



LINKAGES



Rod Ends and Spherical Plain Bearings



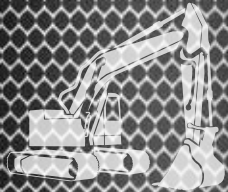
Dunlop BTL Ltd - Ashford European Distribution Centre

MPT House, Brunswick Road
Cobbs Wood Industrial Estate
Ashford, Kent
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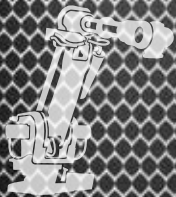
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Manufacturing Facilities

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Dunlop BTL Ltd - Consett UK Manufacturing Centre

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European Distribution Centre, Ashford, Kent UK

MPT House, Brunswick Road
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Ashford, Kent
TN23 1EL , United Kingdom

“We are proud to be a European manufacturer; it is a privilege to supply our products to some of the world’s most prestigious original equipment manufacturers in the Agricultural, Automotive, Construction, Industrial and Motor Sport sectors”.

“Our distributor network is vital to the continued global growth of the DUNLOP brand and our valued distributor partners form the perfect link between manufacturer and end user”.

“Our commitment to our staff, our customers and the environment is of paramount importance to our company, we will continue to develop our organisational skills to further enhance our company’s potential, to engage in sustainable practices and anticipate the needs and expectations of our customers”.

“At Dunlop BTL we love our products”.

Ray Mifsud, *Managing Director.*

**English****Español****Italiano****Deutsch****Français****Nederlands****Polskie****Application**

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Application • Toepassing • Podanie

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Application

There are several factors that need to be addressed to ensure the maximum performance and safe working of all **DUNLOP** rod ends, spherical bearings, ball joints and clevises.

- Rod ends and ball joints should where possible be mounted vertically, i.e. the housing member to the top, this will give maximum efficiency and life of the product.
- Cyclic motion in contaminated conditions can lead to premature failure, every effort should be taken to keep the unit clean, nylon and PTFE raced products have self-cleaning tendencies which can prove beneficial in contaminated environments.
- When mounting ball studs the hex should be properly tightened and flush to its mating surface. Adequate countersinks, counter bores or washers may be necessary to achieve acceptable assembly.
- Self-locking nuts or washers should be used in applications involving vibration and shock loads.
- It is recommended that separate stops should be mounted into the assembly to eliminate the possibility of over articulation of the rod end or ball joint over a maximum cone angle of 55°.
- Clamping forces can cause distortion of the ball and lead to a loss in internal tolerance, maximum torque values are shown below.
- All applications vary and so will product life, samples can be supplied for testing to help determine the suitability in actual operating conditions.
- Products listed in this catalogue are made to commercial standards, if you have any questions concerning a particular product or application please consult with our sales and engineering staff.

Bore Size Metric (mm)	Bore Size Imperial (inches)	Clamping Torque (Newton Metres) Bronze	Clamping Torque (Newton Metres) Steel
3		N/A	1.5
	0.1250	N/A	1.5
	0.1900	1.6	5.6
5		1.6	5.6
6		2.2	19.6
	0.2500	2.5	22.5
	0.3125	6.8	28.0
8		6.8	28.0
	0.3750	9.5	56.4
10		10.6	65.0
	0.4375	13.5	79.0
12		14.0	93.0
	0.5000	14.7	104.0
14		15.8	167.0
	0.6250	18.0	203.0
16		18.0	203.0
18		19.0	234.0
	0.7500	20.3	259.0
20		21.0	272.0

Materials

DUNLOP rod ends, spherical bearings, ball joints and clevises are available in a wide range of materials, steel, stainless steel and aluminium housings, nylon, PTFE and bronze races and steel, stainless steel and Bronze balls. Please refer to table below.

Housings

- Steel 230M07PB is used for all general purpose applications and are zinc plated and white-blue passivate (silver/clear finish) that conforms with RoHS directives on banned substances and ELV 2000/53/EC and are trivalent. Other plating colours and options are available, please refer to our 'Plating options section on page 14.
- Alloy steel, gives extreme load carrying capacity, extended wear life and high shock load resistance.
- Stainless steel 303L offers excellent corrosion resistance, other stainless steel materials such as 304 and 316 are available to order, please discuss with our sales or engineering departments.
- Aluminium A6026 also has corrosion resistance and weight reduction for lighter applications.

