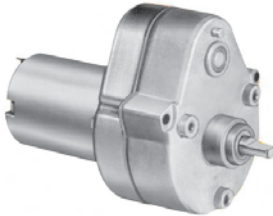


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Precision Geared Stepper Motors



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Stepper Motor Controllers



See page 798

Variable Speed Drives



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Light Duty DC Motors

Low Cost dc



- Three dc motors with different operating characteristics.

Left = High Speed, Middle = Medium Torque, Right = High Torque

Order Code	599-104	599-116	599-128
Operating voltage range (Vdc)	1.5 to 3	1.5 to 4.5	2.4 to 4.5
Nominal voltage (Vdc)	1.5/3	1.5/3	3
No load speed (RPM)	8700/16300	3000/6300	9600
Direction of Rotation*	Anti-clockwise	Clockwise	Clockwise
Current (A)	0.3/0.38	0.08/0.11	0.22
At maximum efficiency			
Speed (RPM)	6500/12000	2300/4900	7850
Current (A)	0.81/1.15	0.26/0.41	0.99
Torque (g/cm)	6.2/10.0	5.2/9.0	20.1
Efficiency %	33.9/35.6	38.3/46.0	55.2
Output (W)	0.41/1.23	0.14/0.51	1.64
Stall torque (g/cm)	24/44	21/44	112
Length inc. shaft	38	38	45
Diameter	20.1	23.8	24.2
Shaft length/dia	7.7/2	6.9/2	10.4/2
Weight (g)	17g	28g	42g

204306

	Order Code	1+	25+	Price Each	250+	500+
High Speed	599-104	1.10	0.78	0.68	0.55	0.44
Medium torque	599-116	1.34	0.95	0.81	0.69	0.55
High torque	599-128	1.99	1.42	1.22	1.02	0.80

Medium Duty DC Motors

12 and 24 Vdc 42mm Diameter



- For low speed drive applications
- Motor maximum power: 17W
- Sintered-bronze bearing

Body Length=88,
Dia Shaft=6,
Length Shaft=25.6

		308-9496	308-9502
Nominal voltage		12V	24V
No load characteristics			
Speed of rotation	rpm	2960	2750
Power consumption	W	4.8	4.3
Current consumption	A	0.4	0.18
Nominal characteristics			
Speed of	rpm	2000	2000
Torque	N-m	0.075	0.075
Rating power	W	15.7	15.6
Power consumption	W	30	26.4
Current consumption	A	2.5	1.1
Box warming	°C	44	40
Efficiency	%	52	59

231223

	Order Code	1+	Price Each	3+	10+
12V	308-9496	58.55	47.72	36.60	
24V	308-9502	58.55	47.72	36.60	

12 and 24 Vdc, 63mm Diameter



- Motor maximum power: 33W
- Ø 63mm: with 2 ball bearings. Power supply through 2 output threads
- For low speed driving applications

Body Length=108
Shaft Dia.=8, Shaft Length=25

		308-9770	308-9782
Nominal voltage		12V	24V
No load characteristics			
Speed	rpm	2100	2100
Power consumption	W	4.8	4.8
Current consumption	A	0.4	0.2
Nominal characteristics			
Speed	rpm	1500	1500
Torque	mN-m	0.172	0.172
Rating power	W	27	27
Power consumption	W	43	45
Current consumption	A	3.6	1.9
Max. operating temperature	°C	50	50
Efficiency	%	62	60

	Order Code	1+	Price Each	3+	10+
12V	308-9770	115.25	93.97	71.93	
24V	308-9782	115.25	93.97	71.93	

231224

12 and 24 Vdc, 42mm and 63mm Diameter



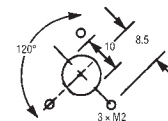
- For applications demanding high power
- Motor maximum power: 42 to 255W
- Ø 42mm: Sintered-bronze bearing. Power supply through 2 input springs
- Ø 63mm: with 2 ball bearings. Power supply through 2 input springs

Types		308-9939	308-9940	308-9952
Nominal voltage		12V	24V	24V
No load characteristics				
Speed	rpm	4150	4050	3700
Power consumption	W	7.32	7.44	10.8
Current consumption	A	0.61	0.31	0.45
Nominal characteristics				
Speed	rpm	3100	3200	3200
Torque	mN-m	0.1	0.1	0.27
Rating power	W	32.5	33.5	90
Power consumption	W	51	52	120
Current consumption	A	4.25	2.15	5
Max. operating temperature	°C	63	54	50
Efficiency	%	63	64	75
Body Dia.	mm	42	42	63
Body Length	mm	118	118	133
Shaft Dia.	mm	6	6	8
Shaft Length.	mm	25.2	25.2	25

231225

	Order Code	1+	Price Each	3+	10+
12	308-9939	83.89	68.53	52.34	
24	308-9940	83.89	68.53	52.34	
24	308-9952	132.63	108.23	82.82	

12 Volt dc Servo



Body: L=39.5, Dia.=29.
Shaft=7.5x3.0 dia.

Panel cut-out

- Designed for low noise, smooth running and accurate speed applications
- Ironless rotor, low inertia and high starting torque
- Suitable gearboxes also available

Current @ no load	56mA	Starting torque	30mNm
Current @ nominal torque	164 to 238mA	Nominal torque	5mNm
Nominal operating voltage	12V dc	Direction or rotation	Reversible
Maximum voltage	15V dc	Operating temperature	-10°C to +60°C

Shaft Speed (RPM)	Mftrs. List No.	Order Code
3000	9904-120-18105	147-875

220487

	Order Code	1+	Price Each	5+	25+	50+
	147-875	45.59	41.22	38.07	35.10	33.39

Brushless Motor 24 Vdc With Integrated Electronics



- 24 Vdc operation
- 12 Watt output power
- Choice of models providing clockwise or counter clockwise operation
- Variable speed depending on supply voltage
- Long maintenance free life and operating speeds up to 3000 rpm.

The unit provides a compact solution to a variety of light industrial applications including:

- Conveyor drives
- Tensioning mechanisms
- Paper feed and pump drives
- Scientific applications include stirring equipment
- Peristaltic pumps, mixing machines, and other variable speed applications

Voltage	Speed Maximum (RPM)	Power Continuous Output	Stall Torque (mNm)	Direction	Mftrs. List No.	Order Code
24Vdc	4550	12W	52	CCW	BLDC48-12L-031	415-8428

242739

	Order Code	1+	Price Each	5+	10+
Direction	415-8428	62.05	58.96	53.05	
CCW					

A-Max™ Program

maxon motor

A range of high quality, state of the art dc motors offering major advantages over traditional ironless dc motors including:-

- Reduced diameter commutator employing more segments for longer life
- Precision made rolled steel motor housing for high strength
- Matching planetary or spur gearheads
- Roll action spring on graphite brush version and 3 fingered wiper design on precious metal brush versions result in consistent pressure over entire lifetime
- Elimination of C-Clip groove on shaft results in higher torsional stability and greater cross-sectional strength
- Impact resistant glass fibre - reinforced plastic end caps resist temperatures up to +125°C and dampens noise
- CE approved

213840

6 and 12 V dc, 13mm Diameter

maxon motor

With Planetary Gearheads



Motor without Gearbox fitted
Body: L = 20.5
Diameter = 13
Shaft: L = 6
Diameter = 1.5

Motor Voltage	Speed(RPM)	Power	Stall Torque(mNm)	Mftrs. List No.	Order Code
6Vdc	11061	1.2W	2.7	203889	415-8556
12Vdc	13422	1.2W	3.1	203892	415-8568

Planetary Gearhead (Metal Gears)

Motor Speed with Gearhead fitted (RPM)	Gearhead Reduction Ratio	Torque(Nm) Constant/Peak	Length with Motor Fitted	Mftrs. List No.	Order Code
6V 12V	67:1	0.3 0.45	43.1	110315	415-8593
165 200	275:1	0.3 0.45	47.0	110316	415-8600
40 48	1119:1	0.35 0.53	50.8	110317	415-8611

242092

Order Code	Price Each				
	1+	5+	10+	25+	50+
Motor Without Gearbox					
6V dc 415-8556	47.42	46.96	45.55	44.08	41.55
12V dc 415-8568	47.42	42.97	40.73	39.40	37.14
Planetary Gearhead					
67:1 415-8593	35.57	35.10	33.25	32.18	30.34
275:1 415-8600	42.67	40.21	38.08	36.86	34.76
1119:1 415-8611	49.79	46.57	44.15	42.71	40.27

6 and 12 V dc, 16mm Diameter

maxon motor

With Planetary Gearheads



Motor without Gearbox Fitted
Body: L=25.4, Dia=16
Shaft: L=6.1, Dia=1.5

Planetary Gearhead
Body: Dia=16
Shaft: L=8, Dia=3

Motor Voltage	Speed(RPM)	Power	Stall Torque(mNm)	Mftrs. List No.	Order Code
6V	7533	2W	3.6	110044	909-579
12V	7200	2W	3.12	110048	909-580

Planetary Gearhead (Plastic Gears)

Motor Speed with Gearhead fitted (RPM)	Gearhead Reduction Ratio	Torque(Nm) Constant/Peak	Length with Motor Fitted	Mftrs. List No.	Order Code
6V 12V	19:1	0.15 0.225	44.5	110322	909-592
392 379	84:1	0.2 0.3	48.1	110323	909-609
89 85	370:1	0.25 0.375	51.7	110324	909-610
20 19	1621:1	0.3 0.45	55.3	110325	909-622

204328

Order Code	Price Each					
	1+	5+	10+	25+	50+	100+
Motor Without Gearbox						
6V 909-579	30.84	30.74	28.95	27.69	26.77	26.48
12V 909-580	34.87	34.76	32.73	31.32	29.01	28.19
Planetary Gearhead						
19:1 909-592	35.35	35.25	33.21	31.78	29.53	28.58
84:1 909-609	33.99	33.89	31.92	30.54	29.33	28.69
370:1 909-610	38.54	38.40	36.18	34.63	32.11	31.15
1621:1 909-622	43.02	42.86	40.37	37.96	34.33	33.52

6, 12 and 24 V dc, 22mm Diameter

maxon motor

With Spur and Planetary Gearheads



Motor without Gearbox Fitted
Body : L = 31.9, Dia = 22.
Shaft : L = 6.5, Dia = 2

Spur Gearhead
Body : Dia = 24
Shaft : L = 6.2, Dia = 3

Planetary Gearhead
Body : Dia = 22
Shaft : L = 9.1, Dia = 4

Motor Voltage	Speed (RPM)	Power	Stall Torque(Nm)	Mftrs. List No.	Order Code
9V	6646	5W	0.0154	110119	909-634
18V	6646	5W	0.01506	110124	909-646
36V	6533	5W	0.0143	110127	909-658

Spur Gearhead

Motor Speed with Gearhead Fitted (RPM)	Gearhead Reduction Ratio	Torque (mNm) Constant/Peak	Length with Motor Fitted	Mftrs. List No.	Order Code
6V 12V 24V	7:1	100 150	45.6	110480	909-701
923 923 907	20:1	100 150	49.3	110481	909-713
335 335 330	32:1	100 150	49.3	110482	909-725
205 205 202	64:1	100 150	49.3	110483	909-737
103 103 101	130:1	100 150	49.3	110484	909-749
51 51 50	325:1	100 150	53.1	110486	909-762

Planetary Gearhead (High Torque)

Motor Speed with Gearhead Fitted (RPM)	Gearhead Reduction Ratio	Torque (mNm) Constant/Peak	Length with Motor Fitted	Mftrs. List No.	Order Code
364 364 340	19:1	500 800	64.1	110338	909-660
79 79 77	84:1	800 1200	70.9	110339	909-671
18 18 17	370:1	1000 1600	77.7	110340	909-683
4.1 4.1 4	1621:1	1000 1600	84.5	110341	909-695

223309

Order Code	Price Each					
	1+	5+	10+	25+	50+	100+
Motor Without Gearbox						
9V 909-634	32.43	32.32	30.47	29.11	27.42	27.08
18V 909-646	32.43	32.32	30.47	29.11	27.42	27.08
36V 909-658	30.83	28.87	26.73	25.14	24.24	24.01
Spur Gearhead						
7:1 909-701	32.32	32.00	30.74	29.39	27.01	26.61
20:1 909-713	36.85	36.59	34.58	33.29	29.77	28.30
32:1 909-725	36.85	36.59	34.58	33.29	29.77	28.30
64:1 909-737	36.85	36.59	34.58	33.29	29.77	28.30
130:1 909-749	24.75	24.58	23.23	22.36	20.00	19.01
325:1 909-762	49.87	49.16	46.26	45.52	39.42	37.25
Planetary Gearhead (High Torque)						
19:1 909-660	57.86	57.27	55.40	52.62	45.38	42.66
84:1 909-671	61.46	60.86	58.44	55.66	52.15	48.19
370:1 909-683	65.45	65.23	61.23	58.32	53.75	49.83
1621:1 909-695	68.40	67.71	64.71	61.60	54.81	51.72

12 and 24 V dc

maxon motor

26mm Diameter



Motor without Gearbox
Body: L = 44.7
Diameter = 26
Shaft: L = 10.3
Diameter = 3

Motor Voltage	Speed(RPM)	Power	Stall Torque(mNm)	Mftrs. List No.	Order Code
12Vdc	7648	11W	70	121391	415-8623
24Vdc	8406	11W	81.5	121394	415-8635

242093

Order Code	Price Each				
	1+	5+	10+	25+	50+
Motor Without Gearbox					
12V dc 415-8623	87.72	83.12	78.80	76.27	71.88
24V dc 415-8635	87.72	83.12	78.80	76.27	71.88

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Medium Duty DC Motors - continued

12 and 24 V dc, 32mm Diameter
With Planetary Gearheads

maxon motor

Motor without Gearhead fitted
Body: L = 60,
Dia = 32,
Shaft: L = 9.5,
Dia = 4w



Planetary Gearhead (Metal Gears)
Body: Dia = 32
Shaft: L = 17, Dia = 6

Motor Voltage	Speed (RPM)	Power	Stall Torque(mNm)	Mfrs. List No.	Order Code
12V	4450	15W	90.4	242467	909-774
24V	5780	15W	120	242472	909-786

Planetary Gearhead (Metal Gears)

Motor Speed with Gearhead Fitted (RPM)	Gearhead Reduction Ratio	Torque (Nm) Constant/Peak	Length with Motor Fitted	Mfrs. List No.	Order Code
12V 927	1204	4.8:1 0.75 1.13	86.5	166156	909-853
24V 249	324	18:1 2.25 3.38	96.4	166159	909-865
67	87	66:1 4.5 6.75	103.1	166165	909-877
40	52	25:1 4.5 6.75	103.1	166169	909-889
18	23	246:1 4.5 6.75	109.8	166174	909-890

204327

Order Code	Price Each					
	1+	5+	10+	25+	50+	100+
Motor Without Gearbox						
12V 909-774	92.86	92.63	87.36	83.57	73.53	70.16
24V 909-786	92.86	92.63	87.36	83.57	73.53	70.16
Planetary Gearhead (Metal Gears)						
4.8:1 909-853	116.56	115.95	109.62	104.73	97.47	90.08
18:1 909-865	141.33	140.78	132.75	126.86	117.78	110.08
66:1 909-877	117.34	116.89	109.61	104.89	97.67	92.17
111:1 909-889	192.85	192.35	180.95	173.07	160.75	144.29
246:1 909-890	192.84	191.95	179.40	169.61	157.21	144.29

12 and 24 V dc, 32mm Diameter
With Through Shaft

maxon motor



- Dual shaft allows gearhead and encoder to be fitted
- Supplied with pinion for 32mm gearboxes see below

Body: L = 61.5 Shaft: L = 9.8 Rear Shaft: L = 15.6
Diameter = 32 Diameter = 4 Diameter = 4

Motor Voltage	Speed(RPM)	Power	Stall Torque(mNm)	Mfrs. List No.	Order Code
12Vdc	4590	15W	96.8	243066	415-8726
24Vdc	5860	15W	129	240987	415-8738

242094

Motor	Order Code	Price Each				
		1+	5+	10+	25+	50+
12V dc	415-8726	86.31	80.18	74.38	70.07	66.48
24V dc	415-8738	86.31	80.18	74.38	70.07	66.48

24 V dc, 36mm Diameter
With Through Shaft

maxon motor



- Dual shaft allows gearhead and encoder to be fitted
- Motors can be used with 42mm gearboxes using adapter kit

Body: L = 71.2 Shaft: L = 20 Rear Shaft: L = 15.6
Diameter = 36 Diameter = 6 Diameter = 4

Motor Voltage	Speed(RPM)	Power	Stall Torque(mNm)	Mfrs. List No.	Order Code
24Vdc	6210	70W	783	137576	415-8740

242095

Motor	Order Code	Price Each			
		1+	5+	10+	
24V dc	415-8740	129.58	128.07	113.03	

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24 V dc, 40mm Diameter
With Through Shaft

maxon motor



- Dual shaft allows gearhead and encoder to be fitted
- Motors can be used with 42mm gearboxes using adapter kit

Body: L = 71 Shaft: L = 20.3 Rear Shaft: L = 15.6
Diameter = 40 Diameter = 6 Diameter = 4

Motor Voltage	Speed(RPM)	Power	Stall Torque(mNm)	Mfrs. List No.	Order Code
24Vdc	7580	150W	2290	148867	415-8763

242096

Motor	Order Code	Price Each		
		1+	5+	10+
24V dc	415-8763	219.30	216.77	191.29

Encoder Unit

maxon motor



- Encoder unit for use with maxon servo amplifiers
- Fits Maxon motors with rear shafts
- Built in line driver

242098

Mfrs. List No.	Order Code	Price Each	
		1+	5+
110518	942-0312	71.13	61.66

Encoder Mounting Kit

maxon motor



- Enables encoder 4205136 to be fitted to various motors
- Kit includes sleeves for 2,4 and 6 mm shaft diameters

242099

Mfrs. List No.	Order Code	Price Each			
		1+	5+	10+	25+
MMUK02043	415-8957	8.12	7.59	7.03	6.62

12 and 24V dc, 32mm Diameter
With Ovoid Gearheads

Crouzet



Motor without Gearhead
L=44.6, Ø=32
Axe L=12, Ø=2

Motor with Gearhead
L=61.3, W=54.2,
H=65.9,
Shaft L=3.2, dia = 8
fixing centers 47.6, Ø 3.2

- Motor or Motor with fitted Gearbox options available
- Sintered bronze bearings lubricated for life
- High performance plastic gears
- Fitted with interference suppression

Voltage	Motor Speed without Gearhead RPM	Torque (Nm)	Mfrs. List No.	Order Code
24V	5000	0.0077	82860004	599-815

204340

Output Speed (RPM)	Voltage	Order Code	Price Each				
			1+	10+	25+	50+	100+
Motor Without Gearhead							
5000	12	599-803	21.78	20.74	19.83	17.94	16.42
5000	24	599-815	29.15	27.76	26.55	24.01	21.98
12V Motor with Fitted Gearhead							
Output Speed (RPM)	Order Code	Price Each					
430		1+	3+	10+			
108		311-5525	40.24	38.19	31.55		
54		311-5550	40.43	38.37	31.70		
3.6		311-5562	40.24	38.19	31.55		

204340

Output Speed (RPM)	Voltage	Order Code	1+	10+	Price Each	25+	50+	100+
24V Motor with Fitted Gearhead								
430		311-5616	40.43	38.37	31.70			
108		311-5641	40.43	38.37	31.70			
22		311-5665	30.81	29.24	24.15			
11		311-5677	30.33	28.79	23.79			
8.6		311-5689	40.43	38.37	31.70			
3.6		311-5690	40.43	38.37	31.70			

DC Motors Geared

Geared DC Instrument Motors 1271 Series



- Suitable to a wide range of applications
- Small sized unit
- The integral iron core motor provides smooth operation
- Has bi-directional variable speed capability
- Gearhead utilises a multi-stage metal spur gear train
- Working torque rated up to 0.2Nm
- Suitable for mounting in any attitude
- Reliable over a wide ambient temperature range
- Equipped with integral VDR electrical suppression

Overall Length	Gear Ratio	Nominal Voltage	No-load Speed	Rated Speed	Rated Torque (Ncm)	Rated Current (mA)	Mass (grams)	Order Code
51.5	21:1	12	125	80	2.5	50	55	399-9919
56.5	43:1	12	60	40	3.8	50	57	399-9920
56.5	90:1	12	30	18	8.0	50	58	399-9932
61.5	188:1	12	14	9	14	50	59	400-0961

Body diameter 27 mm Max. Axial shaft load 5 N
 Max. no load current 20 mA Ambient temperature range -20°C to +60°C
 Max. Radial shaft load 10 N

250201

Mfrs. List No.	Order Code	1+	Price Each	5+	10+
1271-12-21	399-9919	14.77	14.47	14.19	
1271-12-43	399-9920	15.82	15.49	15.19	
1271-12-90	399-9932	16.05	15.74	15.42	
1271-12-188	400-0961	17.18	16.84	16.50	

12 Volt dc Geared



- High quality, long life 12Vdc motors
- Integrated gearboxes
- Permanent magnet stator, flat commutator and built-in spark suppressor
- Chemical resistant polyacetal housing

Current @ no load 45mA
 Current @ nominal torque 185mA
 Nominal operating voltage 12V dc
 Maximum voltage 18V dc
 Direction of rotation Reversible
 Operating temperature -20°C to +60°C

Body: L = 65.5, Dia = 38.6, Flange = 39 x 39
 Fixing centres = 32.32 2.7 dia., Shaft = 8.5 4.0 dia.

