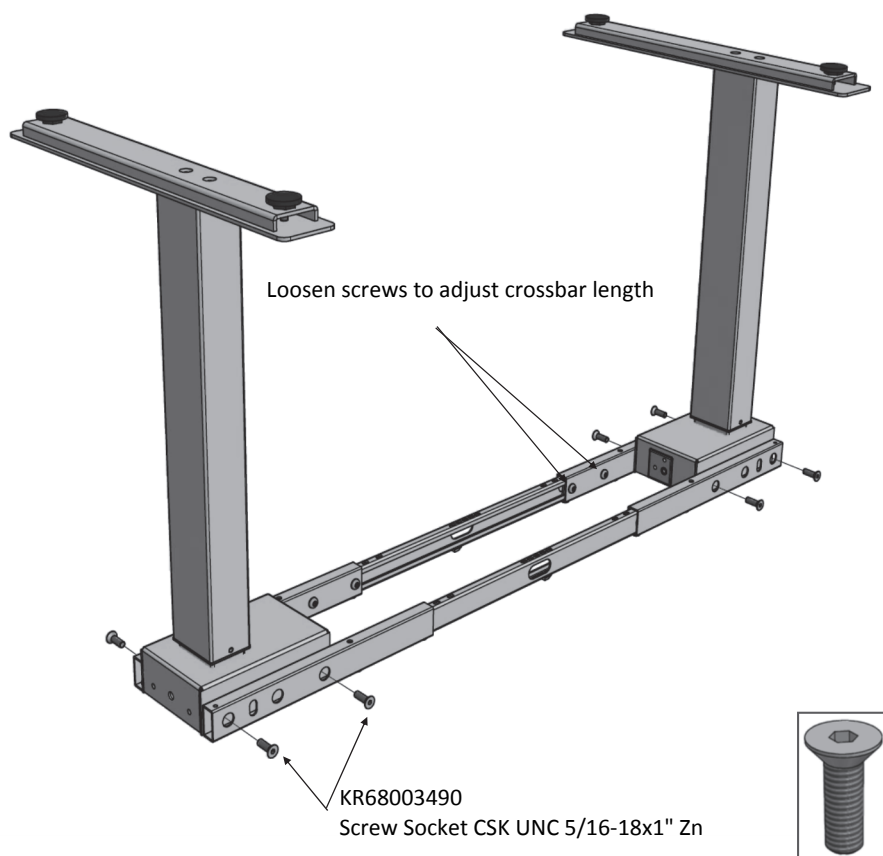
Complete product with work surface



(Fig. 1) Feet



(Fig. 2) Crossbars



Feet Type

On-Foot / OnC (for 2-stage columns)



On-Foot / OffC (for 2-stage columns)



In-Foot / OnC (for 3-stage columns)



In-Foot / OffC (for 3-stage columns)



Crossbar Type

Adjustable width



Fixed width



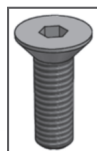
For 120 and 90°

Holes used for mounting of crossbars on the long side of the housing

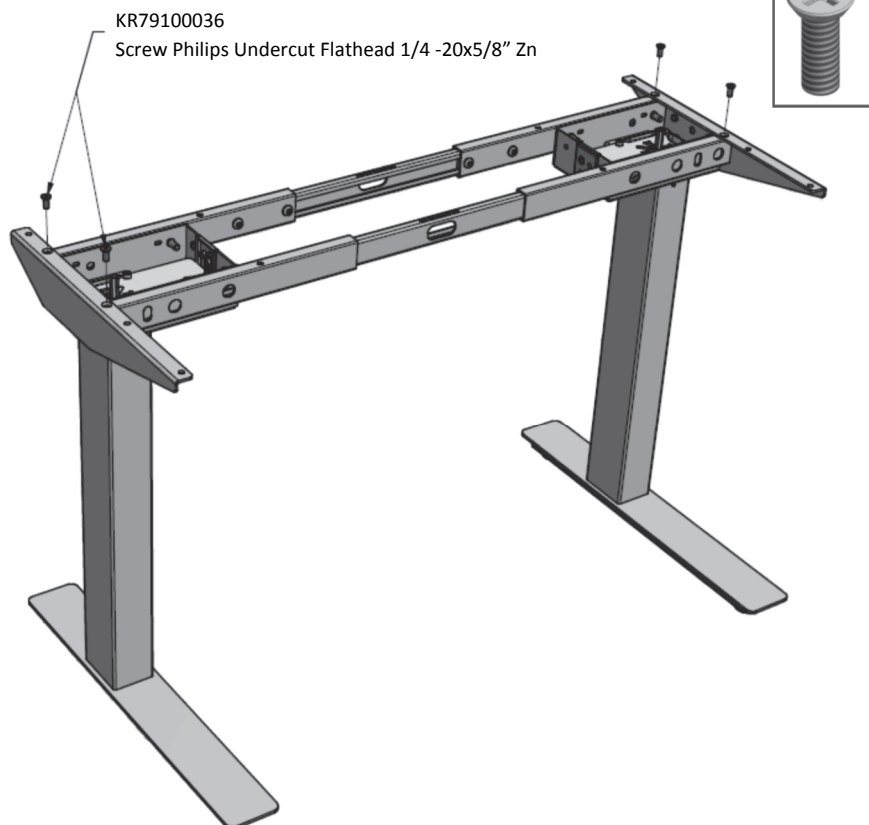


Holes used for mounting of crossbars on the short side of the housing
(For 3-Leg tables only)