Races

- Nylon races are glass fibre reinforced and are suitable for extended high cycling use in heavy applications, also excellent in damp or wet environments.
- PTFE races provide zero backlash, smooth movement and can withstand extreme temperature conditions -200°C to + 260°C, and are suitable for use in high cycling use in heavy applications.
- Bronze design races SAE660 are suitable for low speed high duty loading, general purpose applications.

Spherical balls

- Steel 100Cr6 spherical balls are produced from high quality bearing steel and are heat treated and hardened to HRC 58-62 and electroless nickel plated.
- Stainless steel 440C spherical balls offer excellent corrosion resistance.
- Alloy steel, gives extreme load carrying capacity, extended wear life and high shock load resistance.
- Bronze SAE660 spherical balls are suitable for applications that require the pin or shaft fitted through the bore to rotate.

We reserve the right to vary the materials shown in the interest of product replacement or improvement.

Product Series	Housing Material	Housing Plating	Race Material	Ball/Ball Stud material	Ball Plating
MP / FP	230M07PB	ZINC WHITE/BLUE PASSIVATE	GR-NYLON	100CR6	ELECTROLESS NICKEL
MP-SS / FP-SS	303L	NOT PLATED	GR-NYLON	440C	NOT PLATED
MB / FB	230M07PB	ZINC WHITE/BLUE PASSIVATE	SAE660	100CR6	ELECTROLESS NICKEL
MB-SS / FB-SS	303L	NOT PLATED	SAE660	440C	NOT PLATED
MH / FH	230M07PB	ZINC WHITE/BLUE PASSIVATE	POLYURETHANE	230M07PB	NITROTEC
MH-SS / FH-SS	303L	NOT PLATED	POLYURETHANE	440C	NOT PLATED
MS / FS	230M07PB	ZINC WHITE/BLUE PASSIVATE	230M07PB / PTFE FABRIC	100CR6	ELECTROLESS NICKEL
MS-SS / FS-SS	303L	NOT PLATED	304L / PTFE FABRIC	440C	NOT PLATED
MSX / FSX	708M40	ZINC WHITE/BLUE PASSIVATE	230M07PB / PTFE MESH	100Cr6	ELECTROLESS NICKEL
MSX-MS / FSX-MS	17-4PH	N/A	17-4PH	440C	N/A
MX / FX	817M40	PHOSPHATED	N/A	100Cr6	PHOSPHATED

