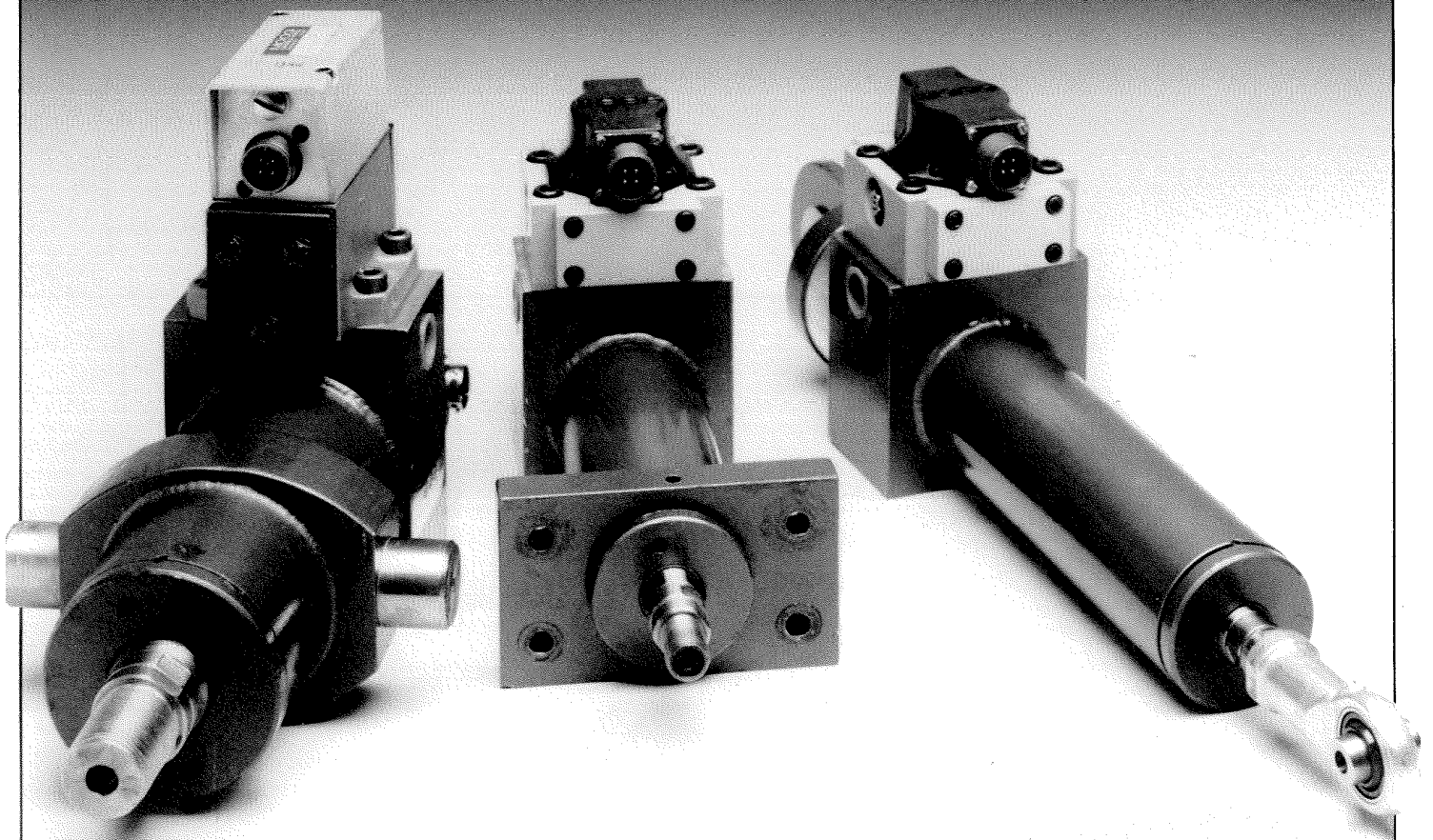


MOOG

E85I Servoactuators

Moog E85I Servoactuators comprise high performance hydraulic cylinders and integral electrical position transducers. They are designed for use in servo control systems to give precise control of position, velocity or force.