Oval hole is only used for drive shaft on 3-leg tables

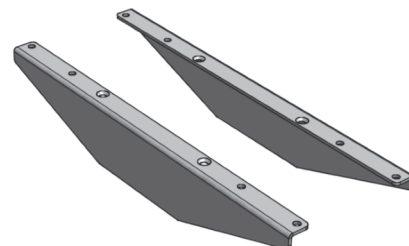


(Fig. 3) Sidebars



Sidebar Type

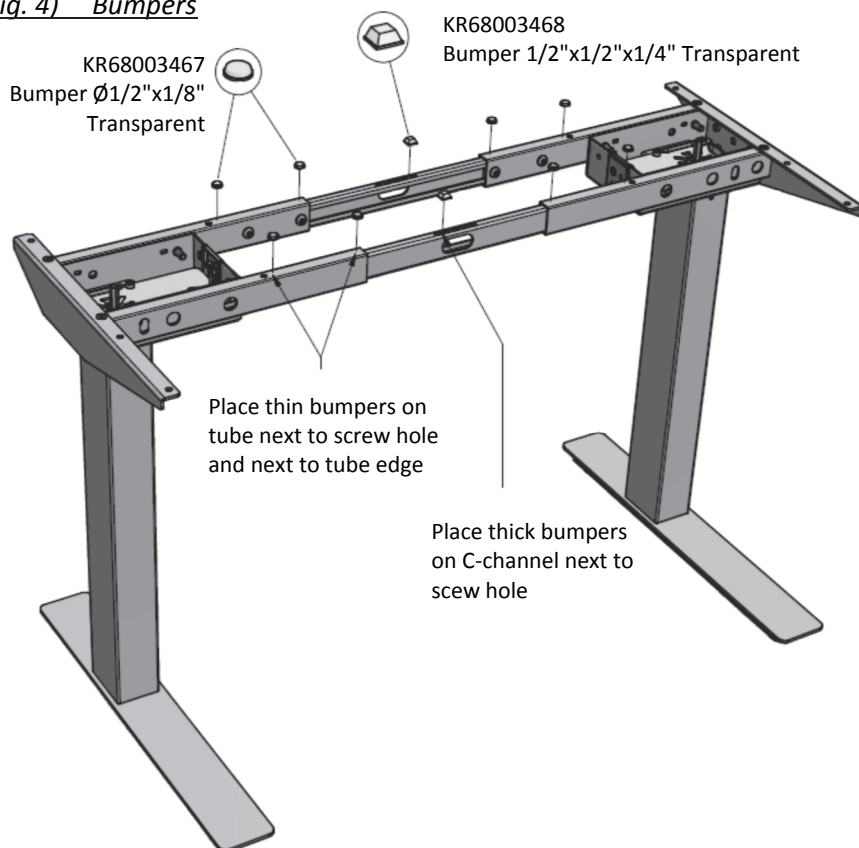
Symmetric Sidebar for T-leg
Part number: KR3AE4015



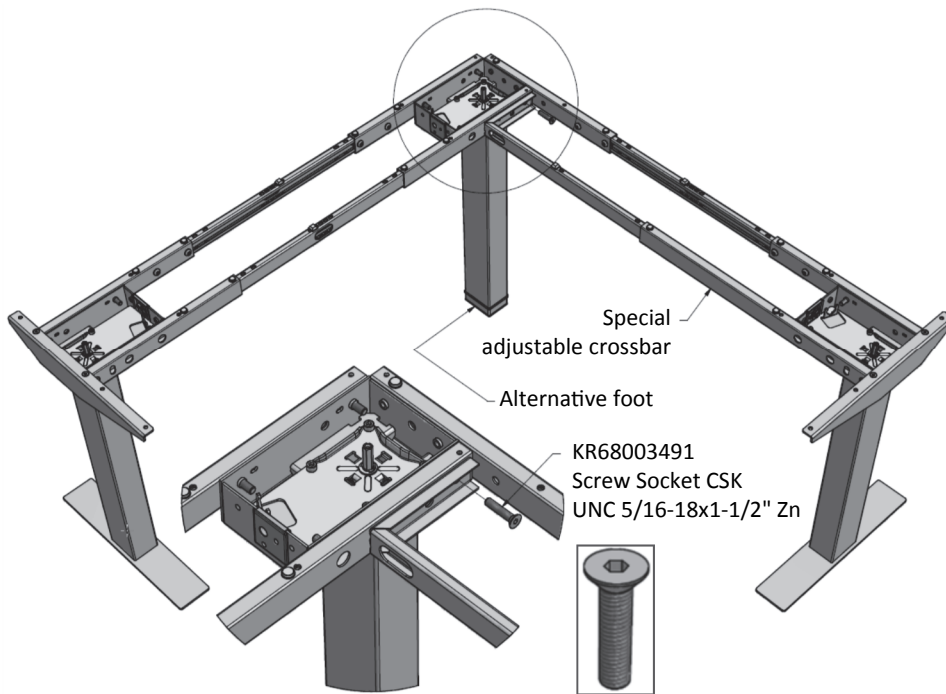
Right Hand / Left Hand sidebars for C-leg
Part numbers: KR3AE4014L - Left
KR3AE4014R - Right



(Fig. 4) Bumpers

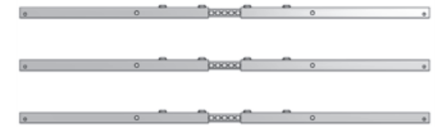


(Fig. 5) 3-Column 90° Adjustable Crossbars



Adjustable crossbars for 3-column 90° table.

3 regular adjustable crossbars

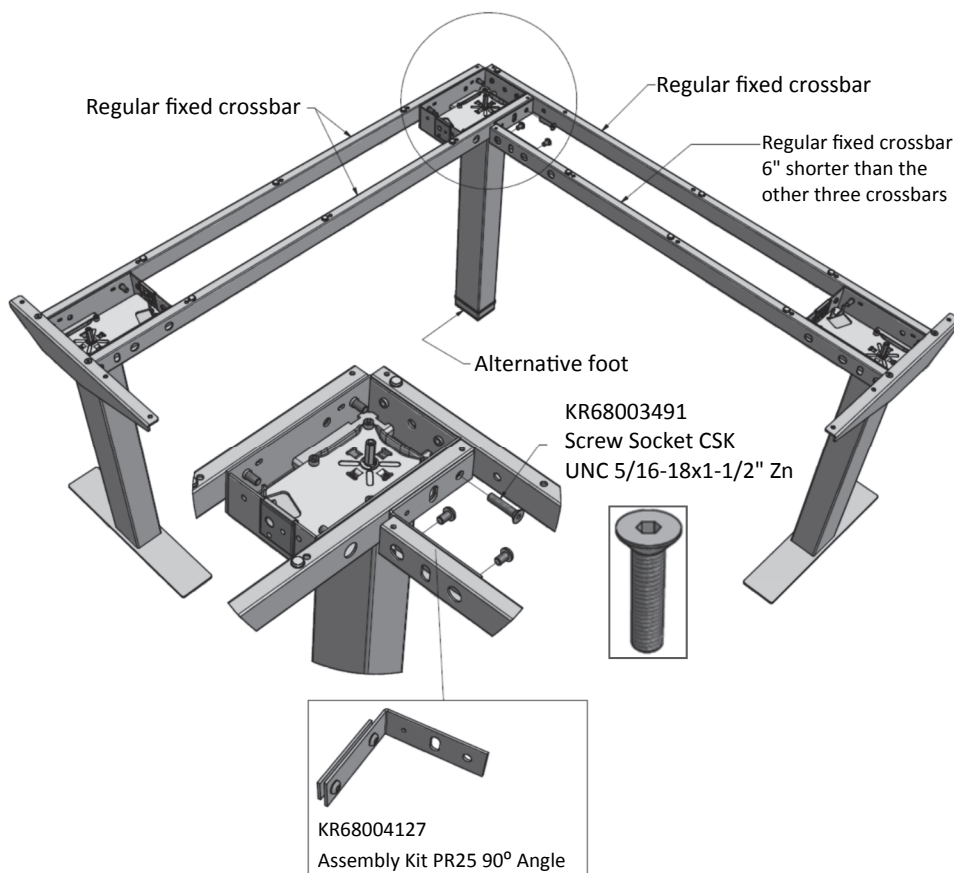


1 special adjustable crossbar



No additional assembly kit

(Fig. 6) 3-Column 90° Fixed Crossbars



Fixed crossbars for 3-column 90° table.

