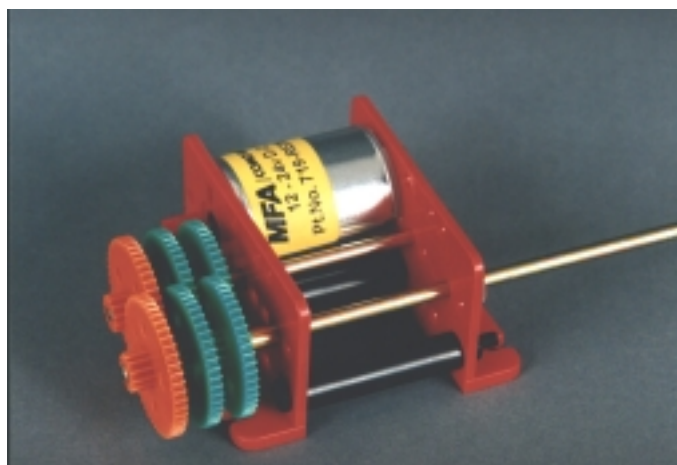


LOW VOLTAGE D.C. MOTORS & GEARBOX UNITS



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918D SERIES SINGLE RATIO METAL GEARBOX (RE280 MOTOR/RE_280/1 MOTOR)



WITH 2mm OUTPUT SHAFT (15:1 ONLY)



WITH 4mm OUTPUT SHAFT (ALL RATIOS)

RATIOS NOW AVAILABLE AS EX-STOCK ITEMS.

918D151	(1.5v - 3v) WITH RE 280 MOTOR (RATIO 15:1). 2mm SHAFT	918D15112	(12v - 24v) WITH RE 280/1 MOTOR (RATIO 15:1). 2mm SHAFT
918D151/1	(1.5v - 3v) WITH RE 280 MOTOR (RATIO 15:1). 4mm SHAFT	918D15112/1	(12v - 24v) WITH RE 280/1 MOTOR (RATIO 15:1). 4mm SHAFT
918D301/1	(1.5v - 3v) WITH RE 280 MOTOR (RATIO 30:1). 4mm SHAFT	918D30112/1	(12v - 24v) WITH RE 280/1 MOTOR (RATIO 30:1). 4mm SHAFT
918D1001/1	(1.5v - 3v) WITH RE 280 MOTOR (RATIO 100:1). 4mm SHAFT	918D100112/1	(12v - 24v) WITH RE 280/1 MOTOR (RATIO 100:1). 4mm SHAFT

This miniature gearbox is of steel and brass construction with brass gears and is mounted on a 1mm thickness steel bracket. It incorporates a high quality three pole motor with sintered-bronze bearings. The design and construction of the unit make it suitable for a host of model and light industrial applications.

MOTOR DATA. (RE-280 & RE-280/1)

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			R.P.M.	A	R.P.M.	A	oz - in	g - cm	W	%	oz - in	g - cm
RE - 280	1.5 - 3.0	1.5v CONSTANT	4600	0.120	3750	0.53	0.160	11.53	0.44	56.2	0.86	62.0
RE - 280	1.5 - 3.0	3.0v CONSTANT	9200	0.155	7800	0.85	0.278	20.00	1.60	62.3	1.81	130.0
RE - 280/1	12 - 24	12v CONSTANT	8400	0.10	6300	0.30	0.347	25.0	1.62	44.87	1.389	100

REDUCTION TABLE. R.P.M.

SUPPLY VOLTAGE	1.5v	3.0v	6v	12v	18v	24v
918D151	306	613				
918D15112			280	560	840	1120
918D301	153	306				
918D30112			140	280	420	560
918D1001	46	92				
918D100112			42	84	126	168

WEIGHT	
918D151	72g
918D15112	72g
918D301	72g
918D30112	72g
918D1001	72g
918D100112	72g

TORQUE TABLE (g.cm). (Theoretical rating for motor & gearbox combined).

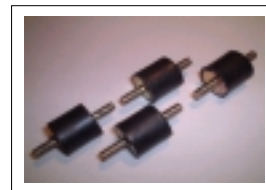
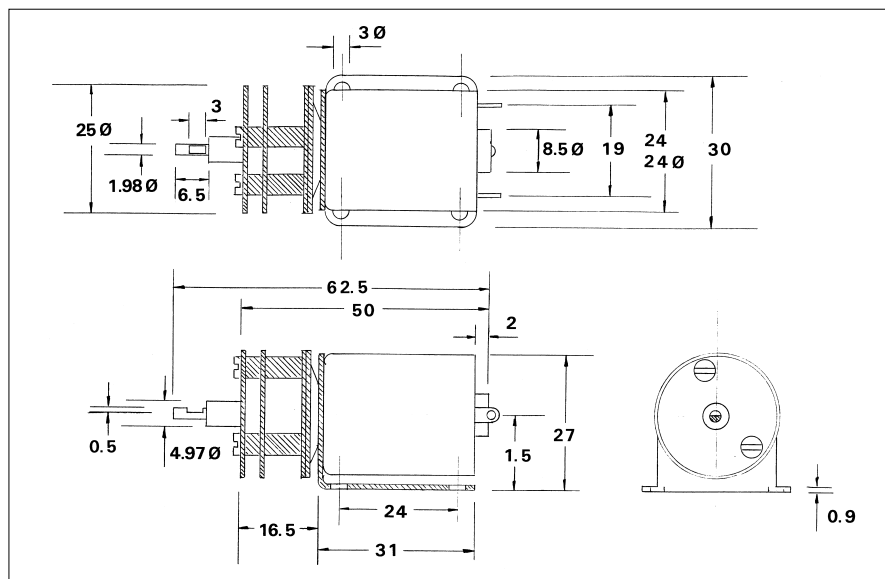
	AT MAXIMUM EFFICIENCY			STALL TORQUE		
	1.5V	3V	12V	1.5V	3V	12V
RE 280 (15:1)	173	300		930	1950	
RE 280/1 (15:1)			375			1500
RE 280 (30:1)	346	600		1860	3900	
RE 280/1 (30:1)			750			3000
RE 280 (100:1)	1153	2000		6200	13000	
RE 280/1 (100:1)			2500			10000

IMPORTANT NOTICE
Due to the wide range of applications for this product it is the users responsibility to establish the products suitability for their individual purpose(s).

NOTE: To establish Torque Rating in nM divide g.cm by 10,197.0

918D SERIES SINGLE RATIO METAL GEARBOX

GEARBOX DIMENSIONS.



Part No. 1071. Anti vibration mount. M3



Part No. 918D8. Steel Shaft. 4mm OD x 150mm

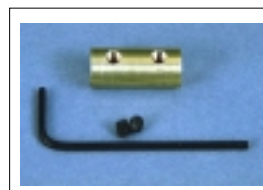
ACCESSORIES FOR 918D SERIES GEARBOX.



Part No. 917D9. Voltage Regulator. (6-15v DC Input, 3v, 1.5amp output)
Part No. 917D10. Voltage Regulator. (6-15v DC Input. 1.5v, 1.5amp output)
Part No. 917D11. Voltage Regulator. (6-15v DC Input. 4.5v, 1.5amp output)
(Above for 280 motor only)



Part No. 918D7. Nylon Bevel Gears (1:1). O.D. 17.2mm. 4mm I.D.



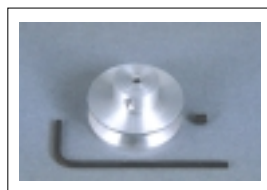
Part No. 918D1. In-Line Coupling. 2mm - 3mm. (Dia. 8mm x 18.4mm)
Part No. 918D1/1. In-Line Coupling 4mm - 4mm. (Dia. 8mm x 18.4mm)



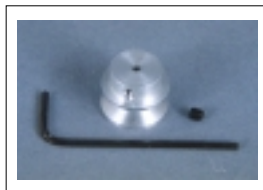
Part No. 918D4. Gear Adapter. 2mm I.D.
Part No. 918D4/1 Gear Adapter. 4mm I.D.