(Shaft Speed RPM)	Reduction Ratio	Torque (Nm)	Mfrs. List No.	Order Code
60	50:1	0.125	9904-120-52605	147-873
330	9:1	0.025	9904-120-52602	147-874

204358

Order Code	1+	5+	Price Each	25+	100+	250+
147-873	24.59	22.51	21.67	20.68	17.30	
147-874	24.59	22.51	21.67	20.68	17.30	

12 and 24V dc 40mm Diameter Spur Gearheads



Motor with Gearhead fitted
 Body: L = 68 (18:1 and 30:1 gearbox fitted),
 70 (60:1 and 100:1), 73 (200:1),
 75 (500:1 and 900:1)
 Dia. = 40, Flange = 38, 38,
 Fixing centres = 30.5 30.5 2.6
 Shaft Dia. = 15 6 dia.

- High quality reversible motor
- Ironless rotor gives excellent linear speed-torque performance
- Precious metal brush commutation guarantees low contact resistance, low starting voltage, low electrical interference and high efficiency
- Matching spur gearheads have steel gears on bronze shafts
- Flat on output drive shaft for easy load coupling

Motor Speed without Gearhead RPM		Torque(Nm) Constant/Peak	Mfrs. List No.	Order Code
12V	4090	0.01366/0.0319	2140.934-61.112-050	650-304
24V	4110	0.013/0.03	2140.937-61.112-050	650-316

Motor Speed with Gearhead Fitted (RPM)	Gearhead Reduction Ratio	Torque(Nm) Constant/Peak	Mfrs. List No.	Order Code
12V	24V			
220	230	18:1	0.2/0.6	110453 650-328
135	140	30:1	0.2/0.6	110454 650-330
65	70	60:1	0.3/0.9	110455 650-341
40	42	100:1	0.6/1.8	110456 650-353
20	21	200:1	0.6/1.8	110457 650-365
8	8	500:1	0.6/1.8	110458 650-377
4	4	900:1	0.6/1.8	110459 650-389

204317

Motor without Gearhead	Order Code	1+	10+	Price Each	20+	50+	100+
12V	650-304	35.44	33.18	30.00	29.07	27.40	
24V	650-316	35.81	33.53	30.29	29.39	27.71	

Gearhead	Order Code	1+	10+	Price Each	20+	50+	100+
18:1	650-328	21.74	20.37	18.41	17.86	16.83	
30:1	650-330	35.30	33.04	29.89	28.98	27.31	
60:1	650-341	35.08	32.85	29.67	28.81	27.14	
100:1	650-353	37.94	35.51	32.10	31.17	29.36	
200:1	650-365	37.94	35.52	32.10	31.17	29.36	
500:1	650-377	36.60	34.25	30.97	30.07	28.33	
900:1	650-389	37.94	35.52	32.10	31.17	29.36	

12 and 24V dc

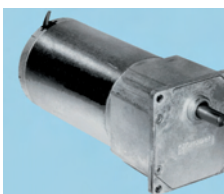


- Speed range : 2.9 to 108 rpm
- Mechanical resistance gearhead : 0.5 to 2Nm, high performance plastic gears
- Motor maximum power : 3.9W, fitted with interference suppression

231239

Speed (rpm)	Order Code	1+	Price Each	3+	10+
12 V Motor with Gearhead					
108	308-9370	49.76	48.66	46.80	45.80
27	308-9393	50.01	48.90	46.01	45.01
2.9	308-9423	49.76	48.66	46.80	45.80
24V Motor with Gearhead					
54	308-9447	50.01	48.90	46.02	45.02
27	308-9459	49.76	48.66	46.80	45.80
7.2	308-9472	50.01	48.90	46.02	45.02
2.9	308-9484	50.01	48.90	46.02	45.02

12 and 24V dc Geared Motor



- High quality gearhead, fully metal
- Basic speeds range : 7.3 to 616 rpm
- Mechanical resistance : 5Nm, for longer life
- Motors: maximum power 33W

Voltage 12V 24V
 Motor basic speed (rpm) 1800 1800

Ratio	Mfrs. List No.	Mfrs. List No.
266	6.75	80835012
147	12.25	80835012
73	24.5	80835014
47	38.28	80835003
29.4	61.25	80835008
14.7	122.5	80835006
7.4	245	80835005

231245

12 V Motor with Gearhead	Order Code	1+	Price Each	3+	10+
266	308-9861	204.75	167.14	127.81	
73	308-9885	169.88	138.63	106.18	
24V Motor with Gearhead					
266	308-9850	106.79	--	--	
147	308-9812	188.54	153.87	117.74	
73	308-9794	203.49	166.07	127.19	
47	308-9800	203.49	166.06	127.19	
29.4	308-9848	203.49	166.06	127.19	
14.7	308-9836	220.92	180.40	138.00	
7.4	308-9824	220.92	180.40	138.00	

DC Motors Geared - continued

12 or 24V dc Geared Motor



- Speed range from 1.5 to 441 rpm
- Mechanical resistance gearhead : 0.5Nm, sintered metal gears
- Fitted with interference suppression
- Output Power = 3.9 watt

Speed (RPM)		Price Each			
12 V	Order Code	1+	3+	10+	
441	307-9521	61.95	50.54	38.62	
141	307-9533	46.27	39.24	34.07	
45	307-9545	46.26	38.96	33.65	
5	307-9594	67.62	55.19	42.22	
1.5	307-9600	53.30	46.20	40.77	
24 V	Order Code	1+	3+	10+	
441	307-9557	61.65	50.28	38.43	
141	307-9569	57.28	46.74	35.71	
45	307-9570	61.65	50.28	38.43	
14	307-9612	67.96	55.47	42.43	
1.5	308-7335	67.62	55.19	42.22	

231250

24V dc Brushless geared motor



- Fully metal gearhead with ball bearings on axis output
- Speed range : 6 to 504 rpm
- Mechanical resistance : 0.3 to 5Nm according to speed reducing ratio
- Max. power : 35W

Voltage 24V

Output Speed (RPM)		Price Each			
10% to 100%		Order Code	1+	3+	10+
9	89	309-4558	287.56	280.61	262.98
6	56	309-4560	286.15	279.23	261.69

227049

12V and 24V dc geared motor



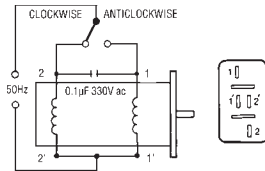
- Speed range from 5.2 to 208 rpm
- Mechanical resistance of the gearhead : 0.5Nm
- Motor maximum power : 17W

Output Speed (RPM)		Price Each			
12 Vdc	Order Code	1+	3+	10+	
208	308-9526	134.73	109.96	84.03	
5.2	308-9710	135.40	110.50	84.45	
24 Vdc	Order Code	1+	3+	10+	
104	308-9733	135.40	110.50	84.45	
62	308-9745	134.73	109.96	84.03	
21	308-9514	134.73	109.96	84.03	

227051

Medium Duty AC Motors

240V ac Synchronous



Body: L=25, Dia.=51. Shaft=8.2x3.0 dia. Fix. Cent.=60.2x3.5 dia. (if mounting ears fitted)

- Suitable for ac servo systems where instant start/stop and reverse is required
- Requires 0.1µF 350V ac capacitor for operation (not supplied)
- Available with or without mounting ears
- Gearboxes also available

Current	16mA	Torque	20mN-m
Power consumption	3.5W	Required phasing capacitor	0.1µF @ 330V ac
Operating voltage	240V ac	Operating temperature	-20°C to +60°C
	-15%+10%		

Shaft Speed (RPM) 250 Mfrs. List No. 9904-111-31104 Order Code 147-876 or 147-877

220488

	Order Code	1+	5+	25+	100+	500+
With mounting ears	147-876	29.98	26.74	23.18	19.78	17.76
Without mounting ears	147-877	31.08	27.43	23.78	20.32	18.23

FOR MORE INFORMATION & CHOICE

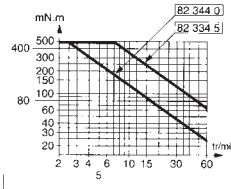
Product Search

AC Motors



RoHS Compliant Items Only | Advanced Search

Synchronous Geared/Gearhead Motors, One Direction



- Constant speed according to the power supply frequency
- Wide speed range
- Highly reliable control of rotational direction (> 10⁷ operations)
- Rotor with Permanent magnet

231289

Anti-clockwise - 82 3440 Series		Order Code	1+	3+	10+
RPM					
30		309-1260	43.13	35.19	26.93
15		309-1296	43.13	35.19	26.93
5		309-1399	43.13	35.19	26.93
1		309-4200	43.13	35.19	26.93
Clockwise - 82 3440 Series					
4		309-1405	46.05	37.59	28.75
1		309-4250	43.13	35.19	26.93
0.5		313-4982	41.05	33.50	25.62

Gearboxes

High Precision Instrument Gearhead



- Suitable for use with the dc servo, ac synchronous and four phase stepper motors, 147-878, 147-879.
- Based on the international ovoid standard
- Internal components provide high efficiency and reliable operation in applications demanding long life

Body: H = 63, W = 50, D = 16.5, Shaft = 10.4 dia

When used with synchronous and stepper motors, 147-878, 147-879, the motors must be ordered without mounting ears fitted. Supplied with full instructions. The motor pinion may be fitted to the motor using Loctite Grade 601 (Order Code 146-317)

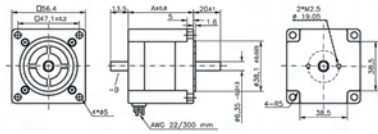
Ratio	dc Servo Speed RPM	Sync Motor Speed	Stepper Motor Step Angle	Order Code
25:3	360	30rpm	0.9°	147-880
25:2	250	20rpm	0.6°	147-881
25:1	120	10rpm	0.3°	147-882
50:1	60	5rpm	0.15°	147-883
125:1	25	2rpm	0.06°	147-884
250:1	12	1rpm	0.03°	147-885
1250:1	2.5	0.2rpm	0.36°	147-886
15000:1	0.2	0.016rpm	0.03°	147-887

231951

Ratio	Order Code	1+	10+	25+	50+
25:3	147-880	19.81	17.54	15.70	13.94
25:2	147-881	19.41	17.42	16.52	15.85
25:1	147-882	19.47	17.49	16.57	15.90
50:1	147-883	19.47	17.49	16.57	15.90
125:1	147-884	21.27	19.20	18.13	17.48
250:1	147-885	21.27	19.20	18.13	17.48
1250:1	147-886	20.55	18.84	17.38	16.14
15000:1	147-887	29.82	27.25	25.69	24.66

Stepper Motors

ST5709 Series Stepping Motors



Stepping motors with 8 connecting lines which can be driven both in a unipolar form and in a bipolar form.

- Step angle 0.9°, two shaft ends
- Holding torque 106/191 Ncm for bipolar drive
- Simple encoder fitting

Technical data:

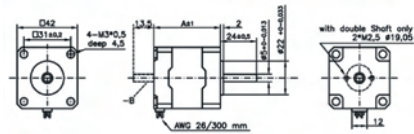
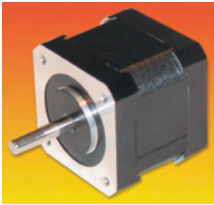
ST5709 Steppingmotor, 2 Phases High Torque

Type	holding torque (Ncm)	Current A	Weight (Kg)	Lenght A (mm)
ST5709S1208-B	75	1.2	0.65	52.5
ST5709L1108-B	135	1.1	1.0	77.5

334393

Type	Order Code	Price Each			
		1+	5+	10+	25+
ST5709S1208-B	474-3155	31.87	29.66	28.17	26.81
ST5709L1108-B	474-3167	46.45	42.75	40.54	39.05

ST4209 Series Stepping Motors



Stepping motor with 8 connecting lines which can be driven in both a unipolar form and a bipolar form.

- Step angle 0.9°, two shaft ends
- Holding torque 21 Ncm with a bipolar drive

Technical data:

ST4209 Steppingmotor, 2 Phasen High Torque

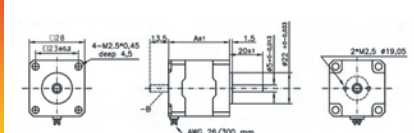
Current per coil (bipolare connection):	0,67 A/coil
Weight:	0.22Kg
Lenght "A" (see drawing):	33.5mm

Type	Description
ST4209S1006-B	Stepping motor, 2 Phase High Torque

334330

Type	Order Code	Price Each			
		1+	5+	10+	25+
ST4209S1006-B	474-3143	23.68	21.98	20.14	16.59

ST Series Stepping Motors



Stepping motors with 6 connecting lines which can be driven in both a unipolar form and a bipolar form.

- Step angle 1.8°, two shaft ends
- Holding torque 7/10.6 Ncm for bipolar drive
- Simple encoder fitting

Technical data:

ST2818 Steppingmotor, 2 Phases High Torque

Type	holding torque (Ncm)	Current (A)	Weight (Kg)	Lenght A (mm)
ST2818S1006-B	5	0.95	0.12	31.2
ST2818M1006-B	7,5	0.95	0.2	44.5

334407

Type	Order Code	Price Each			
		1+	5+	10+	25+
ST2818S1006-B	474-3179	21.34	19.76	18.77	17.92
ST2818M1006-B	474-3180	22.11	20.55	19.54	18.56

FOR MORE INFORMATION & CHOICE

Product Search

Stepper Motors



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Size 16 Hybrid Stepper Motor 1.8°



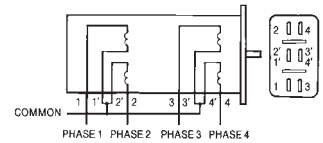
- High dynamic performance
- Ideal for instrumentation drives
- Compact dimensions
- Provides 200 steps/revolution
- Holding torque 5 Ncm
- Uni-polar operation

H = 39, W = 39, L.body = 20.5, L.shaft = 24

Holding Torque (Ncm)	Resistance per phase (ohms)	Current per phase (amps)	Inductance per phase (mH)	Number of leads	Order Code
5	24	0.26	12.5	6	410-1789 250217

Mfrs List No.	Order Code	1+	5+	10+
16HS006	410-1789	27.75	26.36	24.89

Four Phase Unipolar, 7.5°



Body: L=25, Dia.=51, Shaft=8.2x3.0 dia. Fix. Cent.=60.2x3.5 dia (if mounting ears fitted)

- Designed for operation within the pull-in area giving optimum torque and speed
- Bifilar wound coils
- Connections arranged to permit only one RC Network to improve current rise time when used with the SAA1027 driver IC
- Available with or without mounting ears
- Gearboxes available

Step Angle	7°30'	Maximum pull-in rate	240 Steps/s
Resistance per Phase	65Ω	Power consumption	3.8W
Holding Torque	28mN-m	Current Per Coil	175mA
Maximum Working Torque	20mN-m		

Shaft dia.	Mfrs. List No.	Order Code
3mm	9904-112-31004	147-878
3mm	9904-112-31004-2108	147-879

220489

	Order Code	Price Each				
		1+	5+	10+	50+	
With mounting ears	147-878	25.99	23.21	20.14	17.17	15.42
Without mounting ears	147-879	26.78	23.88	20.74	17.66	15.87

Precision Geared Stepper Motors



- High performance
- Precision ovoid gearhead
- Metal gears for optimum torque transmission
- Range of 5 standard gear ratio options
- Holding torque up to 80 Ncm
- 4 phase operation

Body: L = 53
Diameter = 36
Shaft: L = 12.8
Diameter = 3.7

Ratio	Holding Torque (Ncm)	Max working Torque (Ncm)	Typical working Torque (Ncm)	Mfrs. List No	Order Code
25:3	16.2	10.2	6.0	P535L482U-G04L82	415-8490
25:2	21.9	13.8	8.1	P535L482U-G06L82	415-8507
25:1	43.9	27.6	16.3	P535L482U-G11L82	415-8519
50:1	80.0	55.3	32.5	P535L482U-G17L82	415-8520
250:3	80.0	80.0	48.3	P535L482U-G21L82	415-8532

Rated Voltage (LR Drive)	12 V
Current Per Phase	180 mA
Resistance Per Phase	64 Ω

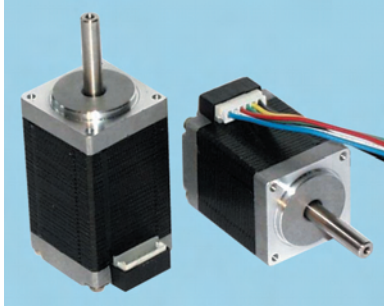
Stepper Motors - continued

Precision Geared Stepper Motors - continued

Steps Per Revolution	Order Code	Price Each		
		1+	5+	10+
400	415-8490	38.01	36.10	32.51
600	415-8507	38.53	36.61	32.94
1200	415-8519	39.62	37.64	33.89
2400	415-8520	39.62	37.64	33.89
4000	415-8532	40.77	38.73	34.86

Mini Hybrid Stepper Motors

ASTROSYN



Size 11

Size 14

- High torque in compact size
- Unipolar and bipolar operation
- Light weight
- Low noise

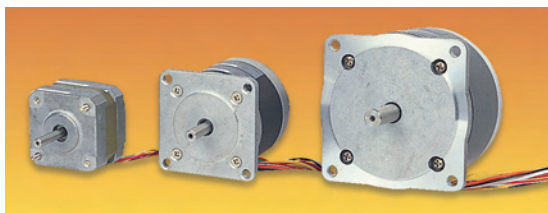
- Low inertia rotor
- High accuracy 1.8° step angle
- Frame size 11 (28x28mm) or 14 (35x35mm)

Frame Size	Weight	Shaft Length	Body Length	Order Code	Frame Size	Weight	Shaft Length	Body Length	Order Code
11	140g	24mm	40mm	842-5868	14	150g	24mm	26mm	842-5892
11	200g	24mm	50mm	842-5876	14	150g	24mm	26mm	842-5906
14	180g	24mm	34mm	842-5884	14	90g	20mm	20mm	842-5914