3 regular fixed crossbars



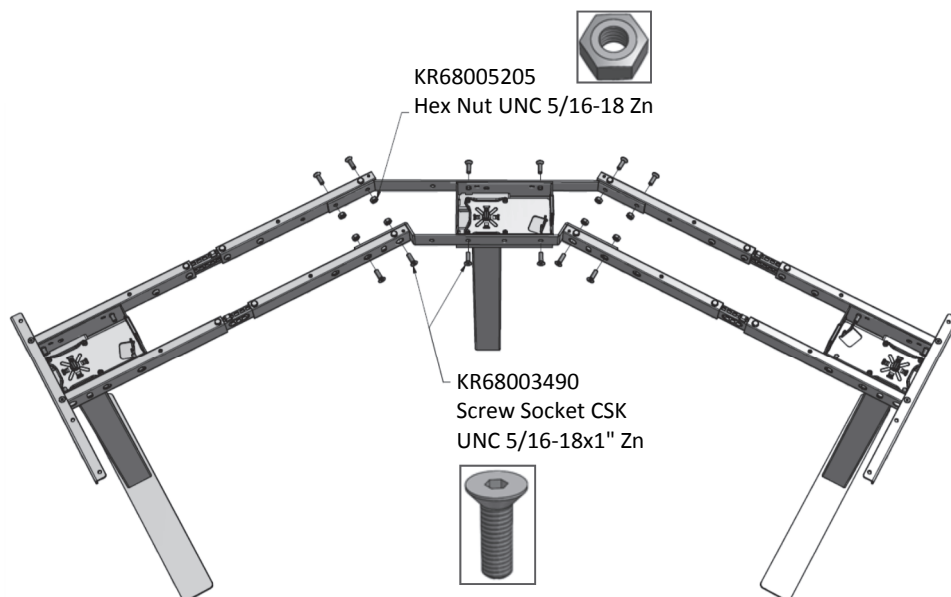
1 regular fixed crossbar, 6" shorter than the other three crossbars



1 additional assembly kit

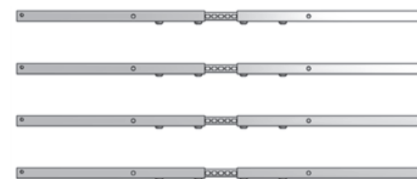


(Fig. 7) 3-Column 120° Adjustable Crossbars



Adjustable crossbars for 3-column 120° table.

4 regular adjustable crossbars



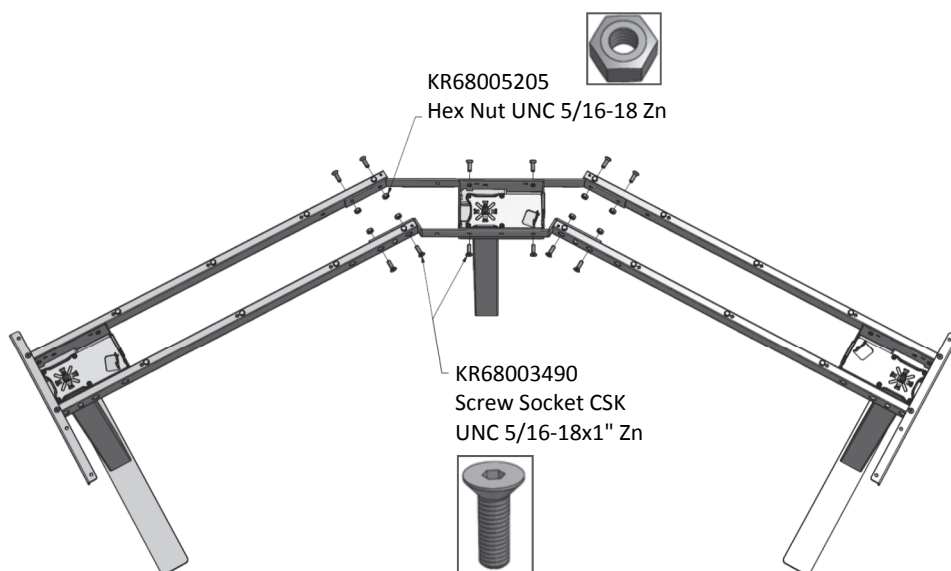
2 Brackets

KR68005095 Bracket 120° Outer

KR68005096 Bracket 120° Inner



(Fig. 8) 3-Column 120° Fixed Crossbars



Fixed crossbars for 3-column 120° table.

