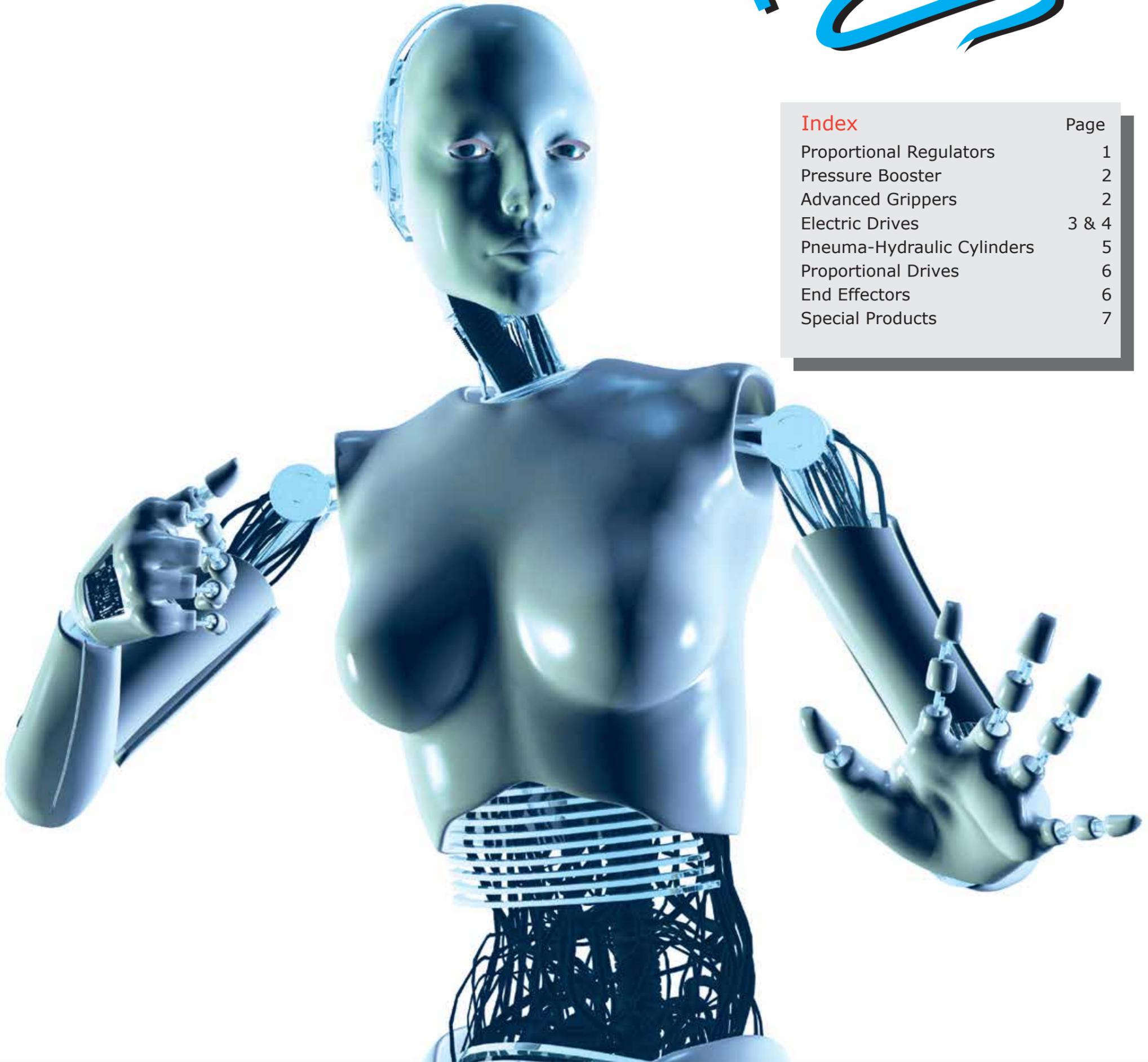


# TecanAir® news



## Index

	Page
Proportional Regulators	1
Pressure Booster	2
Advanced Grippers	2
Electric Drives	3 & 4
Pneuma-Hydraulic Cylinders	5
Proportional Drives	6
End Effectors	6
Special Products	7





### PRP Series Proportional Regulators

The use of microprocessor technology has widely expanded the function of pressure regulators within industry. Using TecnAir RP series proportional Regulators, all control parameters can now be changed by a simple command via an RS485 interface.

### PRE-SET to suit individual applications

Another advantage is the choice of analogue inputs for target and actual values. TecnAir proportional regulators can be set to variable values between 0-10 V and 0-20 mA, which facilitate optimum adjustment of the control system.

### Commonly used command signals

0-20 mA    4-20 mA    0-10V

Once the values of a specific application have been defined, future regulators can be delivered already programmed to the client's parameters, eliminating the need for on-site adjustment. This is an important benefit, saving considerable set up time.