Product Series	Housing Material	Housing Plating	Race Material	Ball/Ball Stud material	Ball Plating
RM	230M07PB	ZINC WHITE/BLUE PASSIVATE	NYLON 66	100CR6	ELECTROLESS NICKEL
RM-SS	303L	NOT PLATED	NYLON 66	440C	NOT PLATED
GAR / GIR	080M46	ZINC WHITE/BLUE PASSIVATE	080M46 / PTFE FABRIC	100CR6	ELECTROLESS NICKEL
DB	230M07PB	ZINC WHITE/BLUE PASSIVATE	GR-NYLON	100CR6	ELECTROLESS NICKEL
AL	A6026	BLACK ANODISED	GR-NYLON	100CR6	ELECTROLESS NICKEL
SP	230M07PB	CHEMI-BLACKED	GR-NYLON	100CR6	ELECTROLESS NICKEL
SPH	230M07PB	ZINC WHITE/BLUE PASSIVATE	GRILAMID	230M07PB	NITROTEC
GE-ES	100CR6	MANGANESE PHOSPHATED	N/A	100CR6	MANGANESE PHOSPHATED
GEZ-ES	100CR6	MANGANESE PHOSPHATED	N/A	100CR6	MANGANESE PHOSPHATED
GE-UK	100CR6	NOT PLATED	PTFE FABRIC	100CR6	ELECTROLESS NICKEL
GE-FW	100CR6	NOT PLATED	PTFE FABRIC	100CR6	ELECTROLESS NICKEL
COM	100CR6	NOT PLATED	PTFE FABRIC	100CR6	ELECTROLESS NICKEL
SX	100CR6	PHOSPHATED	N/A	100CR6	PHOSPHATED
A	230M07PB	ZINC WHITE/BLUE PASSIVATE	NYLON 6	230M07PB	ZINC WHITE/BLUE PASSIVATE
BL	DIE CAST ZINC ALLOY	NOT PLATED	N/A	100CR6 / 535C	ZINC WHITE/BLUE PASSIVATE
BM	NYLON 12	NOT PLATED	N/A	230M07PB	ZINC WHITE/BLUE PASSIVATE
C	230M07PB	ZINC WHITE/BLUE PASSIVATE	N/A	212A42	ZINC WHITE/BLUE PASSIVATE
D	230M07PB	ZINC WHITE/BLUE PASSIVATE	N/A	230M07PB	ZINC WHITE/BLUE PASSIVATE
F	230M07PB	ZINC WHITE/BLUE PASSIVATE	N/A	230M07PB	ZINC WHITE/BLUE PASSIVATE
I	230M07PB	ZINC WHITE/BLUE PASSIVATE	NYLON 6	230M07PB	ZINC WHITE/BLUE PASSIVATE
P	230M07PB	ZINC WHITE/BLUE PASSIVATE	N/A	230M07PB	ZINC WHITE/BLUE PASSIVATE
Q	230M07PB	ZINC WHITE/BLUE PASSIVATE	N/A	230M07PB	ZINC WHITE/BLUE PASSIVATE
M	NYLON PA6.6	NOT PLATED	N/A	230M07PB	ZINC WHITE/BLUE PASSIVATE
G	080M46	ZINC WHITE/BLUE PASSIVATE	N/A	N/A	N/A

Load Capacity

Rod ends and spherical bearings

- The static load ratings listed are based on the yield strength of the race material and define the maximum gradually applied load.
- Radial load which the rod end or spherical bearing assembly can withstand, without significant permanent deformation.

- The steel housing provides a backup so that the product can sustain loading in excess of the listed values without collapsing.
- For highly stressed cyclic applications or those involving impact loads a safety factor of two or three should be applied to arrive at a safe working load.
- Although rod ends and spherical bearings are not recommended for use in applications involving axial loads, the construction is such that they can sustain axial loads up to 15% of the actual applied radial static load ratings without distress, but should not exceed 25% of the listed values.
- For extended life the recommended normally applied loads should be 25% - 50% of the static load ratings.
- All load ratings listed are presented for design guidance only and do not imply or constitute a warranty claim of any type.
- All applications vary and so will product life, samples can be supplied for testing to help determine the suitability in actual operating conditions.

Studs

- In applications using studded rod ends or spherical bearings the capacity of the product is limited by that of the stud to withstand sheer loading.
- Table below lists the expected minimum load capacities based on the use of studs made from carbon steel, please consult our sales and engineering departments where the applied loads exceed 50% of the listed values.

Ball joints

- The capacities listed are based on either the maximum tensile strength of the female body or the maximum shear strength of the ball stud, whichever is the lower. Suitable safety factors should be applied depending on the nature of the loading. Pull out force is the minimum required, when applied axially along the stud to cause complete disengagement of the stud from the housing.

Bore Size Metric (mm)	Bore Size Imperial (inches)	Ultimate Radial Loads (Newton)
	0.1900	1,200
5		1,200
6		1,930
	0.2500	1,930
	0.3125	3,190
8		3,190
	0.3750	4,240
10		4,240
	0.4375	5,720
12		5,720
	0.5000	7,200
14		7,200
	0.6250	9,000
16		9,000

Temperature ranges

- The operating temperature range of rod ends and spherical bearings with a GR-nylon or nylon 66 race is limited by the thermal characteristics of the race material, this is -35°C to +170°C and -30°C to +120°C respectively. However in temperatures in excess of 80°C there may be a loss of load carrying capacity, e.g at 170°C an applied load equal to 20% of the static load rating can result in a compression set of .025mm.
- For application requiring extreme temperature ranges we recommend our liner, rod ends and spherical bearings can safely operate within a temperature range of -200°C to +260°C.
- Ball joints are generally temperature limited by the type of lubricant employed.

