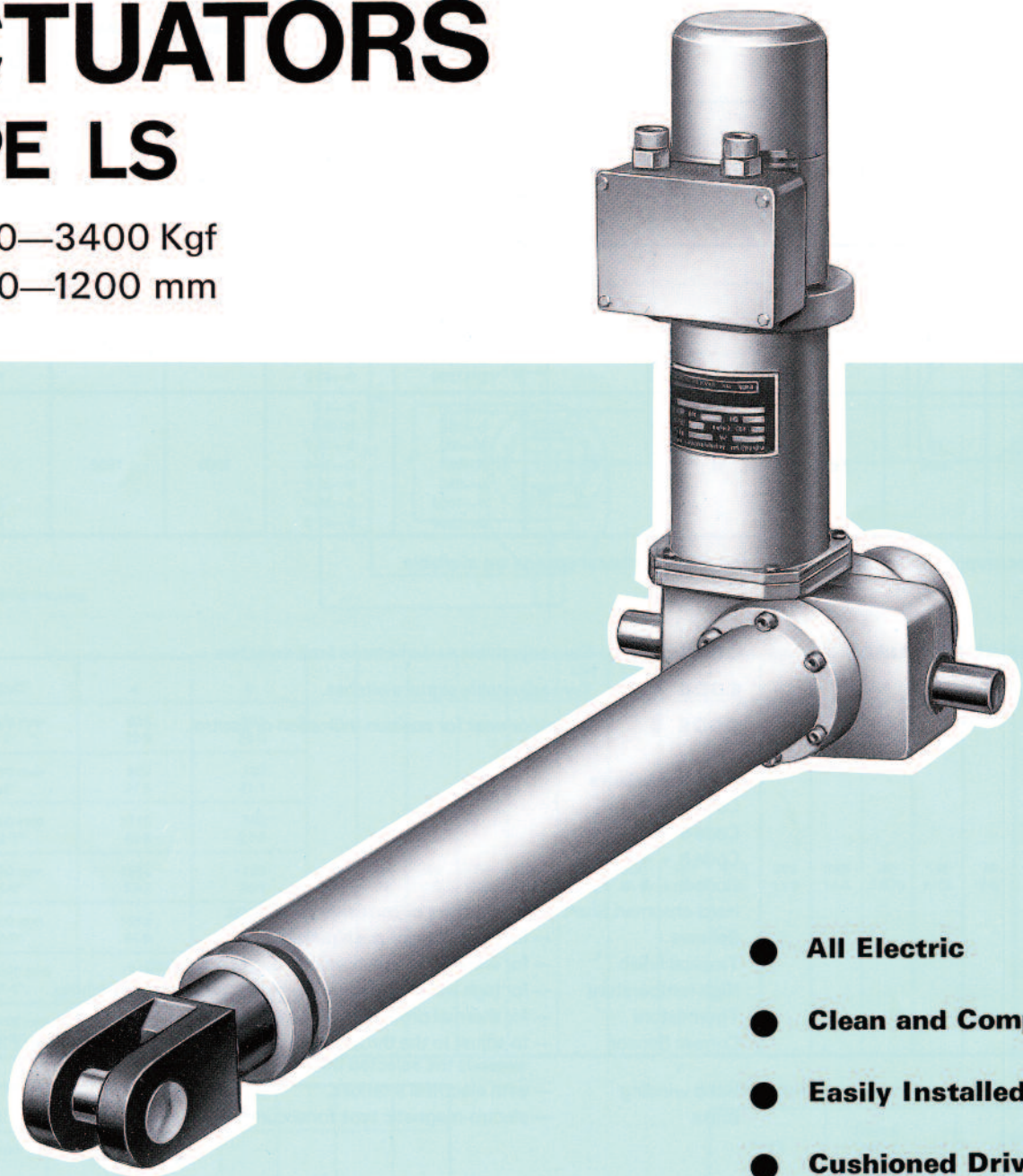


# LINEAR ACTUATORS TYPE LS

Thrusts 0—3400 Kgf  
Strokes 0—1200 mm



- **All Electric**
- **Clean and Compact**
- **Easily Installed**
- **Cushioned Drive**