### Serial BUS control of PROPORTIONAL REGULATORS

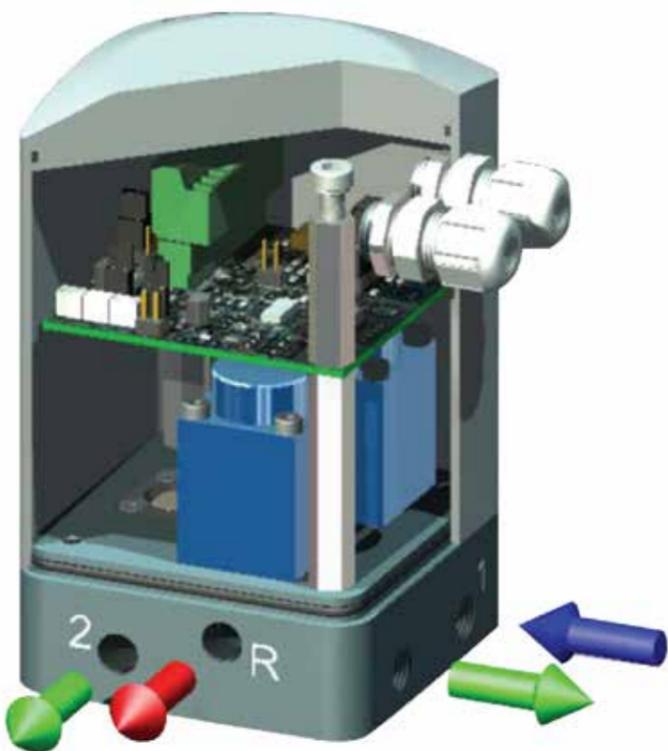
BUS technology is gaining more importance in the control of individual machines and complete production lines. Our engineers have developed a serial BUS carrier board suitable for all RP series Proportional regulators. The carrier board is easily adjusted to different BUS systems including Profibus-DP, ModBus, CANbus, Interbus S and Device-Net. An "add-on" module allows the entire microprocessor range of functions to be used via the BUS systems. Using the basic functions of set point input and actual value, readout PI parameters can be adjusted to the respective control system via the BUS system.

Today, PROPORTIONAL REGULATORS are prime components in the development of intelligent control systems, particularly in applications involving multiple repetitions and placing high demands on pressure, temperature, speed, torque and force. Proportional regulators are responsible for comparing and adjusting signals, such as the signal of the actual value transmitter and the specified control signal. The proportional regulator assumes the task of adjusting actual values to control signals as quickly as possible so that the dynamic production procedure is not interrupted. This function is permanently controlled via the actual value transmitter sensors or proportional regulator.

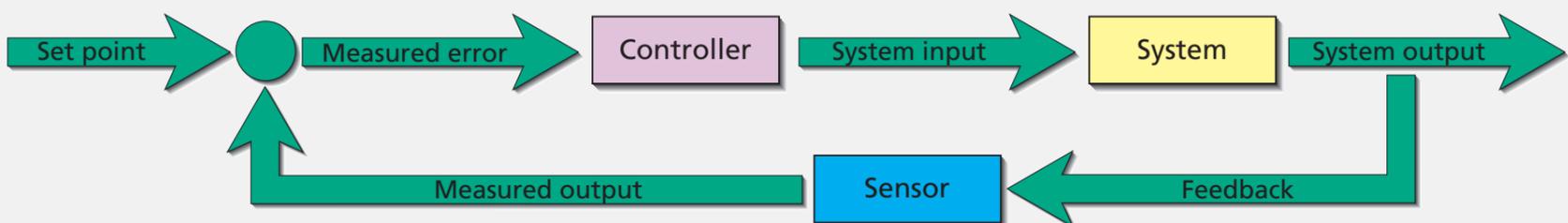
- Self-timing functionality
- Change the proportional or PI (proportional/integral) parameters

Additional benefits:

- Can also be configured to provide soft start function eliminating the need to fit a separate soft start valve in the system.
- Can be used as a pilot operated device to control pressure remotely.



### SCHEMATIC CLOSED LOOP CONTROL SYSTEM



The principal of closed loop control is that the set point is compared with the measured output (voltage or current). The difference is seen as a measured error which is then used to give an input into the system. For example, a measured output voltage could represent the position of a cylinder. The measured error would then force the system to increase pressure to enable the cylinder to reach the set point more quickly.

As the measured error reduces the control signal gets smaller. This is called proportional control. To home-in on the set-point an Integral term is added to the signal. This is the accumulation of errors over a period of time and therefore grows over time if the error stays constant. This ultimately enables the system to achieve the final set-point.



## Pressure Booster

A pressure booster is basically a twin chamber compressor pump. Main air (10bar max) enters the first chamber and is forced into the second chamber. In doing so, the air pressure is amplified twofold (20bar max).

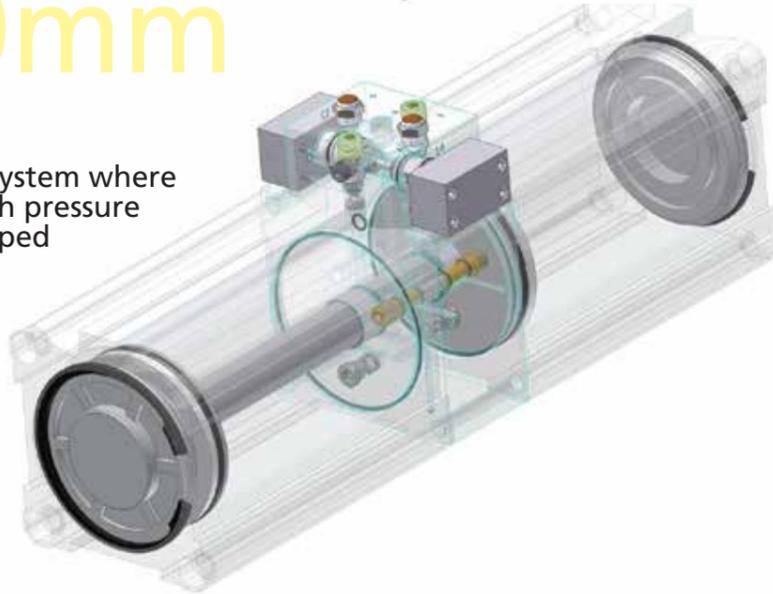


Pressure Booster

# Ø 100mm

## Applications

Boosters are normally used within a control system where one particular part of the system needs a high pressure supply. Often prototype machines are developed around particular cylinder bore sizes and in production some cylinders are found to be undersized, the result being inadequate force. Changing undersized cylinders to larger versions is not so easy without considerable design changes. Boosters can be used to solve this problem.



