



# Supplementary instructions for the electrical assembly kit

For the Alu Line CNC portal milling machine kit,  
for motors with integrated output stages

## Introduction

These additional instructions contain supplementary information on the „Assembly instructions for the milling kit“ in order to prepare the CNC portal milling machine for electrical assembly. The electrical assembly kit supplied is intended exclusively for assembly on the AL-Line CNC portal milling machines.



### Attention!

Only carry out the work if you are familiar with the necessary actions and suitable tools are available. Sorotec GmbH assumes no liability for damage to property or personal injury occurring during assembly or operation of the CNC portal milling machine!

## Scope of delivery

Illustration	Designation	Number
	<b>71</b> Drag chain 18 x 50 mm Length 1 m each	3
	<b>72</b> Connection kit drag chain	2
	<b>79</b> Cable duct 80 x 40 x 420 mm with lid	1
	<b>80</b> Switch housing reference switch (two parts)	3
	<b>81</b> Cross- cable tie block 10	3
	<b>82</b> Cross- cable tie block 8	8

Illustration	Designation	Number
	Cylinder head screw DIN 912 M3 x 20 <b>A2</b> Allen	6
	Flat headed screw M4 x 10 <b>J2</b> Allen	10
	Countersunk screw DIN 7991 M5 x 10 <b>V1</b> M5 x 16 <b>V2</b> M5 x 30 <b>V3</b> Allen	4 2 2
	Hammer nut Nut 8, M5 <b>F</b> Steg 1,7 mm	2
	Hex nut DIN 934 M3 <b>O</b> M5 <b>Q</b>	6 2
	Washer DIN 125 Ø M3 <b>S</b> Ø M5 <b>U</b>	6 2

## Component assembly

The following illustrations show the component assembly for cable routing on the left side of the machine and feed from the rear. This is only to be understood as an assembly suggestion; with the components of the electrical assembly kit is z. For example, a mirror-inverted structure or cable feed from the front can also be implemented. The following must be taken into account when planning:

- Local conditions for machine installation against a wall or in a corner
- Accessibility to the components for subsequent maintenance or repair work
- Components used such as stepper motors and their connection options
- Cable routing and accessibility to the control cabinet

## Required tools

The following tools and aids must or should be available during assembly:

- Common hand tools, such as Allen keys, screwdrivers, plastic hammers, etc.
- Scribing tool and center punches
- Drills 3.3 mm, 5 mm, 8 mm and 20 mm<sup>1)</sup>
- Tap M4

<sup>1)</sup> 20 mm preferably as a spiral or step drill

## Drag chain X-axis

### **i** Note:

Drag chain holder X **44**, bracket for drag chain X **13**, flat-head screws M8 x 16 **L1** and T-nuts Nut 10 M8 **G2** are part of the CNC portal milling machine kit.

The three drag chains supplied, each 1 m long, can be shortened or lengthened as required.

- Equip drag chain holder X **44**, and drag chain bracket X **13** each with two screws **L1** and loosely screw on two hammer nuts **G2** on the inside.
- Position the drag chain holder X **44** and the drag chain bracket X **13**, threading the hammer nuts into the T-slot of the aluminum profile. To turn the T-nuts 90° in the T-slot, tighten the screws slightly.
- Equip the ends of the drag chain **71** with the connection kit **72** and screw to the drag chain holder X or the drag chain bracket X with countersunk screws M5 x 10 **V1**.
- Align drag chain holder X and drag chain bracket X so that the drag chain runs straight.
- Tighten pan head screws.

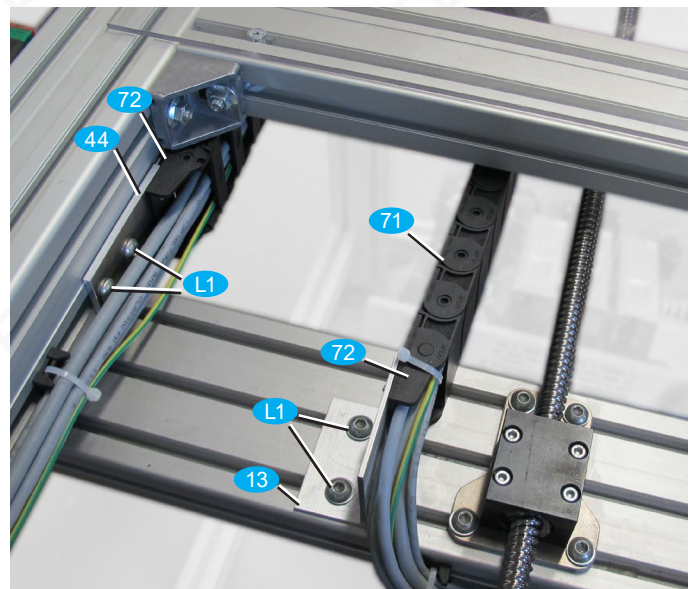


Fig. 1: Cable routing through the X-axis drag chain.

## Drag chain Y-axis

- Equip the ends of the drag chain **71** with the connection kit **72** and screw it to the top of the motor plate Z **31** (countersunk screws M5 x 30 **V3**, hexagon nuts M5 **Q**, washers 5.3 **U**).
- Screw the drag chain to the bottom aluminum profile of the portal (countersunk screws M5 x 16 **V2**, hammer nuts M5 **F**).



