

多轴控制系统中，如果 **X** 轴带有辅助导轨，如何在 **FAS** 中对设备进行针对性的参数设置：

1. 多轴控制系统中，如果 x 轴的实际硬件安装中带有辅助导轨（无动力导轨/动力导轨）的情况，在 **FAS** 中对电缸型号进行配置时需注意，能够配置辅助导轨的产品会出现如下图所示的标识：

Select Axis

Please enter a search phrase and/or select a device from the list below.

5340814

A743

Order code

Part number

  3S7PL810PFQ

X EGC-TB

Search Results

EGC-185-%%-TB-KF-0H-GP-PU2	556817	
EGC-185-%%-TB-KF-0H-GP-PU2-Z	556817	
EGC-185-%%-TB-KF-0H-GQ-PU2	556817	
EGC-185-%%-TB-KF-0H-GQ-PU2-Z	556817	
EGC-185-%%-TB-KF-0H-GV-PU2	556817	
EGC-185-%%-TB-KF-0H-GV-PU2-Z	556817	
EGC-HD-220-%%-TB-0H-GK	556825	
EGC-HD-220-%%-TB-0H-GP	556825	
EGC-HD-220-%%-TB-0H-GK-PU2	556825	
EGC-HD-220-%%-TB-0H-GP-PU2	556825	

Apply

2. 进入电缸具体参数配置时，在选项卡“**Design axis**”中务必按照实际安装情况配置，如下图所示，有 3 种可选项：

Select Axis

×



EGC-HD-220-100-TB-0H-GP-PU2
556825

◀ Search Results

Selected Component

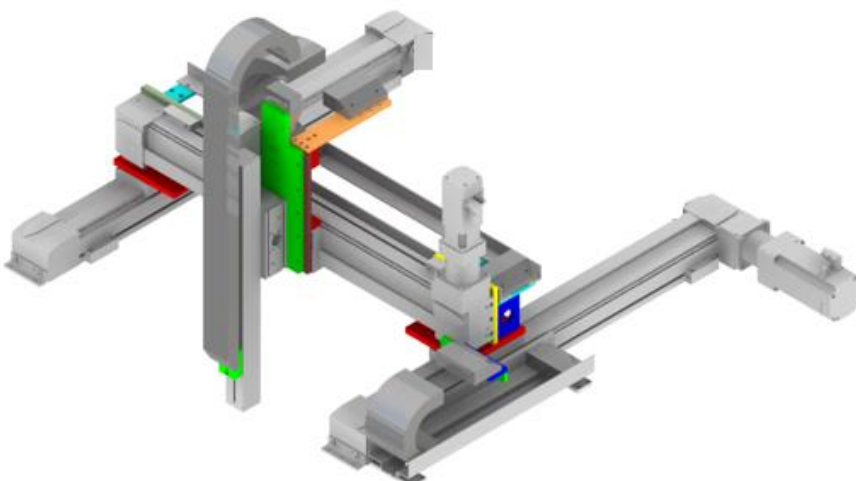
Technology	Tooth belt		
Axis Size	220		
Working Stroke	100.00	mm	■
Feed Constant (Default)	208.00	mm/rev	
Feed Constant	208.00	mm/rev	■
Design axis	With driven parallel... ▲ Single axis (0) With guide axis (1) With driven parallel axis (2)		■
Connecting Shaft			■
Length connecting shaft			■
Inertia connecting shaft	0.00	kgm ²	■

Apply

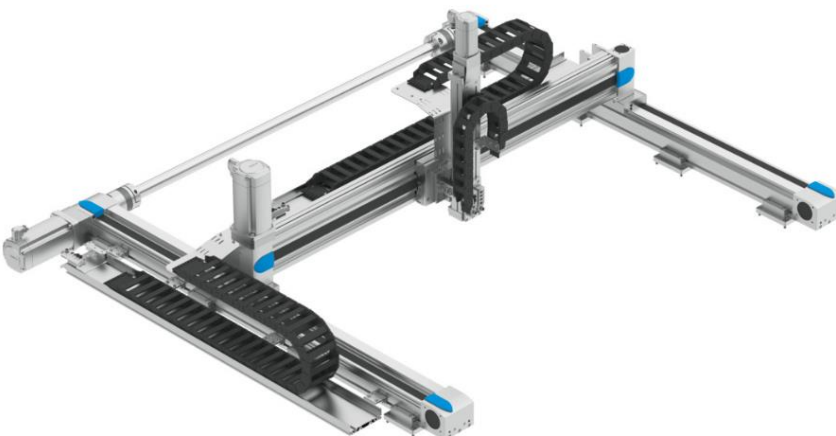
- a. “Single axis(0)”：无辅助导轨，即 x 轴仅为单根电缸，如下图：



