**PRODUCT INFORMATION**

# COBRA: Planar

## Compact X-Y linear stepping motor systems for small loads

Linear motion in machines and plant is often required and is usually produced from the rotating motion of a motor and the subsequent transformation of this movement into a linear movement. This transformation of movement requires unfavourable and system-dependent characteristics such as hysteresis, elasticity and friction to be taken into account for the system in question.

The **COBRA planar drive** system is based on a hybrid stepping motor design which offers one of the few possibilities of realizing linear movement with high speed and accelerating power coupled with very good positioning accuracy. The carriage incorporates two stepping motors enabling movement in both the X and Y directions to be realized. The pneumatic connection to the carriage ensures that it 'floats' on an air bearing a mere 15µm off the stator surface.

The two carriages (ROP-140 & ROP-185) are designed as 2-phase stepping motors and as such are able to be controlled by 2-phase stepping motor drives such as the **EuroStep1** or the **Star2000** drives**.** The larger ROP-195 carriage is designed as a 3-phase stepping motor and as such requires to be controlled by a 3-phase stepping motor drive.

Due to the integrated air system absolute wear is greatly reduced and as a consequence of this downtime for regular maintenance is a thing of the past. Another great advantage is the compact design of the **COBRA planar drive** is ideal where space is an optimum.

It is also possible to have multiple carriages on the planar drive stator (subject to available space). When this option is chosen all carriages can be either driven together or independently.

There are two 'standard' stator sizes available with the **COBRA planar drive**: 340mm x 340mm and 500mm x 500mm however larger stator sizes up to 1000mm x 1500mm are available upon request. The planar stator is also available in Stainless Steel.

As well as the **COBRA planar drive** we can deliver the following accessories:

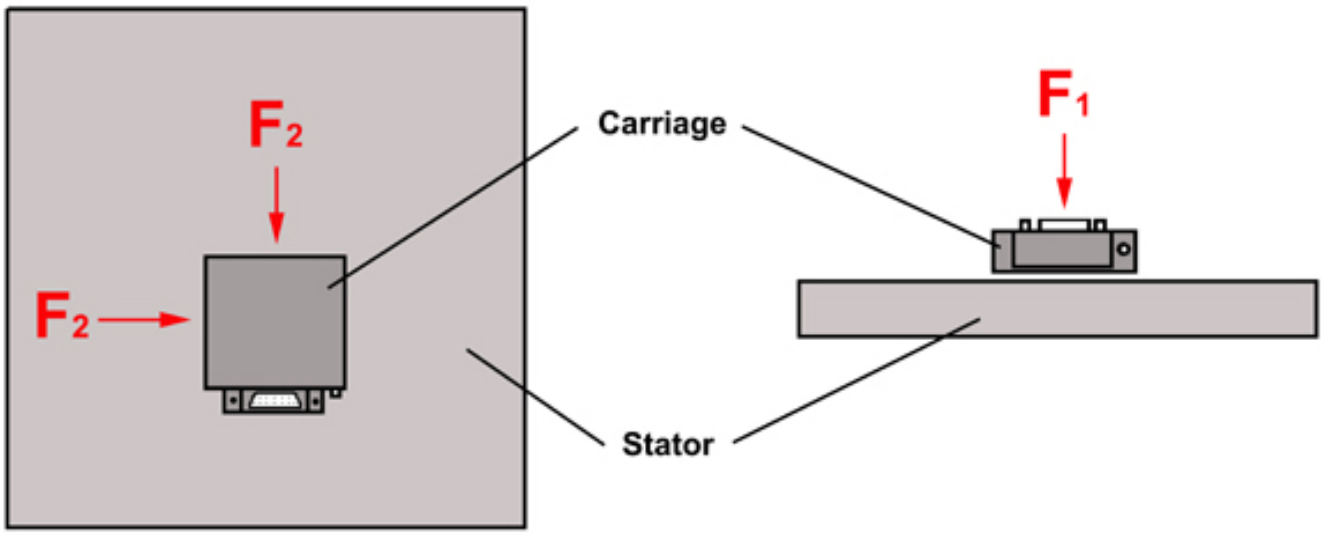
**Star2000** series stepping motor controllers: APD1 (dual axes control); APS1; APS2; APS3; APS4; APS5; **EuroStep1** low-cost stepping motor controller (output up to 3A); filter pressure reducers; spare 3µm and 5µm pneumatic filters; compressors; cable carrier systems heat-sinks; hose and cable.

# Technical characteristics

| **Linear motor type:** | **ROP-140** | **ROP-185** | **ROP-195** * |
|---|---|---|---|
| Maximum static force (N) – pneumatics ON | 35 | 80 | 85 |
| Maximum static force (N) – pneumatics OFF | 225 | 900 | 1000 |
| Force at 0.5ms$^{-1}$ velocity (N) | 25 | 57 | 60 |
| Maximum speed (m/s) | 2 | 2 | 2 |
| Maximum acceleration (m/s²) | 25 | 32 | 34 |
| Permissible load ($F_1$) – non cantilevered (N) | 140 | 300 | 320 |
| Maximum permissible linear force applied to carriage ($F_2$) – non cantilevered (N) | 35 | 80 | 85 |
| Maximum torque permitted to be applied to the carriage (Nm) | 2 | 6 | 6 |
| Positional accuracy @ 1/8 step (mm) with a Star2000 drive | ± 0.05 | ± 0.05 | ± 0.05 |
| Carriage dimensions: Length x Width x Height (mm) | 140 x 140 x 25 | 185 x 185 x 25 | 195 x 195 x 25 |
| Weight of carriage (kg) | 1.4 | 2.5 | 2.5 |
| Standard size stator sizes: Length x Width x Height (mm) | 340 x 340 x 25 | 340 x 340 x 25 | 340 x 340 x 25 |
| | 500 x 500 x 30 | 500 x 500 x 30 | 500 x 500 x 30 |
| Maximum working stoke for a stator dimension 340 x 340 x 25mm (mm) | 150 x 150 | 105 x 105 | 95 x 95 |
| Maximum working stoke for a stator dimension 500 x 500 x 30mm (mm) | 310 x 310 | 265 x 265 | 255 x 255 |
| Weight per 100mm² of stator (kg) (≤ 500 x 500 x 25 mm stator dimension) | 2.36 | 2.36 | 2.36 |
| (≥ 500 x 500 x 30 mm stator dimension) | 3.15 | 3.15 | 3.15 |
| Maximum rated current (A) | 3 | 3 | 3 |
| Phase resistance (Ω) | 5.5 | 0.8 | 0.8 |
| Phase inductance (mH) | 25 | 3 | 3 |
| Stepping motor controller types | APS1 | APS1 | Contact us |
| | EuroStep1 | EuroStep1 | |
| Air supply required (l/min) | 26 | 45 | 51 |
| Pressure (bar) | 3.5 | 3.5 | 3.5 |
| Air-gap between carriage and stator @ design pressure (µm) | 15 ± 7 | 15 ± 7 | 15 ± 7 |
| Filter requirements (µm) | 3 - 5 | 3 - 5 | 3 - 5 |

* The **ROP-195** carriage is designed as a 3-phase stepping motor and requires a 3-phase stepping motor driver to control it.

## Sketch:

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