4 regular fixed crossbars



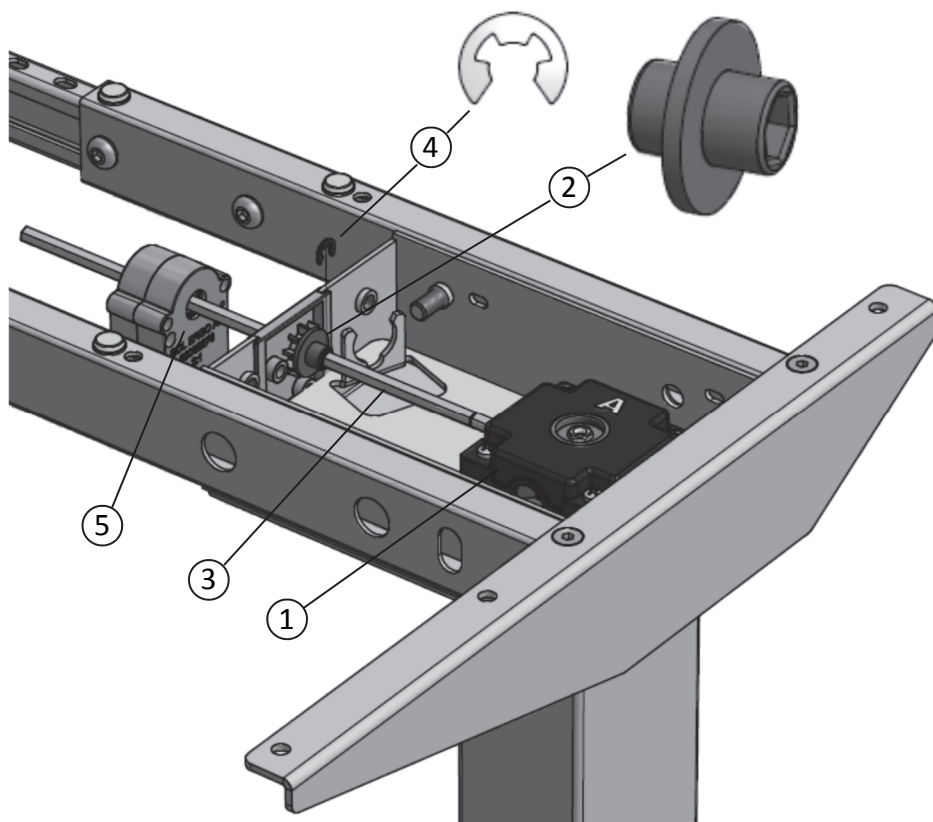
2 Brackets

KR68005095 Bracket 120° Outer

KR68005096 Bracket 120° Inner



(Fig. 8) *Mounting of gears and drive shafts*

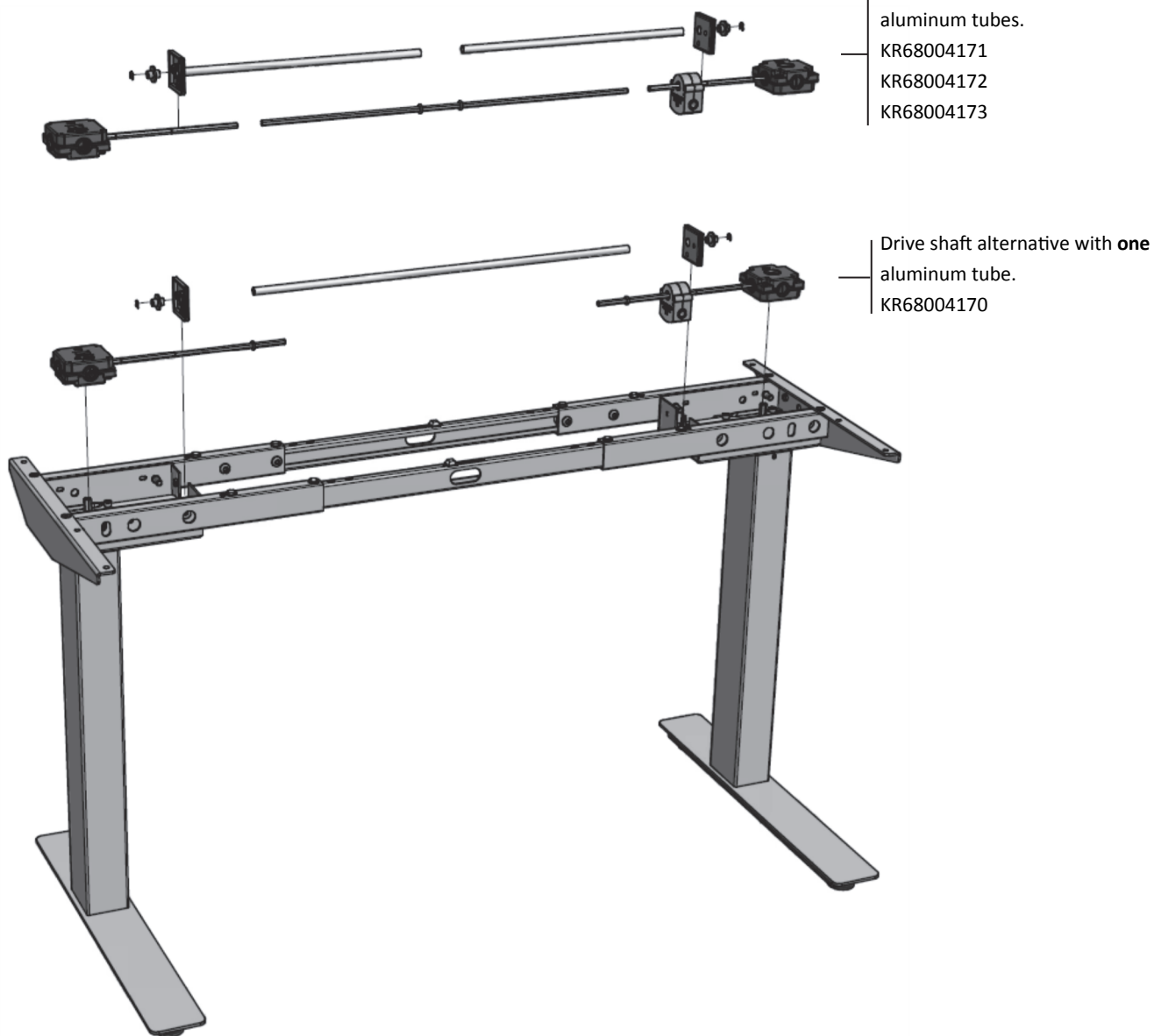


1. Fit Gearbox with correct side facing up (see pages 10-12) on actuator shaft.
2. Insert plastic slide bearing into drive shaft hole of plastic adapter fitted in housing.
3. Insert hex rod with grooves through plastic adapter, slide bearing and gearbox.
NOTE: Make sure hex rod is pushed all the way into the gearbox. Groove should become visible.
4. Snap retaining washer into groove in hex rod to lock assembly in place.
5. Push worm gear (from crank arm assembly) onto the hex bar on either right or left side of the table.



Hex Bar with grooves always fit into Gearbox. End closest to groove always goes into the gear.

(Fig. 9) *Mounting of gears and drive shafts*



When **one** aluminum tube is used, push O-ring toward outside edges to fix aluminum tube in place.

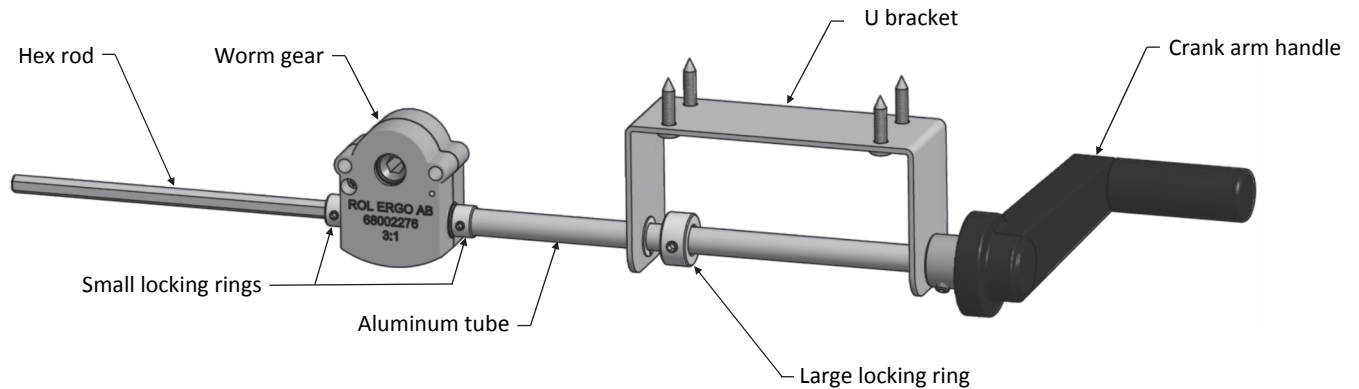


When **two** aluminum tubes are used, push tubes as far as possible toward housings.