Specification

- Metric rod ends and spherical bearings are based on DIN 648.
- Imperial rod ends and spherical bearings are based on SAEJ1120.
- Metric ball joints are based on DIN71802 and DIN 71803.
- Imperial ball joints are based on SAEJ490.
- Metric clevises are based on DIN71752
- Imperial clevises are based on DIN71802
- All items are manufactured to commercial standards and tolerances, these tolerances are shown below.

Dimension	Metric (mm)	Imperial (inches)
Rod end bearings:		
Bore (Steel)	+0.064 - 0.013	+0.0025 - 0.0005
Bore (Bronze)	+0.038 - 0.013	+0.0015 - 0.0005
W	+0.000 - 0.0150	+0.000 - 0.0050
H	+0.050 - 0.050	+0.0030 - 0.0030
D	+0.130 - 0.130	+0.0050 - 0.0050
L1	+0.000 - 1.000	+0.0000 - 0.0620
L2	+0.250 - 0.250	+0.0320 - 0.0320
O	+0.050 - 0.050	+0.0030 - 0.0030
A	+0.130 - 0.130	+0.0050 - 0.0050
B	+0.250 - 0.250	+0.0320 - 0.0320
C	+0.050 - 0.050	+0.0030 - 0.0030
K	+0.130 - 0.130	+0.0050 - 0.0050
Spherical bearings:		
Bore (Steel)	+0.064 - 0.013	+0.0025 - 0.0005
Bore (Bronze)	+0.038 - 0.013	+0.0015 - 0.0005
D	+0.000 - 0.130	+0.0000 - 0.0050
H	+0.000 - 0.100	+0.0050 - 0.0050
W	+0.000 - 0.150	+0.0050 - 0.0050
Ball joints:		
Ball Ø	+0.064 - 0.013	+0.0025 - 0.0005

Table continued from over page:

Dimension	Metric (mm)	Imperial (inches)
L1	+0.000 - 1.000	+0.0000 - 0.0620
L2	+0.250 - 0.250	+0.0320 - 0.0320
STUD A/F	+0.130 - 0.130	+0.0050 - 0.0050
A	+0.130 - 0.130	+0.0050 - 0.0050
B	+0.250 - 0.250	+0.0320 - 0.0320
C	+0.050 - 0.050	+0.0030 - 0.0030
D1	+0.050 - 0.050	+0.0030 - 0.0030
D2	+0.050 - 0.050	+0.0030 - 0.0030
bore	+0.060 - 0.000	+0.0020 - 0.0000
G	+0.300 - 0.300	+0.0118 - 0.0118
A1	+0.300 - 0.160	+0.0118 - 0.0062
A2	+0.300 - 0.160	+0.0118 - 0.0062
B1	+0.150 - 0.000	+0.0060 - 0.0000
D3	+0.130 - 0.130	+0.0050 - 0.0050
L1	+0.500 - 0.500	+0.0196 - 0.0196
L2	+0.300 - 0.300	+0.0118 - 0.0118
L3	+0.300 - 0.300	+0.0118 - 0.0118
Ball studs:		
BALL Ø	+0.064 - 0.013	+0.0025 - 0.0005
A	+0.130 - 0.130	+0.0050 - 0.0050
B	+0.250 - 0.250	+0.0320 - 0.0320
C	+0.050 - 0.050	+0.0030 - 0.0030
K	+0.130 - 0.130	+0.0050 - 0.0050
Threads:		
Male	ISO 6G	Class 2A
Female	ISO 6H	Class 2B



ISO 9001:2008

Our commitment is to quality, to continuously improve in every aspect of the companies activities. In 2006, we successfully passed UKAS quality assurance inspection to ISO 9001:2008 for the manufacture and distribution of bearings, power transmission and motion transfer linkages.

ISO 14001:2004

As a responsible European manufacturer, we take our environmental responsibility extremely seriously. In 2012, we successfully passed UKAS quality assurance inspection to ISO14001:2004 for the manufacture and distribution of bearings, power transmission and motion transfer linkages.