Features of the E85I range

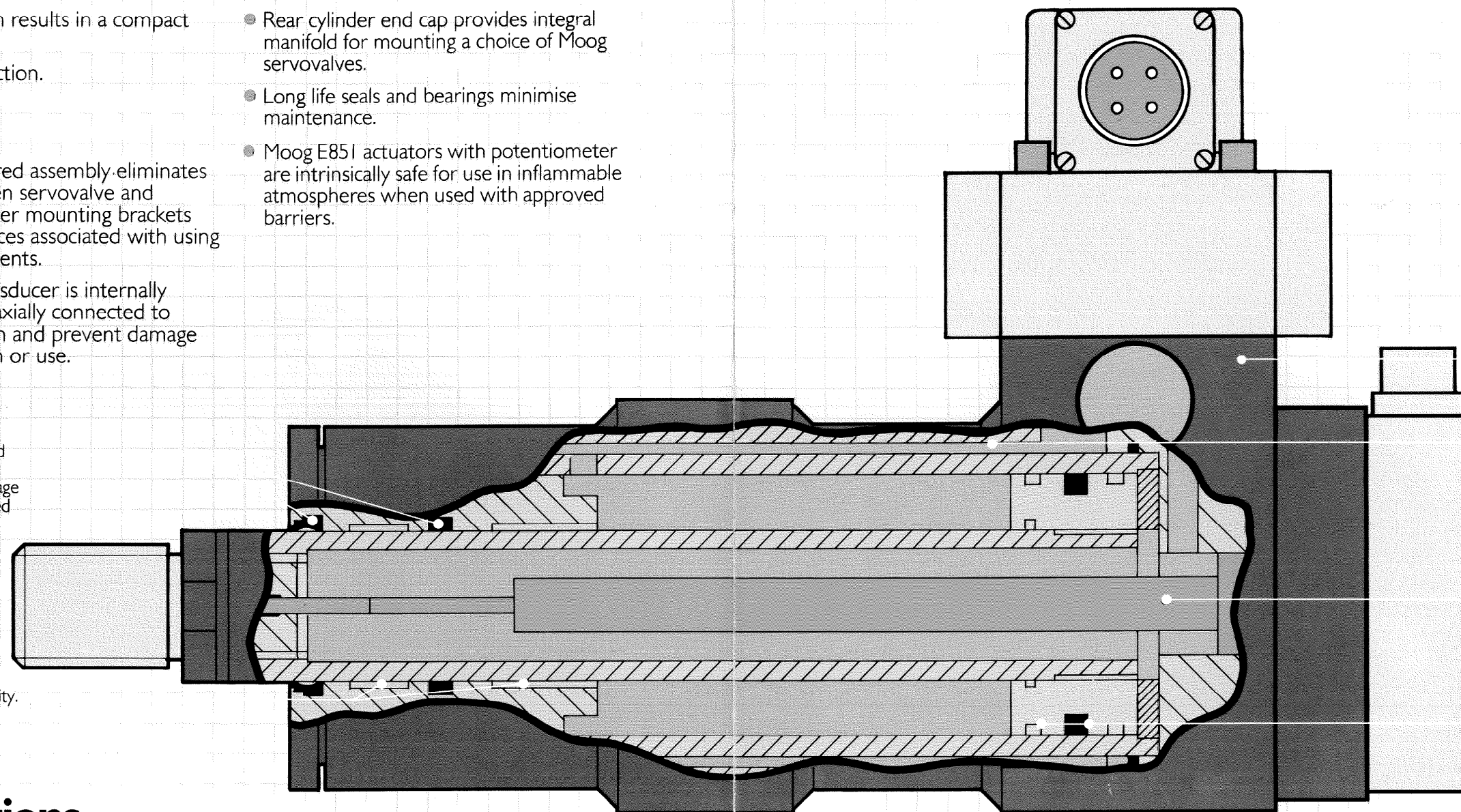
- Triple tube design results in a compact package
- Low breakout friction.
- Low leakage.
- Rear cylinder end cap provides integral manifold for mounting a choice of Moog servovalves.
- Long life seals and bearings minimise maintenance.
- Moog E85I actuators with potentiometer are intrinsically safe for use in inflammable atmospheres when used with approved barriers.