**ELECTRIC ACTUATOR**  
COMPANY LIMITED

Bolling Road Bradford BD4 7BZ

Telephone: +44 (0)1274 732931 Email: [sales@electricactuator.co.uk](mailto:sales@electricactuator.co.uk)

## TECHNICAL DATA

SIZE	PUSH/PULL FORCE		PUSH/PULL SPEED		STROKE		Motor SPEED watts	Motor SPEED rpm	NETT WEIGHT	
	kgf	lb.	mm/sec.	ins/sec.	mm.	ins.			kg	lb.
LS2	360	800	10	0.4	0—120	0—4.7	300	1500	35	76
					0—250	0—9.8			39	85
					0—400	0—15.7			43	95
					0—650	0—25.6			51	112
					0—850	0—33.5			57	126
					0—1000	0—39.4			63	136
					0—1200	0—47.2			65	143
LS3	700	1540	10	0.4	0—120	0—4.7	450	1500	36	79
					0—250	0—9.8			40	88
					0—400	0—15.7			45	98
					0—650	0—25.6			52	115
					0—850	0—33.5			59	129
					0—1000	0—39.4			63	139
					0—1200	0—47.2			66	146
LS4	2300	5000	12	0.5	0—120	0—4.7	1200	1500	64	140
					0—250	0—9.8			69	151
					0—400	0—15.7			74	163
					0—650	0—25.6			82	180
					0—850	0—33.5			89	196
					0—1000	0—39.4			93	204
					0—1200	0—47.2			100	220
LS5	3400	7500	12	0.5	0—120	0—4.7	2000	1500	70	155
					0—250	0—9.8			75	166
					0—400	0—15.7			81	178
					0—650	0—25.6			89	195
					0—850	0—33.5			96	211
					0—1000	0—39.4			100	219
					0—1200	0—47.2			107	235

Higher push/pull forces, longer strokes and slower or faster speeds are available.

## OPTIONAL FEATURES

- CODE 7** Two adjustable end-of-stroke limit switches.  
**CODE 4** Two adjustable signal switches.  
**CODE 6** Potentiometer for position indication or control.

### Combinations

Code 7 + 4

Code 6 + 7

Code 6 + 4

Code 6 + 4 + 7

Hard-chromed Shaft — for abrasive or corrosive conditions.

Bellows — for protection of push/pull shaft.

Tropical finish — for working in high humidity or tropical areas.

High temperature — for high ambient temperatures and sustained switching.

Thermistors — for thermal protection of motor winding.

Current Sensor — to adjust to the thrust required and to switch off the actuator if the demand exceeds the selected thrust.

Hand winding — with electrical interlock.

Brake — electro-magnetic type for accurate positioning.

## MOUNTING

Trunnion, end swing pin or flange.

## CONSTRUCTION

Steel and cast iron.

## ENCLOSURES AVAILABLE

Weatherproof IP54.

Weatherproof and hoseproof IP55.

Dustproof and hoseproof IP65.

CSA ENC4.

Flameproof and explosion proof models to BS4683 part 2 1971 groups II, IIA and IIB.

British Coal Electrical Acceptance Certificate No 1996.

CSA explosion proof to class I group D and class II groups F and G.

## PRINCIPLE

The actuator motors are fitted and combined with a worm gear drive to give the increased torque and slower speed. The leadscrew is driven by the worm wheel, and a drive nut and push/pull tube travel along the leadscrew providing linear motion. Disc springs are fitted at either side of the worm wheel and the leadscrew is free to slide inside the worm wheel bore against the disc springs, which compress when the leadscrew is loaded.

When the push/pull tube is coupled to the load, this prevents the tube from rotating, and it either extends or retracts.