Step Angle	Holding Torque	No. of Leads	Phase Current	Phase Resistance	Phase Inductance	Order Code
1.8°	7N cm	6	0.95A	3.4ohm	1.6mH	842-5868
1.8°	9N cm	6	0.95A	4.6ohm	2.3mH	842-5876
1.8°	11N cm	4	0.75A	5.7ohm	7mH	842-5884
1.8°	7N cm	4	0.75A	4.3ohm	4mH	842-5892
1.8°	8N cm	6	0.76A	10.5ohm	4.8mH	842-5906
1.8°	5N cm	6	0.4A	22ohm	10mH	842-5914

Mftrs. List No.	Order Code	1+	5+	10+	25+
MY3002	842-5868	24.23	21.82	19.83	17.48
MY5002	842-5876	24.23	21.82	19.83	17.48
MY4001	842-5884	24.23	21.82	19.83	17.48
MY5401	842-5892	24.23	21.82	19.83	17.48
MY5602	842-5906	24.23	21.82	19.83	17.48
MY7001	842-5914	24.23	21.82	19.83	17.48

Hybrid 1.8° Step Angle



Size 17
Body: H=42,
W=42, D=33
Shaft: 24x5.0 dia

Size 23
Body: H=57.2,
W=57.2, D=51
Shaft: 20.6x6.35 dia

Size 34
Body: H=82, W=82,
D=61 (93, 586-419)
Shaft: 30.5x9.52 dia

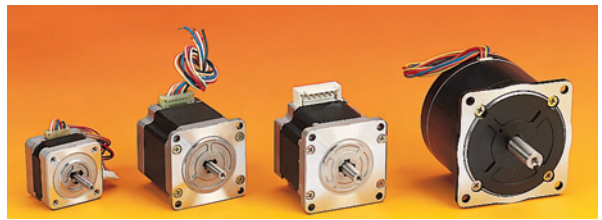
- 4 phase hybrid construction gives a much higher working torque than permanent magnet types
- Very high resolution 1.8° step angle
- 6 and 8 leads - can be bipolar or unipolar driven
- Model 713-4423 manufactured with rear shaft

Rated Voltage (V)	Current Rated (A)	Resistance Per Phase (Ω)	Inductance Per Phase (mH)	Detent Torque (mNm)	Holding Torque (mNm)	Step Angle	Body Size	Order Code
12	0.16	75	60	6	9	1.8°	17	959-8642
5	1	5	9.5	60	500	1.8°	23	959-8650
12	0.6			55	55	1.8°		959-8693
3	1.7	1.8	10	100	1200	1.8°	34	959-8669
2.5	4.6	0.55	16	160	2300	1.8°	34	959-8677

Body Size	Holding Torque (mNm)	Order Code	1+	5+	10+	25+
17	9	959-8642	22.83	19.39	17.12	15.41
23	500	959-8650	37.02	31.45	27.75	22.22
	55	959-8693	32.97	29.03	26.60	24.52
34	1200	959-8669	62.06	54.83	51.40	44.68
34	2300	959-8677	65.11	61.43	58.15	55.20

Hybrid, High Torque 1.8° Step Angle

SANYO DENKI



Size 17
Body: H=42
W=42, D=32
(39, 800-1839)
(41, 720-460)
(48, 800-1847)
Shaft: 24x5 dia

Size 23
Body: H=56
W=56, D=53.8
(75.8, 800-1855)
Shaft: 21x6.35 dia

Size 24
Body: H=82, W=60
D=53.8 (85.8, 635-236)

Size 34
Body: H=82, W=82
D=62 (92.2, 635-248,
25.9 635-250)
Shaft: 30x12 dia.
Keyway L=25,
W=4, D=2.5

- 2 phase hybrid rare earth magnet technology offering 15% to 20% more torque than standard hybrid types
- New size 17 motors achieving 10-37% more torque from improved construction and materials
- New length size 23 motor for improved torque performance
- Improved high speed operation, low noise and low vibration
- Very high positional accuracy, designed for micro-stepping
- Can be unipolar or bipolar driven (bipolar only size 34)
- Integrated JST connector supplied with new size 17 and 24 frame size (mating connectors and contacts supplied)
- Suitable for use with Farnell In One drives, codes: 388-737 and 388-749

Body Size	Holding Torque (Nm)	Order Code	1+	5+	10+
17	0.147	994-8252	31.89	30.96	29.09
17	0.265	994-8260	34.02	32.91	31.00
17	0.3	800-1839	40.48	39.22	35.25
17	0.37	800-1847	44.85	42.99	39.68
23	0.83	994-8279	55.05	53.23	50.18
23	1.27	800-1855	75.06	70.95	63.66
24	1.17	994-8120	64.37	60.86	54.58
24	2.1	994-8139	83.16	78.49	70.38
34	2.75	994-8287	118.02	115.67	104.46
34	5.09	994-8147	150.10	141.54	130.93
34	7.44	994-8155	247.06	232.09	215.54

Hybrid, High Torque with Rear Shaft



Size 23
Body: H=57.2
W=57.2, D=55 391-2681, D=78.5 391-2693
Shaft: 20.6x6.35 dia 391-2681
20.6x8 dia 391-2693
Rear shaft: L=19

Size 34
Body: H=86, W=86
D=67 391-2700, D=94 391-2711, D=125 391-2723
Shaft: L=30.2x9.525 dia.
Rear shaft: L=28.5

- High quality NEMA 23 & 34 frame size motors
- High energy magnet technology provides typically 50% more torque than standard hybrid types
- Rear shaft for fitting encoders, handwheels, parking brakes etc.
- High resolution (1.8 degree step size) also suitable for half stepping and microstepping
- 8 lead connection suitable for 4 phase Uni-polar drives and Bi-polar drives with series or parallel connected coils

Uni-polar	Rated Current Bi Polar	Resistance Per Phase (Ω)	Inductance Per Phase (mH)	Holding Torque (Nm)	Step Angle	Body Size	Order Code	
1.0	0.7	6.2	8.8	0.98	1.8°	23	391-2681	
3.0	2.1	4.2	1.1	1.63	1.8°	23	391-2693	
4.3	3.0	6.0	0.75	3.5	4.8	1.8°	34	391-2711
6.4	4.0	8.5	0.5	2.5	7.6	1.8°	34	391-2723

Body Size	Holding Torque (Nm)	Order Code	1+	5+	10+
23	0.98	391-2681	70.64	67.11	63.56
23	1.63	391-2693	102.56	97.44	92.30
34	4.8	391-2711	142.70	135.57	128.42
34	7.6	391-2723	205.22	194.96	184.70

Stepper Motor Drivers

Complete Stepper System Solutions



Stepper motor systems have become a popular method of achieving controllable motion due to their unique feature of the output shaft rotating a discrete number of steps. This digital step feature makes them ideally suited for simple open loop position control. When combined with a suitable controller the system can be tailored to meet the requirements of a wide variety of applications:

Applications

- X,Y & Z positioning
- Rotary indexing tables
- Special purpose machines
- Accurate scientific use
- Pick and place automation
- Feed and cut to length
- Print roll registration
- Packaging/ labelling systems

Stepper advantages

- Simple cost effective open loop position
- Easy to configure -no tuning required
- No maintenance - all motors brushless
- High torque from compact motors
- Stable when stopped - no hunting
- Fast motor response - no settling
- Inherently digital positioning
- Microstepping exceptionally smooth

Unlike DC or servo motors, all stepper motors are purely synchronous devices, they rely on receiving pulse after pulse to step discrete angles, it is essential to select the correct motor and drive to ensure the combination is capable of producing significantly greater torque than the maximum expected load.

In order to construct a robust stepper system that meets expectations, attention must be given to the individual components and to the overall system integration. A stepper system must successfully integrate four essential components: Controller, Drive, Motor and Power Supply.

234904

Stepper Controller

The controller is the unit responsible for producing the initial step frequency (square wave) which determines the exact motion of the motor.

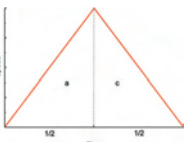
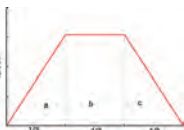
It is vital that the step pulse stream presented to the drive is uniform, without jitter and with carefully controlled acceleration and deceleration profiles so that the motor is not subject to high acceleration demands which may otherwise cause it to desynchronise.

Controllers vary in sophistication from simple transistor switching to sophisticated microprocessor driven packages, but they all offer the user a front end interface whereby the motion profile of the required move can be created.

The profiles above illustrate moves a user may create from the Controller. Firstly a typical trapezoidal move comprising 3 programmable components - and a triangle move which is purely a ramp up and down with no constant speed. Both profiles would move a load in the same time however, the a & c phases of the Trapezoidal represent only 2/3 of the available time to perform the whole move therefore setting a harsher motor acceleration, but lower peak speed and will require less peak power to perform the move with respect to the triangular profile.

When sizing stepper systems it good practice to oversize by approximately 30% to allow for parameter adjustments or unexpected loads i.e. mechanical wear.

Applying this method with good design your stepper system will never stall or loose position, making a very cost effective and reliable open loop solution.



Stepper Drive

The Drive unit takes step and direction signals provided by the controller and sequences current through the stepper motor windings using chopped power MOSFETS. It is therefore important that the power output of the drive and motor specification are compatible.

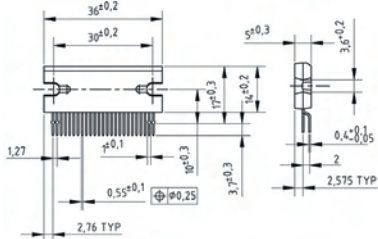
The Drive is also responsible for setting the step angle. Full stepping drives result in 200 steps per motor shaft revolution (step angle 1.8°) Half stepping results in 400 steps (step angle 0.9°) At these resolutions some shaft noise will occur, particularly at slow speeds where resonance can set up in the motor typically below 100 RPM.

These are features of Stepper systems and often can be worked around. For a significantly reduced noise and better position resolution Microstepping Drives should be considered. These Drives can increase the number of steps per revolution from 400 to many thousands by smoothing out the torque pulses into a pseudo sine wave.

When the sine wave is applied to a suitable motor it can give very smooth resonance free motion and greater positional resolution.

234905

IMT-901 / Microstep Constant Current Driver IC



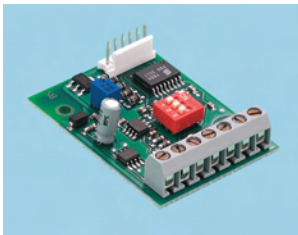
The IMT 901 is a PWM chopper type sinusoidal micro step bipolar stepp-ingmotor driver. Sinusoidal micro step operation is generated by meansof built-in hardware and is outputted for operation by clock signal inputting.

- only one IC for power and logic (up to 2.5 A/phase)reduces considerably space, assembly time and cost of a microstepdriver with a max. functions yet with a min. of ext. components.
- selectable from: 1/1-, 1/2-, 1/4-, 1/8-Stepenables individual application-related microstep switching, smoothand constant running and reduces considerably system resonance.
- Current down system or current zeroingreduces or eliminates motor power losses and heating during stand-still

334335

Type	order code	1+	5+	10+	25+
IMT-901	474-3295	7.54	7.06	6.71	6.36

Stepper Motor Driver, Unipolar 0.5A



- Simple to use Unipolar (4 Phase) stepper drive
- Compact size only 80mm by 40mm
- Full step and half step modes
- On board internal clock, external LS, TTL frequency can also be used
- Rated at 350mA per phase at 24V
- Fitted wit a MTA100 6 way header

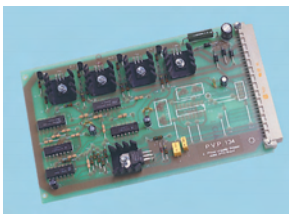
L=55, W=40, H=15

Supply Voltage	7-24V dc	Step Frequency	40 to 300Hz adjustable
Motor output	350mA per phase (typ), 500mA(max)	Ambient Operating Temperature	0°C to 40°C

231230

Order Code	1+	5+	10+	25+	50+
318-7585	26.03	23.15	22.21	22.00	17.43

Stepper Motor Driver - Unipolar, 2A



L=160, W=100, H=17

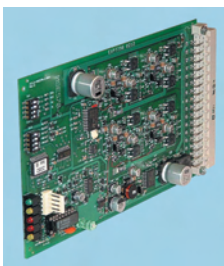
- Designed to match a wide range of permanent magnet and hybrid stepper motors having 6 or 8 lead configurations
- Full logic translation providing full step and half step modes
- Simple control interface requiring only a pulse and direction input
- Single rail operation - can drive motors up to 2 Amps per phase at 30V dc
- Standard single Eurocard with 32 way DIN 41612 style B connection
- Supplied with comprehensive instructions

Supply Voltage	15-30V dc (+10% max)
Current Consumption:	
Board Only	60mA
Motor Output	2A per phase max (current sinking)
Aux output	+12V dc, 50mA max
Max input frequency (clock)	30kHz (minimum pulse width 5µs)
Control Inputs	CMOS schmitt trigger inputs operating at +12V with 10 KΩ pull ups
	Logic 0 (Low) 0V to +2V
	Logic 1 (High) +9V to +15V

231231

Order Code	1+	5+	10+	25+	50+
959-8685	31.63	28.84	28.53	27.85	25.68

Bi-polar Stepper Motor Drive



- High performance
- Increased efficiency
- No heatsink required
- Single rail supply for both logic and motor
- Standard thermal protection and condition monitoring
- Designed for mounting in 3U high Euro-racks

H = 100, W = 60, L = 160

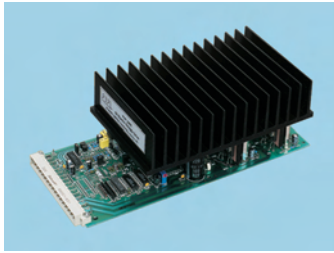
Supply Voltage	15 - 42 Vdc
Logic Supply Voltage	No separate supply required, use motor supply
Current consumption range	1 - 3 Amps
Output stage	2 Phase Bi-polar, chopped constant current set by on-board DIP switch
Step logic	Full step / half step
Output current per phase	0.5 - 3.5 Amps
Control signals	CMOS Schmitt trigger inputs operating at +12V with 10KΩ pull up resistors and diode isolation
	Logic 0 (low) 0V to +2V
	Logic 1 (high) +9V to +30V max.
Mfrs.List No	MSE570 EVO 2

242870

Order Code	1+	5+	10+
415-8544	136.19	133.46	130.79

Stepper Motor Drivers - continued

Stepper Motor Drive, 6 amp



L=220, W=100, H=76

- Drives 4,6 or 8 lead motors upto 70Vdc and 6A per phase
- Selectable output current, 2A to 6A allows 23 to 42 frame size motors to be driven
- Full and half-step modes (microstep available by using additional 'piggy-back' board)
- Provision for assembly of simple 'on board' oscillator
- Output stage overload and thermal protection
- Standby and boost outputs available to power external devices
- 5V and 12V dc auxiliary outputs available to power external devices

Warning: Serious damage to the output stage can occur if any of the motor connections become disconnected whilst the drive stage is required

Motor Supply Voltage	20-70V dc(Smoothed unregulated)
Logic supply voltage	15-28V dc(Smoothed unregulated)
Output Current range	2-6A (DIL switch Selectable)
Suitable Motor Current rating	2A-9A (4,6 or 8 lead types)
Auxiliary outputs (regulated)	+12V dc, 50mA max +5V dc, 50mA max
Max input frequency (clock)	20kHz(10[b5] S Min. Width) negative edge trigger
Control inputs	CMOS Schmitt trigger inputs operating at +12V with 10kΩ pull ups Logic 0 (low) 0V to +2V Logic 1 (high) +9V to +30V max.

231238

Order Code	Price Each			
	1+	5+	10+	20+
715-4320	190.52	176.90	163.30	152.41

High Performance Microstepping Driver



- High performance microstepping driver suitable for 2 and 4 phase hybrid steppers
- Advanced bipolar constant-current chopper circuit with current control technology
- Suited to motion control applications requiring low noise, low vibration, high speed and high precision
- Supply voltage to 40V dc, current to 3.5A
- Inaudible 20kHz chopping frequency
- TTL compatible and optically isolated input signals
- Automatic idle current reduction
- Mixed-decay current control for reduced motor heating
- 14 selectable step resolutions in decimal and binary
- Microstepping to 51200 steps/revolution
- Suitable for 4, 6 or 8 lead wire motors
- Overcurrent, overvoltage and short circuit protected
- Compact size

Electrical

Drive Current	Adjustable from 1.3 to 3.5A
Supply Voltage	Input voltage from 24 to 40V dc
Step Control	Half step or microstepping
Control Inputs	Connections for pulse, direction and enable signals
Pulse Signal	Speed control to maximum frequency 300kHz
Direction Signal	Clockwise or counter-clockwise rotation
Enable Signal	Driver enable or disable
Logic Signals	Current from 6 to 30mA

Mechanical

Material	Black coated aluminium with integral heatsink
Mounting	Free standing or via mounting holes
Dimensions	45x132x76mm
Weight	0.355kg

380874

Mfrs. List No.	Order Code	Price Each		
		1+	5+	10+
P403	842-5922	156.07	143.97	132.98

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High Performance Microstepping Driver



- High performance microstepping driver suitable for 2 and 4 phase hybrid steppers
- Advanced bipolar constant-current chopper circuit with current control technology
- Suited to motion control applications requiring low noise, low vibration, high speed and high precision
- Supply voltage to 90V dc, current to 7.7A
- Inaudible 20kHz chopping frequency
- TTL compatible and optically isolated input signals
- Automatic idle current reduction
- Mixed-decay current control for reduced motor heating
- 14 selectable step resolutions in decimal and binary
- Microstepping to 51200 steps/revolution
- Suitable for 4, 6 or 8 lead wire motors
- Overcurrent, overvoltage and short circuit protected
- Compact size

Electrical

Drive Current	Adjustable from 2.8 to 7.7A
Supply Voltage	Input voltage from 24 to 90V dc
Step Control	Half step or microstepping
Control Inputs	Connections for pulse, direction and enable signals
Pulse Signal	Speed control to maximum frequency 300kHz
Direction Signal	Clockwise or counter-clockwise rotation
Enable Signal	Driver enable or disable
Logic Signals	Current from 6 to 30mA

Mechanical

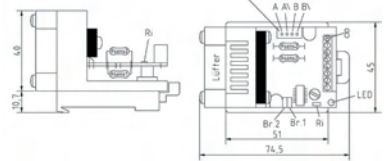
Material	Black coated aluminium with integral heatsink
Mounting	Free standing or via mounting holes
Dimensions	50x120x102mm
Weight	0.45kg

380875

Mfrs. List No.	Order Code	Price Each		
		1+	5+	10+
P808	842-5930	174.74	160.46	149.47

Stepper Motor Controllers

SMC42 Series/Controllers



- max. phase current 2 A/phase
- Microstep setting up to one eighth step for low-resonance, quiet running
- automatic current reduction at rest with the required supply voltage being only 21-37 V

Technical data:

SMC42 microstep power-amplifier	Current:	0.3 - 2.0 A / Phase	Connection:	with screw-clamps
Type:	Bipolar-Chopper-Driver	Temperature	Fasteningmode:	for DIN-Railmounting EN 50 022 35 x 7,5
Temperature	0°C to +40°C	Weight:	130g	

Type	Phase current	Description	Type	Phase current	Description
SMC42-0,3-1	0.3A	Power amplifier, microstep	SMC42-2,0-1	2.0A	Power amplifier, microstep
SMC42-1,0-1	1.0A	Power amplifier, microstep			

334328

Type	Order Code	Price Each			
		1+	5+	10+	25+
SMC42-0,3-1	474-3118	51.76	49.32	46.27	46.27
SMC42-1,0-1	474-3120	53.21	50.70	47.57	47.57
SMC42-2,0-1	474-3131	53.21	50.70	47.57	47.57