Benefits

- The pre-engineered assembly eliminates plumbing between servovalve and cylinder, transducer mounting brackets and other nuisances associated with using separate components.
- The position transducer is internally mounted and coaxially connected to eliminate backlash and prevent damage during installation or use.

High performance rod and wiper seals — give low friction, low external leakage and long life — avoids need for case drain.

Low friction bearings give excellent side load capability.



Integral mounting for servovalve — eliminates separate manifold and simplifies pipework.
Internal oil transfer gallery — avoids external pipework and minimises fluid compliance.

Internally mounted feedback transducer — avoids backlash and prevents damage to transducer.

Low friction piston head seals and bearings.

Specifications

General specifications

Supply pressure	210 bar maximum
Operating temperature range	−40°C to 85°C
Fluid	petroleum base, hydraulic fluid
Supply filtration required	25 µm absolute or better
External leakage	typically 1 drop/5000 cycles at 100 bar
Breakout force	typically 50N (12 lbf)
Actuator orientation	any

Position transducer (potentiometer)

E85I Servoactuators use a full stroke, high technology potentiometer coaxially mounted within the piston centreline. The potentiometer technology overcomes previous disadvantages of wirewound and conductive plastic potentiometers. The resolution is virtually infinite and life is high. Tests on an E85I actuator at Moog have shown no detectable wear on the transducer after 50 million high frequency cycles. An integral wiper resistor prevents damage, should incorrect electrical connections be made. An L.V.D.T. position transducer (non contacting) is also available.

Electrical specifications (potentiometer)

Linearity	±0.2%
Resolution	virtually infinite
Resistance	4KΩ/100 mm
Wiper load impedance	minimum of 100 × total element resistance
Life	typically > 50 × 10 ⁶ cycles at 25 mm stroke
Temperature coefficient	.013% per°C (max)