The actuator can be stopped at any point of the stroke, and will hold its position and maintain its rated thrust unless there is vibration present. In this case a brake should be fitted.

This type of actuator is particularly suitable for applications where the push/pull tube has to absorb heavy shock loads, and also where a gradual build-up of pressure is required.

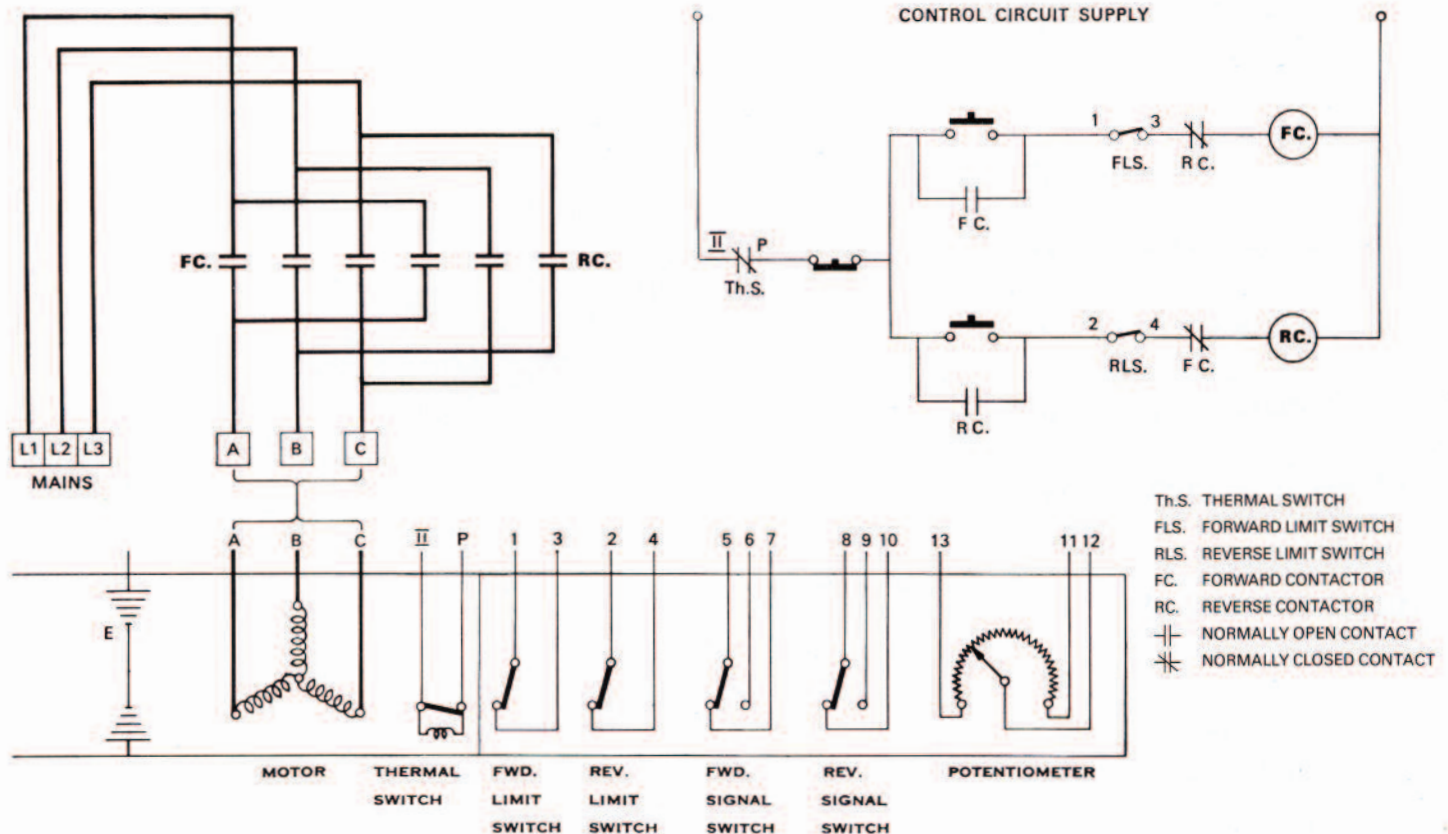
## ELECTRICS

- MOTOR** — The motor is a squirrel cage type with die cast aluminium rotor, designed with a low starting current and low inertia. These characteristics have been chosen because an actuator is often required to start and stop frequently with accurate positioning.
- THERMAL SWITCH** — Provided in the motor winding to prevent overheating. The thermal switch has to be connected into the control circuit.
- STARTING** — This is by reversing contactors. These can be initiated by push buttons or from an automatic control system.