Part No. 917D2458. Pinions (Plastic) 12 tooth. 1.9mm I.D.



Part No. 918D2. Pulley. 2mm I.D. (25mm dia. x 14.75mm) (Aluminium)
Part No. 918D2/1. Pulley 4mm I.D. (25mm dia. x 14.75mm) (Aluminium)



Part No. 918D3. Pulley. 2mm I.D. (16mm dia. x 13.6mm) (Aluminium)
Part No. 918D3/1. Pulley 4mm I.D. (16mm dia x 13.6mm) (Aluminium)



Part No. 917D2515. "O" Ring 70mm x 5mm Dia.

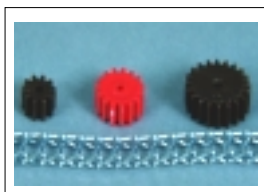
Subject to minimum order quantities of 250 units, the following ratios are also available with a six week lead-time. The physical dimensions of these other gearboxes may vary from the data as illustrated above. Details of individual gearboxes are available upon request.

GEARBOX 21:1 with RE280 motor (1.5v - 3v)
GEARBOX 44:1 with RE280 motor (1.5v - 3v)
GEARBOX 60:1 with RE280 motor (1.5v - 3v)
GEARBOX 112:1 with RE280 motor (1.5v - 3v)
GEARBOX 150:1 with RE280 motor (1.5v - 3v)
GEARBOX 200:1 with RE280 motor (1.5v - 3v)
GEARBOX 250:1 with RE280 motor (1.5v - 3v)
GEARBOX 320:1 with RE280 motor (1.5v - 3v)
GEARBOX 360:1 with RE 280 motor (1.5v - 3v)
GEARBOX 1024:1 with RE 280 motor (1.5v - 3v)

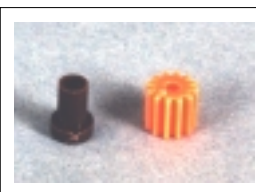
GEARBOX 21:1 with RE280/1 motor (12v - 24v)
GEARBOX 44:1 with RE280/1 motor (12v - 24v)
GEARBOX 60:1 with RE280/1 motor (12v - 24v)
GEARBOX 112:1 with RE280/1 motor (12v - 24v)
GEARBOX 150:1 with RE280/1 motor (12v - 24v)
GEARBOX 200:1 with RE280/1 motor (12v - 24v)
GEARBOX 250:1 with RE280/1 motor (12v - 24v)
GEARBOX 320:1 with RE280/1 motor (12v - 24v)
GEARBOX 360:1 with RE280/1 motor (12v - 24v)
GEARBOX 1024:1 with RE 280/1 motor (12v - 24v)

MULTI RATIO GEARBOX

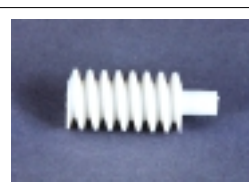
MULTI RATIO GEARBOX ACCESSORIES. (917D, 917D/A, 920D, 920D/A, 927D, 927D/A.)



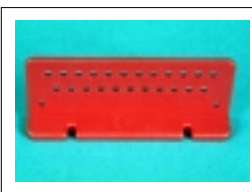
Pt.No.917D2401,2402,2403
2404,2449/1



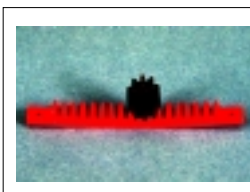
Pt.No.917D2417,2458



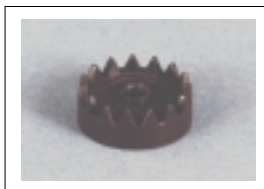
Pt.No.917D2420



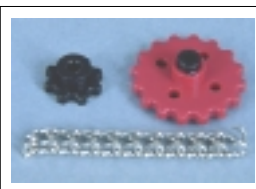
Pt.No. 917D2425



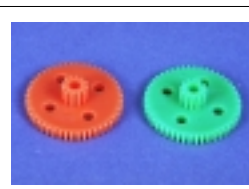
Pt.No. 917D2401
Pt.No. 917D2430
(Set: 917D/1)



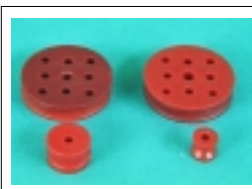
Pt.No. 917D2440



Pt.No.917D2445,2446,2449



Pt.No.917D2452,2456



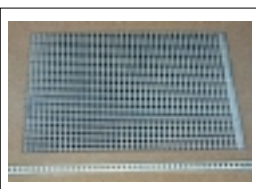
Pt.No.917D2460,2461,2462,2463



Pt.No.917D2515



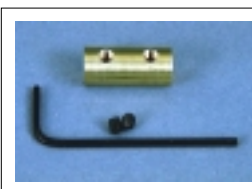
Pt.No.917D2501,2502,2504,
2505,2506,2507,2509, 2513



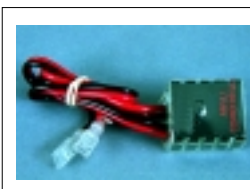
Pt.No.917D2531,2540



Pt.No.917D2551,2553



Pt.No. 917D8



Pt.No.917D9,D10,D11

Part No. 917D8.
Part No. 917D9.

Part No. 917D10.

Part No. 917D11.

Part No. 917D2401.
Part No. 917D2402.
Part No. 917D2403.
Part No. 917D2404.
Part No. 917D2415.
Part No. 917D2417.
Part No. 917D2420.
Part No. 917D2425.
Part No. 917D2426.
Part No. 917D2430.
Part No. 917D2440.
Part No. 917D2445.
Part No. 917D2446.
Part No. 917D2449.
Part No. 917D2449/1

Inline Coupling. 3mm - 3mm. (7.9mm x 20mm)
Voltage regulator. 6-15v DC Input.3v1.5amp output.
(31mm x 26mm x 15.5mm)
Voltage regulator.6-15v DC Input. 1.5v,1.5amp output.
(31mm x 26mm x 15.5mm)
Voltage regulator. 6-15v DC Input. 4.5v,1.5amp output.
(31mm x 26mm x 15.5mm)
Gear. 10 tooth. 2.9mm bore. (Dia. 11.2mm x 5.8mm)(pkt 10)
Gear. 15 tooth. 2.9mm bore. (Dia. 16.2mm x 5.8mm)(pkt 10)
Gear. 20 tooth. 2.9mm bore. (Dia. 22mm x 6.3mm)(pkt 10)
Gear. 40 tooth. 2.9mm bore. (Dia. 41.3mm x 6.3mm)(pkt 10)
Stop Rings.(pkt 10)
Micro-Switch operating pins. (Dia. 3.9mm/5.7mm x 8mm)(pkt 10)
Worm Drive. (Dia. 11.94mm x 32mm)(pkt 10)
Custom gearbox bracket. (69.8mm x 27.9mm x 2.0mm)(pkt 2)
Gearbox Brackets. (52.8mm x 30.0mm x 2.0mm)(pkt 2)
Rack. (70.5mm x 4.7mm x 5.13mm)(pkt 10)
Crown Gear. (OD 16.4mm x 6.9mm high)(pkt 10)
Chain Sprocket. 8 tooth 2.9mm bore. (OD 13.9mm)(pkt 10)
Chain Sprocket.16 tooth 2.9mm bore. (OD 26.7mm)(pkt 10)
Chain in 1m length approx. (7.1mm wide)
For gears 917D2445, 2446.
Chain in 1m length approx. (10.8mm Wide)
For gears 917D2401,2402, 2403 & 2404.