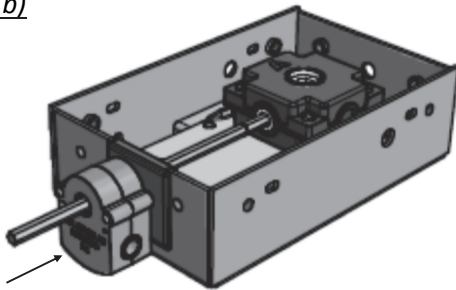


Push O-rings toward inside edges to fix aluminum tubes in place

(Fig. 10 a) Assembly of crank arm

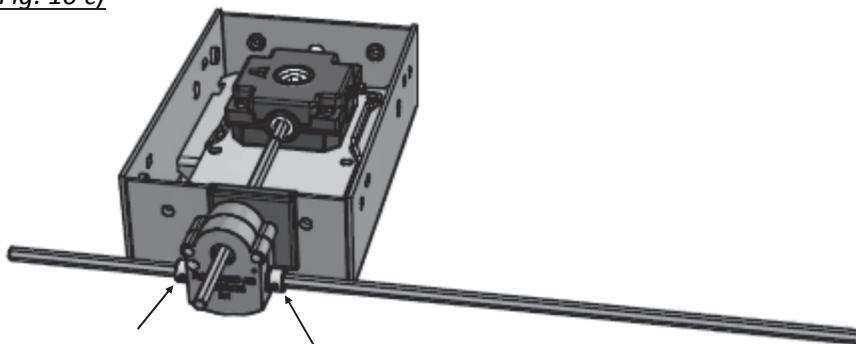


(Fig. 10 b)



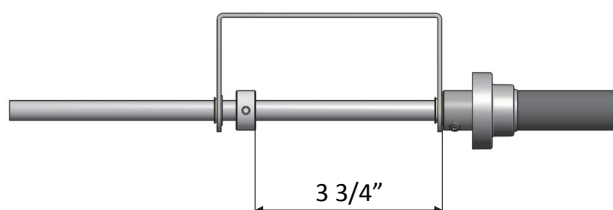
The worm gear should be inserted on the hex rod prior to mounting the drive shafts. Locate the worm gear next to the housing at desired column. It does not need to be fastened.

(Fig. 10 c)



Insert hex rod (included in crank arm assembly) into the worm gear with one small locking ring on each side. Do not tighten the locking rings at this point.

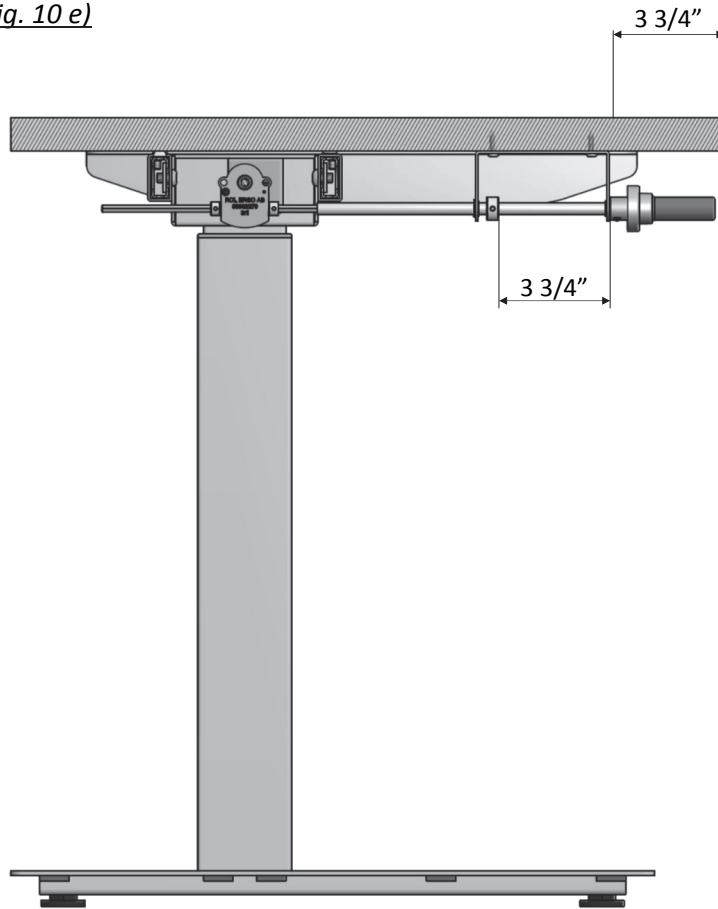
(Fig. 10 d)



Attach the large locking ring on the aluminum tube of the crank arm assembly. Lock it tightly with Allen key 3 3/4 inch from the crank arm as shown on illustration.

The U bracket must be inserted between the handle and the locking ring.

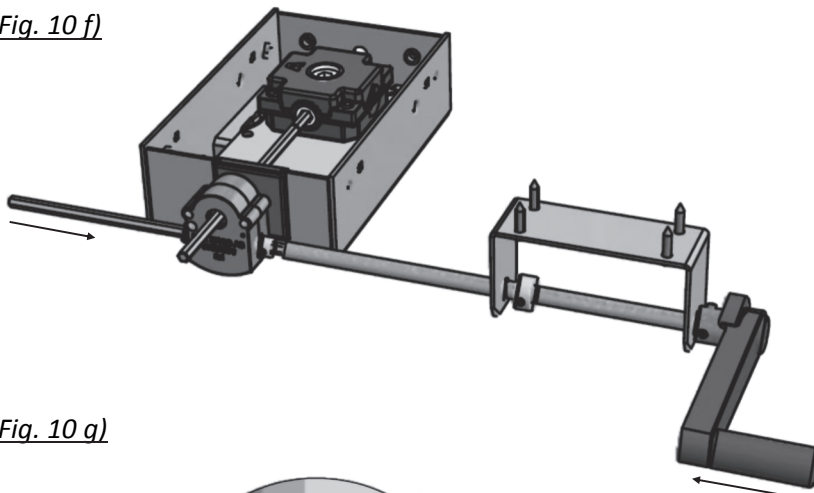
(Fig. 10 e)



Mount the aluminum tube onto the hex rod.

Attach the U bracket with wood screws underneath the work surface 3 3/4" from the work surface edge.

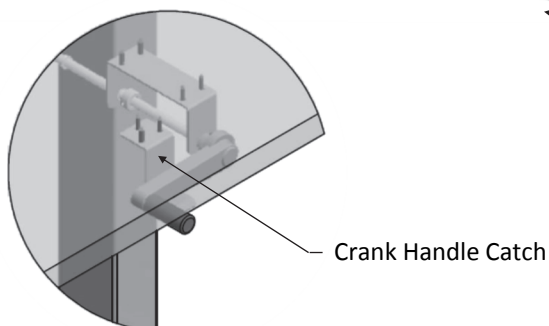
(Fig. 10 f)



With the U bracket fixed in place, push the crank arm handle against the angle. Then push the hex rod as far as it goes into the aluminum tube.