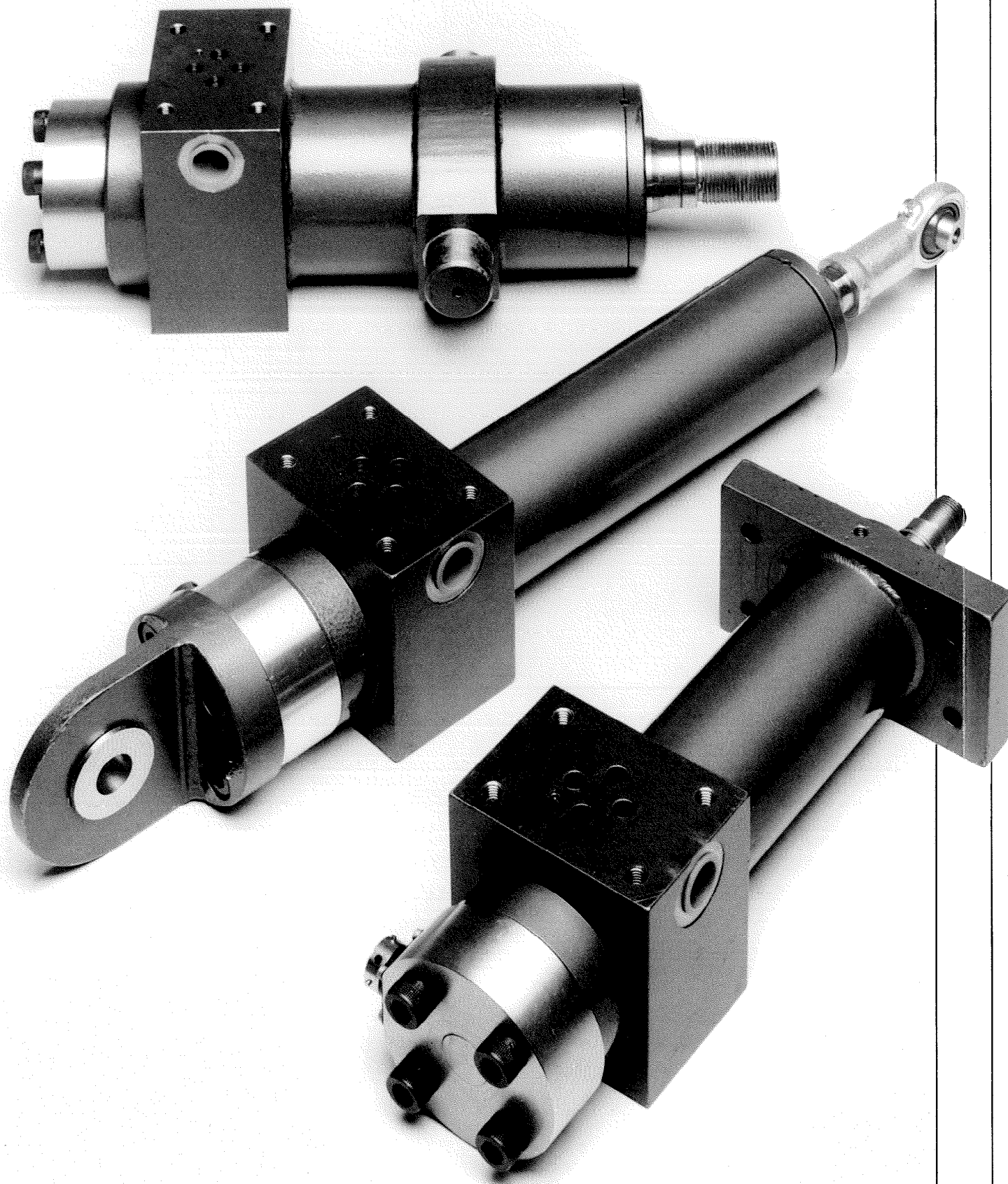
NOTE: A high impedance buffer circuit must be used to condition the wiper signal from the potentiometer.

Cylinder specifications

Cylinder bore size mm	40	63	80	100
Piston head area (mm ²)	1260	3120	5000	7850
Annulus area (mm ²)	880	2100	3440	5400

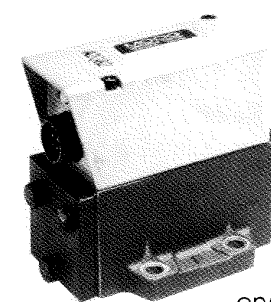
Cylinder strokes from 25mm up to 150mm in increments of 25mm are available.

Actuators with integral transducer



Servovalves

The rear end cap on the E851 servoactuator provides an integral manifold for mounting a servovalve and for connecting the supply and return hydraulic lines. The 40mm and 60mm bore units accept either the low cost Series 62 or the higher performance Series 760, whereas the 80mm and 100mm accept the higher flow Series 78. An adaptor manifold A56189 allows 760 or 62 series valves to be fitted to these larger actuators. Moog servovalves can be supplied intrinsically safe.



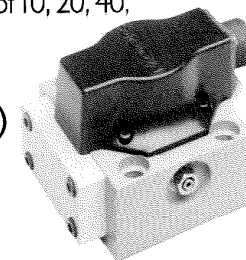
Series 62 (low cost)

A fully-fledged, two stage, proportional flow control servovalve with mechanical feedback, dry torque motor and other features found only in higher cost servovalves. The Series 62 fills the gap between crude on/off controls and conventional, high performance servovalves.

Available with rated capacities of 10, 20, 40, 60 and 77 L/min., at 70 bar drop and supply pressures to 210 bar.