Part No. 917D2452.
Part No. 917D2456.
Part No. 917D2458.
Part No. 917D2460.
Part No. 917D2461.
Part No. 917D2462.
Part No. 917D2463.
Part No. 917D2501.
Part No. 917D2502.
Part No. 917D2504.
Part No. 917D2505.
Part No. 917D2506.
Part No. 917D2507.
Part No. 917D2509.
Part No. 917D2513.
Part No. 917D2515.
Part No. 917D2531.
Part No. 917D2540.
Part No. 917D2551.
Part No. 917D2553.
Part No. 917D2682.
Part No. 917D2683.

Double Gear. 48/12. 2.9mm bore. (OD24.57mm/OD6.72mm)(pkt 10)
Double Gear. 48/12. 3.1mm bore. (OD24.57mm/OD6.72mm)(pkt 10)
Pinion. 12 tooth (for motor) 1.9mm Bore. (OD6.92mm)(pkt 10)
Pulley. 14/10mm dia. 2.9mm bore.(pkt 10)
Pulley. 30/25mm dia. 2.9mm bore.(pkt 10)
Pulley. 30/25mm dia. 3.9mm bore with brass sleeve.(pkt 10)
Pulley. 8/5.5m dia. 2.9mm bore. (pkt 10)
Robotic Wheels - 25mm x 10mm. 2.6mm bore.(pkt 4)
Robotic Wheels - 35mm x 7mm. 2.6mm bore.(pkt 4)
Robotic Wheels - 51mm x 16mm. 2.6mm bore.(pkt 4)
Robotic Wheels - 68mm x 20mm. 3.5mm bore.
Robotic Wheels - 37mm x 16mm. 2.6mm bore.(pkt 4)
Robotic Wheels - 44mm x 16mm. 2.6mm bore.(pkt 4)
Robotic Wheels - 56mm x 16mm. 2.6mm bore.(pkt 4)
Robotic Wheels - 54mm x 30mm. 2.6mm bore.
'O' Ring 70mm x 5mm dia.
Perforated Metal Strip. (305mm x 8.75mm x 0.5mm)(pkt 5)
Perforated Metal Sheet. (200mm x 110mm x 0.6mm)
Shaft 3mm dia (long for output). (3mm x 110mm)(pkt 10)
Shaft 3mm dia (short for intermediate). (3mm x 60mm)(pkt 10)
Spacers (25mm).(pkt 10)
Spacers (30mm).(pkt 10)

RACK & PINION SET. PT.NO. 917D/1.

Consisting of: 1 Rack (917D2430), 1 Pinion (917D2401) and Mounting Screws.

CHAIN & SPROCKET SET. PT.NO. 917D/3.

Consisting of:2 Sprockets(917D2445),2 Sprockets(917D2446)
& 1m approx Chain(917D2449)

CROWN WHEEL & PINION SET. PT.NO. 917D/5.

Consisting of: 1 Crown Wheel (917D2440) & 1 Pinion (917D2401).

PULLEY SET. PT. NO. 917D/7.

Consisting of: 1 each of Pulley (917D2460, 917D2461, 917D2462,
917D2463) Micro Switch operating Pin. (917D2417), & "O" Ring
(917D2515).

GEAR SET. PT.NO. 917D/2.

Consisting of:4 gears(917D2456),2 gears (917D2452) and 1 Pinion
(917D2458).

WORM DRIVE SET. PT.NO. 917D/4.

Consisting of:1 Worm drive(917D2420),& 1 Spur Gear(917D2404).

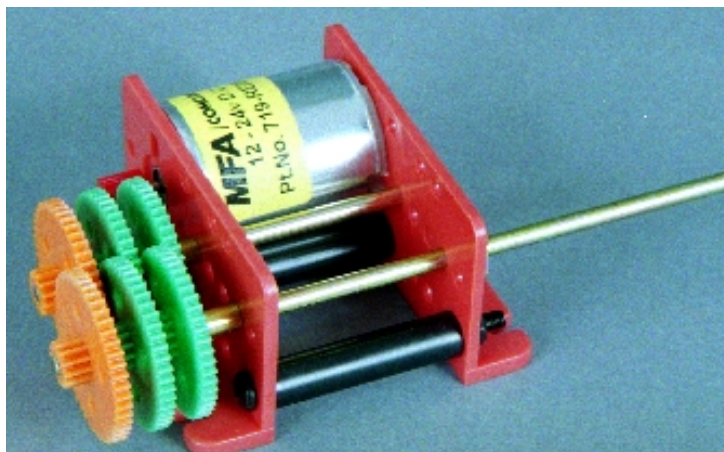
SPUR GEAR SET. PT.NO. 917D/6.

Consisting of: 1 each Spur Gear (917D2403, 917D2401 & 917D2404).

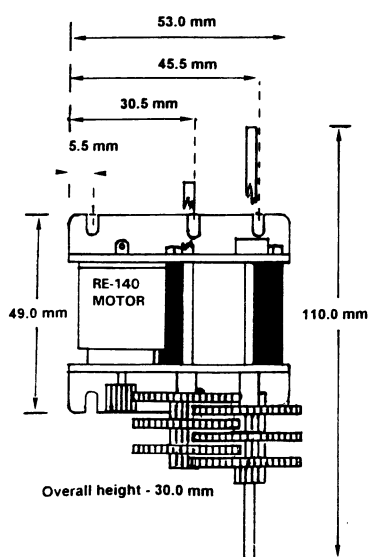
MULTI RATIO GEARBOX

MULTI RATIO GEARBOX

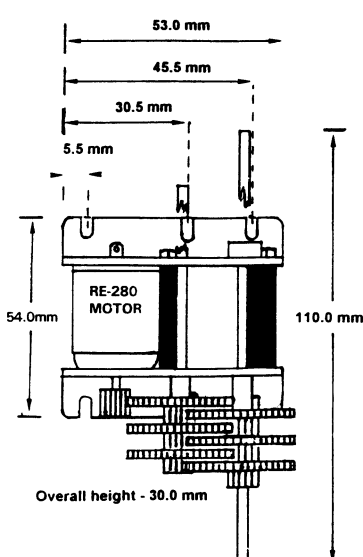
917D KIT FORM (RE 140 MOTOR)
 917D/A ASSEMBLED VERSION (RE 140 MOTOR)
 920D KIT FORM (RE 280 MOTOR)
 920D/A ASSEMBLED VERSION (RE 280 MOTOR)
 927D KIT FORM (RE 280/1 MOTOR)
 927D/A ASSEMBLED VERSION (RE 280/1 MOTOR)



GEARBOX DIMENSIONS. (917D)



(920D & 927D)



***PROVIDES 6 DIFFERENT RATIOS AND 18 SPEEDS. *RUGGED AND COMPACT DESIGN AND CONSTRUCTION. *IDEAL FOR MODELS, CDT (CRAFT, DESIGN AND TECHNOLOGY) PROJECTS. *OPERATES FROM 1.5 - 3v (RE140 &, WITH THE HIGHER TORQUE MOTOR, RE280) AND 12 - 24v (RE280/1) D.C. SUPPLIES. *EXTENSIVE RANGE OF ACCESSORIES AVAILABLE.**

The unit operates on 1.5 - 3v (917D & 917D/A, also with higher torque motor 920D & 920D/A), or 12-24v (927D & 927D/A) D.C. power sources, either battery or suitable transformer. Its simple versatile design and sturdy construction make it suitable for a host of uses from powering models and robots to teaching the principles of mechanics. Current consumption depends on eventual load but is within the range 0.2 to 0.8n amps. The output shaft is 3mm diameter.