Lock the small locking rings tight with Allen key.

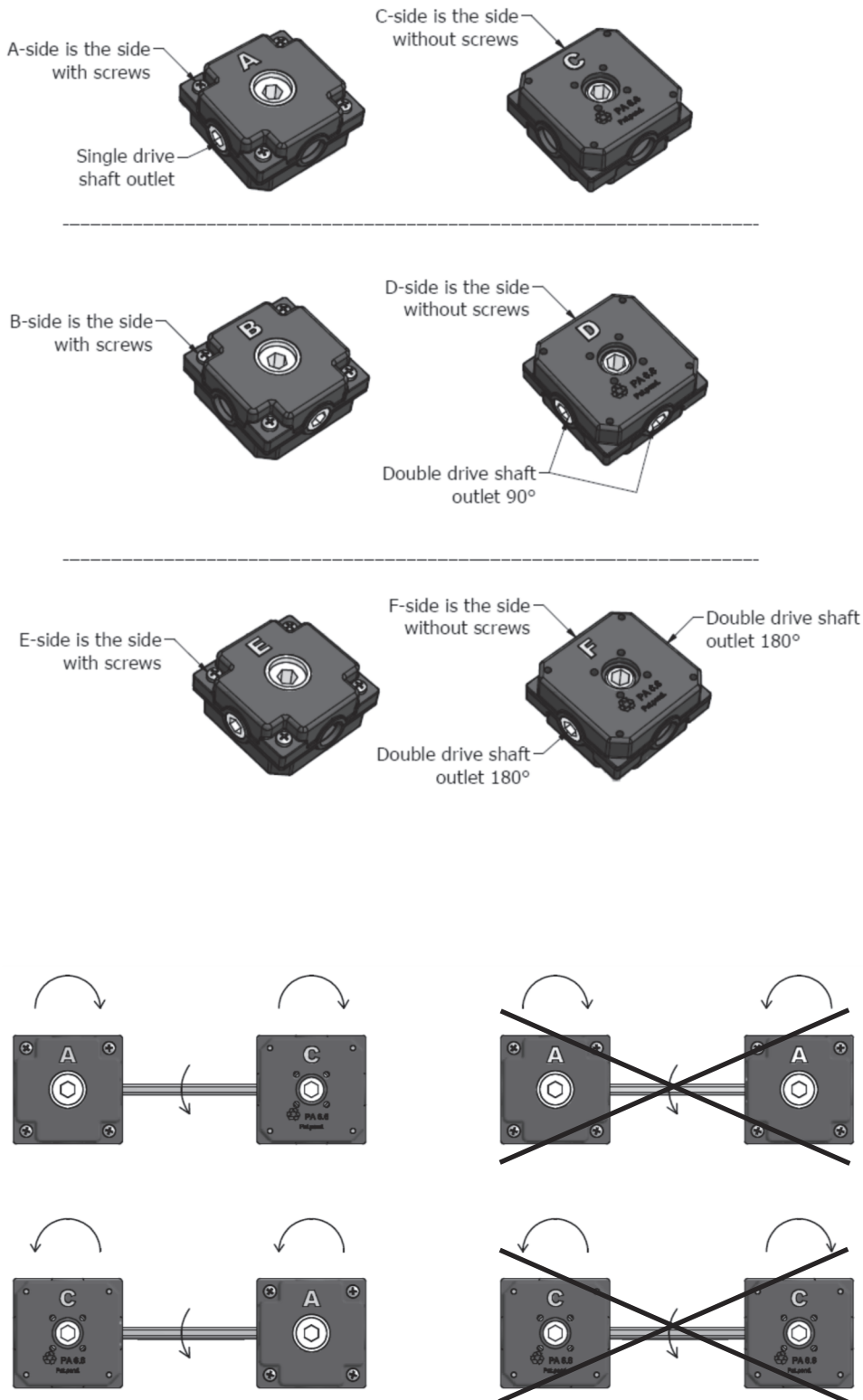
(Fig. 10 g)



Fix crank handle catch in work surface according to image to support the handle.

SUPPLEMENTARY INFORMATION

Gearbox Placement



Three different gear boxes are used:

The **Gearbox AC** has **one drive shaft outlet**. The two sides are named A & C. The vertical rotation is reversed when the gearbox is turned upside down. The A-side is the side with screws. The C-side is the side without screws.

2-column tables only use Gearbox AC

The **Gearbox BD** has **two drive shaft outlets placed in 90°**. The two sides are named B & D. The vertical rotation is reversed when the gearbox is turned upside down.

The B-side is the side with screws. The D-side is the side without screws.

The Gearbox BD is used on the middle column of a 3-column 90° table.

The **Gearbox EF** has **two drive shaft outlets placed in 180°**. The two sides are named E & F. The vertical rotation is reversed when the gearbox is turned upside down. The E-side is the side with screws. The F-side is the side without screws.

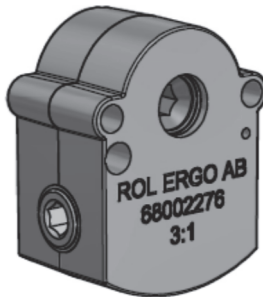
The Gearbox EF is used on the middle column of a 3-column 120° table.

The actuators *always* go **DOWN** with a **CW** rotation.

The actuators *always* go **UP** with a **CCW** rotation.

Hence must all gearboxes connected to a table frame turn in the same direction.

Worm Gear

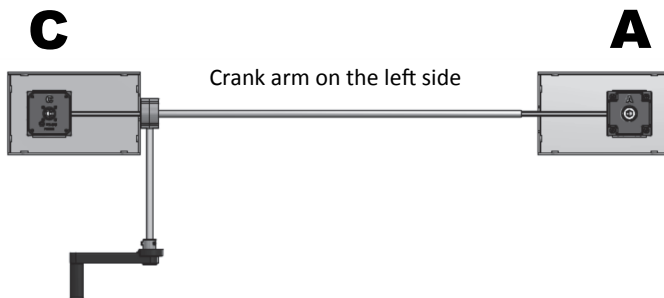


↑
UP

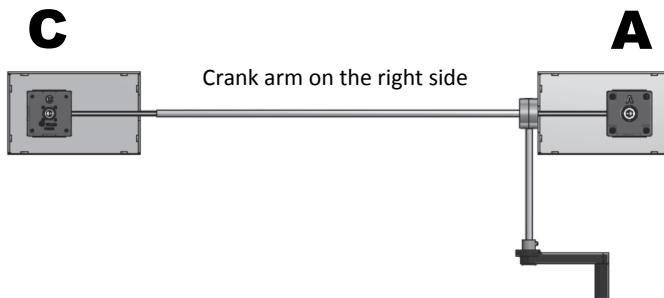
The worm gear is placed on the side of the table where the crank handle should be. It is placed on the hex bar that is attached to the Gearbox. The worm gear should be placed immediately outside the housing. It does not need to be fastened.