Stepper Motor Controller - Unipolar Microstepping, 2A



L=83, W=57, H=43

- Low cost, unipolar microstepping drives rated up to 36V dc @ 2A
- Full step, half step or microstepping options
- Suitable for most size 17 and 23 unipolar motors
- Offers low noise, low vibration operation
- Ideal for test and development
- Compact package
- Current adjustment with on-board potentiometer
- Maximum stepping rate 20K pulse per step
- Auto current down

Full step = Basic step angle of the motor 1/1 pulse
 Half step = Basic step angle of the motor 1/2 pulse
 Micro Stepping:-
 994-8066= 4 Options 1/1, 1/2, 1/4, 1/8

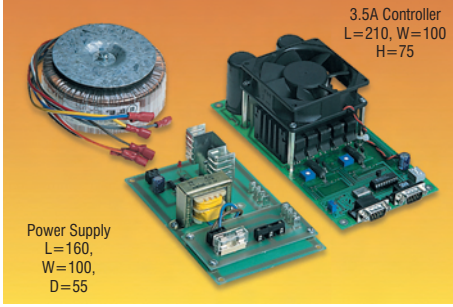
Motor supply voltage 24-36V dc/3A
 Logic supply voltage 5V dc/ 0.5A

220497

	Order Code	Price Each			
		1+	5+	10+	25+
Micro stepping, 4 option	994-8066	158.60	146.35	140.29	129.41

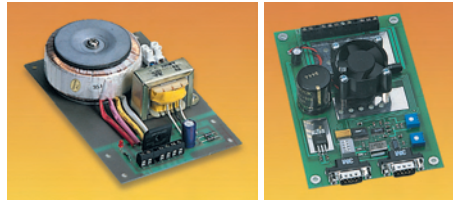
Intelligent Stepper Motor Controllers

Bipolar, 1.5A and 5A



3.5A Controller
 L=210, W=100
 H=75

Power Supply
 L=160,
 W=100,
 D=55



1.5 Controller
 L=150,
 W=100,
 H=35

- Up to 4 controllers can be daisy chained allowing individual control of four motors simultaneously
- Direction, speed, number of steps, boost ramp rate, full and half step and limit switching may be controlled via any simple communication software
- A menu driven software front end is included to enable fast access of software commands and includes a self teaching facility (supplied on 3 1/2" disk)
- Supplied complete with power supply and comprehensive instruction manual

Two intelligent controllers providing comprehensive control of 4, 6 or 8 wire bipolar driven stepper motors via an RS232 serial port from a personal computer or other suitable device

Controller
 Motor supply voltage 650-109 12-40V dc
 650-110 12-80V dc
 Motor supply current 650-109 1.5A per phase max
 650-110 5A per phase max
 Interface RS232C 900 baud, DTE via 9 pin 'D' connector
 TX, RX and GND active (Null modem) daisy chained from card to card.
 Address On board access selection 0,1,2,3
 Software commands include card address
 Terminations 650-109 12 way 0.2" header
 650-110 4 way 0.2" header (motor)
 8 way logic & PSU Logic

Power Supply
 Supply voltage 250Vac
 Output 250mA @ 12Vdc (logic and fan)
 650-109 800mA @ 34Vdc (motor)
 650-110 3.2A @ 70Vdc (motor)

220495

	Order Code	Price Each		
		1+	5+	10+
1.5A Controller + PSU	650-109	232.63	220.99	205.49
3.5A Controller + PSU	650-110	299.60	284.62	264.66

FREE global legislation support

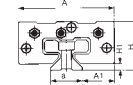
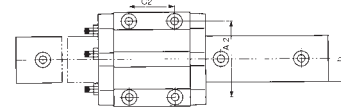
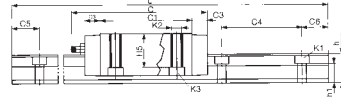
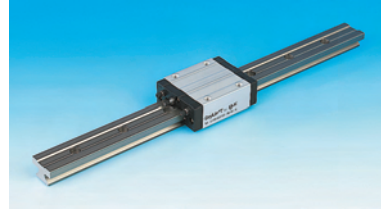


RoHS, REACH, WEEE, EuP, Batteries Directive - we've got it covered at:
www.global-legislation.com

Drylin Rail & Carriage

Drylin T Linear Bearings
 Type SGO

IGUS



- Shock and vibration resistant
- Maintenance free and corrosion resistant
- Very high acceleration possible
- Carriages are manufactured from aluminium and the rails from hard anodised aluminium

DryLin® T slide guide rails are ideal for use in a wide range of applications in the automation and handling industries. Being non corrosive and resistant to dust, dirt and moisture they are suitable for use in a wide range of environments. The lack of moving parts means the guides are exceptionally quiet in operation.

Rail Dimensions

Nom.	a	b	C4	C5 min	C5 max	C6 min	C6 max	h	h1	K1	Weight kg/m	
15	-0,2	15	22	60	20	49	20	49	15,5	10	M4	0,6

Carriage Dimensions

Nom.	H	A	C	A1	A2	C1	C2	C3	H1	H5	Weight kg/m	
15	±0,5	24	47	72	16	38	50	30	9	4	16	0,11

Static Load-Bearing Capacity

Type	C _{0Y}	C _{0(L,Y)}	C ₀₂	M _{0X}	15	4000	4000	2000	32
					(N)	(N)	(N)	(Nm)	

bas101/231938

Carriage Size	Order Code	Price Each		
		1+	3+	5+
15	723-9233	38.65	37.63	36.67
Rail Width	300	Order Code		Price Each
		1+	3+	5+
15	725-9049	24.23	23.72	22.35

DC - Permanent Magnetic Motors

Brush Spares

Leeson 180V D.C.

- Brushes for Leeson 180 volt DC motors



221361

	Order Code	Price Each			
		1+	3+	5+	10+
Brush assembly for IEC 71 frame	722-8843	9.90	9.42	8.99	8.61

Controllers Suitable for DC Motors

- All drives manufactured by Eurotherm

To select the required drive, note the 'Controller Ref' in the specification table for the relevant motor and cross-reference with the following table. For further information, including prices, SEE THIS PAGE onwards.

DC Drive Selection Guide for Leeson Motors

Drive Model	Enclosure	O/P Rating (A)	Isolation	Drive Order Code	DC Motor Ref.
507	IP00	6	Nil	650-390	A & B
508	IP00	12	Nil	650-407	C
507/EE1	IP44	6	Nil	650-468	A & B
512C8	IP00	8	Isolated	650-419	A, B & C

230 volt supply required for 180 volt motors.

Controllers should be matched to motor amps within their minimum/maximum ratings, also ensure fuse loadings are compatible

221340

Output (A)	Mfrs. List No.	Order Code	Price Each		
			1+	5+	10+
6A	507	650-390	104.48	100.19	94.20
12A	508	650-407	121.89	117.01	110.00
6A	507/EE1	650-468	157.83	147.44	140.30
8A	512C8	650-419	208.57	204.40	197.76



Vibratory Motors



Single-Phase



- Adjustable eccentric weights for varying centrifugal force
- Enclosure protection to IP65
- Bearings specially selected to withstand high radial loads and speeds
- Terminal box has two cable entry points permitting wiring from either side

Electric external vibrators are typically used for feeding, screening, compacting, hopper evacuation, etc. Typical industries include: concrete, chemical, food, packaging and mechanical handling.

Max. CF kg	Power watts	Current Amps	H	Dimensions W	D	Weight kg	Mftrs. List No.	Order Code
4	20	0.13	69mm	90mm	104mm	0.85	M4	703-5111
21	22	0.1	73mm	110mm	148mm	1.7	M20	703-5123
62	120	0.27	120mm	127mm	193mm	4.1	M3/65	703-5135

221415

Mftrs. List No.	Order Code	1+	3+	5+	10+	20+	Price Each
M4	703-5111	105.81	96.21	88.20	80.40	74.65	
M20	703-5123	160.16	145.59	133.46	121.69	112.98	
M3/65	703-5135	209.37	190.32	174.47	159.05	147.69	

Sound Level Meters



See our range on page 1538

Motors & Control Books

Stepping Motors: A Guide to Modern Theory and Practice

ACARNLEY



This book examines the aspects of stepping motor performance most important to the system designer and is aimed at both industrial and academic engineers, to give a clear appreciation of the capabilities of a computer controlled environment.

3rd Edition

223428

Order Code	1+	3+	Price Each
182-813	21.93	20.56	

Technical information at your fingertips



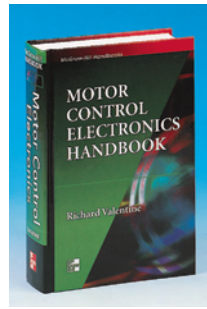
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Visit www.farnell.co.uk and look for the **Tech Info** heading in your search results.

Motor Control Electronics Handbook

Richard Valentine

MCGRAW-HILL



- Featuring the latest in electronics technology from the best in the business
- An expert guide giving everything from the fundamentals to cutting edge design tips
- This Handbook focuses on the electronics of a motor control system and includes many design examples and a glossary to aid understanding of the meaning or general description of motor control terminologies

223710

Order Code	1+	3+	Price Each
725-3412	69.90	64.76	

Practical Transformer and Electric Motor Handbooks

GOTTlieb



Easy to follow handbooks, written with the minimum use of mathematics and theory, designed for both engineers and designers covering Transformers and Electric Motors.

223613

Title	Order Code	1+	3+	Price Each
Practical Transformer Handbook	198-973	21.27	19.69	
Practical Electric Motor Handbook	198-961	20.55	19.02	

Motor Protection Relays

Electronic Overload Relays



- Inverse time delay response characteristic
- Independent adjustment of trip delays for starting and running conditions
- Locked rotor (shearpin) protection
- Thermistor input
- Adjustable reset delay
- Phase loss protection with override
- Range of current transformers available (two required for 3∅ measurement)
- Latching version retains fault status when power removed

Supply	Product Type	Order Code
115/230V	Standard	DMPR230S000 715-4811
115/230V	Latching	DMPR230L000 715-4835

Current Transformers Basic Range	Order Code
Range (A)	
1.4 - 20	01000158221 715-4860
17.5 - 100	01000158222 715-4872

224608

DMPR	Order Code	1+	5+	Price Each	25+	50+
115/230V	715-4811	188.05	186.15	184.30	171.01	138.18
115/230V	715-4835	193.37	189.53	185.72	179.29	148.18
Current Transformers						
Range (A)						
1.4 - 40	715-4860	31.92	29.29	28.02	25.08	23.69
17.5 - 100	715-4872	31.93	29.29	28.03	25.08	23.69



Introduction to Soft Starters

Introduction to Soft Starters

Soft starters have become increasingly popular since they eliminate most of the problems associated with Direct-on-line and Star-Delta starting of ac induction motors. The main advantages are due to the ability of the starter to:

- Reduce high starting current
- Reduce starting torque (minimising the stress on motor bearings, drives, chains, etc)
- Reduce maintenance on both mechanical and electrical equipment
- Extend contactor life by minimising inrush current
- Reduce connection cable current rating

As reduced motor excitation is automatically applied under light load conditions, the system implicitly saves power, restricts motor heating, improves the power factor, minimises voltage drop problems (which affects other users of the same supply) and eliminates high current transients when switching from Star to Delta. The sequence of operation of the soft starters is as follows:- Upon receipt of the start signal the supply phases are scanned to ensure their presence, the thyristors checked for short circuits and the motor voltage increased to a pedestal of 40% of the supply. Next the starter ramps up the voltage from the pedestal to 100% in the preset ramp time. The most popular applications which benefit from soft starters include pumps, fans, conveyors, air conditioning, refrigeration and machinery which is started under load.

224609

Soft Starters

DIN Rail-Mounted Soft Starters



- Compact soft starter controller for use with 3 phase ac induction motors
- Adjustable starting torque and ramp-up time
- Independant ramp-down time
- Integral bypass relay
- LED indication for monitoring
- Two-phase control for smoother starting

Supply Voltage	230/400V ac
Control Voltage	24 - 110V ac/dc 110 - 480V ac
Frequency	50 - 60Hz
Starting torque	12A=5-85%, 25A=5-50%
Ramp up/ramp down	12A=0.5-5 secs, 25A=0.5-10 secs
Temperature Range	-20°C to +50°C
IP rating	IP20

Motor Rating	Current	Mftrs. List No.	Order Code
5.5kW	12A	SAF4012	715-7198
11kW	25A	SAF 4025	325-5979

224610

	Order Code	Price Each				
		1+	5+	10+	25+	50+
12A	715-7198	146.53	133.19	122.10	112.71	104.66
25A	325-5979	195.36	177.62	162.81	150.28	139.54

Electronic Soft Starters 3RW40



- Protection of the machine's mechanical power-transmitting elements during start-up and ramp-down
- They efficiently guard the network against high inrush peaks through reduced power input
- Optimum adjustment to the drive application through separate potentiometers starting voltage (40 to 100%), start-up time up to 20 sec. And soft ramp-down 0 to 20 sec and settable current limiting
- Reduced mounting costs and wiring through simple 4-wire motor supply line
- Integrated intrinsic device protection against overloads
- Selectable manual or remote RESET

Rated Control Supply Voltage	110 to 230V ac
Rated Operational Voltage	200 to 480V
Dimensions (W x H x D) 3RW4024-28	45x125x149mm
3RW4036	55x160x165mm
Ambient Temperature	40 °C
Fan Size 3RW40 2	S0
3RW40 3	S2

Operational Current	Rated power of 3-phase motors with rated operational voltage		Mftrs. List No.	Order Code
	kW @ 230 V	kW @ 400 V		
12.5	3	5.5	3RW4024-1BB14	154-1425
25	5.5	11	3RW4026-1BB14	154-1427
32	7.5	15	3RW4027-1BB14	154-1428
38	11	18.5	3RW4028-1BB14	154-1429
45	11	22	3RW4036-1BB14	154-1430

499352

Mftrs. Part No.	Order Code	Price Each		
		1+	5+	10+
3RW4024-1BB14	154-1425	188.68	179.25	173.60
3RW4026-1BB14	154-1427	181.98	172.89	167.41
3RW4027-1BB14	154-1428	216.83	205.99	199.50
3RW4028-1BB14	154-1429	259.43	246.45	238.68
3RW4036-1BB14	154-1430	345.18	336.10	327.48

Accessories				
Fan S0	3RW4928-8VB00	154-1431	34.67	32.94
Fan S2	3RW4947-8VB00	154-1433	35.62	33.84
Sealing Cover	3RW4900-0PB10	154-1434	7.04	6.69

Electronic Soft Starters 3RW30



- Optimum adjustment to the drive application through separate potentiometers for starting voltage (40...100%) and start-up time up to 20s
- Minimum power loss through integrated bypass contacts after start-up completion
- Up to 70% space savings in the control cabinet compared to star-delta combination
- Reduced mounting costs and wiring through simple 4-wire motor supply line

SIEMENS

New

Rated Control Supply Voltage	110 to 230V
Rated Operational Voltage	200 to 480V
3RW3003	200 to 400V
Dimensions (W x H x D) 3RW3003	22.5x102x120mm
3RW3013 - 18	45x95x93mm
3RW3026 - 28	45x125x119mm
3RW3036	55x160x143mm
Ambient Temperature	40 °C
Fan Size 3RW3013-18	S00
3RW3026-28	S0
3RW3036	S2

Mftrs. List No.	Operational Current	Rated power of 3-phase motors with rated operational voltage		Order Code
		kW @ 230 V	kW @ 400 V	
3RW3003-1CB54	3.0	0.55	1.1	157-3677
3RW3013-1BB14	3.6	0.75	1.5	157-3678
3RW3014-1BB14	6.5	1.5	3	157-3679
3RW3016-1BB14	9.0	2.2	4	157-3680
3RW3017-1BB14	12.5	3	5.5	157-3681
3RW3018-1BB14	17.6	4	7.5	157-3683
3RW3026-1BB14	25.0	5.5	11	157-3684
3RW3027-1BB14	32.0	7.5	15	157-3685
3RW3028-1BB14	38.0	11	18.5	157-3686
3RW3036-1BB14	45.0	11	22	157-3687

508260

Mftrs. Part No.	Order Code	Price Each		
		1+	5+	10+
3RW3003-1CB54	157-3677	103.74	98.56	93.36
3RW3013-1BB14	157-3678	92.44	87.82	83.20
3RW3014-1BB14	157-3679	107.84	102.45	97.06
3RW3016-1BB14	157-3680	123.24	117.08	110.92
3RW3017-1BB14	157-3681	138.66	131.74	124.78
3RW3018-1BB14	157-3683	159.20	151.24	143.29
3RW3026-1BB14	157-3684	184.87	175.64	166.38
3RW3027-1BB14	157-3685	215.68	204.90	194.12
3RW3028-1BB14	157-3686	267.05	253.70	240.34
3RW3036-1BB14	157-3687	328.66	312.23	295.79

AC Motor Speed Control

Single & Three Phase Motor Filters

MOELLER



Radio interference suppression filters protect against conducted high-frequency interference (noise immunity) and reduce the high-frequency interference from a device, which is transmitted through or emitted from the mains cable, and which must be limited to a prescribed level (emitted interference). Radio interference suppression filters must be installed as near as possible to the frequency inverter. Filters have earth leakage currents. In the event of a malfunction (such as phase failure or load imbalance) these can rise some way above the nominal values. To avoid dangerous voltages, the filters must therefore be earthed before they are switched on. For leakage currents above 3.5 mA, VDE 0160 and EN 60335 stipulate the following:

- Protective conductor f 10 mm2
- or
- The protective conductor must be open-circuit monitored
- or
- An additional conductor must be fitted.

As these leakage currents are high-frequency interference, the earthing conductors must have a low impedance and a large surface area.

Operating Voltage	230V ac (Single Phase)
	400V ac (Three Phase)
Operating Temperature	-25 to 100°C

AC Motor Speed Control - continued

Single & Three Phase Motor Filters - continued

Rating (A)	L	W	H	Weight (kg)	Mftrs. List No.	Order Code
Single Phase						
7 A	27	80	170	0.45	DE51-LZ1-007-V2	146-0710
12 A	35	110	180	0.5	DE51-LZ1-012-V2	146-0711
24 A	35	110	180	0.67	DE51-LZ1-024-V2	146-0712
Three Phase						
7 A	35	110	180	0.7	DE51-LZ3-007-V4	146-0713
11 A	35	110	180	0.75	DE51-LZ3-011-V4	146-0714
20 A	40	110	285	1.2	DE51-LZ3-020-V4	146-0715

490288

Power Rating	Mftrs. List No.	Order Code	1+	5+	10+
Single Phase					
0.18 to 0.37 kW	DE51-LZ1-007-V2	146-0710	21.85	19.65	18.57
0.55 to 0.75 kW	DE51-LZ1-012-V2	146-0711	28.95	26.05	24.61
1.1 to 2.2 kW	DE51-LZ1-024-V2	146-0712	38.41	34.57	32.65
Three Phase					
0.37 to 1.5 kW	DE51-LZ3-007-V4	146-0713	47.54	42.78	40.41
2.2 to 4.0 kW	DE51-LZ3-011-V4	146-0714	57.72	51.97	49.06
5.5 to 7.5 kW	DE51-LZ3-020-V4	146-0715	97.09	87.38	82.53

Description	Mftrs. List No.	Order Code	1+	5+	10+
Accessories					
Communication Module, Can Open	DE51-NET-DP	146-0718	175.28	157.75	148.99
Remote Keypad with POT	DEX-KEY-6	146-0719	26.22	23.60	22.29
Remote Keypad	DEX-KEY-61	146-0720	24.40	21.96	20.74
Keypad Mounting Kit	DEX-MNT-K6	146-0721	19.45	17.51	16.53
Keypad Connection Cable	DEX-CBL-1M0-ICS	146-0723	5.77	5.20	4.92
PC Connection Cable	DEX-CBL-2M0-PC	146-0724	35.80	32.23	30.43

DF51 Series, Variable Speed Drives



DF51-322 Series



DF51-340 Series

DF51 is big in functionality and small in size: compared to its predecessor it requires over 40 % less space in the control cabinet. DF51 is therefore ideal for retrofitting in drive systems that were previously run without speed control. They therefore considerably increase the economy and productivity of your machine or system. The integrated keypad ensures fast operation without the need for any tedious parameter setting. The drive can also be controlled directly at the machine using the potentiometer.