IMPORTANT NOTICE
 Due to the wide range of applications for this product it is the users responsibility to establish the products suitability for their individual purpose(s).

WEIGHT	
917D	54g
920D	76g
927D	76g

MOTOR DATA. (RE-140, RE-280 & RE-280/1)

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF	oz - in	g - cm
			R.P.M.	A	R.P.M.	A	oz - in	g - cm	W	%		
RE - 140	1.5 - 3.0	3.0v CONSTANT	14800	0.300	11500	1.05	0.152	10.92	1.29	41.03	0.68	49.0
RE - 280	1.5 - 3.0	1.5v CONSTANT	4600	0.120	3750	0.53	0.160	11.53	0.44	56.20	0.86	62.0
RE - 280	1.5 - 3.0	3.0v CONSTANT	9200	0.155	7800	0.85	0.278	20.00	1.60	62.30	1.81	130.0
RE - 280/1	12 - 24	12V CONSTANT	8400	0.100	6300	0.30	0.347	25.00	1.62	44.87	1.389	100.0

REDUCTION TABLE R.P.M. (917D)

	1.5V	3.0V
4:1	1850	3700
16:1	462	925
64:1	115	231
256:1	29	57
1024:1	7	14
4096:1	2	4

REDUCTION TABLE R.P.M. (920D)

	1.5V	3.0V
4:1	1150	2300
16:1	287	575
64:1	72	144
256:1	18	36
1024:1	4	9
4096:1	1	2

REDUCTION TABLE R.P.M. (927D)

	12V	15V	18V	24V
4:1	2100	2625	3150	4199
16:1	525	656	787	1050
64:1	131	164	196	261
256:1	33	42	50	67
1024:1	8	10	12	16
4096:1	2	2	3	4

919D SERIES SINGLE RATIO METAL GEARBOX

(RE 540/1 MOTOR)



IMPORTANT NOTICE
Due to the wide range of applications for this product it is the users responsibility to establish the products suitability for their individual purpose(s).

RATIOS NOW AVAILABLE AS EX-STOCK ITEMS.

NEW!	919D2.51	(4.5v - 15v)	WITH RE 540/1 MOTOR.	RATIO 2.5:1
	919D61	(4.5v - 15v)	WITH RE 540/1 MOTOR.	RATIO 6:1
	919D111	(4.5v - 15v)	WITH RE 540/1 MOTOR.	RATIO 11:1
	919D501	(4.5v - 15v)	WITH RE 540/1 MOTOR.	RATIO 50:1
	919D1481	(4.5v - 15v)	WITH RE 540/1 MOTOR.	RATIO 148:1
	919D8101	(4.5v - 15v)	WITH RE 540/1 MOTOR.	RATIO 810:1
NEW!	919D30001	(4.5v - 15v)	WITH RE 540/1 MOTOR.	RATIO 3000:1

Designed for heavy-duty industrial and model applications this robust unit boasts a powerful high quality, three pole motor with sintered bronze bearings. The all steel gearbox incorporates bronze output bearings, enabling the high torque transfer from the motor to be transmitted through the gearbox. The unit is mounted on a 1mm thick plated steel bracket.

MOTOR DATA. (RE-540/1)

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			R.P.M.	A	R.P.M.	A	oz - in	g - cm	W	%	oz - in	g - cm
RE - 540/1	4.5 - 15.0	6.0v CONSTANT	7500	0.45	6180	2.1	1.64	118.2	7.49	59.4	9.31	670
		12.0v CONSTANT	15800	0.52	13360	2.85	2.14	154.4	21.2	61.9	13.9	1000

REDUCTION TABLE. R.P.M.

SUPPLY VOLTAGE	4.5v	6.0v	9.0v	12.0v	15.0v
919D2.51	2250	3000	4500	6300	7900
919D61	990	1316	1975	2633	3295
919D111	540	718	1077	1436	1800
919D501	120	158	237	316	395
919D1481	40	53	80	106	132
919D8101	8	10	15	20	25
919D30001	1.5	2	3	5	6

WEIGHT	
919D2.51	240g
919D61	234g
919D111	238g
919D501	246g
919D1481	255g
919D8101	255g
919D30001	262g

TORQUE TABLE (g.cm). (Theoretical rating for motor & gearbox combined).

	AT MAXIMUM EFFICIENCY		STALL TORQUE	
	6V	12V	6V	12V
RE 540/1 (2.5)	295	386	1675	2500
RE 540/1 (6:1)	709	926	4020	6000
RE 540/1 (11:1)	1300	1698	7370	11000
RE 540/1 (50:1)	5910	7720	33500	50000
RE 540/1 (148:1)	17493	22851	99160	148000
RE 540/1 (810:1)	95742	125064	542700	810000
RE540/1(3000:1)	354600	463200	2010000	3000000

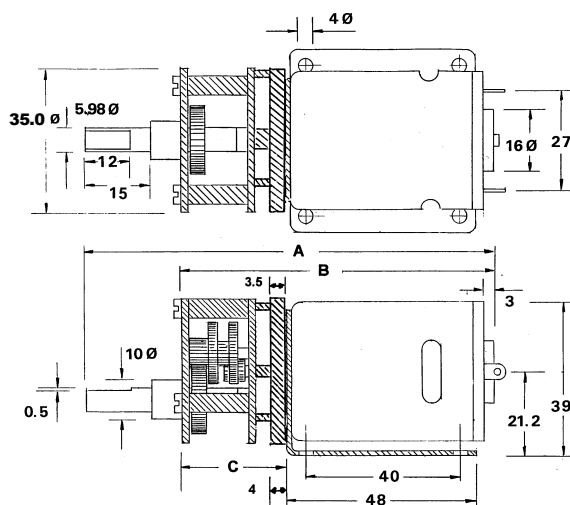
NOTE: To establish Torque Rating in nM divide g.cm by 10,197.0

24 volt versions are available for this range of motor-gearboxes. Performance data is similar to 12 volt versions. This version also has an extended 10mm rear shaft to accommodate motor encoders. When ordering please use 12v version part number suffixed with 24V. I.E. 919D111 will be 919D11124V

919D SERIES SINGLE RATIO METAL GEARBOX

(RE 540/1 MOTOR)

GEARBOX DIMENSIONS



GEARBOX REF.	A	B	C
919D2.5:1	99	73	20
919D61 (6:1)	99	73	20
919D111 (11:1)	101	76	22
919D501 (50:1)	105	80	26
919D1481(148:1)	107	82	28
919D8101(810:1)	109	94	30
919D3000:1	112	97	33



Part No. 1071. Anti vibration mount. M3



Part No. 919D30 Bearing Blocks. 5mm I.D.



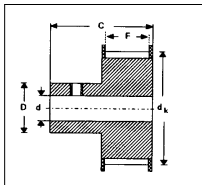
Part No. 919D30/1 Bearing Blocks. 6mm I.D.

Part No. 919D26/1 Steel Shaft 6mmOD x 150mm

TIMING PULLEYS



Part No. 919D7 - 14. Timing Pulleys.



Pt. No.	No. of teeth	d	dk	F	C	D
919D7	14	6	21.45	12	21.0	12
919D8	16	6	24.60	12	21.0	15
919D9	20	6	31.00	12	21.0	15
919D10	25	6	39.00	12	21.0	15
919D11	30	6	46.95	12	21.0	15
919D12	35	6	54.85	12	21.0	15
919D13	40	6	62.85	12	21.0	15
919D14	44	6	69.20	12	21.0	15

TIMING BELTS

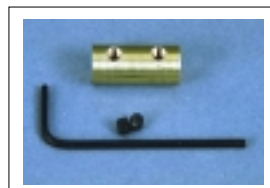


Part No. 919D15 - 23. Timing Belts.

