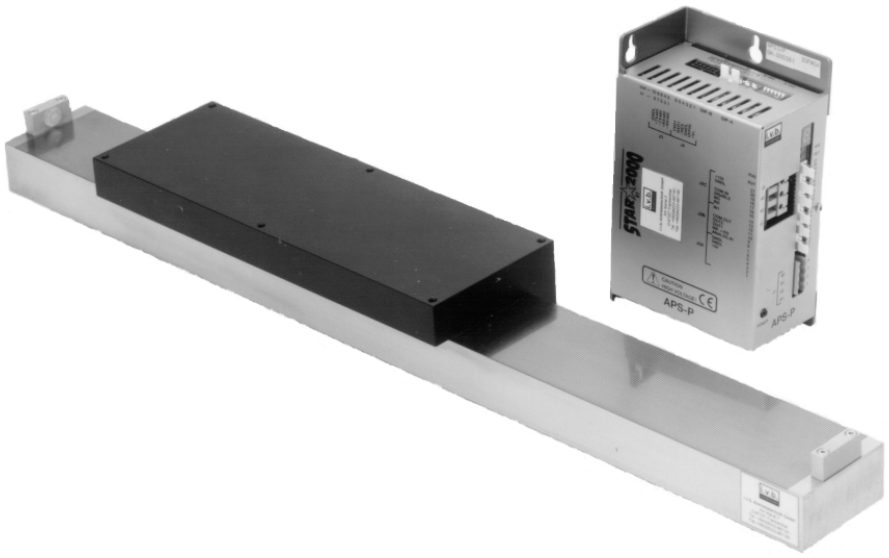
PRODUCT INFORMATION

ACP & D Limited

‘COBRA’ linear stepping motor



‘COBRA’ linear step motor type 643 with a Star2000 APS4-P stepping motor controller

Often linear movement in machines and plant is required. This 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 play, elasticity and friction to be taken into account for the system in question.

The **COBRA** linear direct drive 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. Without the requirement of additional measuring systems a micro step operation of high resolution is obtained. 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** linear slide, ideal where space is an optimum.

Another feature of the **COBRA** that it is possible as an option, to fit more than one carriage on the stator or beam depending upon it’s length. When this option is chosen all carriages can be either driven together or independently.

The **COBRA** is presently available in ten variations from the ‘301’ to the ‘1802’ (see overleaf). The stator or beam is available as standard in steel and as an option in high-grade steel. For the versions indicated overleaf their lengths can be increased up to the maximum indicated without additional mechanical measures being required. For **COBRA** linear stepping motors with larger lengths than those indicated, suitable support systems are to be used after consultation with us.

For the control of the **COBRA** any commercial 2-phase stepping motor controller can be used. For optimal control we recommend the stepping motor **STAR2000** series which can be controlled by clock and direction signal, RS232/485-Bus, CAN-Bus, Profibus and internal program memory means. The **COBRA/Star2000** combination provides a drive system at an extremely competitive price.

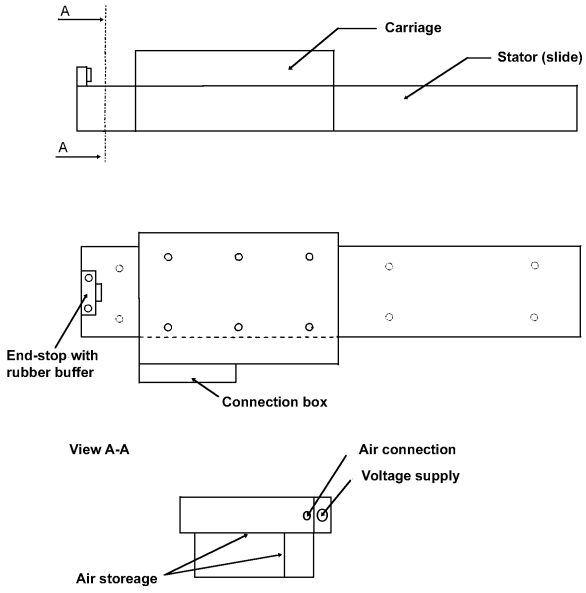
As well as the **COBRA** we can deliver the following accessories:

Star2000 series stepping motor controllers: APD1 (dual axes control); APS1; APS2; APS3; APS4; APS5; **PS6410** high precision stepping motor controller; filter pressure reducers; spare 3µm and 5µm pneumatic filters; compressors; cable carrier systems heat-sinks; hoses and cable.