- Speed control of three-phase motors up to 7.5 kW
- General pump and fan applications in buildings or industrial premises
- Standard drives on machine tools, as well as on processing and packaging machines in the foodstuffs and beverages industries

Current Rating	Power Rating	Dimensions (WxHxD)	Weight	Mftrs. List No.	Order Code
230 V ac					
1.4A	0.25kW	80x120x105mm	0.8kg	DF51-322-025	146-0725
2.6A	0.37kW	80x120x119mm	0.95kg	DF51-322-037	146-0726
3A	0.55kW	80x120x142mm	0.95kg	DF51-322-055	146-0727
4A	0.75kW	110x130x127mm	1.4kg	DF51-322-075	146-0728
5A	1.1kW	110x130x127mm	1.4kg	DF51-322-1K1	146-0731
7.1A	1.5kW	110x130x127mm	1.9kg	DF51-322-1K5	146-0732
10A	2.2kW	110x130x127mm	1.9kg	DF51-322-2K2	146-0733
400 V ac					
2.5A	0.75kW	110x130x168mm	1.8kg	DF51-340-075	146-0735
3.8A	1.5kW	110x130x168mm	1.9kg	DF51-340-1K5	146-0736
5.5A	2.2kW	110x130x168mm	1.9kg	DF51-340-2K2	146-0737
7.8A	3kW	110x130x168mm	1.9kg	DF51-340-3K0	146-0738
8.6A	4kW	110x130x168mm	1.9kg	DF51-340-4K0	146-0739
13A	5.5kW	180x220x167mm	5.5kg	DF51-340-5K5	146-0740
16A	7.5kW	180x220x167mm	5.7kg	DF51-340-7K5	146-0741

490393

Mftrs. List No.	Order Code	1+	5+	10+
DF51-322-025	146-0725	91.02	81.92	77.37
DF51-322-037	146-0726	97.57	87.82	82.95
DF51-322-055	146-0727	117.21	105.49	99.62
DF51-322-075	146-0728	124.96	112.46	106.21
DF51-322-1K1	146-0731	130.91	117.81	111.26
DF51-322-1K5	146-0732	148.16	133.33	125.93
DF51-322-2K2	146-0733	169.57	152.60	144.13
DF51-340-075	146-0735	227.87	205.08	193.68

Mftrs. List No.	Order Code	1+	5+	10+
DF51-340-1K5	146-0736	258.20	232.38	219.46
DF51-340-2K2	146-0737	297.48	267.73	252.87
DF51-340-3K0	146-0738	365.92	329.33	311.05
DF51-340-4K0	146-0739	416.50	374.85	354.01
DF51-340-5K5	146-0740	480.75	432.68	408.62
DF51-340-7K5	146-0741	600.34	540.31	510.32

Single Phase Micro Inverter S520S Series



- Digital control dial for ease of configuring
 - PU/EXT button and also display LED's for mode selection
 - Inrush current protection
 - DCL choke connection possible
 - Sink/Source selectable
 - High torque ability
 - Hardware tripless function
 - I Compatible with other 500 series, keypads (PA02-02, PU04, DU04)*
 - Can interface directly with all E type HMI's*
- *High function version only

The S500 is Packed with new added features and is the first Mitsubishi Inverter that can be configured through a digital dial, therefore, access to all parameters within the unit is greatly simplified compared to a traditional 3-button keypad.

234317

Power Rating	Mftrs. List No.	Order Code	1+	2+	5+	10+
Standard						
0.2kW	FR-S520S-0.2-K-EC	357-0496	121.78	116.84	111.78	107.70
0.4kW	FR-S520SE-0.4K-EC	357-0502	136.86	131.32	125.65	121.05
0.75kW	FR-S520SE-0.75K-EC	357-0514	159.50	153.04	146.40	141.07
Filter						
0.2 - 0.75kW	0.75KW FILTER	357-0551	20.69	19.83	18.99	18.29

Single/Three Phase AC Inverters



E500 Series



- E540 used for 3-phase and E520 used for single-phase applications
- Special feature is the 'built-in' communications
- Capability to connect to any of 3 open fieldbuses (DeviceNet, Profibus DP and CC-Link)
- Mx500 software makes connectivity even simpler
- Windows based software enables communication and control between any Mitsubishi 500 Series inverter
- Both software and keypad are suitable for single and three phase inverters

	E540	E520
Input Voltage	380 - 480V, 50/60Hz, three phase	200 - 240V, 50/60Hz, single phase
Output Voltage	380 - 480V, 50/60Hz, three phase	200 - 240V, 50/60Hz, three phase
Overload Current	150% 60 seconds, 200% 0.5 seconds	150% 60 seconds, 200% 0.5 seconds
Accel/Decel	0.01, 0.1 to 3600 seconds	0.01, 0.1 to 3600 seconds

Three Phase Input/Three Phase Output	W	H	D	Weight (kg)
FR-E540-1.5K-EC	140	150	136	2
FR-E540-3.7K-EC	140	150	136	2
Single Phase Input/Three Phase Output				
FR-E520S-0.4KEC	140	150	136	1.9
FR-E520S-0.75KEC	140	150	136	1.9
FR-E520S-1.5KEC	140	150	166	2
FR-E520S-2.2KEC	140	150	166	2

202588

Mftrs. List No.	Order Code	1+	2+	5+	10+	20+
Three Phase Inverters						
1.5kW	FR-E540-1.5K-EC	312-8430	284.43	275.06	266.91	261.57
3.7kW	FR-E540-3.7K-EC	312-8453	524.22	506.96	491.93	482.09
Three Phase Filters						
0.75kW	FR-E5NF-H0.75K	312-8489	34.05	32.94	31.96	31.33
Single Phase Inverters						
0.75kW	FR-E520S-0.75KEC	312-8544	152.81	147.79	143.41	140.54
1.5kW	FR-E520S-1.5KEC	312-8556	255.43	247.02	239.70	234.90
2.2kW	FR-E520S-2.2KEC	312-8568	300.04	290.17	281.56	275.91
Single Phase Filters						
0.75kW	FR-E520S-14A-FC1	312-8570	21.21	20.51	19.89	19.50
2.2kW	FR-E520S-26A-SC1	312-8581	20.12	19.47	18.89	18.50
Keypad	FR-PA02-02	312-8593	25.65	24.83	24.08	23.59



AC Inverter Drives



- No programming required - easy and descriptive interface
- Power range - 0.18 to 2.2kW
- Supply: 1 phase input 200 - 240V +10 - 15%
- 3 phase output 200 - 240V
- Built-in EMC filter 1st environment
- 150% overload for 60 seconds
- Low motor noise - 5kHz switching frequency adjustable to 16kHz
- Analogue voltage or current input

- Optional potentiometer for easy local drive speed control
- IP20 rated
- Removable mounting clip for DIN or wall mounting from back or side of the drive
- CE, CSA and C-Tick approved, UL, ULc, recognised
- All drive setup is done using only 3 potentiometers for: Motor nominal current, Acceleration/Deceleration, Motor frequency
- 8 DIP switches for:
 - NOM FREQ Hz Nominal frequency of the motor
 - SILENT motor noise level
 - LOAD Load torque type (U/f curve)
 - P&F= pump/fan CT=constant torque
 - JOG Hz Constant frequency for jogging
 - RELAY can be set to fault or running
 - AI OFFSET minimum valve for the analogue input
 - AUTORESET on or off
 - HI FREQ to allow over-speeding of the motor
- Status and fault indication is by easy to see LED's

383545

Power	Mfrs. List No.	Order Code	1+	5+	10+
0.18kW	ACS50-01E-01A4-2	864-1200	81.00	79.38	77.79
0.75kW	ACS50-01E-04A3-2	864-1226	106.00	103.88	101.80
1.1kW	ACS50-01E-07A6-2	864-1234	149.00	146.02	127.74
2.2kW	ACS50-01E-09A8-2	864-1242	174.00	170.52	167.11
Accessories					
Potentiometer, ACS50	ACS50-POT	864-1250	16.27	15.94	15.63

AC Drives
0.25 to 2.2kW



This series is a family of 200 - 240V AC drives that provide a no-fuss, cost effective solution for the simplest to most complex open-loop AC motor control applications. The series has single key selectable pre-programmed applications so set-up is quick and easy without unnecessary complications.

- Integral EMC compliant filters
- Extremely simple set-up and operation
- Integral operator controls with optional remote mounting
- Exceptionally compact design
- 150% overload for 30 seconds
- Motor thermistor input
- Back lit LCD display

Nominal Power	Output Current	Width	Dimensions Length	Depth	Mfrs. List No.	Order Code
Single Phase Controllers (230V nominal)						
0.25kW	1.5A	73	137	142	650-002-230	853-9693
0.37kW	2.2A	73	137	142	650-003-230	853-9707
0.75kW	4.0A	73	137	142	650-007-230	853-9723
1.1kW	5.5A	73	192	173	650-011-230	853-9731
1.5kW	7.0A	73	192	173	650-015-230	853-9740
Three Phase Controllers (400V nominal)						
0.37kW	1.5A	73	137	142	650-003-400	853-9758
1.1kW	3.5A	73	192	173	650-011-400	853-9782
1.5kW	4.5A	73	192	173	650-015-400	853-9790
2.2kW	5.5A	96	257	195	650-022-400	853-9804

381868

Mfrs. List No.	Order Code	1+	5+	10+
Single Phase Controllers				
650-002-230	853-9693	131.69	121.46	110.93
650-003-230	853-9707	141.82	130.96	119.53
650-007-230	853-9723	181.59	167.71	153.06
650-011-230	853-9731	244.85	226.12	206.37
650-015-230	853-9740	260.17	240.26	219.28
Three Phase Controllers				
650-003-400	853-9758	260.17	240.26	219.28
650-011-400	853-9782	293.63	271.15	247.47
650-015-400	853-9790	331.58	306.21	279.47
650-022-400	853-9804	237.00	--	--

Enclosed IP54 Invertors
0.25 to 1.5kW



Fastpack AC is a range of 220 - 240V single inverters housed in sheet steel electrical cabinets together with associated control equipment ready for immediate installation.

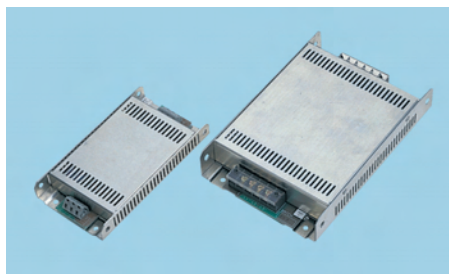
- Ready to install complete systems
- Ratings up to 1.5kW
- Comprehensive range of control options
- CE marked to EN60204 (1994)
- Door mounted operator display
- Door interlocked mains isolator
- Circuit breaker
- Start/Stop push buttons or switches
- Emergency stop (Category 1)

Nominal Power	Output Current	Width	Dimensions Length	Depth	Mfrs. List No.	Order Code
0.37kW	2.2A	300	300	210	FP-1-650-003-230	853-9820
1.5kW	7.0A	300	400	210	FP-1-650-015-230	853-9863

381869

Mfrs. List No.	Order Code	1+	Price Each	5+	10+
FP-1-650-003-230	853-9820	256.39	236.76	216.09	
FP-1-650-015-230	853-9863	400.16	369.51	337.25	

Single & Three-Phase Motor Inverter Filters



Motor inverter high performance filters designed to enable inverters to meet the most stringent EMC limits as laid down in EN55022B. Flexible mounting options ensure minimal panel space occupation. Finger proof terminals are used up to 30A and insulating boots cover stud terminals above 30A. Designed to meet the requirements of IEC950.

Operating voltage	250V ac 520V ac	Single phase Three phase				
Operating temperature	-25°C to +85°C					
Overload current	150% for 1 minute, 200% for 1 second					
Typical worst case insertion loss	70 - 80dB					
Rating (A)	L	W	H	Weight (kg)	Mfrs. List No.	Order Code
Single Phase						
3	170	90	25	0.3	MIF03	118-7726
10	214	145	40	0.95	MIF10	118-7729
16	214	145	40	0.95	MIF16	118-7730
Three Phase						
16	214	204	47	1.6	MIF316	118-7732
23	214	204	47	1.6	MIF323	118-7733
30	360	175	50	1.8	MIF330	118-7734
100	785	275	80	9.5	MIF3100	118-7736

231344

Rating (A)	Order Code	1+	5+	Price Each	10+	25+
Single Phase						
3	118-7726	64.56	62.17	57.21	52.56	
10	118-7729	100.04	96.35	93.32	91.45	
16	118-7730	108.94	104.89	98.33	95.97	
Three Phase						
16	118-7732	150.25	144.65	140.08	137.27	
23	118-7733	172.46	166.06	155.67	151.64	
30	118-7734	159.94	153.98	141.70	121.16	
100	118-7736	331.09	318.88	298.93	288.49	

Coming soon



Register your interest for items that are 'Coming Soon' at www.farnell.co.uk and we'll email you to let you know that they're in stock.



AC Motor Speed Control - continued

iDrive Series Single or 3 Phase



iDrive uses a uniquely simple twelve parameter set-up for nominal applications, but for more advanced operation the hidden b-functions can be accessed. Simple, small and powerful the new low-cost iDrive comes with powerful domestic class B EMC filter, DC injection motor stopping (to satisfy the Machinery Directive EN98/37/EC), PC and Hewlett Packard PDA software. Single phase 200V and 3-phase 400V models available.

- Simplified torque vector or V/F control
- Integrated class B EMC filter
- DIN rail or screw fix mounting as standard
- Auto energy saving for pumps and fans
- PID with sleep mode for pumps and fans
- RS232/RS485 options
- Remote keypad option
- Basic or advanced use set-up
- PC and PDA software

- 8 programmable preset speeds
- Parameter copy module
- Sink/Source switching
- CE marked for EMC & LVD european directives
- UL, cUL & TÜV approved

Input Supply Frequency	50/60Hz	Input Supply Voltage 3 phase	380 to 480V ac
Ambient Temperature	-10 to 50°C	Output Frequency	0 to 200Hz
Switching Frequency	4 to 16kHz	Overload Protection	150% for 60 sec.
Input Supply Voltage Single Phase	200 to 240V ac		

Power Rating	Weight (Kg)	Dimensions (WxHxD)	Mfrs. List No.	Order Code
Single Phase (200V)				
0.37/0.55kW	0.73	77x132x130.5mm	IDRIVE-EDX-040-21-E	129-3086
0.75kW	0.73	77x132x130.5mm	IDRIVE-EDX-075-21-E	129-3087
1.5kW	1.25	118x132x148mm	IDRIVE-EDX-150-21-E	129-3088
2.2kW	1.3	118x132x148mm	IDRIVE-EDX-220-21-E	129-3089
Three Phase (400V)				
0.75kW	1.68	118x132x148mm	IDRIVE-EDX-075-43-E	129-3090
1.5kW	1.7	118x132x148mm	IDRIVE-EDX-150-43-E	129-3091
2.2kW	1.73	118x132x148mm	IDRIVE-EDX-220-43-E	129-3092

449723

Mfrs. List No.	Order Code	1+	2+	5+	10+	25+	Price Each
Single Phase (200V)							
IDRIVE-EDX-040-21-E	129-3086	96.37	92.51	88.66	86.73	81.91	
IDRIVE-EDX-075-21-E	129-3087	107.32	103.03	98.73	96.59	91.21	
IDRIVE-EDX-150-21-E	129-3088	160.98	154.54	148.09	144.88	136.84	
IDRIVE-EDX-220-21-E	129-3089	191.64	183.97	176.31	172.47	162.89	
Three Phase (400V)							
IDRIVE-EDX-075-43-E	129-3090	213.54	205.00	196.46	192.19	181.51	
IDRIVE-EDX-150-43-E	129-3091	246.39	236.53	226.67	221.75	209.43	
IDRIVE-EDX-220-43-E	129-3092	257.33	247.04	236.75	231.61	218.74	

AC Motor Speed Controller - CIMR-J7Z Series Single and 3 Phase



The CIMR-J7Z inverter is an extremely compact, easy to use general purpose inverter and has versions available in both single phase 240V AC up to 1.5kW, three phase 200V AC up to 2.2kW and three phase 400V AC up to 4kW

All models carry advanced features normally associated with higher cost units including configurable inputs and output terminals, DC braking, analogue output, skip built-in operator interface.

The CIMR-J7Z offers the option of OMRON's footprint RFI filter to provide compliance with the latest EMC directives.

Features include:

- Available from 0.1kW to 4kW
- Single and three phase versions available
- In-built operator interface
- Built-in potentiometer
- Optional Footprint RFI filter and output choke
- UL and cUL Recognised, CE approved
- Instantaneous power interruption protection facility
- Supplied with comprehensive, easy to use, instruction manual
- RS485 communication available
- Fully adjustable v/f pattern
- Electronic thermal trip settable
- Configurable multi-function Input and Output terminals
- Programmable Analogue Output
- DC Injection braking
- 2 Skip Frequencies
- Programmable S-curve
- Electronic Potentiometer
- Automatic fault retry
- 8 Pre-set speeds
- Plus many more advanced features

Input voltage (single phase)	200-240V ac, -15% to +10%, 50/60Hz
Input voltage (three phase 200V)	200-230V ac, -10% to +10%, 50/60Hz
Input voltage (three phase 400V)	380-460V ac, -15% to +10%, 50/60Hz
Operating temperature	-10°C to +50°C
Output frequency	0.1Hz to 400Hz
Overload	150% for 60 seconds
Accel/Decel	0.0 to 999 seconds separately adjustable
Degree of Protection	IP20

202582

Single Phase	Mfrs. List No.	Order Code	Price Each
0.75kW	CIMR-J7AZB0P70	318-1522	163.00
Three Phase (200V)			
0.4kW	CIMR-J7AZ20P40	318-1560	118.76
Three Phase (400V)			
1.5kW	CIMR-J7AZ41P50	377-4090	334.00

DC Motor Speed Control

Programmable 24V dc 70A Permanent Magnet Motor Controller



A four quadrant motor speed controller ideally suited for battery powered vehicle traction and general speed control applications.