Ø 100mm		
Inlet Pressure	Outlet Pressure	Flow NI/min
10 bar	20 bar	4500

## Self-Reciprocating

### Long Stroke 3 Jaw Grippers

Extending the family of 3 jaw grippers - TecAir have introduced a long stroke version in bore sizes 16mm to 80mm.

## GGL SERIES



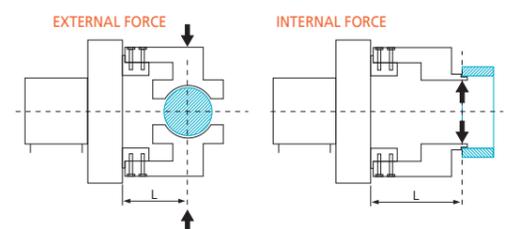
Model	GGL-16D	GGL-25D	GGL-32D	GGL-40D	GGL-50D	GGL-63D	GGL-80D	
Stroke mm (diameter)	10	12	16	20	28	32	40	
Cylinder bore (mm)	16	25	32	40	50	63	80	
Fluid	Filtered Compressed Air							
Operating pressure Mpa (psi)	2 to 6 bar		1 to 6 bar					
Ambient and fluid temperature (°C)	±-10 60							
Repeatability (mm)	±0.01							
Maximum operating frequency (c.p.m)	120		60			30		
Lubrication	With or Without Lubrication							
Action	Double Acting							
*Effective gripping force at pressure of 0.5Mpa (bar)	External gripping force	14	42(9.4)	74(16.6)	118(26.5)	187(42)	335(75)	500(112)
	Internal gripping force	16	47(10.6)	82(18.4)	130(29)	204(46)	359(81)	525(118)
Weight (g)	100	190	373	600	930	1850	2880	

Ø 16 - 80mm



Advanced Grippers

\*Note 1: Values for - 16 to 25 at gripping point L = 20mm  
- 32 to 63 at gripping point L = 30mm  
- 80 at gripping point L = 50mm.



### Miniature 180° 2 Jaw Grippers

Gripper fingers rotate 180° away from the work piece to allow maximum access.

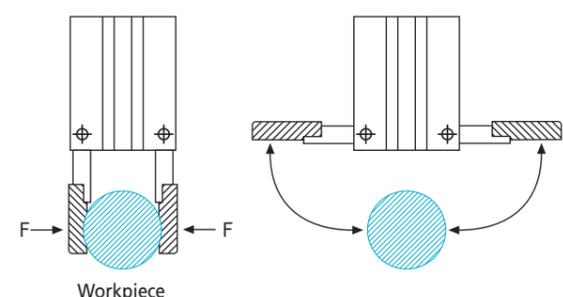
## GRY SERIES



Model	GRY-10D	GRY-16D	GRY-20D	GRY-25D
Cylinder bore (mm)	10	16	20	25
Fluid	Filtered Compressed Air			
Operating pressure Mpa (psi)	1 to 6 bar			
Effective Force (Nm) @ 5 bar	0.16	0.54	1.10	2.28
Ambient and fluid temperature (°C)	±-10 60			
Repeatability (mm)	±0.02			
Maximum operating frequency (c.p.m)	60			
Lubrication	With or Without Lubrication			
Action	Double Acting			
Weight (g)	80	150	320	600