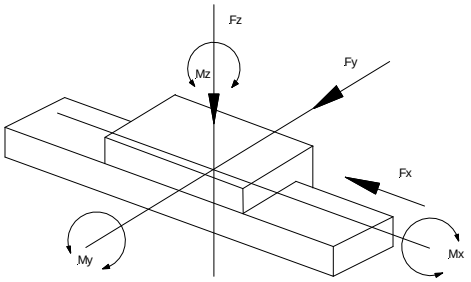
Technical characteristics

Linear motor type:		**301**	**302**	**641**	**642**	**643**	**644**	**1201**	**1202**	**1801**	**1802**
Maximum static force (N) – pneumatics ON	F_x	15	30	45	90	135	180	270	360	540	810
Maximum static force (N) – pneumatics OFF	F_x	75	150	225	450	675	900	1,350	1,800	2,700	4,050
Force at 1ms^{-1} velocity (N)	F_x	5	15	25	50	70	100	150	200	300	400
Maximum speed (m/s)		1.8	1.8	2	2	2.5	3	3	3	3	3
Maximum acceleration (ms^{-2})		50	60	75	90	90	90	90	90	90	90
Positional accuracy @ 1/8 step (mm)		± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05
Permitted forces/torques on the carriage											
Permissible side load in N	F_y				100	160	180				
Negative permissible side load (pulling force) in N	$-F_y$				35	60	70				
Permissible load in N	F_z	20	50	100	300	450	600	700	800	1200	1600
Negative permissible load (pulling force) in N	$-F_z$				120	200	240				
Permissible torque in Nm	M_x				6	9	12				
Permissible torque in Nm	M_y				15	25	30				
Permissible torque in Nm	M_z				4	6	7.3				
Dimensions: (carriage)											
Length (mm)		70	140	70	140	210	280	210	280	280	420
Width (mm)		47	47	104	104	104	104	163	163	223	223
Height (mm)		39	39	56	56	56	56	56	56	84	84
Weight of carriage (kg)		0.3	0.5	0.6	1	1.5	2	3	4	6	9
Dimensions: (slide)											
Maximum length - self supporting (mm)		1000	1000	4000	4000	4000	4000	4000	4000	6450	6450
Width (mm)		30	30	64	64	64	64	120	120	180	180
Height (mm)		20	20	32	32	32	32	32	32	60	60
Extra length required for each end-stop used (mm)		12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Weight per 100mm length (kg)		0.47	0.47	1.6	1.6	1.6	1.6	3	3	8.4	8.4
Electrical data:											
Current (A)		3	6	3	6	9	12	9	12	12	12
Voltage (VDC)		80	80	80	80	140	140	140	140	140	140
Stepping motor controller type		APS1	APS2	APS1	APS2	APS4	APS4	APS4	APS4	APS4	APS4
Pneumatic details:											
Air supply required (l/min)		5	10	12	12	15	20	25	30	35	40
Pressure (bar)		3	3	3 - 5	3 - 5	3 - 5	3 - 5	3 - 5	3 - 5	3 - 5	3 - 5
Filter requirements µm		3 - 5	3 - 5	3 - 5	3 - 5	3 - 5	3 - 5	3 - 5	3 - 5	3 - 5	3 - 5

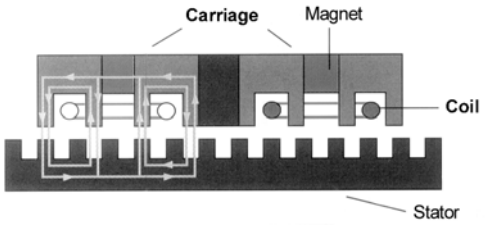
Sketch:



Forces diagram:



COBRA cross-section:



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