- Programmable IR compensation
- Integral supply isolation contactor
- Programmable current limit
- Potentiometer or 0-5V speed input
- Independently programmable forward and reverse speeds
- Low battery lockout function
- 3 programmable auxiliary outputs
- Hours run timer function
- On-board system log records all trip conditions
- Environmentally protected to IP65
- Fully programmable via PGDT software package

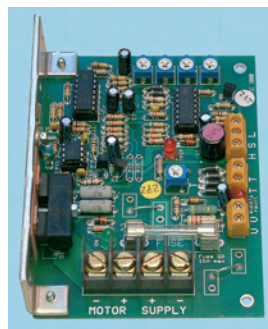
- Self-protecting outputs
- Low impedance inputs
- Development kit includes full documentation, connectors and programming software package

Supply Voltage	24V dc	Aux 1 Output	24V 1.25A
Operating Voltage	16 to 28V dc	Aux 2 Output	24V 0.5A
Peak Voltage	35V dc	Aux 3 Output	12 or 24V 0.5A
Reverse Battery Voltage	40V dc	Operating Temperature	-25 to 50°C
Peak Output Current	70A for 30 seconds	Dimensions	131.5 x 72.5 x 41mm
PWM Frequency	20kHz ± 1%		

380864

Description	Mfrs. List No.	Order Code	1+	5+	10+	Price Each
I Drive 70A	D50702	842-6902	103.14	85.95	68.76	
Development Kit	D50703	842-6910	229.19	212.00	194.81	

2020 PWM Motor Speed Controller



88x117x39mm



99x132x54mm

- Suitable for PM and Shunt motors
- 12 or 24 volt operation
- Maximum output current 12A dc
- Soft start
- 0 - 100% speed control
- 150% acceleration torque
- Supply fuse
- Thermal protection
- Available in skeleton or boxed versions

The controller provides a pulse width modulated output for the armature of the dc motor which can be adjusted between 0 - 100%. Fixed acceleration provides a smooth soft start performance whilst regulated speed control is achieved by comparing the back EMF of the motor with the required speed potentiometer setting. High and low speed settings may be preset on the controller. Electronic current limit is adjustable and may be set to limit the motor current (torque) at up to 150% of the continuous rating. Adjustable load compensation may also be set to enhance the speed holding of the motor particularly at low speeds.

383993

Version	Mfrs. List No.	Order Code	1+	5+	10+	Price Each
Skeleton	2020S	871-7907	56.76	52.41	48.67	
Boxed	2020B	871-7915	89.77	82.84	76.92	

2562 PWM Motor Speed Controller



102x203x79mm

The controller provides a pulse width modulated output for the armature of the dc motor that may be adjusted between 0 - 100%. Fixed acceleration provides a smooth soft start performance whilst regulated speed control is achieved by comparing the back EMF of the motor with the required speed potentiometer setting. High and low speed settings may be preset on the controller. Electronic current limit is adjustable and may be set to limit the motor current (torque) at up to 150% of the continuous rating.

- Economic controller for PM motors up to 2.0 amps
- 230 volt operation
- 0-24V dc output
- Maximum output current 2.0A dc
- Soft start
- 0 - 100% speed control
- 150% acceleration torque
- Supply fuse 2A quick blow

383394

Mfrs. List No.	Order Code	1+	5+	10+
2562B	871-7923	89.02	82.16	76.29

DC Motor Controller - 4 Quadrant 2A



H = 25, W = 130, D = 52

A four quadrant linear output controller ideally suited for small dc motors and gear motors up to 60W

- Linear control minimises electrical noise
- Single polarity supply gives bi-directional control
- Armature feedback provides variable control over a speed range up to 50:1
- Control by potentiometer, dc control voltage or FSR hand control
- Adjustable current limit
- Inbuilt thermal protection

Supply Voltage	10 - 35Vdc	Current limit	100mA to 2A
Max output voltage	±26Vdc	Speed control input resistant	200 kΩ
Max output current	±2A		

204330

Order Code	1+	5+	10+	15+	20+	30+
909-907	88.14	83.73	79.34	77.47	77.12	73.98

Servo Amplifier ADS50/5, ADS50/10

maxon motor



H = 180 W = 103 D = 26

- ADS50/5 drives brushed permanent magnet motors up to 250 Watts
- ADS50/10 drives brushed permanent magnet motors up to 500 Watts
- Wide input power supply range of 12 to 50 Vdc
- Built in motor choke on ADS 50/5 allows the connection of motors with very low inductivity

Four modes can be selected by DIP switches

- Speed control using tacho signals
- I x R compensated speed control
- Speed control using encoder signals
- Torque and current control

	415 - 8908	415 - 8910
Supply Voltage	12 to 50V dc	12 to 50V dc
Maximum Output Voltage	0.95 x Vcc	0.95 x Vcc
Maximum Output Current	5A	10A
Maximum Output Current (Peak)	10A	20A

242100

Mfrs. List No.	Current Rating	Order Code	1+	5+	10+
145391	5A	415-8908	219.30	205.36	190.16
201583	10A	415-8910	260.80	248.53	232.48

Servo Amplifier LSC 30/2

maxon motor



H = 100 W = 103 D = 34

- I x R compensation
- Voltage regulator
- Digital encoder control
- DC tacho control
- Current control

Set value can be set in several Ways:

- ±10V to connect to layout systems, such as a positioning controller
- Auxiliary voltages ±3.9 V are provided for use with an external potentiometer
- Speed adjustment can be obtained using internal potentiometer

Other features include:

- Wide input voltage range 12 to 30 Vdc
- Modular style aluminium housing offers several mounting options including 19" rack (3HE)

The LSC 30/2 is a linear 4-Q servo amplifier used to control permanent magnet DC motors up to approx 50W.

It allows the following operating modes:

Supply Voltage	12 to 30V dc	Max. Output Current	2A
Max. Output Voltage	25V dc	Max. Power Output	50W

242101

Mfrs. List No.	Current Rating	Order Code	1+	5+	10+	25+	50+
250521	2A	415-8921	132.77	131.45	126.97	122.87	115.83

DC Motor Speed Controllers - 507, 508 Series

EUROTHERM DRIVES

Non-Isolated



A compact non-isolated range of speed controllers suitable for shunt wound and permanent magnet dc motors up to 12A rating.

- Suitable for 110/120 or 220/240V single phase AC supplies (switch selectable)
- Fully isolated heatsink
- Adjustable speed ramp up and ramp down times (1-15 secs)
- Adjustable armature current limit (0-100%)
- Adjustable motor maximum and minimum speed limits
- Control signals available for zero speed, drive healthy and speed trim

650-390 650-407
H=125, W=96, D=66 H=125, W=96, D=77

- Switch selectable speed range
- Switch selectable feedback mode
- Adjustable IR compensation (for armature voltage feedback control)
- Torque control of motor
- Stall timer isolates motor current after 15 seconds to prevent motor overheating
- In built high transient suppression and fuseless overcurrent protection above 200% overload
- DIN rail mounting
- Supplied complete with comprehensive instruction manual

Supply voltage	110/120 or 220/240Vac ±10% 45-65 Hz
Armature output voltage	90 or 180Vdc
Armature output current:	
650-390	6A
650-407	12A
Field output voltage	100 or 210Vdc
Field output current	2A
Typical full load speed regulation	0.1% with tacho feedback 3% with armature voltage feedback

Note: The ac mains supply to the modules must be fused as this line is not internally protected.

204311

Output Rating	Mfrs. List No.	Order Code	1+	5+	10+
6A	507	650-390	104.48	100.19	94.20
12A	508	650-407	121.89	117.01	110.00

Troubleshooting tips



Chat live online to one of our technical engineers at www.farnell.co.uk



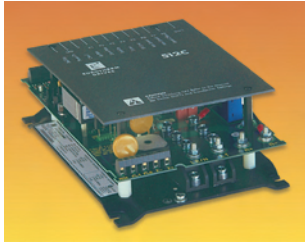
Premium service without a premium price

With thousands of prices already reduced, go online to see our most up-to-date pricing: www.farnell.co.uk

DC Motor Speed Control - continued

DC Motor Speed Controllers - 512C Series

Isolated



A compact isolated range of speed controllers suitable for shunt wound and permanent magnet dc motors up to 32A rating.

650-419 H=240, W=160, D=85
650-420 H=240, W=160, D=85
650-432 H=240, W=160, D=123

- Suitable for 110/120 or 220/240 or 380/415V single phase supplies (switch selectable)
- Switch selectable current calibration
- Buffered 0-10V output for speed indication
- Buffered 0-7.5V output for current indication (7.5V=150%)
- Adjustable speed ramp up and down times (0-40 secs)
- Linear current feedback for accurate torque control
- Zero speed or zero setpoint relay driver output - 24V dc
- Drive healthy relay driver output - 24V dc
- Adjustable maximum and minimum speeds
- Adjustable IR compensation (for armature voltage feedback speed control)
- 150% current overload capacity for 60 seconds
- Indication of mains on, stall trip and overcurrent trip
- Supplied with comprehensive instruction manual
- On board auxiliary supply fusing
- Adjustable maximum current levels
- Adjustable speed stability
- Speed trim input
- Total setpoint output
- Stall detection and trip

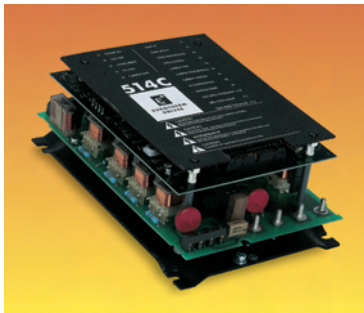
Supply voltage 110/120, 220/240 or 380/415Vac ±10% 50/60 Hz
Armature output voltage 90, 180 or 320Vdc
Armature output current:
650-419 8A
650-420 16A
650-432 32A
Field output voltage 100, 210 or 360Vdc
Field output current 2A
Typical full load speed regulation 0.1% with tach feedback
3% with armature voltage feedback

204312

Output Rating	Mfrs. List No.	Order Code	1+	5+	10+
8A	512C8	650-419	208.57	204.40	197.76
16A	512C16	650-420	220.93	213.67	200.77
32A	512C32	650-432	286.22	276.82	260.09

DC Motor Speed Controllers

S14C, 4 Quad, Isolated



- Isolated 4 Quadrant speed controllers, suitable for shunt-wound and permanent-magnet dc motors up to 32A
- AC contactor control logic
- Switch selectable current calibration
- Buffered 0-10V output for speed indication
- Buffered 0-10V output for current indication
- Adjustable speed ramp up and down times (0-40 sec.)
- Linear current feedback for accurate torque control
- Adjustable speed loop P & gains
- 150% FLC capacity for 60 seconds
- Trip indication
- Supplied with comprehensive instruction manual
- Meet the low voltage directive - VDE 0160

● Zero speed/zero setpoint digital output - 24V dc
● Drive healthy digital output - 24V dc
● 3 speed inputs
● Stall detection, trip and override
● Adjustable maximum and minimum speeds
● Adjustable IR compensation

● Adjustable speed loop P & gains
● 150% FLC capacity for 60 seconds
● Trip indication
● Supplied with comprehensive instruction manual
● Meet the low voltage directive - VDE 0160

O/P Rating (A)	Dimensions H	W	DC Drive D	Suitable RFI Filters	Mfrs. List No.	Order Code
16	240	160	94	676-512	514C/16	715-6315

Supply voltage 110 to 500V
Auxiliary supply voltage 110/230V, 1Ø 50/60 Hz
Typical armature voltage 0.8 x supply volts
Field voltage 0.9 x supply volts
Max. field current 3A
Typical full load speed regulation 0.1% with tach feedback 3% with armature voltage feedback

Configuration Equipment				
Mfrs. List No.	Supply Fuses Semiconductor	Contractor AC3 Rated	Field Fuses Semiconductor	Auxiliary Fuses HRC
514C/04	12A	12A	10A	5A
514C/08	16A	16A	10A	5A
514C/16	32A	32A	10A	5A
514C/32	50A	50A	10A	5A

Typical 10KΩ potentiometer, Order Code 351-283. Further ranges of 1 watt, wire wound potentiometers available in our components catalogue

224629

O/P Rating (A)	Order Code	1+	2+	5+	10+	20+
16	715-6315	521.30	510.86	494.46	484.58	472.11

Peristaltic Pump



- Provides accurate pumping of fluids
- No fluid or pump contamination as the fluid is contained within the tube
- Flow rates of 1.5, 5 and 10 litres per hour available, dependent on size of tube, 3 tubes supplied changeable by removal of front cover
- Roller guide provides minimum pressure between the roller and tube therefore no lubrication is required

H=120, W=65, D=124, Fix centres=52.38x73.66

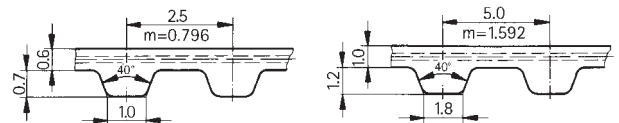
Operating Voltage 230V 50Hz Current 350mA 231297

Order Code	1+	Price Each 10+	20+
538-140	60.38	57.35	54.33

Synchroflex Belts

Synchroflex® Timing Belts

Synchroflex®



- Up to 98%
- Belt speeds up to 80 m/s
- Maintenance-free
- High accuracy
- Resistance to oils, grease & petrol
- Temperature range from -30°C to 80°C

Synchroflex® timing belts consist of only two components: a highly wear-resistant polyurethane body and a high tensile steel tension member. The excellent bond between the two results in a high tooth loading combined with low elastic elongation. Synchroflex® belts are suitable for all types of drives with their inherent flexibility and the high flexural strength of the tension members. Manufactured to DIN 7721, Synchroflex® is a registered trademark of Continental Antriebstechnik.

221978

Long Length (mm)	Mfrs. List No.	Order Code	1+	5+	Price Each 10+	20+	50+
Pitch 2.5mm, W=6mm							
245	6T2.5.245	708-9740	5.24	4.88	4.47	4.34	4.16
265	6T2.5/265	708-9752	5.36	4.97	4.59	4.43	4.26
285	6T2.5/285	708-9764	5.36	4.97	4.59	4.43	4.26
500	6T2.5/500	708-9788	6.21	5.77	5.30	5.13	4.93
Pitch 5mm, W=10mm							
165	10T5/165	708-9790	6.78	6.29	5.80	5.63	5.38
225	10T5/225	708-9806	7.03	6.53	6.01	5.82	5.59
245	10T5/245	708-9818	7.13	6.63	6.11	5.93	5.68
260	10T5/260	708-9820	7.15	6.65	6.12	5.94	5.69
305	10T5/305	708-9831	7.41	6.88	6.35	6.14	5.89
340	10T5/340	708-9843	7.54	6.99	6.44	6.23	5.98
355	10T5/355	708-9855	7.60	7.06	6.50	6.29	6.04
365	10T5/365	708-9867	5.83	5.64	5.47	5.30	5.15
390	10T5/390	708-9879	7.73	7.17	6.62	6.41	6.14
455	10T5/455	708-9880	8.03	7.47	6.87	6.67	6.39
480	10T5/480	708-9892	8.18	7.60	7.00	6.78	6.50
690	10T5/690	708-9909	9.65	8.97	8.25	7.98	7.66

Long Length (mm)	Mfrs. List No.	Order Code	1+	5+	10+	20+	50+
Pitch 5mm, W=10mm							
815	10T5/815	708-9910	10.90	10.13	9.31	9.03	8.64
990	10T5/990	708-9934	12.63	11.74	10.80	10.46	10.04
1380	10T5/1380	708-9958	16.54	15.37	14.16	13.72	13.16
Pitch 5mm, W=16mm							
165	16T5/165	708-9960	7.06	6.56	6.05	5.86	5.62
225	16T5/225	708-9971	9.12	8.46	7.80	7.55	7.25
455	16T5/455	709-0055	11.13	10.33	9.52	9.21	8.83

Synchroflex Belt Pulleys

Pulleys



- Light alloy pulleys
- Plated flanges
- Pilot bored
- Generated toothforms

Suitable for all Synchroflex® belts of their respective pitches

Synchroflex®

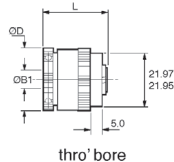
Pitch	Belt W	No. of Teeth	d _k	d _g	Bore d ^{H7}	W1	W	d _N	Mfrs. List No.	Order Code
2.5	6	14	10.60	14	3	10	16	14	LS16T2.5/14-2	709-2570
2.5	6	16	12.20	16	4	10	16	16	LS16T2.5/16-2	709-2581
2.5	6	22	17.00	23	4	10	16	12	LS16T2.5/22-2	709-2593
2.5	6	28	21.75	25	4	10	16	14	LS16T2.5/28-2	709-2600
2.5	6	32	24.95	28	6	10	16	16	LS16T2.5/32-2	709-2611
2.5	6	48	37.70	-	6	10	16	26	LS16T2.5/48-2	709-2623
2.5	6	60	47.25	-	8	10	16	34	LS16T2.5/60-2	709-2635
5	10	10	15.05	20	4	15	21	8	LS21T5/10-2	709-2404
5	10	12	18.25	23	4	15	21	10	LS21T5/12-2	709-2416
5	10	14	21.45	26	6	15	21	14	LS21T5/14-2	709-2428
5	10	15	23.05	28	6	15	21	16	LS21T5/15-2	709-2430
5	10	18	27.80	33	6	15	21	20	LS21T5/18-2	709-2441
5	10	27	42.20	47	8	15	21	30	LS21T5/27-2	709-2453
5	10	32	50.10	55	8	15	21	38	LS21T5/32-2	709-2477
5	10	40	62.85	67	8	15	21	40	LS21T5/40-2	709-2489
5	16	15	23.05	28	6	21	27	16	LS27T5/15-2	709-2490
5	16	20	31.00	36	6	21	27	24	LS27T5/20-2	709-2519
5	16	25	39.00	43	6	21	27	26	LS27T5/25-2	709-2520
5	16	30	46.95	51	8	21	27	34	LS27T5/30-2	709-2532
5	16	40	62.85	67	8	21	27	40	LS27T5/40-2	709-2544
5	16	48	75.55	-	8	21	27	50	LS27T5/48-2	709-2556
5	16	60	94.65	-	8	21	27	65	LS27T5/60-2	709-2568

221984

Pitch	Belt Width	No. of Teeth	Order Code	1+	5+	10+	20+	50+
2.5	6	14	709-2570	5.04	4.69	4.32	4.18	4.03
2.5	6	16	709-2581	6.20	5.76	5.29	5.13	4.93
2.5	6	22	709-2593	7.43	6.89	6.36	6.16	5.91
2.5	6	28	709-2600	7.71	7.15	6.59	6.39	6.13
2.5	6	32	709-2611	8.42	7.80	7.19	6.98	6.70
2.5	6	48	709-2623	10.75	9.98	9.19	8.92	8.54
2.5	6	60	709-2635	14.86	13.80	12.71	12.33	11.82
5	10	10	709-2404	5.41	5.02	4.63	4.47	4.31
5	10	12	709-2416	5.80	5.38	4.95	4.81	4.61
5	10	14	709-2428	6.20	5.76	5.29	5.13	4.93
5	10	15	709-2430	6.96	6.47	5.96	5.78	5.54
5	10	18	709-2441	8.18	7.59	6.99	6.78	6.50
5	10	27	709-2453	9.70	9.01	8.29	8.03	7.71
5	10	32	709-2477	10.44	9.69	8.93	8.65	8.30
5	10	40	709-2489	11.79	10.95	10.08	9.78	9.36
5	16	15	709-2490	7.74	7.19	6.63	6.42	6.17
5	16	20	709-2519	9.50	8.80	8.13	7.86	7.55
5	16	25	709-2520	11.05	10.28	9.47	9.15	8.79
5	16	30	709-2532	11.79	10.95	10.08	9.78	9.36
5	16	40	709-2544	14.30	13.30	12.23	11.85	11.38
5	16	48	709-2556	15.31	14.20	13.08	12.67	12.15
5	16	60	709-2568	17.24	15.99	14.74	14.28	13.70

Friction Clutches

Adjustable Friction Clutches



- Adjustable rotary friction clutches
- Available in two torque ranges
- Compact proportions
- Use as a torque limiter or tensioning device
- Can be fully mounted or adapted for in-line coupler use with coupler adaptor
- Use bore adaptors for alternative shaft sizes

Huco Vari-Tork are friction devices with a facility for adjusting the drag or slip torque. Controlled slip takes place between the hub and housing whenever the load exceeds the set torque.

The construction is simple and robust, comprising a series of steel clutch plates engaging a hub plus a series of friction rings engaging a housing. Pressure is brought to bear on the plates and friction rings by an adjuster acting through a spring and pressure plate.