The worm gear can be placed either way on the hex bar. The action remains the same. Worm gear must be oriented upward as shown.

2-Column Table



Crank arm on the left side



Crank arm on the right side

Normally, the action of the crank arm should operate in the following manner:

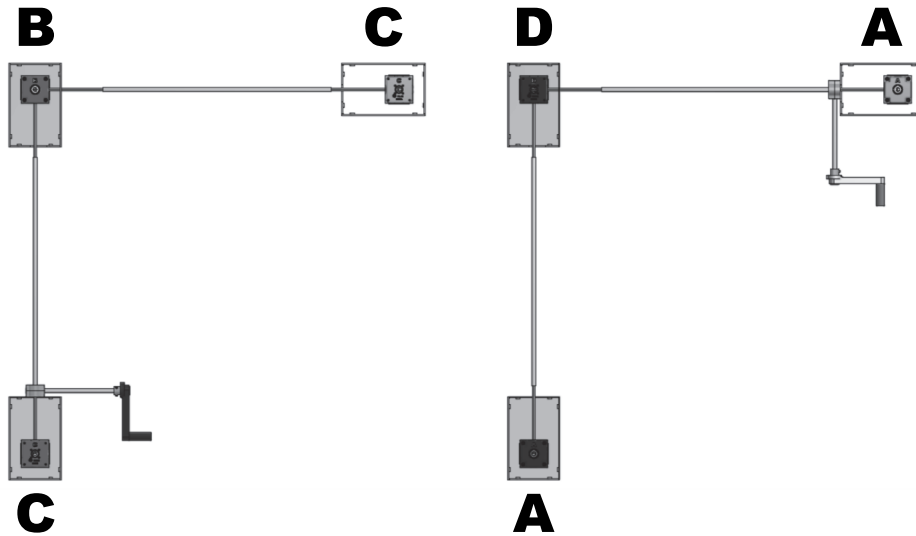
CW turn = table going **UP**

CCW turn = table going **DOWN**

To achieve this on a 2-column table the Gearbox must be placed with the A-side facing up on the right column and the C-side facing up on the left column.

The crank arm can then be placed on preferred side of the table (right or left).

3-Column Table 90°



Normally, the action of the crank arm should operate in the following manner:

CW turn = table going **UP**

CCW turn = table going **DOWN**

On a 3-column table every other Gearbox must be placed with the "opposite" side up. That is, every other gear must have the side with the screws facing up.

This means that the gears on both outer column will be facing the same way.

As a gear with two drive shaft outlets is needed on the middle column, the Gearbox BD must be used here.

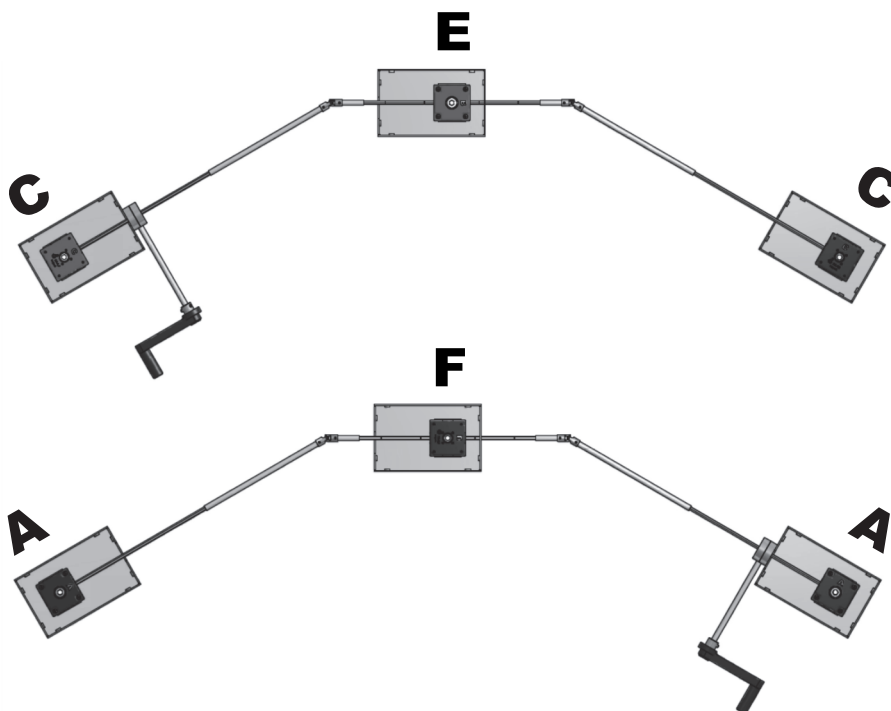
As opposed to a 2-column table, the side on which the crank arm is placed has importance on a 3-column table.

The correct placement is as follows:

Crank arm on the **left side** = **CBC**

Crank arm on the **right side** = **ADA**

3-Column Table 120°



Same principle as for a 3-column 90° table apply also for a 3-column 120° table.

The correct placement is as follows:

Crank arm on the **left side** = **CEC**

Crank arm on the **right side** = **AFA**

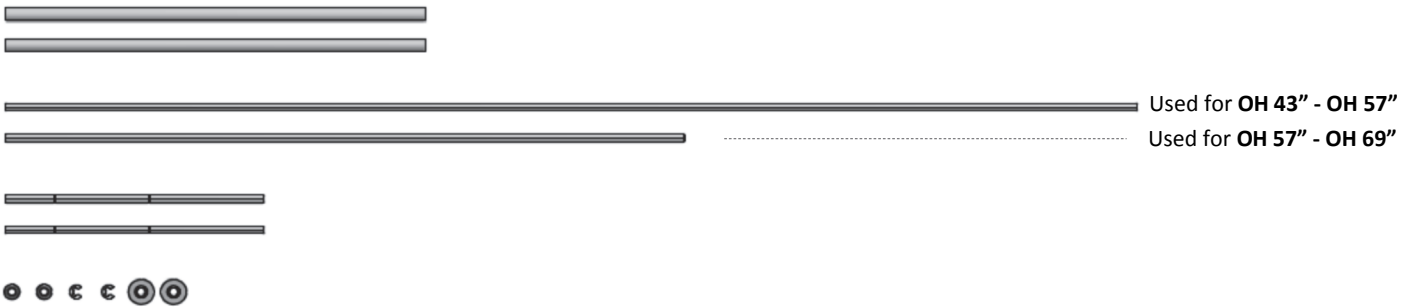
Drive Shaft Kits

Part Number	Description	2-Column							3-Column 90°			3-Column 120°		
		42	48	54	60	66	72	78	48	54	60	48	54	60
KR68004170	Drive Shaft Kit c/c 26"-40" / OH 31"-45"	1	1						2	2				
KR68004171	Drive Shaft Kit c/c 38"-64" / OH 43"-69"			1	1	1	1				2			
KR68004172	Drive Shaft Kit c/c 58"-84" / OH 63"-89"							1						
KR68004173	Drive Shaft Kit 120° c/c 26"-40" / OH 31"-45"											1	1	1