Series 760 (high performance)

A two stage, mechanical feedback, flow control servovalve with high frequency response. Reliable mechanical feedback design having



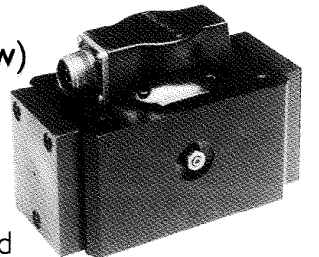
a dry, double air gap, torque motor.

Available with rated capacities of 4, 10, 20, 40, 65 and 75 L/min. at 70 bar drop and supply pressures to 210 bar.

Series 78 (medium flow)

Two stage, mechanical feedback, flow control servovalve with the advantages of the Series 760 but higher flow rates.

Available with rated capacities of 77, 115 and 150 L/min. at 70 bar drop and supply pressures to 210 bar. Typical frequency response is 90° phase lag at 25Hz. Higher response versions are also available.



Optional manifolds

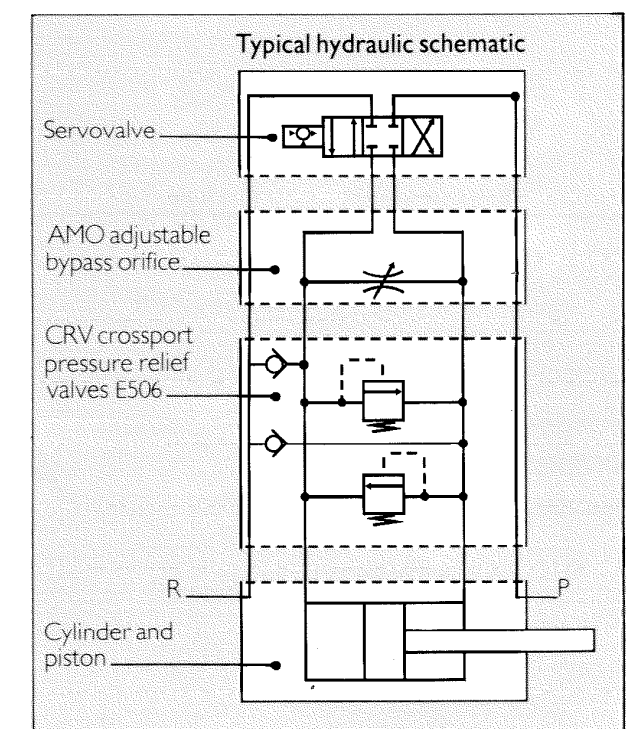
A range of manifolds which can be directly mounted between the servovalve and cylinder to satisfy differing control requirements is available. These include:

- **Adjustable metering orifice manifold (AMO)**
An adjustable bleed between the control ports can be used to improve stability in position or load systems. *Part number A56380*

- **Pressure transducer manifold (PT)**
This manifold provides $\frac{3}{8}$ " BSP tapings into the control ports. Pressure transducers can be then fitted to measure control port pressures for load control loops or for load monitoring in position loops. *Part number A35250*

- **Cross port relief manifold (CRV)**
Cross port relief valves can be used to limit differential pressures. These can be used to prevent overstressing of the load or overpressurising the cylinder by sudden acceleration of a high inertia load. *Part number E506*

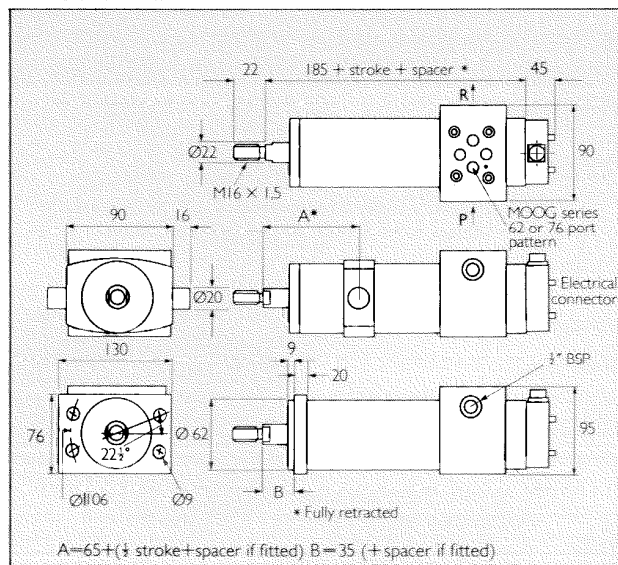
- **3-way manifold (3W)**
Where high output force is not necessary, a 3-way manifold can be used to reduce the