Ø 10, 16, 20 & 25mm

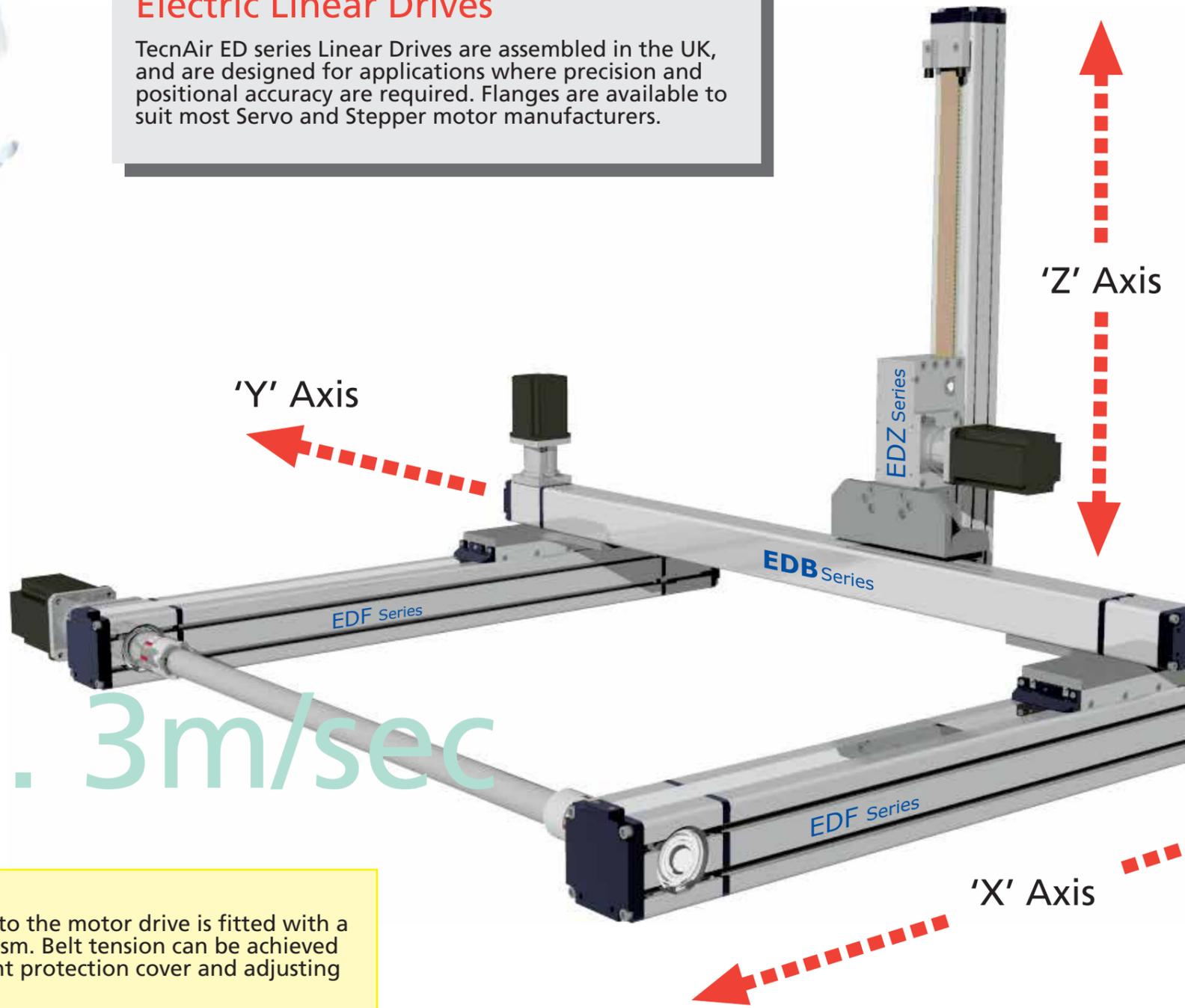
## 180° SWING FINGERS





## Electric Linear Drives

TecnAir ED series Linear Drives are assembled in the UK, and are designed for applications where precision and positional accuracy are required. Flanges are available to suit most Servo and Stepper motor manufacturers.



# FAST... 3m/sec

### Patented Pully Adjustment

The end cap on the opposite side to the motor drive is fitted with a patented belt tensioning mechanism. Belt tension can be achieved by simply removing the adjustment protection cover and adjusting the tensioning screw.

### Reinforced Tooth Belt

The carriage is driven by a Polyurethane toothed belt, which is reinforced with a stainless steel mesh.

### Magnetically Sealed Stainless Steel Strip

The carriage runs along an open slot in the extrusion, which is magnetically sealed by a stainless steel strip.

### Bearing Guide Rail

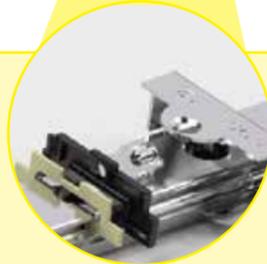
The guide rail is produced from hardened steel and forms an integral part of the Linear Drive. Protecting the guide rail within the extrusion eliminates the need to protect against environmental contamination. This is an important feature as most other linear drives have external guide rails making them vulnerable to failure. TecAir's integral guide rail is ideally suited to food handling/packaging and other applications requiring an oil/grease proof function.

### Home Sensor

Proximity sensors can be fitted at any point to indicate home and end of stroke positions

### Bearing Block

Re-circulate Ball Bearings provide smooth and accurate operation during movement and ensures even wear. The bearings are housed in a dust proof carrier, covered by a stainless steel housing and fitted with two scraper seals. These features enhance the life of TecAir Linear Drives and also allow high running speeds; up to 3m/sec.



The bearing block is pre-lubricated using "Prolong Super Lubricant" which significantly lengthens the interval between re-lubrication, thus reducing maintenance costs. The lubricant is injected through two port holes located on either end of the bearing block. When injected, the lubricant passes through the hole and over the stainless steel balls. The recirculation movement of the balls then transfers the lubricant onto the rail profile.

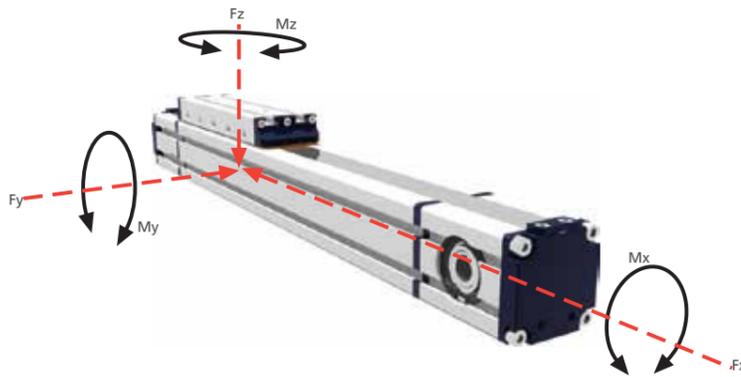


ACCURACY...0.1MM

## EDB Series (42, 55 & 80mm)

The TecnAir EDB drive has a square profile and forms the backbone of the TecnAir range. This version is ideal for most "X Y Axis" applications.

Interface plates are available for all types of electrical motor/gearbox combinations and supplied as a kit to include motor shaft extension and drive coupling.