As a torque limiter, Vari-Tork interrupts continuity between power source and load when this reaches a pre-determined level. As a tensioning device, Vari-Tork typically maintains tension in a filament or tape winding operation by exerting drag on the feed spool.

The further this is screwed home, the greater the slipping torque between the hub and housing. The load can be connected to either the steel inner hub or the aluminium alloy housing.

Power dissipation at 20°C 7.0 watts - 2 plate model Max. Permissible surface temperature 80°C
8.6 watts - 6 plate model Max. Slipping speed 1000 rpm
2° max.

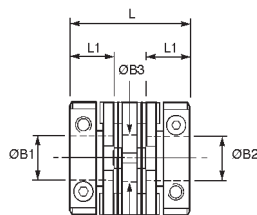
Backlash	Ø D	L	L 1	Ø B1 Max. Bores	25.8	25.8	Screw size	M3	M3	
Max. drag torque Nm	Thro'	Thro'	Mfrs' List No.	Order Code	0.53	1.32	34634	34635	707-6800	
Order Code									707-6794	707-6800

pra10/221958

Clutch	Bore mm	Order Code	1+	5+	10+	25+	50+
2 Plate	8	707-6794	22.45	21.69	20.63	19.42	18.33
6 Plate	8	707-6800	26.72	25.64	24.85	24.08	23.34
Adaptor		707-6812	4.93	4.78	4.53	4.27	4.03

Motor Couplings

Uni-Lat Couplings



- Backlash-free
- Flex-free mechanical action - low bearing loads
- 10° angular and 1 mm radial compensation
- Short space envelope
- Electrically isolating
- Low inertia
- Axially stiff
- Torsionally damping
- Use bore adaptors to fit a full range of shaft sizes

The Uni-LatT is a one-part, zero-backlash coupler rated for intermittent operation. Its special feature is a short overall length combined with exceptional misalignment capability.

Torque is transmitted through a pair of injection-moulded acetal rings formed with bearings allowing the hubs pivotal and radial displacement. The principle uniquely combines the mechanisms of the universal joint and the Oldham, and is free of flex-related restoring forces.

Materials

Integral hubs and journals Sizes 18 and 27 - Brass

Sizes 34 and 41 - Al. Alloy

Clamp rings Sizes 18 and 27 - Al. Alloy

Annular bearing rings All Sizes - Acetal Polymer

ØD	L	1L1	2L2	ØB1 & B2	Screw Size	Moment of Inertia kgm² x 10²	Peak Torque NM	Order Code
19.1	19.1	7.0	5.1	6.00	4-40	55	0.3	707-1358
19.1	19.1	7.0	5.1	6.35	4-40	0.3	0.3	707-1371
28	25.4	9.3	6.9	10	M3	220	1.7	707-1401

1. Length of bore. Shafts must not penetrate beyond L1 when couplers in operation
2. Distance between shafts inserted to L1

Max. offsets Angular	Max. offset Radial mm	Max. End Loading N	Max. Rec. speed	Mfrs. List No.	Order Code
5	1.0	19	6000	207P18.2222.F	707-1358
5	1.0	19	6000	207P18.2424.F	707-1371
5	1.0	31	5000	207P27.3232.F	707-1401

221324

Size	Bore (mm)	Order Code	1+	10+	20+	50+
18	6x6	707-1358	13.28	12.68	11.92	11.27
18	6.35x6.35	707-1371	13.28	12.68	11.92	11.27
27	10x10	707-1401	14.46	13.28	12.45	11.74

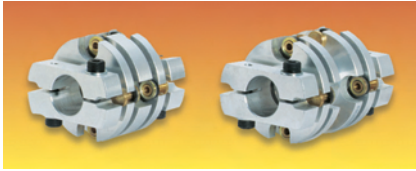
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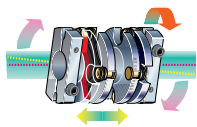
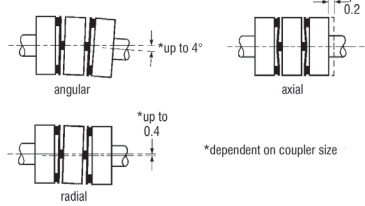
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Clamping Elements

Huco-Flex M Flexible Coupler



misalignment geometry



fixed & floating shafts



Fixed Shafts. Couplers with radial flexibility are required when both shafts are conventionally located by 2 bearings (fixed shafts)

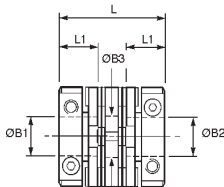
- Torsionally rigid
- No moving parts
- Near infinite, backlash-free life
- Dynamically balanced design
- Angular, radial and axial compliance
- All-metal construction
- Non-magnetic
- Low inertia
- Use bore adaptors to fit a full range of shaft sizes

The HucoFlex M® are torsionally rigid, high-performance precision couplers with excellent kinematic properties, no moving parts and near-infinite life expectancy. They are rated for continuous uni- and bidirectional rotation and are typically specified for high resolution measuring devices, high-gain velocity or motion control systems, position-critical frictional loads, dynamometers, precision encoders, etc.

Typically, Flex-M conduct the transmission through two complementary angles when compensating for radial shaft errors. The greater the distance between the membranes, the larger the radial error that can be accommodated. To cater for differing levels of radial error, Flex-M are made in standard lengths.

mot12/221333

Huco-Flex M, Short Spacer



∅D	L	¹ L1	∅B1 & B2	Screw Size	Moment of Inertia kgm ² - 10 ⁵	Order Code
25.6	28.4	10.0	6x6	M2.5	16	707-2715
33.5	40.1	14.0	0.375x0.375	M3	73	707-2740
33.5	40.1	14.0	10x10	M3	73	707-2764
41.5	48.5	17.0	16x16	M4	222	707-2776

1. Length of supported through bore. Shafts can near-butt.

Peak Torque Nm	Max. Compliance Angular	Max. Compliance Radial mm	Max. Compliance Axial ±mm	Torsional Nm/rad	Order Code
2.3	4	0.2	0.2	385	707-2715
5.6	3	0.2	0.2	935	707-2740
5.6	3	0.2	0.2	935	707-2764
11.3	2	0.2	0.2	1980	707-2776

229791

Size	Bore	Mfrs. List No.	Order Code	Price Each			
				1+	5+	10+	25+
26	6mm x 6mm	466P26.2222.F	707-2715	17.01	16.40	15.85	15.32
33	0.375" x 0.375"	466P33.3131.F	707-2740	18.90	16.99	16.12	15.65
33	10mm x 10mm	466P33.3232.F	707-2764	18.90	16.99	16.12	15.65
41	16mm x 16mm	466P41.4242.F	707-2776	24.35	21.89	20.77	20.19

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Oldham Couplings



- Backlash-free
- Flex-free mechanical action - low bearing loads
- High radial misalignment capability
- Torsionally stiff with alternative shock absorbing wear element
- Electrically isolating
- Low inertia
- Mix & Match hubs for a range of shaft combinations
- Max. speed: 3000rpm

Standard set screw, X-Y through series

A robust three-part coupler rated for intermittent operation, the Huco Oldham has zero backlash, high torsional stiffness and offers easy connection of drives in blind or difficult installations. The Oldham is widely used for motion control, typically in positioning tables, fluid delivery, optical systems and similar applications.

Components

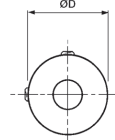
The Huco Oldham coupler consists of two hubs + one torque disc. The hubs determine the method of installation and shaft attachment, the discs determine the quality of motion. The two hub styles and two disc materials that comprise the range are fully interchangeable within each of the several sizes available. To take advantage of this flexibility, hubs and discs are specified and supplied separately. Through-bored hubs are recommended when backlash-free life is a primary consideration. The protective coating applied to these hubs has a lower abrasion factor, giving between two-three times more freedom from backlash than blind hubs.

mot16/221356

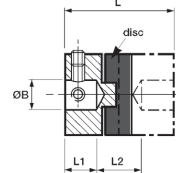
Oldham Coupling, Blind Hub Standard Series



Set Screw Style



Blind Hubs



controlled bore depth L1 provides a register when pre-assembling hubs to shafts



set screw style

∅D	L	¹ L1	² L1	∅B	Screw Size	³ Moment of Inertia kgm ² x10 ⁵	Order Code
12.7	15.9	4.3	7.3	3	M3	26	707-5558
12.7	15.9	4.3	7.3	4	M3	26	707-5560
12.7	15.9	4.3	7.3	5	M3	26	707-5571
12.7	15.9	4.3	7.3	6	M3	26	707-5583
12.7	15.9	4.3	7.3	6.35	M3	26	707-5595
19.1	22	6.3	9.4	4	M3	67	707-5601
19.1	22	6.3	9.4	6	M3	67	707-5613
19.1	22	6.3	9.4	6.35	M3	67	707-5625
25.4	28.4	8.6	11.2	8	M4	252	707-5522
25.4	28.4	8.6	11.2	10	M4	252	707-5546

1. Length of parallel bore. Bores normally terminate in 118° incl. angle
2. Distance between unchamfered shafts bottomed-out to L1
3. Values apply to complete couplers with Max. bores

Peak Torque Nm	Max. Offset Angular °	Max. Offset Radial MM	Max. Offset Axial MM	Order Code
0.8	1	1.5	0.10	707-5558
0.8	1	1.5	0.10	707-5560
0.8	1	1.5	0.10	707-5571
0.8	1	1.5	0.10	707-5583
0.8	1	1.5	0.10	707-5595
1.6	1	2.0	0.20	707-5601
1.6	1	2.0	0.20	707-5613
1.6	1	2.0	0.20	707-5625
3.4	1	2.8	0.20	707-5522
3.4	1	2.8	0.20	707-5546

Maximum offset values are mutually exclusive

1. Couplers can sustain 10⁶ minimum reversal cycles at these values

Mot144/221343

Per Pack Size	Pack Bore	Pack Qty	Mfrs. List No.	Order Code	Price Per Pack				
					1+	5+	10+	20+	
12.7	3	4	232P13.14.F	707-5558	12.01	11.33	10.92	10.18	9.69
12.7	4	4	232P13.18.F	707-5560	12.01	11.33	10.92	10.18	9.69
12.7	5	4	232P13.20.F	707-5571	12.01	11.33	10.92	10.18	9.69
12.7	6	4	232P13.22.F	707-5583	12.01	11.33	10.92	10.18	9.69
12.7	6.35	4	232P13.24.F	707-5595	12.01	11.33	10.92	10.18	9.69
19.1	4	4	232P19.18.F	707-5601	13.84	13.06	12.59	11.73	11.17
19.1	6	4	232P19.22.F	707-5613	13.84	13.06	12.59	11.73	11.17
19.1	6.35	4	232P19.24.F	707-5625	13.84	13.06	12.59	11.73	11.17
25.4	8	2	232P25.28.F	707-5522	8.73	8.25	7.94	7.40	7.04
25.4	10	2	232P25.32.F	707-5546	8.73	8.25	7.94	7.40	7.04

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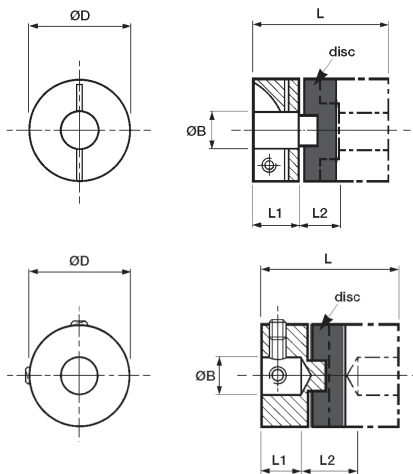
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Oldham Coupling, Through-Bore X-Y Series



Clamp Style
Set Screw Style



ØD	L	¹ L1	² L2	ØB	Screw Size	³ Moment of Inertia kgm ² x10 ⁵	Order Code
19.1	26	9.4	7.2	4	4-40	59	707-5923
19.1	26	9.4	7.2	5	4-40	59	707-5935
19.1	26	9.4	7.2	6	4-40	59	707-5947
19.1	26	9.4	7.2	6.35	4-40	59	707-5959
25.4	32.4	11.6	9.2	6	M3	252	707-5856
25.4	32.4	11.6	9.2	6.35	M3	252	707-5868
25.4	32.4	11.6	9.2	8	M3	252	707-5870
33.3	48.0	15.0	18.0	8	M3	1133	707-5960
33.3	48.0	15.0	18.0	10	M3	1133	707-5984
41.3	50.8	17.8	15.3	12	M4	3177	707-5900

1. Max. permissible shaft penetration with standard disc.
2. Min. distance between shafts with standard disc.
3. Values apply to complete couplers with Max. bores

Static Break Torque Nm	¹ Peak Torque Nm	Max. Offsets Angular °	Max. Offset Radial MM	Max. Offsets Axial MM	Mftrs. List No.	Order Code
10	1.6	1	2.0	0.20	453P19.18.F	707-5923
10	1.6	1	2.0	0.20	453P19.20.F	707-5935
10	1.6	1	2.0	0.20	453P19.22.F	707-5947
10	1.6	1	2.0	0.20	453P19.24.F	707-5959
13	3.4	1	2.8	0.20	452P25.22.F	707-5856
13	3.4	1	2.8	0.20	452P25.24.F	707-5868
13	3.4	1	2.8	0.20	452P25.28.F	707-5870
53	9	1	3.6	0.25	453P33.28.F	707-5960
53	9	1	3.6	0.25	452P33.32.F	707-5984
57	18	1	4.5	0.25	452P41.35.F	707-5900

Maximum offset values are mutually exclusive
1. Couplers can sustain 10⁶ minimum reversal cycles at these values

Mot17/221367

Ø	Bore	Order Code	1+	5+	10+	15+	20+	Price Each
19.1	4mm	707-5923	4.20	3.98	3.78	3.49	3.25	
19.1	5mm	707-5935	4.20	3.98	3.78	3.49	3.25	
19.1	6mm	707-5947	4.20	3.98	3.78	3.49	3.25	
19.1	6.35mm	707-5959	4.20	3.98	3.78	3.49	3.25	
25.4	6mm	707-5856	5.85	5.48	5.21	4.82	4.48	
25.4	6.35mm	707-5868	5.85	5.48	5.21	4.82	4.48	
25.4	8mm	707-5870	5.85	5.48	5.21	4.82	4.48	
33.3	8mm	707-5960	6.54	6.21	5.89	5.43	5.04	
33.3	10mm	707-5984	8.48	8.02	7.64	7.03	6.54	
41.3	12mm	707-5900	7.85	7.25	6.73	6.29	5.89	

Oldham Couplings

Backlash-Free Torque Disc



Standard Discs



- Manufactured in Actel
- High torsional stiffness
- Good bearing properties
- Long backlash-free life

For use with Oldham latera displacement coupler hubs.

Size	13	19	25	33	41
Static Break Torque Nm	1	2.5	3.2	3.3	14
Peak Torque Nm	0.8	1.6	3.4	9	18
Max. Offsets Angular°	1	1	1	1	1
Max. Offsets Radial mm	1.5	2.0	2.8	3.6	4.5
Max. Offsets	0.10	0.20	0.20	0.25	0.25

Axial mm	3000	3000	3000	3000	3000
Max. Recommended Speed rpm					
Mftrs. List No.	236P13.F	236P19.F	236P25.F	236P33.F	236P41.F
Order Code	700-2531	700-2543	700-2555	700-2567	700-2579

Temperature factors 0°C - 60°C: factor 1, 60°C-85°C:factor 1.5

mot18/221372

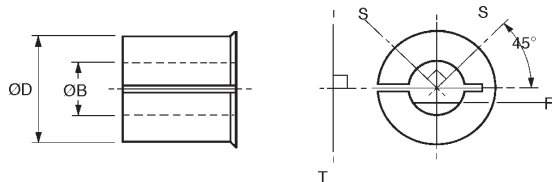
Sold in Packs of 4	Order Code	1+	5+	10+	15+	20+	Price Per Pack
13	700-2531	1.51	1.39	1.29	1.21	1.14	
19	700-2543	1.90	1.73	1.61	1.50	1.41	
25	700-2555	3.76	3.48	3.24	3.02	2.84	
33	700-2567	5.59	5.18	4.84	4.52	4.26	
41	700-2579	8.19	7.60	7.05	6.61	6.30	

Bore Adaptors



For optimum fastening, install HUCO-LOK bore adaptors as shown. 'S' represents screws in set screw hub. 'T' represents tangential screw in clamp hub. 'F' shows recommended orientation of flatted shaft in set screw hub.

- Fits full range of Hucou couplers
- Feathered head to prevent over insertion
- Ideal for prototyping



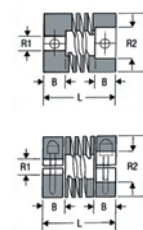
Note that both traction and concentricity may be affected when using an adaptor. For best results, shafts with h6 tolerance or better are recommended; undersized shafts become progressively less effective. For similar reasons, flatted shafts with more than 1/4 of their diameter removed are not recommended.

Existing Bore Ø	Bore Required (B1)	Mftrs. List No.	Order Code
5	0.125	251P16.F	702-1045
5	4	251P18.F	702-1057
0.25	4	253P18.F	702-3042
8	4	255P18.F	702-3091
8	6	255P22.F	702-3960
10	5	257P20.F	702-8155
10	0.25	257P24.F	702-8167
10	8	257P28.F	702-8179
0.5	6	259P22.F	702-8180

mot20/221380

Sold in Packs of 2	Outside Ø	Bore	Mftrs. List No.	Order Code	1+	5+	10+	25+	50+	Price Per Pack
5mm	0.125"	251P16.F	702-1045	4.18	3.89	3.71	3.54	3.20		
5mm	4mm	251P18.F	702-1057	4.18	3.89	3.71	3.54	3.20		
0.25"	4mm	253P18.F	702-3042	4.18	3.89	3.71	3.54	3.20		
8mm	4mm	255P18.F	702-3091	2.72	2.57	2.40	2.30	2.18		
8mm	6mm	255P22.F	702-3960	2.72	2.57	2.40	2.30	2.18		
10mm	5mm	257P20.F	702-8155	6.05	5.59	5.33	4.89	4.49		
10mm	0.25"	257P24.F	702-8167	6.05	5.59	5.33	4.89	4.49		
10mm	8mm	257P28.F	702-8179	6.05	5.59	5.33	4.89	4.49		
0.5"	6mm	259P22.F	702-8180	3.82	3.58	3.38	3.22	3.07		

Panamech Multi-Beam Couplings



- One piece construction
- Zero backlash
- Torsionally rigid
- No lubrication needed
- Constant velocity
- High flexible
- For use with high or low speeds
- Can be reversed
- Allowable misalignment 5°/0.13mm
- Available with clamp or set screw fixings

A range of multi-beam flexible couplings designed to perform where higher speeds, greater misalignment and limited lubrication would exceed the capabilities of other couplings. Both styles are manufactured from aluminium and are of one piece construction. Typical applications would include stepper motors, rotary encoders, robotics, pumps, measuring instruments, valves etc.