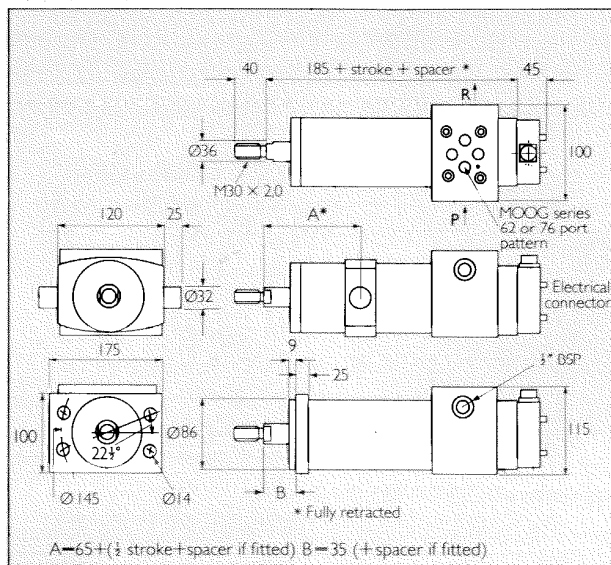
power consumption of the power pack. The 3-way manifold connects the rod end of the actuator to the pressure line and blocks the corresponding servovalve control port. *Part number A35589*

Actuator dimensions

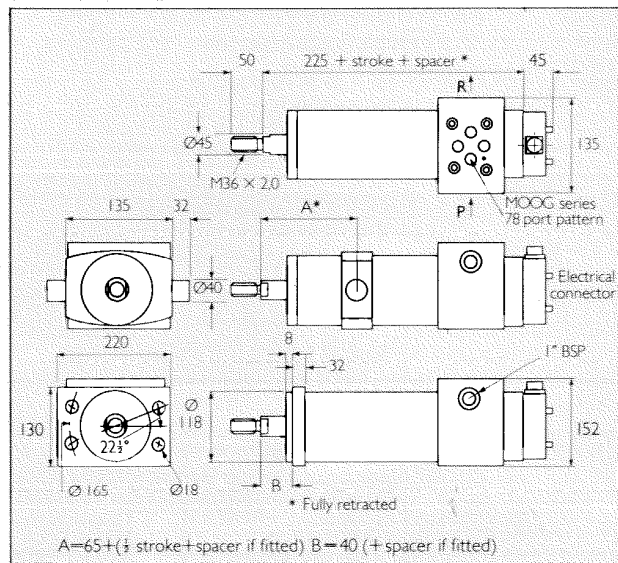
40mm bore



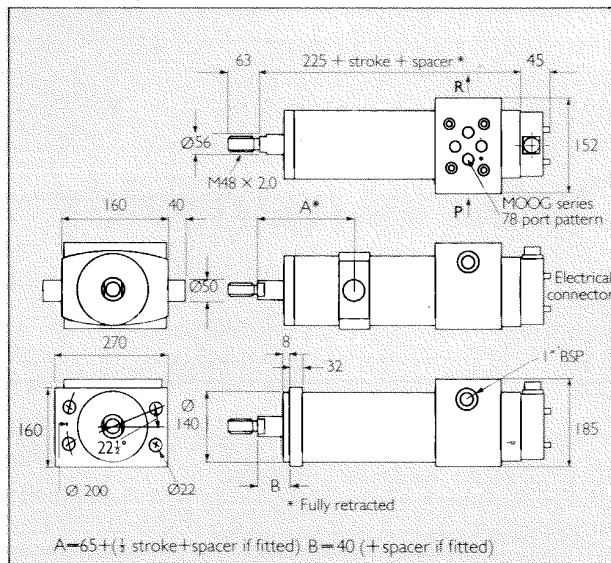
63mm bore



80mm bore



100mm bore



- Electrical connector: MS 3102E 14S 5P compatible
- Standard strokes are: 50, 100, or 150 mm.