Pt. No.	Length (Circum)	Width
919D15	165	9.8
919D16	185	9.8
919D17	200	9.8
919D18	305	9.8
919D19	390	9.8
919D20	455	9.8
919D21	545	9.8
919D22	630	9.8
919D23	840	9.8



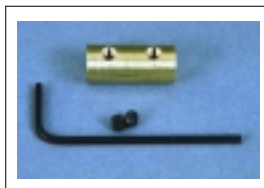
Part No. 919D29 Double ended motor mount.



Pt No. 919D1. In-Line Coupling. 6mm - 6mm. (Dia. 12.67mm x 24.8mm)



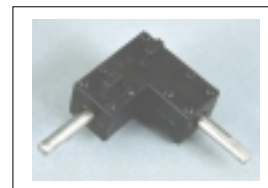
Pt No. 919D2. Voltage Regulator. (6-15v DC Input. 4v-12v output). 26mm x 31mm x 15.5mm



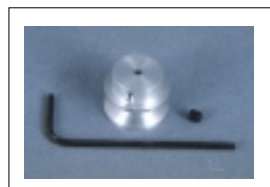
Pt No. 919D3. In-line Coupling. 6mm-8swg (Meccano) Dia. 12.67mm x 24.8mm



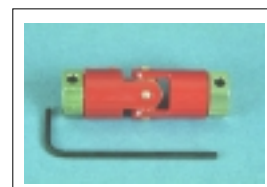
Pt No. 919D4. Pulley 25mm dia. (Aluminium)



Pt.No.919D24. Bevel Gear-box. (Right Angle)



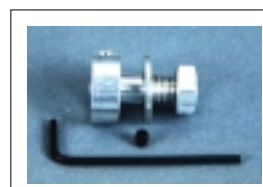
Pt No. 919D5. Pulley 16mm dia. (Aluminium)



Pt No. 919D6. Universal Coupling. 6mm - 6mm.



Pt No. 917D2515. "O" Ring 70mm x 5mm Dia.



Pt No. 919D27. Gear Adapter.



Pt No. 919D25. Nylon Bevel Gears 1:1. OD30.7mm ID 6mm

Subject to minimum order quantities of 250 units, the following ratios are also available with a six week lead-time. The physical dimensions of these other gearboxes may vary from the data as illustrated above. Details of individual gearboxes are available upon request.

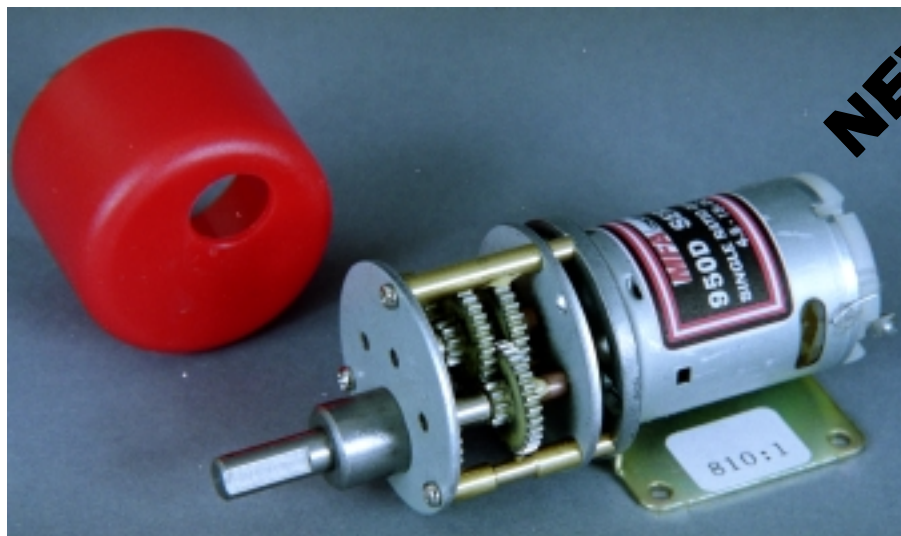
GEARBOX 18:1 WITH 540/1 MOTOR.
GEARBOX 70:1 WITH 540/1 MOTOR.
GEARBOX 100:1 WITH 540/1 MOTOR
GEARBOX 200:1 WITH 540/1 MOTOR
GEARBOX 350:1 WITH 540/1 MOTOR
GEARBOX 500:1 WITH 540/1 MOTOR
GEARBOX 900:1 WITH 540/1 MOTOR

GEARBOX 30:1 WITH 540/1 MOTOR.
GEARBOX 75:1 WITH 540/1 MOTOR.
GEARBOX 120:1 WITH 540/1 MOTOR
GEARBOX 250:1 WITH 540/1 MOTOR
GEARBOX 400:1 WITH 540/1 MOTOR
GEARBOX 600:1 WITH 540/1 MOTOR
GEARBOX 1000:1 WITH 540/1 MOTOR

GEARBOX 60:1 WITH 540/1 MOTOR
GEARBOX 90:1 WITH 540/1 MOTOR.
GEARBOX 180:1 WITH 540/1 MOTOR
GEARBOX 300:1 WITH 540/1 MOTOR
GEARBOX 450:1 WITH 540/1 MOTOR
GEARBOX 700:1 WITH 540/1 MOTOR
GEARBOX 1500:1 WITH 540/1 MOTOR

950D SERIES SINGLE RATIO METAL GEARBOX

(RE 385 MOTOR)



NEW!

IMPORTANT NOTICE
Due to the wide range of applications for this product it is the users responsibility to establish the products suitability for their individual purpose(s).

RATIOS NOW AVAILABLE AS EX-STOCK ITEMS.

950D2.51	(4.5v - 15v)	WITH RE 385 MOTOR. RATIO 2.5:1
950D61	(4.5v - 15v)	WITH RE 385 MOTOR. RATIO 6:1
950D111	(4.5v - 15v)	WITH RE 385 MOTOR. RATIO 11:1
950D501	(4.5v - 15v)	WITH RE 385 MOTOR. RATIO 50:1
950D1481	(4.5v - 15v)	WITH RE 385 MOTOR. RATIO 148:1
950D8101	(4.5v - 15v)	WITH RE 385 MOTOR. RATIO 810:1
950D30001	(4.5v - 15v)	WITH RE 385 MOTOR. RATIO 3000:1

Designed for heavy-duty industrial and model applications this robust unit boasts a powerful high quality, five pole motor with sintered bronze bearings. The all steel gearbox incorporates bronze output bearings, enabling the high torque transfer from the motor to be transmitted through the gearbox. The unit is mounted on a 1mm thick plated steel bracket.

MOTOR DATA. (RE-385)

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF	oz - in	g - cm
			R.P.M.	A	R.P.M.	A	oz - in	g - cm	W	%		
RE - 385	6.0 - 15.0	12v CONSTANT	11000	0.155	9281	0.837		65.3	6.21	61.85		417.6

REDUCTION TABLE. R.P.M.

SUPPLY VOLTAGE	4.5v	6.0v	9.0v	12.0v	15.0v
950D2.51	1890	2520	3375	5040	6300
950D61	787	1050	1575	2100	2625
950D111	429	572	858	1145	1430
950D501	94	126	189	252	315
950D1481	32	42	64	85	106
950D8101	5	7	11	15	18
950D30001	1.5	2	3	4	5

WEIGHT	
950D2.51	146g
950D61	144g
950D111	146g
950D501	156g
950D1481	162g
950D8101	164g
950D30001	168g

TORQUE TABLE (g.cm). (Theoretical rating for motor & gearbox combined).