Maximum Load (N)

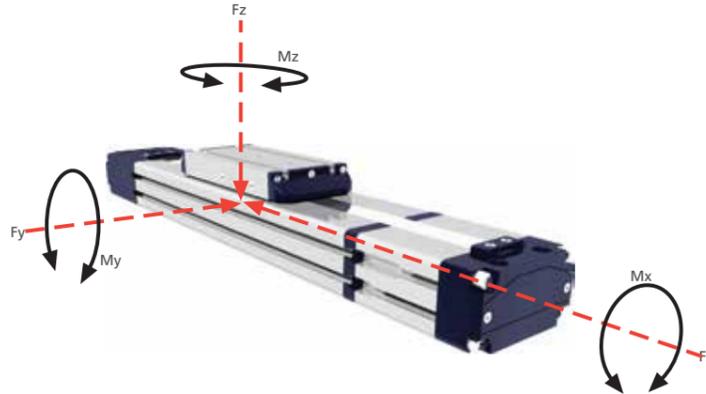
Series	Fx	Fy	Fz
EDB-42	460	1560	1560
EDB-55	820	1850	1850
EDB-80	1650	4500	4500

Bending Moments (Nm)

Series	Mx	My	Mz
EDB-42	20	55	55
EDB-55	25	120	120
EDB-80	80	450	450

## EDF Series (42mm)

The TecnAir EDF drive has a unique "flat" profile which reduces the overall height of the carriage. The TecnAir EDF profile can be fitted with twin parallel guide rails to allow heavier loads to be carried, and like all TecnAir electrical drive units, the guide rails form an integral part of the Linear Drive, avoiding external contamination.



Version	Bearing Rail Types
L	Single Bearing Rail
H	Twin Bearing Rails

Bending Moments (Nm)

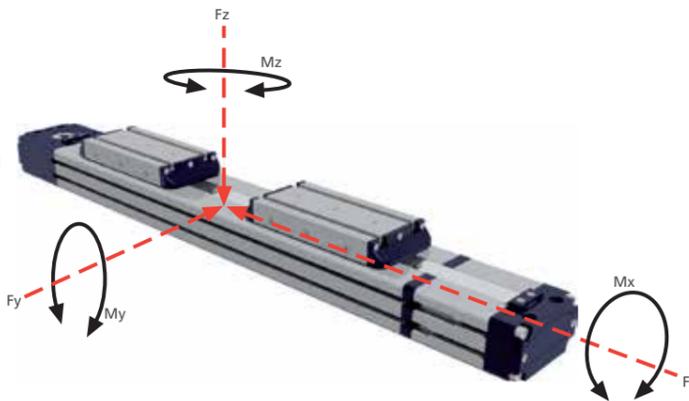
Version	Mx	My	Mz
L	9	55	55
H	18	110	110

Maximum Load (N)

Version	Fx	Fy	Fz
L	615	637	637
H	615	1275	1275

## EDF-D Series (42mm)

The TecnAir EDF-D drive has the same unique "flat" profile as the standard EDF Series, which reduces the overall height of the carriage. The drive mechanism is positioned in line with the carriage which allows one or two carriages to be fitted onto one drive. The carriages can be assembled to provide two different functions, in that both carriages can move in the same or opposite directions. The latter is ideal for sliding door applications as used on trains.



Version	Bearing Rail Types
L	Single Bearing Rail
H	Twin Bearing Rails

Bending Moments (Nm)

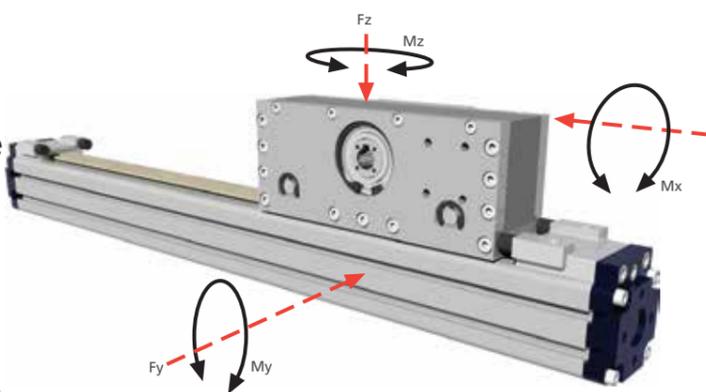
Version	Mx	My	Mz
L	9	55	55
H	18	110	110

Maximum Load (N)

Version	Fx	Fy	Fz
L	615	637	637
H	615	1275	1275

## EDZ-L Series (55mm)

The TecnAir EDZ-L drive has been designed for vertical movement within an "XYZ" 3 axis system. Unlike other TecnAir electrical drive units, the motor is mounted directly onto the central carriage. The carriage is fixed to the application and remains static during operation, whilst the extrusion moves into the desired position. The load is then attached to mounting holes in the end plate.



Version	Bearing Rail Type
EDZ-L	Single Internal Rail

Bending Moments (Nm)

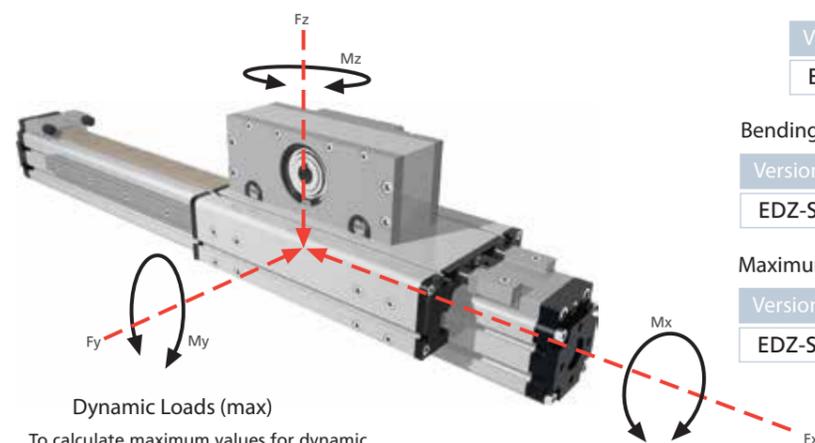
Version	Mx	My	Mz
EDZ-L	40	220	220

Maximum Load (N)