Drive Shaft Kit KR68004170



Drive Shaft Kit KR68004171



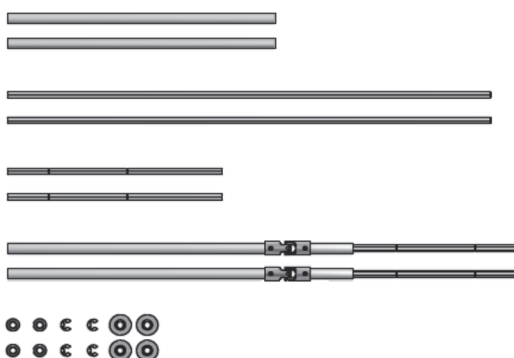
Drive Shaft Kit KR68004172

Complete kit is used



Drive Shaft Kit KR68004173

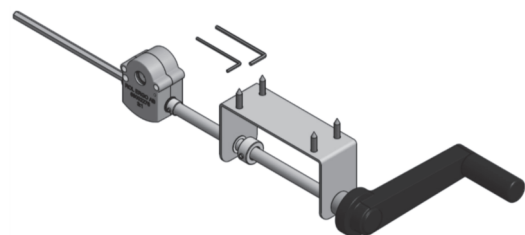
Complete kit is used



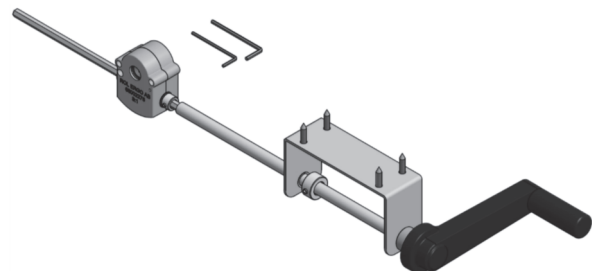
Crank Arm Kits

		24" C-Leg	30" C-Leg	30" T-Leg
68004148	Crank Arm Kit 14"-18"	1		1
68004149	Crank Arm Kit 15"-24"		1	

Crank Arm Kit 68004148 X = 14"-18"



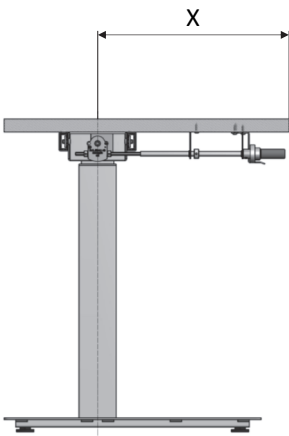
Crank Arm Kit 68004149 X = 15"-24"



User Manual Tone Handcrank and Extended Handcrank



User manual should be left on the table after completed installation.



ASSEMBLY PROCEDURE

Fig. 1	FEET Assemble the feet on the columns. Tighten screws firmly. Maximum Torque from 3 to 5 lbf-ft. IMPORTANT: Make sure the correct screws are used. Using too long screws may destroy internal parts in the column.
Fig. 2	CROSSBARS Attach the crossbars on the long side of the housings. Tighten screws firmly. Loosen the buttonhead screws on the crossbars and adjust the frame to desired width. Fasten the screws on the crossbars.
Fig. 3	SIDEBARS Fasten sidebars in threaded holes on top of crossbars with undercut flathead screws. Two types of sidebars exist, symmetrical for T-leg tables and right/left-handed for C-leg tables.
Fig. 4	BUMPERS Adhesive rubber bumpers come in two types; thick and thin. The thick bumpers are only used on the adjustable-width crossbars, and are placed on top of the C-channel in the center. Do not use thick bumpers on fixed-width crossbars. The thin bumpers are placed on fixed-width crossbars and should be spaced evenly between the sidebars in order to prevent the work surface from bowing. The work surface will rest upon the bumpers on the crossbars, and directly upon the sidebars (without bumpers). WORK SURFACE Two sizes of wood screws for the work surface are included in the assembly kit. KR68006557 Screw Phil Pan FT-W P17 10x1" Zn KR68006558 Screw Phil Truss FT-W P17 10x2-1/2" Zn The shorter screws through sidebars. The longer screws through crossbars. IMPORTANT: These wood screws require a minimum of 1" thick work surface.
Fig. 5	3-COLUMN 90° TABLE, ADJUSTABLE CROSSBARS 3 regular adjustable crossbars and 1 special adjustable crossbar with an angled C-channel are used.
Fig. 6	3-COLUMN 90° TABLE, FIXED CROSSBARS 3 regular fixed crossbars together with 1 regular fixed crossbar 6" shorter than the other three are used. The assembly procedure is the same as for a 2-column table with the exception that the angled C-channel mounts to the middle housing. Here one 5/16x1" screw is replaced with one extra-long screw 5/16x1-1/2". An alternative foot, shaped as a spacer, is used on the middle column.
Fig. 7-8	3-COLUMN 120° TABLE 4 regular adjustable or fixed crossbars are used together with two 120° brackets that attach to the middle column. The assembly procedure is the same as for a 2-column table. The 120° brackets are attached to crossbars with bolts and nuts.

REVISION

DO NOT INCLUDE THIS PAGE IN PRINTOUTS

Update document ID and revision on previous page

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Created By: AB

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Revision date: 2017-07-17

<u>Revision</u>	<u>Date</u>	<u>Change</u>	<u>Revised by</u>
Rev A	2014-05-20	New document	AB
Rev B	2014-10-01	New name on product and change to black and white	PERLOH
Rev C	2015-03-03	Fig. 3, 79100036 was 68003465	JONLAR
Rev D	2016-04-12	90 deg crank arm angle replaced with U bracket. See rev. C 68004148 and 68004149. Knoll Z Crank Handle Catch added Text modified after Knoll input Revised wood screws in Fig. 4, Page 15 Revised screw types in Fig. 1, 2, 5, 6, 7 & 8 Reworded bumper instructions in Fig. 4, Page 15 Drawings updated to show crank arm catch on left side of crank Revised all drawings on Page 1, and Figs 10f & 10g on Page 9 Removed middle column drawings on page 6. Revised date in header.	LINPHA
Rev E	2017-07-17	Added Caution Note in page 1 Added Maximum Torque from 3 to 5 lbf·ft on page 2 & 15	LINPHA