	AT MAXIMUM EFFICIENCY		STALL TORQUE	
	12V		12V	
RE 385 (2.5)		165		1044
RE 385 (6:1)		392		2506
RE 385 (11:1)		718		4594
RE 385 (50:1)		3625		20880
RE 385 (148:1)		9664		61805
RE 385 (810:1)		52893		338256
RE 385 (3000:1)		195900		1252800

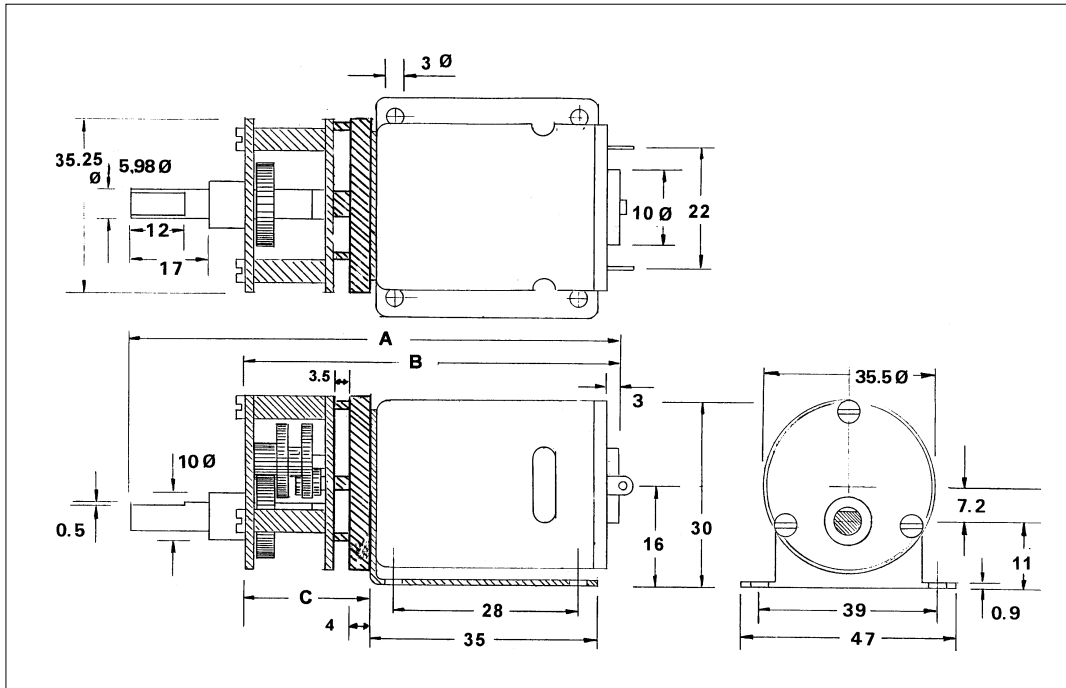
24 volt versions are available for this range of motor-gearboxes. Performance data is similar to 12 volt versions. This version also has an extended 10mm rear shaft to accommodate motor encoders. When ordering please use 12v version part number suffixed with 24V. I.E. 950D111 will be 950D11124V

NOTE: To establish Torque Rating in nM divide g.cm by 10,197.0

950D SERIES SINGLE RATIO METAL GEARBOX

(RE 385 MOTOR)

GEARBOX DIMENSIONS



GEARBOX REF.	A	B	C
950D2.5:1	85	60	19
950D61 (6:1)	85	60	19
950D111 (11:1)	85	60	19
950D501 (50:1)	90	65	24
950D1481 (148:1)	92	67	26
950D8101 (810:1)	95	70	29
950D3000:1	102	87	31

FOR ACCESSORIES TO FIT THIS SERIES GEARBOX, REFER TO 919D SERIES PAGE.

Subject to minimum order quantities of 250 units, the following ratios are also available with a six week lead-time. The physical dimensions of these other gearboxes may vary from the data as illustrated above. Details of individual gearboxes are available upon request.

GEARBOX 18:1 WITH 385 MOTOR.
GEARBOX 70:1 WITH 385 MOTOR.
GEARBOX 100:1 WITH 385 MOTOR
GEARBOX 200:1 WITH 385 MOTOR
GEARBOX 350:1 WITH 385 MOTOR
GEARBOX 500:1 WITH 385 MOTOR
GEARBOX 900:1 WITH 385 MOTOR
GEARBOX 3000:1 WITH 385 MOTOR

GEARBOX 30:1 WITH 385 MOTOR.
GEARBOX 75:1 WITH 385 MOTOR.
GEARBOX 120:1 WITH 385 MOTOR
GEARBOX 250:1 WITH 385 MOTOR
GEARBOX 400:1 WITH 385 MOTOR
GEARBOX 600:1 WITH 385 MOTOR
GEARBOX 1000:1 WITH 385 MOTOR

GEARBOX 60:1 WITH 385 MOTOR
GEARBOX 90:1 WITH 385 MOTOR.
GEARBOX 180:1 WITH 385 MOTOR
GEARBOX 300:1 WITH 385 MOTOR
GEARBOX 450:1 WITH 385 MOTOR
GEARBOX 700:1 WITH 385 MOTOR
GEARBOX 1500:1 WITH 385 MOTOR

941D SERIES PLANETARY (EPICYCLIC) SUB MINIATURE METAL GEARBOX



IMPORTANT NOTICE
Due to the wide range of applications for this product it is the users responsibility to establish the products suitability for their individual purpose(s).

RATIOS NOW AVAILABLE AS EX-STOCK ITEMS.

941D41	(1.5v - 12v)	RATIO 4:1
941D621	(1.5v - 12v)	RATIO 62:1
941D2311	(1.5v - 12v)	RATIO 231:1

Designed for heavy-duty industrial and model applications this robust unit boasts a powerful high quality motor with sintered bronze bearings. The all metal gearbox incorporates bronze output bearings, enabling the high torque transfer from the motor to be transmitted through the gearbox.

MOTOR DATA.

MODEL	VOLTAGE		NO LOAD		MAX EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		g - cm
			R.P.M.	mA	R.P.M.	mA	oz - in	g - cm	W	%		
(941D)	1.5 - 12.0	12.0v CONSTANT	8000	19	5881	70		8.68	0.5	63.26		26

REDUCTION TABLE. R.P.M.

SUPPLY VOLTAGE		3.0v	6.0v	9.0v	12.0v
941D41		350	800	1300	1800
941D621		18	50	82	119
941D2311		5	14	23	32

WEIGHT	
941D41	37g
941D621	45g
941D2311	49g

NOTE: It is not recommended to run the motor/gearbox combination at 1.5v

TORQUE TABLE (g.cm). (Theoretical rating for motor & gearbox combined).

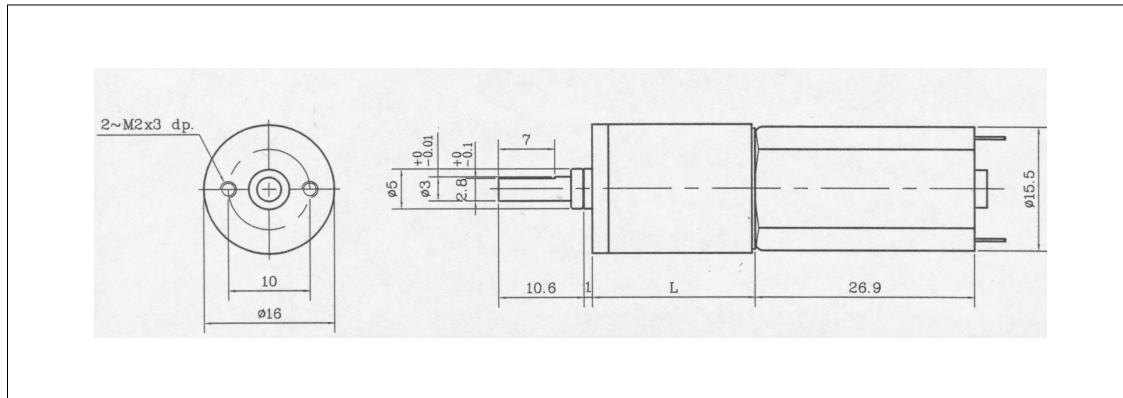
	AT MAXIMUM EFFICIENCY 12V	STALL TORQUE 12V
941D4:1 (4:1)	31	94
941D621 (62:1)	484	1451
941D2311 (231:1)	1805	5405