Version	Fx	Fy	Fz
EDZ-L	800	3300	3300

## EDZ-S Series (55mm)

The TecnAir EDZ-S drive is from the same family as EDZ-L, but with a heavy duty carriage for high load applications. Unlike all other TecnAir electrical drive units, the bearing rails are mounted along the outside of the extrusion. The carriage wraps around the top and side faces for added rigidity and is fixed to the application and remains static during operation, whilst the extrusion moves into the desired position. The TecnAir EDZ-S drives are designed for vertical movement within an "XYZ" 3 axis system.



Version	Bearing Rail Type
EDZ-S	Twin External Rails

Bending Moments (Nm)

Version	Mx	My	Mz
EDZ-S	265	480	480

Maximum Load (N)

Version	Fx	Fy	Fz
EDZ-S	800	7800	7800

### Dynamic Loads (max)

To calculate maximum values for dynamic conditions please refer to the following formula when combined loads are applied

$$\frac{F_{yA}}{F_y} + \frac{F_{zA}}{F_z} + \frac{M_{xA}}{M_x} + \frac{M_{yA}}{M_y} + \frac{M_{zA}}{M_z} \leq 1$$

(Parameters A show calculated value)

- ┌ Robotic Handling
- ┌ Slitting Machines
- ┌ Spray Painting
- ┌ Automatic Doors
- ┌ Punching Machines
- ┌ Material Handling
- ┌ Profile Cutting
- ┌ Automated Guards
- ┌ Positioning Systems



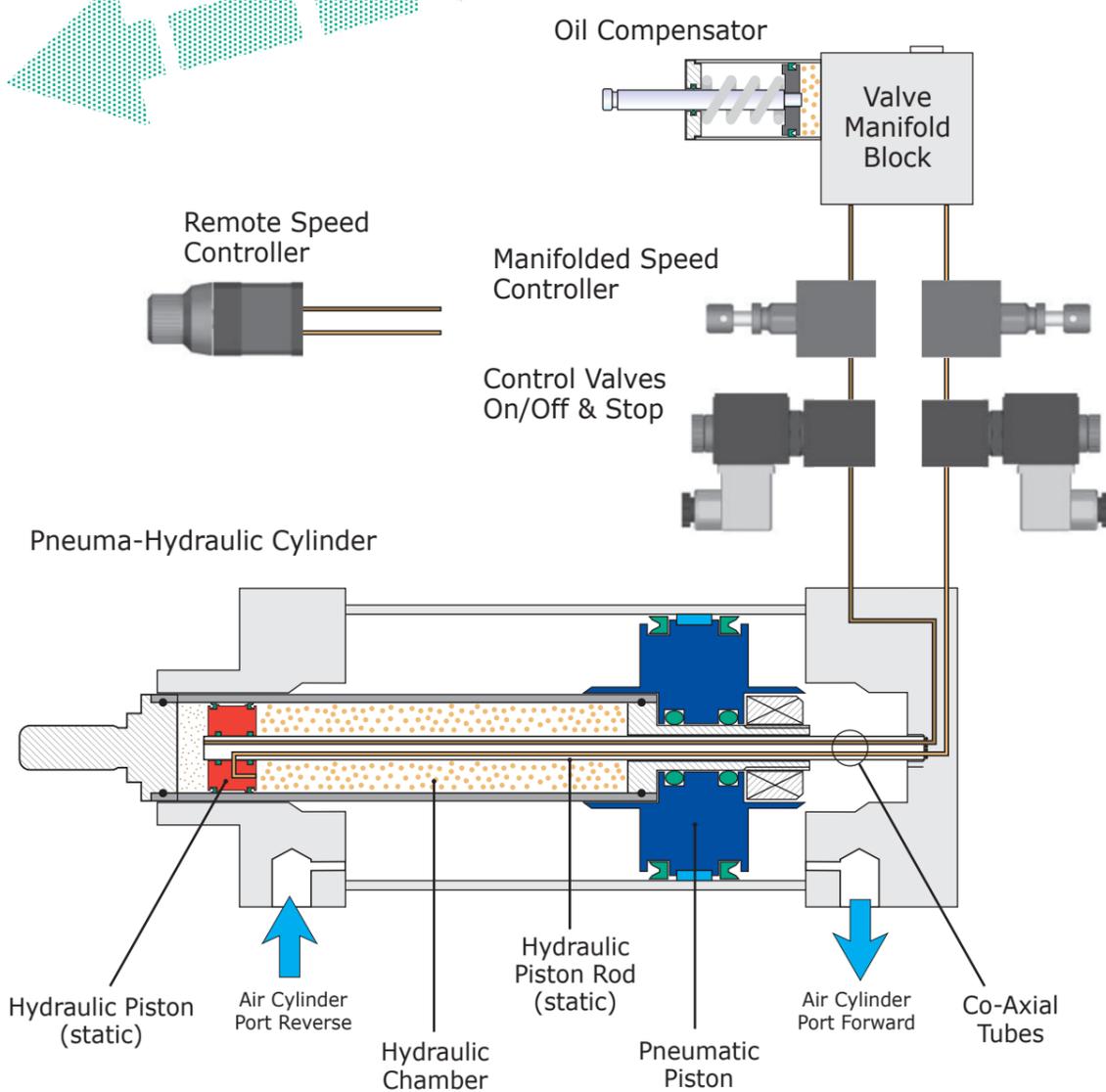


## Co-Axial Drives

Unlike conventional Hydro-Check cylinders, which require a separate pneumatic cylinder to provide power element, TecAir's 'all-in-one' design incorporates both pneumatic and hydraulic functions in the same body. This compact design reduces the overall envelope size of the system and eliminates installation costs associated with connecting conventional hydro-checks and air cylinders together.