- POTENTIOMETER** — When fitted, will provide remote indication of the shaft position, or can be used with proportional control units. Accurate positioning may require a brake to be fitted.
- SWITCHES** — For end-of-stroke and signalling; they are adjustable with locking cams.
- Inductive Ratings: 10 amps at 110 volts A.C.  
 10 amps at 240 volts A.C.  
 5 amps at 415 volts A.C.  
 0.5 amps at 80 volts D.C.
- The switch housing provides easy access for switch setting and potentiometer adjustment.
- SUPPLY** — A.C., 3-phase up to 600 volts; frequencies up to 60 Hz.  
 D.C., up to 440 volts.
- CABLES** — Tapped holes provided for incoming cable glands. Mains and control connections are made in weatherproof terminal boxes with ample space for cabling.

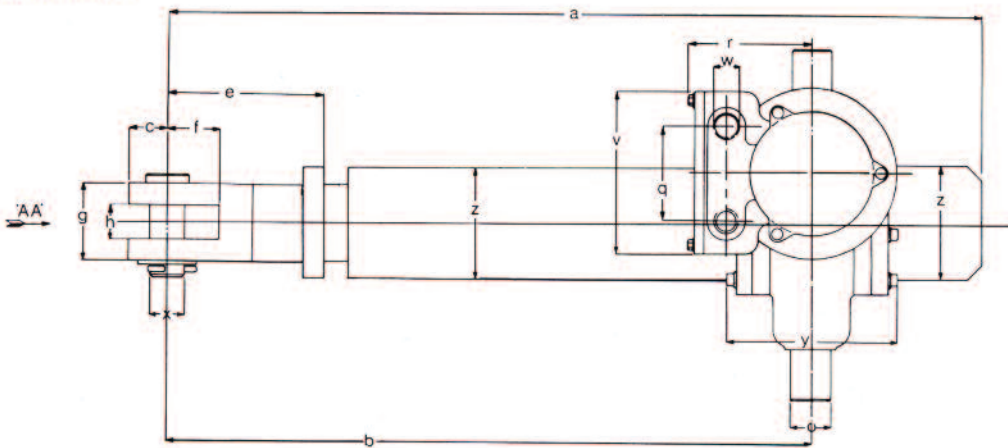
See separate leaflet for Current Sensors and Position Indicators.

The Technical Data table shows motor speeds and linear speeds on 50 Hz supply — other frequencies give speeds pro rata.

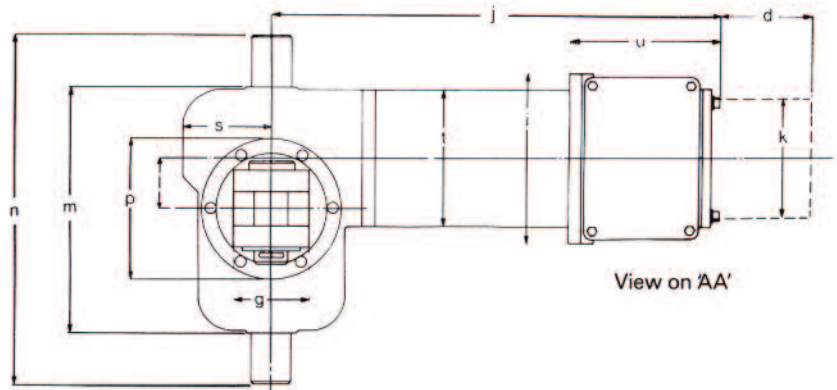
## TYPICAL SCHEMATIC



## DIMENSIONS



Bellows dia. 140 mm (5½") when fitted.