NOTE: To establish Torque Rating in nM divide g.cm by 10,197.0

24 volt versions are available for this range of motor-gearboxes. Performance data is similar to 12 volt versions. This version also has an extended 10mm rear shaft to accommodate motor encoders. When ordering please use 12v version part number suffixed with 24V. I.E. 941D621 will be 941D62124V

941D SERIES PLANETRY (EPICYCLIC) SUB MINIATURE METAL GEARBOX

GEARBOX DIMENSIONS



GEARBOX REF.	L
941D41 (4:1)	15
941D621 (62:1)	22.2
941D2311 (231:1)	25.8

FOR ACCESSORIES TO FIT THIS SERIES GEARBOX, REFER TO 917D SERIES PAGE.

ADVANTAGES OF PLANETARY GEARBOXES.

EFFICIENCY:	Efficiencies of planetary gearboxes can be above 90% while some other types of transmission can be 50% or less. This allows the use of smaller motors.
SIZE:	Planetary gearboxes can be half the size of conventional boxes.
WEIGHT:	Weight savings can be as high as 60%, allowing smaller, lighter support structures.
MAINTENANCE:	Other than routine oil changes, no maintenance is required, eliminating the need to hold spares.
REVERSIBLE:	Planetary gears can be equally efficient in either direction. This is an advantage for use in running machinery in both clockwise and anti-clockwise directions.
COAXIAL:	The coaxial configuration of input and output shafts allows planetary gears to be installed in line with a motor and a machine.

Subject to minimum order quantities of 100 units, the following ratios are also available with a six week lead-time. The physical dimensions of these other gearboxes may vary from the data as illustrated above. Details of individual gearboxes are available upon request.

GEARBOX 14:1 WITH MOTOR
GEARBOX 84:1 WITH MOTOR
GEARBOX 316:1 WITH MOTOR
GEARBOX 455:1 WITH MOTOR
GEARBOX 1621:1 WITH MOTOR

GEARBOX 19:1 WITH MOTOR
GEARBOX 104:1 WITH MOTOR
GEARBOX 370:1 WITH MOTOR
GEARBOX 1014:1 WITH MOTOR
GEARBOX 1996:1 WITH MOTOR

940D SERIES PLANETARY (EPICYCLIC) METAL GEARBOX

(RE 385 MOTOR)



NEW!

IMPORTANT NOTICE
Due to the wide range of applications for this product it is the users responsibility to establish the products suitability for their individual purpose(s).

RATIOS NOW AVAILABLE AS EX-STOCK ITEMS.

940D51	(4.5v - 15v)	RATIO 5:1
940D1001	(4.5v - 15v)	RATIO 100:1
940D5161	(4.5v - 15v)	RATIO 516:1

Designed for heavy-duty industrial and model applications this robust unit boasts a powerful high quality, five pole motor with sintered bronze bearings. The all metal gearbox incorporates bronze output bearings, enabling the high torque transfer from the motor to be transmitted through the gearbox.

MOTOR DATA. (RE-385)

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			R.P.M.	A	R.P.M.	A	oz - in	g - cm	W	%	oz - in	g - cm
RE - 385	6.0 - 15.0	12v CONSTANT	11000	0.155	9281	0.837		65.3	6.21	61.85		417.6

REDUCTION TABLE. R.P.M.

SUPPLY VOLTAGE	4.5v	6.0v	9.0v	12.0v	15.0v
940D51	700	1000	1600	2150	2800
940D1001	35	50	77	103	134
940D5161	6	8.5	14	19	25

WEIGHT	
940D51	167g
940D1001	214g
940D5161	239g

TORQUE TABLE (g.cm). (Theoretical rating for motor & gearbox combined).

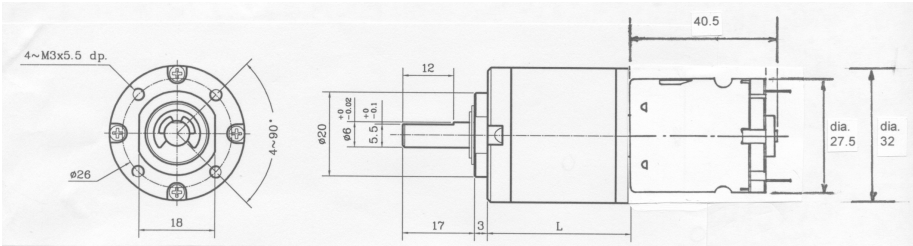
	AT MAXIMUM EFFICIENCY 12V	STALL TORQUE 12V
940D51 (5:1)	326.5	2008
940D1001 (100:1)	6530.0	41760
940D5161 (516:1)	33695.0	215482

NOTE: To establish Torque Rating in Nm divide g.cm by 10,197.0

24 volt versions are available for this range of motor-gearboxes. Performance data is similar to 12 volt versions. This version also has an extended 10mm rear shaft to accommodate motor encoders. When ordering please use 12v version part number suffixed with 24V. I.E. 940D1001 will be 940D100124V

940D SERIES PLANETRY (EPICYCLIC) METAL GEARBOX

GEARBOX DIMENSIONS



GEARBOX REF.	L
940D51 (5:1)	20.4
940D1001 (100:1)	33.2
940D5161 (516:1)	39.6

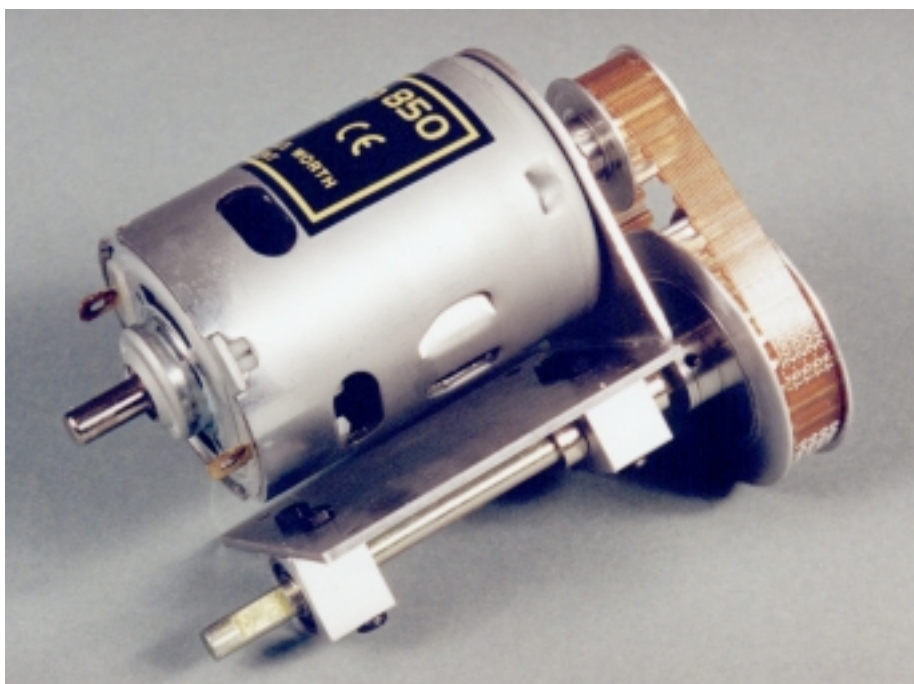
FOR ACCESSORIES TO FIT THIS SERIES GEARBOX, REFER TO 919D SERIES PAGE.