Speed Control between 40mm & 6000mm per minute



### Modular Control Blocks

The rear end cap of the UCC series cylinder is effectively a complex hydraulic manifold, which is capable of multi function use. Modular elements can be fitted to the hydraulic manifold in a number of combinations to achieve on/off function and precision speed regulation to control either forward and/or reverse movement. Remote speed control can also be achieved.

### High Performance

TecAir UCC series cylinders are manufactured to ensure the hydraulic circuit is completely sealed and free from trapped air. Oil is vacuum filled to eliminate all air from within the sealed system and is designed to remain intact for the life of the product. The unit is designed to withstand shock loads but the hydraulic system can be refilled on site when leakage occurs due to application overload. Speed control between 40mm and 6000mm per minute can be achieved depending on control blocks used.

### Function

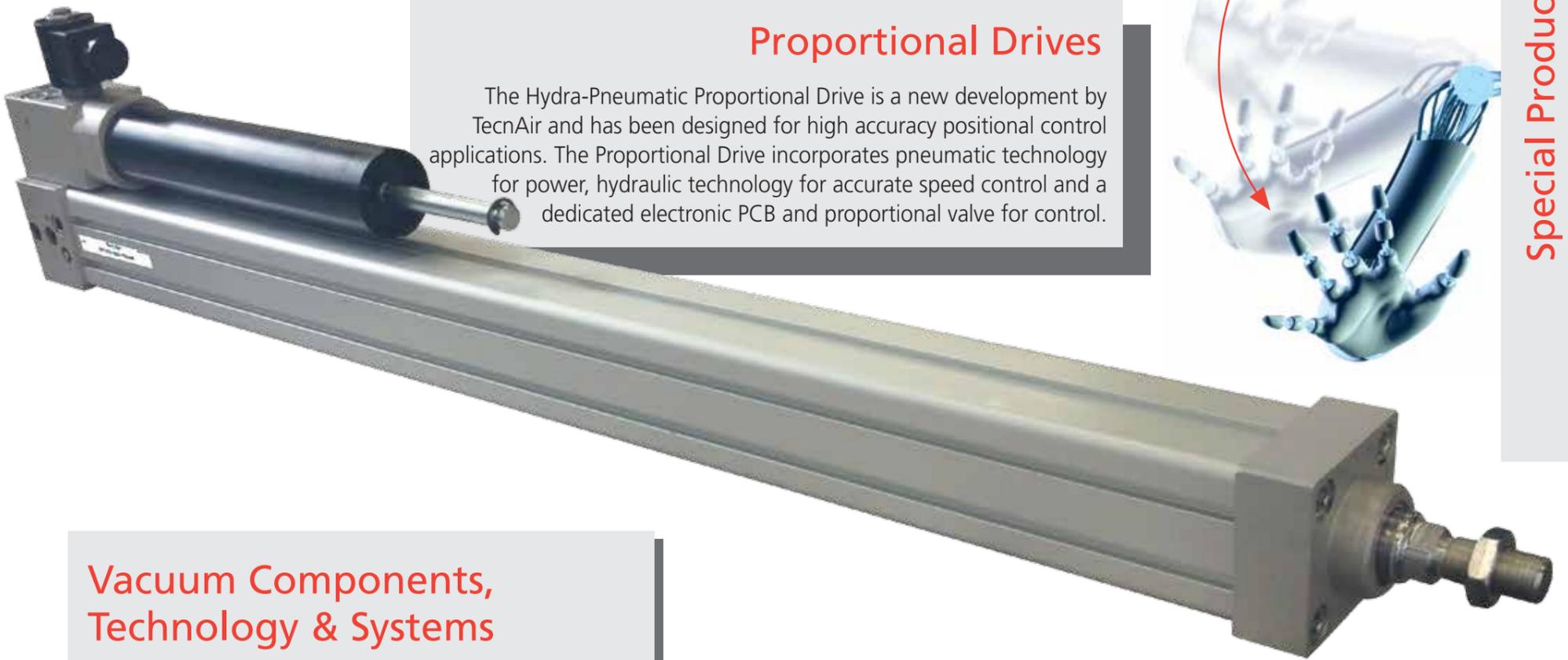
TecAir UCC series cylinders are designed around a co-axial hydraulic tube. The outer chamber houses the pneumatic cylinder, which provides the operating force. The central chamber houses the hydraulic piston, which enables stop/start functions and precision speed control. The inner chamber provides fluid connection across the hydraulic piston via the control valves. The combination offers a streamlined, high-tech solution, which is ideal for speed control and positioning systems.

High quality seals and a precision honed central inner barrel ensure the hydraulic components are capable of a long, trouble free life. The pneumatic and hydraulic pistons are fitted with precision PTFE guide sleeves to ensure accurate, smooth linear operation, and also to protect the inner hydraulic system from impact. Mechanical shock absorbers are designed into the cylinder as standard.