Clamp Screw Fixing

Model	Bore 'R1' & 'R2'	D	L	B	Cap Screw	Angular Offset	Parallel Offset	Working Torque Nm	Order Code
DBC3	3x3	12.7	19.05	6.0	M2	5°	0.127	1.46	721-4704
DBC3	4x4	12.7	19.05	6.0	M2	5°	0.127	1.4	721-4716
DBC3	4x5	12.7	19.05	6.0	M2	5°	0.127	0.9	721-4728
DBC4	4x4	19.05	22.86	7.0	M2.5	5°	0.127	4.06	721-4730

Clamping Elements - continued

Panamech Multi-Beam Couplings - continued

Clamp Screw Fixing

DBCRC4	5x5	19.05	22.86	7.0	M2.5	5°	0,127	4,06	721-4741
DBCRC4	6x6	19.05	22.86	7.0	M2.5	5°	0,127	4,0	721-4753
DBCRC4	0.25x0.25	19.05	22.86	7.0	M2.5	5°	0,127	3,2	721-4765
DBCRC5	6x6	25.4	31.75	10.0	M3	5°	0,127	6,5	721-4777
DBCRC5	8x8	25.4	31.75	10.0	M3	5°	0,127	5,9	721-4789
DBCRC5	10x10	25.4	31.75	10.0	M3	5°	0,127	4,3	721-4807
DBCRC6	10x10	31.75	44.45	12.0	M4	5°	0,127	9,7	721-4819
DBCRC6	12x12	31.75	44.45	12.0	M4	5°	0,127	7,2	721-4820

Set Screw Fixing

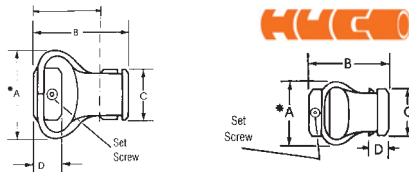
Model	Bore 'R1' & 'R2'	D	L	B	Cap Screw	Angular Offset	Parallel Offset	Working Torque Nm	Order Code
DBSR2	3x3	9.52	14.2	2.8	M2.5	3°	0.1	0.65	721-4832
DBSR3	3x3	12.7	19.05	6.0	M3	5°	0.127	1.46	721-4844
DBSR3	4x4	12.7	19.05	6.0	M3	5°	0.127	1.4	721-4856
DBSR3	5x5	12.7	19.05	6.0	M3	5°	0.127	0.9	721-4868
DBSR4	4x4	19.05	22.86	7.0	M4	5°	0.127	4.06	721-4870
DBSR4	5x5	19.05	22.86	7.0	M4	5°	0.127	4.06	721-4881
DBSR4	6x6	19.05	22.86	7.0	M4	5°	0.127	4.0	721-4893
DBSR4	0.25x0.25	19.05	22.86	7.0	M4	5°	0.127	3.2	721-4900
DBSR5	6x6	25.4	31.75	10.0	M5	5°	0.127	6.5	721-4911
DBSR5	8x8	25.4	31.75	10.0	M5	5°	0.127	5.9	721-4923
DBSR5	0.375x0.375	25.4	31.75	10.0	M5	5°	0.127	4.52	721-4935
DBSR5	10x10	25.4	31.75	10.0	M5	5°	0.127	4.3	721-4947
DBSR6	10x10	31.75	44.45	12.0	M6	5°	0.127	9.75	721-4959

mott145/221344

Clamp Fixing	Mftrs. List No.	Order Code	Price Each			
			1+	5+	10+	25+
3x3	725.13.1414	721-4704	12.85	11.89	11.05	10.32
4x4	725.13.1818	721-4716	12.85	11.89	11.05	10.32
4x5	725.13.1820	721-4728	12.85	11.89	11.05	10.32
4x4	725.19.1818	721-4730	15.32	14.18	13.16	12.31
5x5	725.19.2020	721-4741	15.32	14.18	13.16	12.31
6x6	725.19.2222	721-4753	14.59	13.51	12.54	11.72
0.25x0.25	725.19.2424	721-4765	15.32	14.18	13.16	12.31
6x6	725.25.2222	721-4777	18.43	17.06	15.85	14.81
8x8	725.25.2828	721-4789	18.43	17.06	15.85	14.81
10x10	725.25.3232	721-4807	18.43	17.06	15.85	14.81
10x10	725.32.3232	721-4819	29.60	27.38	25.46	23.79
12x12	725.32.3535	721-4820	29.60	27.38	25.46	23.79

Set Screw Fixing	Mftrs. List No.	Order Code	Price Each			
			1+	5+	10+	25+
3x3	724.09.1414	721-4832	10.76	9.95	9.23	8.63
3x3	724.13.1414	721-4844	10.08	9.33	8.66	8.09
4x4	724.13.1818	721-4856	10.08	9.33	8.66	8.09
5x5	724.13.2020	721-4868	10.08	9.33	8.66	8.09
4x4	724.19.1818	721-4870	11.37	10.52	9.77	9.14
5x5	724.19.2020	721-4881	11.37	10.52	9.77	9.14
6x6	724.19.2222	721-4893	10.83	10.02	9.30	8.70
0.25x0.25	724.19.2424	721-4900	11.37	10.52	9.77	9.14
6x6	724.25.2222	721-4911	13.58	12.55	11.69	10.91
8x8	724.25.2828	721-4923	13.58	12.55	11.69	10.91
0.375x0.375	724.25.3131	721-4935	13.58	12.55	11.69	10.91
10x10	724.25.3232	721-4947	13.58	12.55	11.69	10.91
10x10	724.32.3232	721-4959	22.92	21.17	19.70	18.40

'K' Coupling
Misalignment Coupling



- Constructed from annealed steel hubs, zinc plated and tough elastcast
- Polyurethane set screwfixing
- Angular, parallel and axial flexibility
- Isolates vibration and absorbs shock

Model	Bore Sizes	A	B	C	D	Set Screw	Max. Torque g cm	Order Code
5801	6x6	28.5	28.5	17.5	8.0	M4	3500	721-5617
5801	0.25x0.25	28.5	28.5	17.5	8.0	M4	3500	721-5629
5802	6x6	47.6	44.5	25.5	12.6	M5	14000	721-5630
5802	8x8	47.6	44.5	25.5	12.6	M5	14000	721-5642
5802	10x10	47.6	44.5	25.5	12.6	M5	14000	721-5654
5803	12x12	54	54	31.8	15.8	M6	32500	721-5680
5804	16x16	54	60.3	31.8	15.8	M6	46000	721-5721

Model	Angular Misalignment	Parallel Misalignment	Compressed	Axial Movement	Max. Operating Temperature	Weight kg
5801	10°	2.4	21.5	4.8	80°C	0.025
5802	15°	3.2	31.75	7.5	80°C	0.093

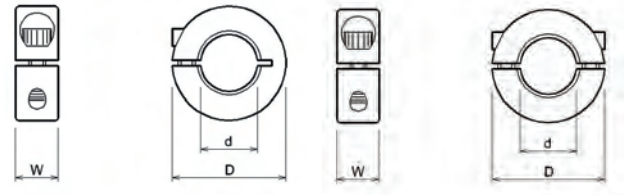
Type	Bore Size	Mftrs. List No.	Order Code	Price Each			
				1+	5+	10+	25+
5801	6x6	047102222.FAR	721-5617	8.99	8.32	7.74	7.26
5801	0.25x0.25	047102424.FAR	721-5629	8.99	8.32	7.74	7.26
5802	6x6	047202222.FAR	721-5630	9.95	9.22	8.58	8.01
5802	8x8	047202828.FAR	721-5642	9.95	9.22	8.58	8.01
5802	10x10	047203232.FAR	721-5654	9.95	9.22	8.58	8.01
5803	12x12	047303535.FAR	721-5680	10.99	10.17	9.45	8.85
5804	16x16	047404242.FAR	721-5721	12.09	11.20	10.43	9.75

Mott146/221345

Collars



Clamp type collars provide an effective all round grip on both hardened and plain shafts.
 ● Sizes to fit a wide range of standard shafts
 ● Easy installation & adjustment
 Material - Steel with black finish



1 Piece Collars

Bore mm	O.D / D	Width mm	Screw	Screw Torque max	Order Code
8	18	9	M3 x 8	2.1	347-1615
10	24	9	M3 x 10	2.1	347-1627
12	28	11	M4 x 12	4.6	347-1639
16	34	13	M5 x 16	9.5	347-1652
20	40	15	M6 x 16	16	347-1664
25	45	15	M6 x 16	16	347-1688

Bore mm	Mftrs. List No.	Order Code	Price Each			
			1+	5+	10+	25+
8	046101008FAR	347-1615	1.24	1.18	1.12	
10	046101010FAR	347-1627	1.14	1.08	1.03	
12	046101012FAR	347-1639	1.45	1.39	1.33	
16	046101016FAR	347-1652	1.73	1.64	1.56	
20	046101020FAR	347-1664	2.36	2.24	2.13	
25	046101025FAR	347-1688	2.37	2.26	2.14	

2 Piece Collars

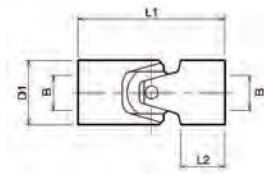
Bore mm	O.D / D	Width mm	Screw	Screw Torque max	Order Code
5	16	9	M3 x 8	2.1	347-1755
25	45	15	M6 x 16	16	347-1846

Bore mm	Mftrs. List No.	Order Code	Price Each		
			1+	5+	10+
5	046201005FAR	347-1755	1.97	1.87	1.78
25	046201025FAR	347-1846	3.48	3.32	3.14

233656

Universal Joints

Single Universal Joints



- A range of high quality steel universal joints with plain bearings
- Available with standard metric bores or un-bored for matching by end user
- Hardened and ground bearing journals prolong the operational life of the joint

Bore mm	D1	L1	L2	Static Torque at Break (NM)	Order Code
12	23	50	14	210	346-7612

Bore mm	Mftrs. List No.	Order Code	Price Each		
			1+	5+	10+
12	134P23.3535.FAR	346-7612	18.91	17.96	17.06

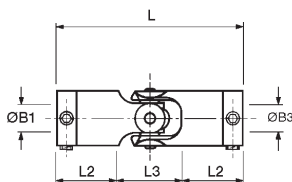
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www.global-legislation.com

Acetal Universal Joints



- Light weight U/Js with moulded acetal bodies
- Corrosion-resistant
- Backlash-free
- Electrically isolating
- No maintenance
- Maximum working angle: 45°
- Maximum speed: 1000rpm
- Use bore adaptors to fit a full range of shaft sizes, see Motor's section

Huco Pol® is range of light-duty, backlash-free universal joints, manufactured from acetal and non-ferrous metals. They are intended for intermittent applications where low mass, corrosion-resistance and electrical insulation are advantageous. Applications include business machines, domestic appliances, laboratory equipment and healthcare Huco Pol® U/Js have only a fraction of the torque capability of steel joints and are not intended to substitute these in the normal way. They provide a relatively low-cost means of routing transmission paths through angles too severe for normal misalignment couplers.

ØD	L	L21	L32	ØB1 & B3	Screw Size	Static Break Torque	*Peak Torque	*Max End Loading	Order Code
11.1	37.6	13.1	11.4	5mmx5mm	M3	1.9	0.36	38	707-7130
14.3	46.2	15.7	14.8	6mmx6mm	M3	4.5	0.85	67	707-7142
17.5	67.6	22.3	23.0	10mmx10mm	M4	6.8	1.6	98	707-7191

1. Bore Depth, 2. Distance between fully entered shafts
*Values are mutually exclusive

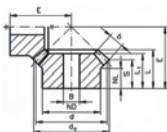
pra11/221959

Bore	Pack Qty	Mfrs. List No.	Order Code	Price Each				
				1+	5+	10+	25+	50+
5mmx5mm	2	103P09.2020.F	707-7130	12.94	11.60	10.92	10.44	10.03
6mmx6mm	1	103P13.2222.F	707-7142	7.12	6.39	6.01	5.75	5.50
10mmx10mm	1	103P16.3232.F	707-7191	7.83	7.03	6.61	6.33	6.06

Bevel Gears, Steel



Bevel Gears - Steel



- Straight crown-milled teeth
- Angle between axes 90°
- Select matched pairs for the stated transmission ratios

273217

Steel

Material Steel 9SMn 28K
Module 0.5

Ratio	No. teeth	O.D.	Pitch dia.	Hub dia.	Hub length	Torque (Ncm)	Mfrs. List No.	Order Code
1:1	20	10.7	10	4	10.6	3.9	102360211FAR	347-0428
2.5:1	20	11.3	10	4	9.1	3.9	102360272FAR	347-0507
2.5:1	50	25.2	25	4	11	3.9	102360273FAR	347-0519

273215

No. teeth	Order Code	Price Each		
		1+	5+	10+
20	347-0428	9.56	9.09	8.64
20	347-0507	12.33	11.71	11.12
50	347-0519	17.16	16.31	15.50

Steel

Material Steel 9SMn 28K
Module 1.0

Ratio	No. teeth	O.D.	Pitch dia.	Torque (Ncm)	Mfrs. List No.	Order Code
1:1	30	31.4	30	78.4	102360520FAR	346-9116
3:1	15	17.7	15	20.7	102360576FAR	346-9189
3:1	45	45.4	45	20.7	102360577FAR	346-9190

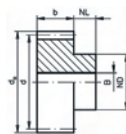
273218

No. teeth	Order Code	Price Each		
		1+	5+	10+
30	346-9116	12.58	11.94	11.35
15	346-9189	11.52	10.95	10.40
45	346-9190	25.77	24.47	23.24

Spur Gears, Steel



Spur Gears - Steel



- Milled teeth, straight interlocking
- H7 bore tolerances
- Pressure angles 20°

High quality machined gears for industrial use. Manufactured to **DIN 3967**. Quality grade 8.

273085

Steel

Material Steel - Up to 80 Ø 9 SMn 28k
Over 80 Ø C45

Module 1.0
Thickness(b) 10mm

No. teeth	O.D.	Pitch dia.	Hub dia.	Hub length	Bore	Torque (Ncm)	Mfrs. List No.	Order Code
12	14	12	10	6	4	11.3	101214012FAR	347-0544
20	22	20	15	6	6	31.4	101214020FAR	347-0581
22	24	22	15	6	6	38	101214022FAR	347-0593
24	26	24	15	6	6	45.2	101214024FAR	347-0600
25	27	25	20	6	8	49.1	101214025FAR	347-0623
26	28	26	20	6	8	53.1	101214026FAR	347-0635
28	30	28	20	6	8	61.5	101214028FAR	347-0647
30	32	30	25	8	8	70.7	101214030FAR	347-0659
36	38	36	25	8	8	100	101214036FAR	347-0672
38	40	38	25	8	8	110	101214038FAR	347-0684
40	42	40	25	8	8	120	101214040FAR	347-0696
42	44	42	25	8	8	130	101214042FAR	347-0702
44	46	44	25	8	8	150	101214044FAR	347-0714
45	47	45	30	10	10	150	101214045FAR	347-0726
48	50	48	30	10	10	180	101214048FAR	347-0740
50	52	50	30	10	10	190	101214050FAR	347-0751
60	62	60	40	12	10	280	101214060FAR	347-0817

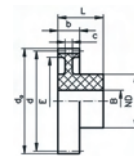
273123

Module	No. teeth	Order Code	Price Each		
			1+	5+	10+
1.0	12	347-0544	3.22	3.06	2.91
1.0	20	347-0581	3.93	3.72	3.54
1.0	22	347-0593	6.92	6.58	6.25
1.0	24	347-0600	4.91	4.65	4.41
1.0	25	347-0623	4.39	4.17	3.95
1.0	26	347-0635	4.42	4.20	4.00
1.0	28	347-0647	4.76	4.53	4.29
1.0	30	347-0659	4.48	4.27	4.05
1.0	36	347-0672	5.66	5.37	5.10
1.0	38	347-0684	8.85	8.41	7.98
1.0	40	347-0696	6.52	6.21	5.89
1.0	42	347-0702	9.09	8.64	8.21
1.0	44	347-0714	9.73	9.24	8.77
1.0	45	347-0726	10.40	9.88	9.38
1.0	48	347-0740	10.65	10.12	9.61
1.0	50	347-0751	10.74	10.20	9.70
1.0	60	347-0817	15.11	14.35	13.63

Spur Gears, Acetal



Spur Gears - Acetal



- Injection moulded
- Machined bores
- Pressure angles 20°

High strength and low friction coefficient make these gears a popular choice for many applications, including underwater.

273189

Acetal

Material Acetal
Module 0.5

Thickness(b) 3mm

No. teeth	O.D.	Pitch dia.	Hub dia.	Hub length	Bore	Torque (Ncm)	Mfrs. List No.	Order Code
12	7	6	4	7	2	0.6	101281012FAR	347-1147
15	8.5	7.5	6	10	3	1.0	101281015FAR	347-1160
16	9	9	6	10	3	1.2	101281016FAR	347-1172
18	10	6	8	10	4	1.5	101281018FAR	347-1196
20	11	10	8	10	4	1.8	101281020FAR	347-1214
22	12	11	10	10	4	2.2	101281022FAR	347-1226
24	13	12	10	10	4	2.7	101281024FAR	347-1240
30	16	15	12	10	4	4.2	101281030FAR	347-1287
32	17	16	12	10	4	4.8	101281032FAR	347-1299
36	19	18	12	10	4	6.1	101281036FAR	347-1317
38	20	19	12	10	4	6.8	101281038FAR	347-1329
40	21	20	12	10	4	7.5	101281040FAR	347-1330
48	25	24	15	10	6	10.8	101281048FAR	347-1366
60	31	30	15	10	6	16.8	101281060FAR	347-1421
70	36	35	15	10	6	19.6	101281070FAR	347-1457
80	41	6	15	4	6	22.3	101281080FAR	347-1482

Spur Gears, Acetal - continued

Acetal - continued

273185

Module	No. teeth	Order Code	Price Each		
			1+	5+	10+
0.5	12	347-1147	0.25	0.24	0.23
0.5	15	347-1160	0.29	0.28	0.27
0.5	16	347-1172	0.32	0.30	0.28
0.5	18	347-1196	0.35	0.34	0.30
0.5	20	347-1214	0.39	0.37	0.36
0.5	22	347-1226	0.39	0.37	0.36
0.5	24	347-1240	0.48	0.45	0.43
0.5	30	347-1287	0.55	0.53	0.50
0.5	32	347-1299	0.60	0.57	0.54
0.5	36	347-1317	0.65	0.61	0.58
0.5	38	347-1329	0.67	0.63	0.61
0.5	40	347-1330	0.76	0.70	0.67
0.5	48	347-1366	1.19	1.13	1.07
0.5	60	347-1421	1.44	1.37	1.31
0.5	70	347-1457	1.54	1.46	1.40
0.5	80	347-1482	1.67	1.59	1.49

Acetal

Material Acetal
Module 1.0
Thickness(b) 9mm

No. teeth	O.D.	Pitch dia.	Hub dia.	Hub length	Bore	Torque (Ncm)	Mftrs. List No.	Order Code
12	14	12	9	17	4	8.0	101283012FAR	346-9943
14	16	14	9	17	4	11.1	101283014FAR	346-9955
16	18	16	9	17	4	14.5	101283016FAR	346-9979
18	20	18	9	17	4	18.3	101283018FAR	346-9980
20	22	20	9	17	4	22.6	101283020FAR	346-9992
24	26	24	15	18	6	32.6	101283024FAR	347-0015
25	27	25	15	18	6	35.4	101283025FAR	347-0027
30	32	30	15	18	6	50.9	101283030FAR	347-0052
40	42	40	18	18	8	90.6	101283040FAR	347-0106
45	47	45	18	18	8	110	101283045FAR	347-0120
60	62	60	21	18	8	200	101283060FAR	347-0209
80	82	80	21	4	10	260	101283080FAR	347-0260

273203

Module	No. teeth	Order Code	Price Each		
			1+	5+	10+
1.0	12	346-9943	1.44	1.37	1.28
1.0	14	346-9955	1.47	1.41	1.33
1.0	16	346-9979	1.51	1.45	1.38
1.0	18	346-9980	1.18	1.10	1.06
1.0	20	346-9992	1.73	1.66	1.57
1.0	24	347-0015	1.85	1.74	1.67
1.0	25	347-0027	1.93	1.83	1.72
1.0	30	347-0052	2.09	2.00	1.89
1.0	40	347-0106	2.47	2.33	2.22
1.0	45	347-0120	2.83	2.69	2.56
1.0	60	347-0209	3.97	3.77	3.57
1.0	80	347-0260	4.53	4.30	4.09

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