Intermediate strokes eg 25, 75 or 125mm are the next larger stroke but with a 25mm spacer fitted, eg 75mm stroke is 100mm actuator with 25mm spacer.

Format for specifying servoactuator

E85I	040	025	FFA	00
Factory identification	Bore	Stroke	Mounting	Standard configuration
	040 = 40mm	025 = 25mm		
	063 = 63mm	050 = 50mm		
	080 = 80mm	100 = 100mm		
	100 = 100mm	150 = 150mm		
	25mm increments		FFA = Front Flange	LV = LVDT Position Transducer
			MTA = Mid-Trunnion	
			REA = Rear Eye	00 = Potentiometer

N.B. These dimensions are accurate at time of going to press. However, because of our policy of continual product improvement, changes may have occurred. Please check with the factory.

Accessories

Fluid Supply Filtration

Good filtration will extend the life and reliability of E85I servoactuators as well as that of other components within the hydraulic system.

The recommended arrangement is for a $15\text{ }\mu\text{m}$ ($\beta_{15} \geq 75$) to $30\text{ }\mu\text{m}$ full flow, non by-pass filter immediately upstream of the actuator with a $3\text{ }\mu\text{m}$ ($\beta_3 \geq 75$) in the return line.

Moog can supply filters to meet these requirements. Elements on high pressure filters will withstand 210 bar (3000 psi) differential pressure without collapsing. Electrical dirt alarms are supplied as standard.

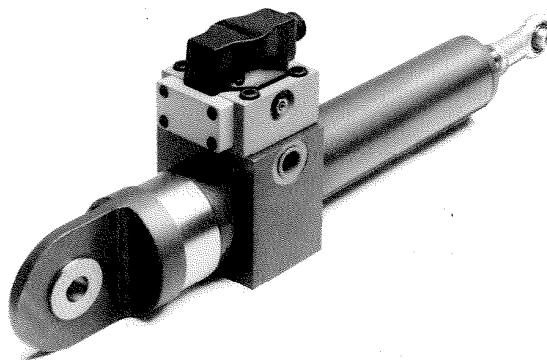
Servocontrollers

The 82-300-100 servocontroller combines the servoloop requirements of multiple input summation, amplification, transducer excitation, gain adjustments, and DC power supplies in one convenient package suitable for rack mounting. Many of the 127 range of electronics cards can be plugged-in to this 82-300-100 servocontroller to further extend its capability.

E127 Electronics

A complete line of high performance servo electronics for manufacturers of industrial vehicles and equipment. Modular packaging provides a low-cost, convenient solution for OEM's needing servocontrol. Available for 12 vdc, 24 vdc, 110 vdc and 240 vac supplies.

Mating electrical connectors	Part number
Servo valve connector	: 06I-49054F-14S-2S
Servo valve connector; right-angle	: 06I-54680E-14S-2S
Transducer connector	: 06I-49054E-14S-5S



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Moog Controls Limited Ashchurch, Tewkesbury, Gloucestershire, England, GL20 8NA. Telephone Tewkesbury (0684) 296600. Telex 43229, Telefax (0684) 296760.

- East Aurora, NY, USA. ● São Paulo, Brazil. ● Boblingen, W Germany.
- Varese, Italy. ● Paris, France. ● Hiratsuka, Japan. ● Gothenburg, Sweden. ● Melbourne, Australia.

Moog Controls Limited pursue a policy of continuous development and reserve the right to alter designs and specifications without prior notice.