Not to be used as a working drawing.

TYPE	STROKE	a	b	c	e	f	g	h	i	LS2 j	LS3 j	k	l	m	n	o	p	q	r
LS2 and LS3	0 – 120 mm 0 – 4-7"	651 25-6	522 20-55	28 1-1	114 4-5	38 1-5	57 2-25	25 1-0	126 4-96	343 13-50	379 14-92	89 3-5	38 1-5	181 7-12	257 10-12	30 1-182	110 4-3	60 2-4	104 4-1
	0 – 250 mm 0 – 9-8"	781 30-7	652 25-65																
	0 – 400 mm 0 – 15-7"	931 36-6	802 31-55																
	0 – 650 mm 0 – 25-6"	1181 46-5	1052 41-45																
	0 – 850 mm 0 – 33-5"	1381 54-4	1252 49-35																
	0 – 1000 mm 0 – 39-4"	1531 60-3	1402 55-25																
	0 – 1200 mm 0 – 47-2"	1731 68-1	1602 63-05																

TYPE	STROKE	s	t	u	v	w	x	y	z
LS2 and LS3	0 – 120 mm 0 – 4-7"	66 2-6	102 4-02	114 4-49	120 4-72	20mm conduit	25 0-987	132 5-2	83 3-25
	0 – 250 mm 0 – 9-8"								
	0 – 400 mm 0 – 15-7"								
	0 – 650 mm 0 – 25-6"								
	0 – 850 mm 0 – 33-5"								
	0 – 1000 mm 0 – 39-4"								
	0 – 1200 mm 0 – 47-2"								

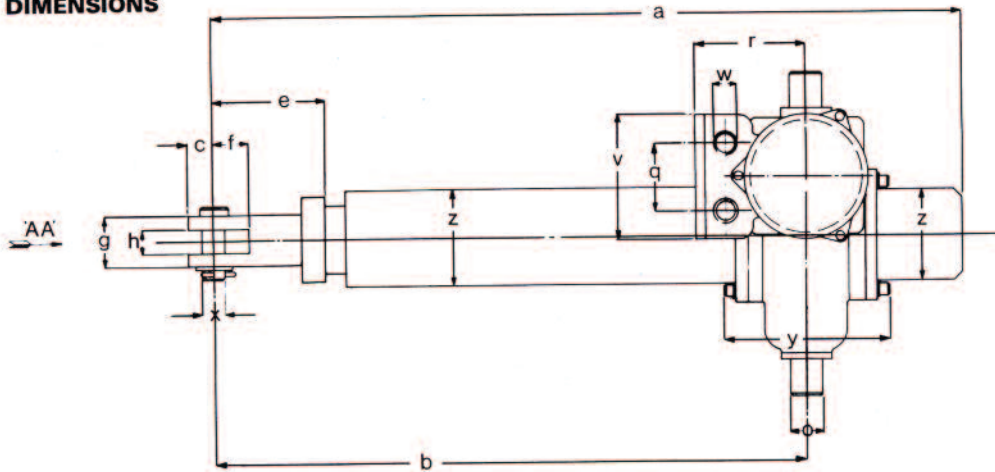
Add the following dimensions 'd' for extras

TYPE	Code 4 Code 6 Code 7 Code 7 + 4	Code 6 + 4 Code 6 + 7	Code 6 + 4 + 7
LS2 and LS3	71 2-8	92 3-62	121 4-76