Fig. 2: Cable routing through the Y-axis drag chain.

## Cable duct

Screw the cable duct **79** to a portal frame (cylinder head screws DIN912 M3 x 20 **A2**, hexagon nut M3 **O**, washers 3.2 **S**).



Fig. 3: Cable routing through cable duct. The cover is missing for a better overview.

## Housing for reference switch

The two-part housings **80** and the reference switches **39** are assembled as a group with two cylinder screws **A1** each. The insert foils from the CNC portal milling machine kit are no longer used for this.

The connection cables of the reference switches are fed out through the recess in the switch housing.

The assembly takes place at the installation locations that are described in the assembly instructions for the milling kit at the following points:

- X-Axis: Page 18
- Y-Axis: Page 24
- Z-Axis: Page 28

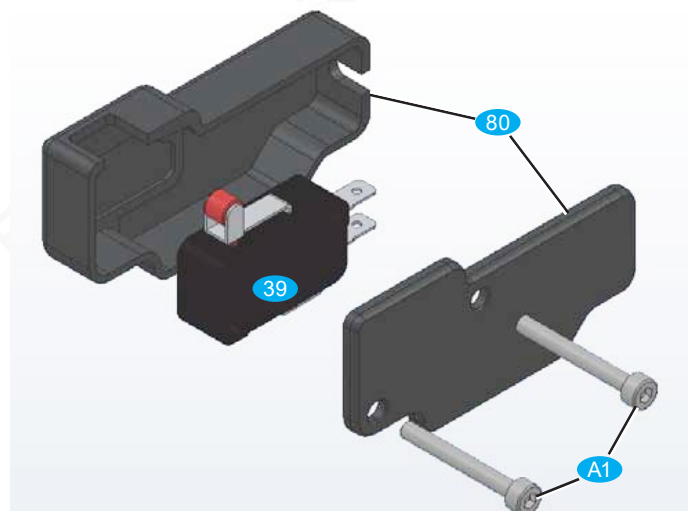


Fig. 4: Reference switch / housing assembly

## Cross tie block

### Note:

*The scope of delivery includes two different sizes (8 / 10, 82 / 81) of the cross cable tie blocks. They are to be used according to the groove widths of the aluminum profiles.*

The cross cable tie blocks can be inserted at any point in the grooves of the aluminum profiles and fixed by turning them 90°.

Cables or hoses can then be attached to the cross cable tie blocks with cable ties.

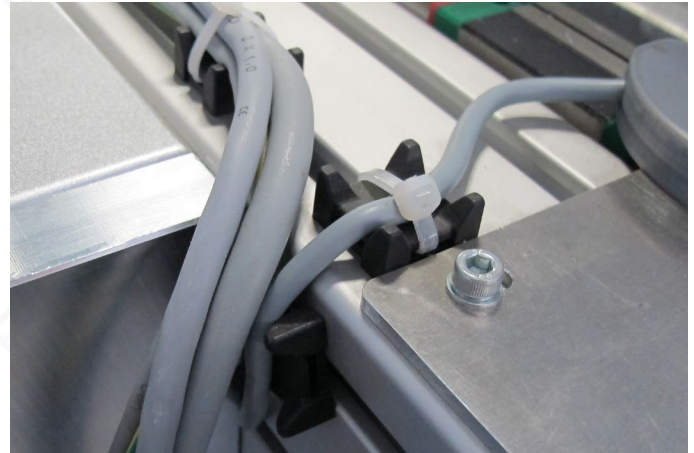


Fig. 5: Wiring along the numerous grooves is greatly simplified by using crossover cable tie blocks.

## Motors connection

The electrical connection of the axis drives is described in the instructions for the controller, the associated circuit diagrams and in the motor data sheets.

The mechanical design is shown in Figs. 6 and 7 as an example. We strongly recommend using the protective cap shown with cable glands to protect the connection panel from dust and chips.

The covers, which are specially made for this purpose using 3D printing, are available in the Sorotec shop (ESM.ZB.JMC.ABD.SET) and fit both the closed-loop systems from JMC and the Leadshine motors with an integrated output stage.

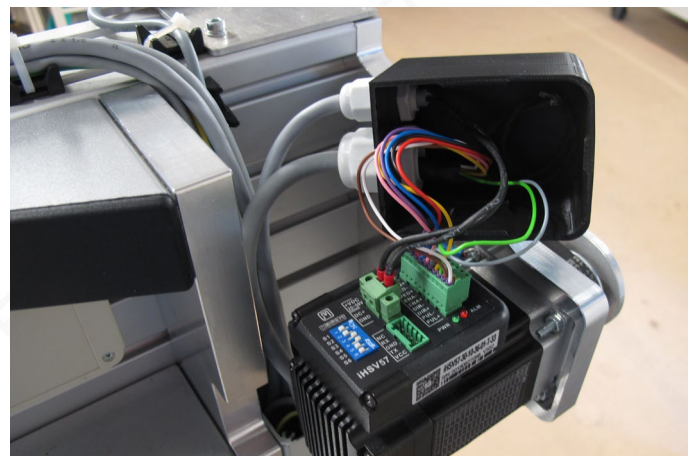


Fig. 6: Connection panel of a servo motor JMC iHSV57.



Fig. 7: The cover protects against dust and chips.