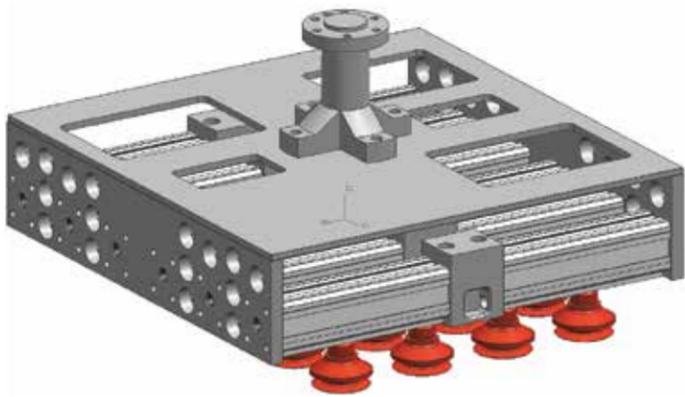
### Proportional Drives

The Hydra-Pneumatic Proportional Drive is a new development by TecnAir and has been designed for high accuracy positional control applications. The Proportional Drive incorporates pneumatic technology for power, hydraulic technology for accurate speed control and a dedicated electronic PCB and proportional valve for control.



### Vacuum Components, Technology & Systems

TecnAir Handling Division designs and manufactures bespoke END EFFECTOR solutions.

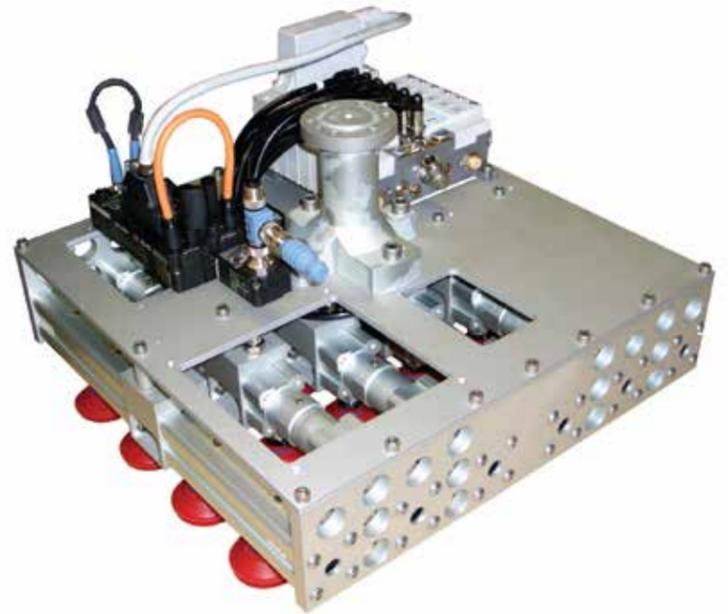


FROM DESIGN

This special assembly incorporates mechanical clamping as well as vacuum holding, with individual vacuum supply to each vacuum cup.



TO ASSEMBLY



TO PRODUCTION



### END EFFECTORS





## SPECIAL PRODUCT DESIGN AND PRODUCTION

TecnAir's UK manufacturing facility offers a full range of design solutions from cylinders and valves through to complete control systems and sub assemblies.

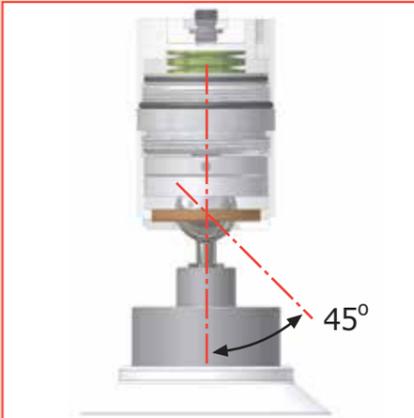


## CLEAN LINE CYLINDERS

- Stainless Steel 304 or 316
- Ø 32 to 125mm
- Completely clean-line
- No hidden crevices
- Unique nose bearing
- Ideal for harsh environments



## LOCKING VACUUM HEAD



### Self levelling vacuum head

Locking vacuum heads can be attached to automated fixtures which move the vacuum cup(s) into place allowing the ball joint to position the cup into the desired plane.

### Mechanical joint lock

Once the vacuum cup is positioned at the correct angle the locking head is designed to hold the ball joint securely in place.



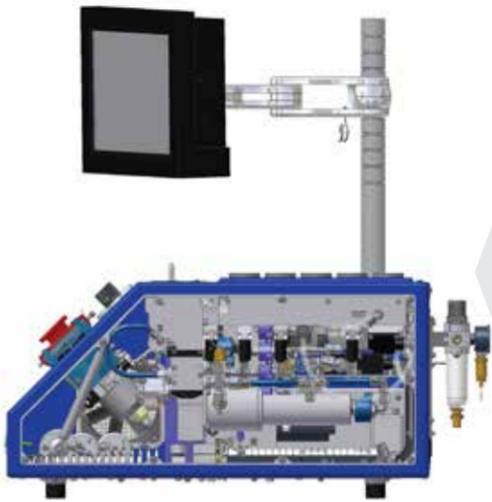
## SPECIALIST CONTROL SYSTEMS

### Bespoke control panels

TecnAir's control system division has the capability of combining all control strategies including PLC, electrical, hydraulic and pneumatic. Offering the full range of design solutions from concept through to the finished product.

### Special purpose machined manifolds

For clients wanting a modular design with limited maintenance and easy access to components, eliminating all pipework.



**TecnAir Manufacturing Co. Ltd**

Tecnair Works  
 Saltaire Road, Shipley  
 West Yorkshire, BD18 3HL  
 United Kingdom  
[www.tecnair.co.uk](http://www.tecnair.co.uk)