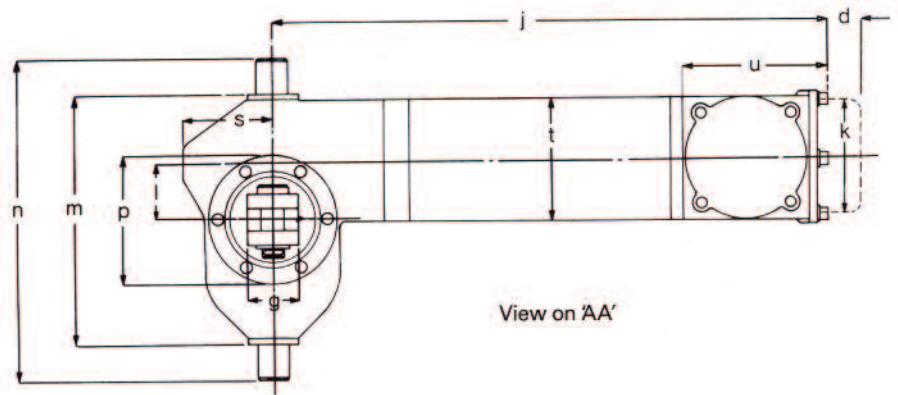
## LUBRICATON

Apply grease to push/pull screw shaft every 200,000 operations (or 12 months, for normal working). Extend shaft and remove guide cover bolts and slide guide cover up shaft to gain access to the screw shaft. ROCOL GREASE GRADE MTS 1000.  
 The gearbox is packed with ROCOL GREASE GRADE MTS 2000. This grease should be inspected periodically by removing the motor unit, and replenished if necessary.

## DIMENSIONS



Bellows dia. 165 mm (6½") when fitted.



Not to be used as a working drawing.

TYPE	STROKE	a	b	c	e	f	g	h	LS4 j	LS5 j	k	l	m	n	o	p	q	r	s
LS4 and LS5	0 – 120 mm 0 – 4-7"	833 32-8	660 26-0	28 1-1	124 4-9	38 1-5	57 2-25	25 1-0	546 21-5	626 24-6	127 5-0	63-5 2-5	284 11-2	366 14-4	40 1-570	146 6-75	76 3-0	127 5-0	99 3-9
	0 – 250 mm 0 – 9-8"	963 37-9	790 31-1																
	0 – 400 mm 0 – 15-7"	1113 43-8	940 37-0																
	0 – 650 mm 0 – 25-6"	1363 53-7	1190 46-9																
	0 – 850 mm 0 – 33-5"	1563 61-6	1390 54-8																
	0 – 1000 mm 0 – 39-4"	1713 67-5	1540 60-7																
	0 – 1200 mm 0 – 47-2"	1913 75-3	1740 68-5																

TYPE	STROKE	t	u	v	w	x	y	z
LS4 and LS5	0 – 120 mm 0 – 4-7"	140 5-5	160 6-3	140 5-5	25mm conduit	25 0-987	185 7-3	108 4-25
	0 – 250 mm 0 – 9-8"							
	0 – 400 mm 0 – 15-7"							
	0 – 650 mm 0 – 25-6"							
	0 – 850 mm 0 – 33-5"							
	0 – 1000 mm 0 – 39-4"							
	0 – 1200 mm 0 – 47-2"							

Add the following dimensions 'd' for extras

TYPE	Code 4 Code 7 Code 4 + 7 Code 6	Code 4 + 6 Code 7 + 6 Code 4 + 7 + 6
LS4 and LS5	78 3-06	161 6-31

## LUBRICATON

Apply grease to push/pull screw shaft every 200,000 operations (or 12 months, for normal working. Extend shaft and remove guide cover bolts and slide guide cover up shaft to gain access to the screw shaft. Rocol GREASE GRADE MTS 1000.  
 The gearbox is packed with Rocol GREASE GRADE MTS 2000. This grease should be inspected periodically, by removing the motor unit, and replenished if necessary.