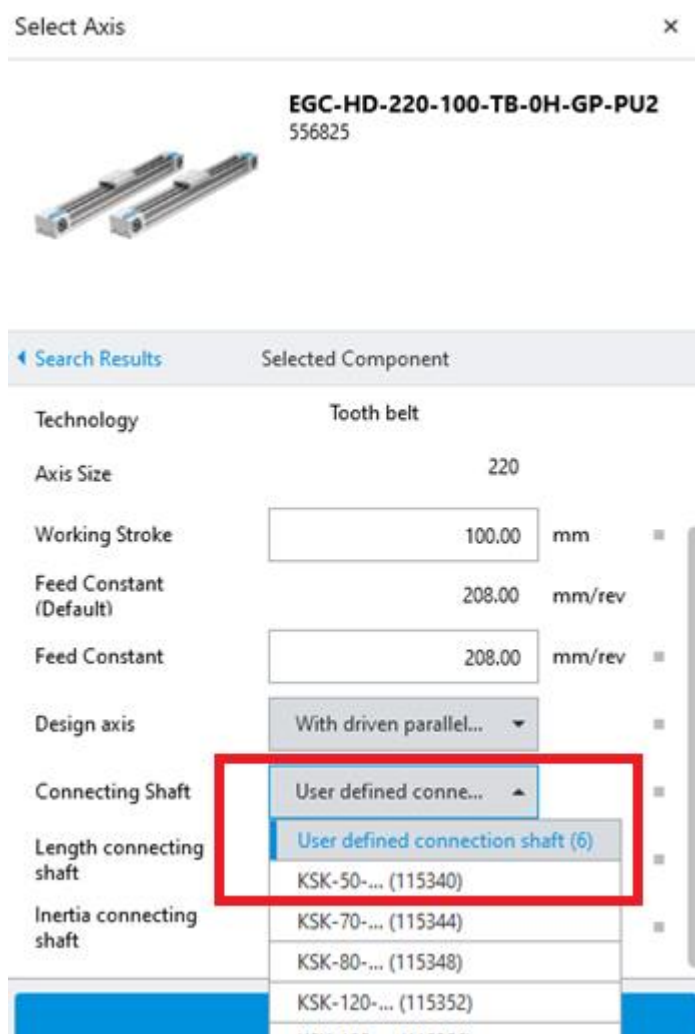
- b. “With guide axis(1)”：带无动力的辅助导轨，如下图：



- c. “With driven parallel axis”：带动力输出的辅助导轨，x 轴的电缸之间存在硬连接（如 KSK），如下图：



如果实际配置为“With driven parallel axis”，还需要继续在“**Connecting Shaft**”中进行“自定义连接轴/KSK”的选择，如下图：



以上内容是在实际应用单/多导轨时，FAS 在参数设置中的操作提示。另外，值得注意的是：如果实际应用为“多导轨”，但是在 FAS 参数配置的却是“单导轨”的话，可能会出现动态性能降低（噪声较大/出现 following error 等）、实际扭矩无法达到预期效果。主要差别如下所示：

Guide axis vs. Single axis, 位置环的比例系数差距较大, “Design axis” 配置错误会导致 PID 调节的异常

ID	Name	Value in project	Unit	Value on device	Unit
P0.902.0.0	Device name	2		1	
P1.220.0.0	Position controller amplification gain	23.13665		44.24211	
P1.224.0.0	Velocity controller amplification gain	0.2199423		0.1756492	
P1.225.0.0	Velocity controller integration constant	37.72596		30.1285	
P1.1197.0.0	Design axis	With guide axis (1)		Single axis (0)	
P1.526796.0.0	Maximum torque symmetrical	1000000000000000000	Nm	0.30	Nm

2

Driven parallel axis vs. Single axis, 除了和上述情况一样会影响 PID 调节以外, 由于还涉及电缸轴是否带有驱动力, 所以在电缸运行过程中, 扭矩的限定值也会被放大处理

ID	Name	Value in project	Unit	Value on device	Unit
P0.902.0.0	Device name	3		1	
P1.220.0.0	Position controller amplification gain	45.07901		44.24211	
P1.224.0.0	Velocity controller amplification gain	0.4337714		0.1756492	
P1.225.0.0	Velocity controller integration constant	74.40334		30.1285	
P1.850.0.0	Lower limit value velocity (closed loop control)	-4.332901	m/s	-4.999632	m/s
P1.851.0.0	Upper limit value velocity (closed loop control)	4.332901	m/s	4.999632	m/s
P1.852.0.0	Lower limit value torque (closed loop control)	-2.484	Nm	-1.242	Nm
P1.853.0.0	Upper limit value torque (closed loop control)	2.484	Nm	1.242	Nm
P1.1197.0.0	Design axis	With driven parallel axis		Single axis (0)	
P1.1198.0.0	Length connecting shaft	1.00		0.00	
P1.1199.0.0	Maximum driving torque axis	2.484	Nm	1.242	Nm
P1.1202.0.0	Database ID connecting shaft / coupling	115348		0	
P1.1203.0.0	Order code connecting shaft / coupling	KSK-80-...		0	
P1.1304.0.0	Limit value velocity limit positive direction of	4.332901	m/s	4.999632	m/s