ADVANTAGES OF PLANETARY GEARBOXES.

EFFICIENCY:	Efficiencies of planetary gearboxes can be above 90% while some other types of transmission can be 50% or less. This allows the use of smaller motors.
SIZE:	Planetary gearboxes can be half the size of conventional boxes.
WEIGHT:	Weight savings can be as high as 60%, allowing smaller, lighter support structures.
MAINTENANCE:	Other than routine oil changes, no maintenance is required, eliminating the need to hold spares.
REVERSIBLE:	Planetary gears can be equally efficient in either direction. This is an advantage for use in running machinery in both clockwise and anti-clockwise directions.
COAXIAL:	The coaxial configuration of input and output shafts allows planetary gears to be installed in line with a motor and a machine.

Subject to minimum order quantities of 100 units, the following ratios are also available with a six week lead-time. The physical dimensions of these other gearboxes may vary from the data as illustrated above. Details of individual gearboxes are available upon request.

GEARBOX 19:1 WITH 385 MOTOR. GEARBOX 27:1 WITH 385 MOTOR.
 GEARBOX 71:1 WITH 385 MOTOR. GEARBOX 139:1 WITH 385 MOTOR
 GEARBOX 264:1 WITH 385 MOTOR GEARBOX 721:1 WITH 385 MOTOR

960D & 965D SERIES BELT DRIVE REDUCTION UNITS

Part No. 960D2.11 (RE 800 Motor)
 Part No. 965D2.11 (RE 850 Motor)
 Part No. 966D2.11 (Without motor)

This unit has been developed to meet a requirement for heavy duty high torque applications combined with relatively low power consumption.

The unit is powered by MFA/Como Drills 800 or MFA/Como Drills 850 series 12v d.c. 3 pole motors, with heavy duty carbon brush gear and double ended 6mm drive shaft. The motor is mounted on a rugged 1.5mm steel right angle bracket. The 2.1:1 reduction is achieved via two precision aluminium timing pulleys utilising a high quality toothed timing belt. The final drive is delivered through two block mounted precision ballraces with a 6mm keyed steel output shaft.

The RE800 motor version will deliver around 1229 g.cm torque (0.12 Nm) running at maximum efficiency. The RE850 motor version will deliver around 1380 g.cm torque (0.14 Nm) running at maximum efficiency.

MOTOR DATA. (RE 800)

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF	oz - in	mN-m
			R.P.M.	A	R.P.M.	A	oz - in	mN-m	W	%		
RE - 800	12.0v	12.0v CONSTANT	5167	1.058	4289	5.28		82.08	36.84	58.2		482.8

MOTOR DATA. (RE 850)

MODEL	VOLTAGE		NO LOAD		AT MAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF	oz - in	mN-m
			R.P.M.	A	R.P.M.	A	oz - in	mN-m	W	%		
RE - 850	12.0v	12.0v CONSTANT	9778	1.90	8311	10.82		92.13	157	61.74		614

942D SERIES PLANETARY (EPICYCLIC) METAL GEARBOX (RE 540/1 MOTOR)



IMPORTANT NOTICE
Due to the wide range of applications for this product it is the users responsibility to establish the products suitability for their individual purpose(s).

RATIOS NOW AVAILABLE AS EX-STOCK ITEMS.

942D51	(4.5v - 15v)	RATIO 5:1
942D1001	(4.5v - 15v)	RATIO 100:1
942D5161	(4.5v - 15v)	RATIO 516:1

Designed for heavy-duty industrial and model applications this robust unit boasts a powerful high quality motor with sintered bronze bearings. The all metal gearbox incorporates bronze output bearings, enabling the high torque transfer from the motor to be transmitted through the gearbox.

MOTOR DATA.

MODEL	VOLTAGE		NO LOAD		MAX EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		g - cm
			R.P.M.	A	R.P.M.	A	oz - in	g - cm	W	%		
540/1	4.5 - 15.0	12.0v CONSTANT	15,800	0.52	13360	2.85	2.14	154.4	21.2	61.9	13.9	1000

REDUCTION TABLE. R.P.M.

SUPPLY VOLTAGE	4.5v	6.0v	9.0v	12.0v	15.0v
942D51	1082	1502	2287	3090	3640
942D1001	51	71	108	146	172
942D5161	9.5	13	20	27	32

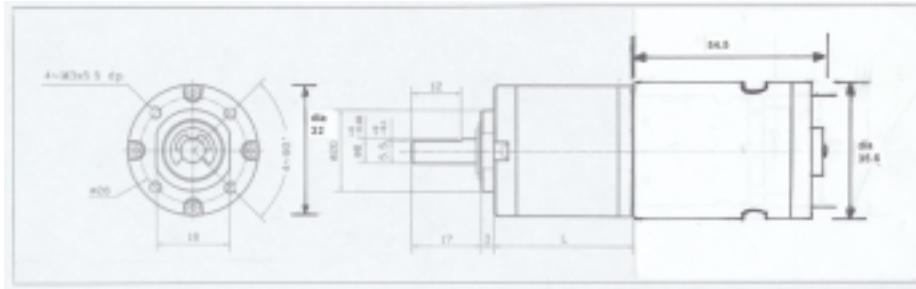
WEIGHT	
942D51	g
942D1001	g
942D5161	g

TORQUE TABLE (g.cm). (Theoretical rating for motor & gearbox combined).

	AT MAXIMUM EFFICIENCY 12V	STALL TORQUE 12V
942D51 (5:1)	772	5000
942D1001 (100:1)	15440	100,000
942D5161 (516:1)	79670	516,000

NOTE: To establish Torque Rating in Nm divide g.cm by 10,197.0

24 volt versions are available for this range of motor-gearboxes. Performance data is similar to 12 volt versions. This version also has an extended 10mm rear shaft to accommodate motor encoders. When ordering please use 12v version part number suffixed with 24V. I.E. 942D1001 will be 942D100124V

942D SERIES PLANETRY (EPICYCLIC) METAL GEARBOX**GEARBOX DIMENSIONS**

GEARBOX REF.	L
942D51 (5:1)	20.4
942D1001 (100:1)	33.2
942D5161 (516:1)	39.6

FOR ACCESSORIES TO FIT THIS SERIES GEARBOX, REFER TO 919D SERIES PAGE.

ADVANTAGES OF PLANETARY GEARBOXES.

EFFICIENCY:	Efficiencies of planetary gearboxes can be above 90% while some other types of transmission can be 50% or less. This allows the use of smaller motors.
SIZE:	Planetary gearboxes can be half the size of conventional boxes.
WEIGHT:	Weight savings can be as high as 60%, allowing smaller, lighter support structures.
MAINTENANCE:	Other than routine oil changes, no maintenance is required, eliminating the need to hold spares.
REVERSIBLE:	Planetary gears can be equally efficient in either direction. This is an advantage for use in running machinery in both clockwise and anti-clockwise directions.
COAXIAL:	The coaxial configuration of input and output shafts allows planetary gears to be installed in line with a motor and a machine.

Subject to minimum order quantities of 100 units, the following ratios are also available with a six week lead-time. The physical dimensions of these other gearboxes may vary from the data as illustrated above. Details of individual gearboxes are available upon request.

GEARBOX 19:1 WITH 540/1 MOTOR.
GEARBOX 71:1 WITH 540/1 MOTOR.
GEARBOX 264:1 WITH 540/1 MOTOR

GEARBOX 27:1 WITH 540/1 MOTOR.
GEARBOX 139:1 WITH 540/1 MOTOR
GEARBOX 721:1 WITH 540/1 MOTOR