Plating Options

DUNLOP rod ends, spherical bearings, ball joints and clevises are available in a wide range of plating options. Our standard catalogue and stock specification is trivalent F39, zinc and white/blue passivate, (zinc and clear), that conforms with RoHS directives on banned substances and is ELV 2000/S3/EC compliant.

Table below shows our suffix designations, other available plating options may not be RoHS and ELV compliant, please enquire for availability. For a full list of options, please refer to table below.

BRITISH PLATING STANDARDS

BS3382 – Zinc plating of all steel parts with external threads

Basic major diameter of thread
 0.127"-0.250" (3-6mm)
 0.251"-0.500" (6-12mm)
 0.501"-0.750" (12-19mm)
 0.751" and over (19mm)

Average plating thickness
 5.0 to 6.4 µm
 6.4 to 7.6 µm
 7.6 to 8.9 µm
 8.9 to 12.7 µm

Finish Code	Finish Description
F0	SELF COLOUR
F1	ZINC PLATE & YELLOW PASSIVATE (CONTAINS HEXAVALENT CHROMIUM)
F2	ZINC PLATE & CLEAR PASSIVATE (CONTAINS HEXAVALENT CHROMIUM)
F3	PHOSPHATE, DE-EMBRITTLE & OIL
F4	ZINC NICKEL ALLOY & BLACK PASSIVATE 8 microns (2000 hours salt spray resistance)
F5	CHEMI-BLACK
F6	AS SPECIFIED ON CUSTOMERS DRAWING
F7	ZINC PLATE & BLUE PASSIVATE
F8	ZINC PLATE & OLIVE DRAB PASSIVATE TO ACCO CABLES (TRIDENT) SPEC. FS.25
F9	COPPER PLATE 0.0127/0.0203mm THICK
F10	DACROMET (REPLACED BY GEOMET F54)
F11	ZINC PLATE, DE-EMBRITTLE & YELLOW PASSIVATE (CONTAINS HEXAVALENT CHROMIUM)
F12	ZINC PLATE, DE-EMBRITTLE & CLEAR PASSIVATE
F13	ZINC PLATE, DE-EMBRITTLE & BLUE PASSIVATE
F14	ZINC PLATE, DE-EMBRITTLE & OLIVE DRAB PASSIVATE
F15	PHOSPHATE & OIL
F16	MECHANICAL ZINC PLATE & YELLOW PASSIVATE
F17	CATHODIC BLACK
F18	XYLON XL BLACK
F19	PHOSPHATE, DE-EMBRITTLE & OIL DRY TO TOUCH
F20	PARKERISE
F21	ZINC PLATE & BLACK PASSIVATE (CONTAINS HEXAVALENT CHROMIUM)
F22	PAINT TO IRR NATO GREEN – DEF STD 80-41
F23	ZINC PLATE & BRONZE PASSIVATE FORD WSD-M1P85-A2+WSB-M10P10-A4

Table continued from over page:

Finish Code	Finish Description
F24	RED OXIDE PAINT AND SPRAY BLACK GLOSS TO S/A SPEC 1000-SEDDON
F25	BLACK FURALON B5514 FORD SPEC WSK-M2P153-A3
F26	BRIGHT NICKEL FLASH (PLATING DEPOSIT 0.0025/0.0051mm)
F27	POWDER COAT PAINT
F28	OIL
F29	ZINC PLATE, DE-EMBRITTLE & BLACK PASSIVATE (CONTAINS HEXAVALENT CHROMIUM)
F30	BLACKODIZE
F31	BLACK PAINT TO AULTRAFast SPEC AF1
F32	NITROTEC TO SPECIFICATION NQ40
F33	NITROTEC TO SPECIFICATION NQ3
F34	ZINC PLATE TO JS 500 (NO COLOUR)
F35	FERRITIC NITROCARBURISE
F36	ZINC NICKEL ALLOY & CLEAR PASSIVATE
F37	ZINC NICKEL ALLOY & YELLOW PASSIVATE
F38	ZINC PLATE & YELLOW TRIVALENT PASSIVATE (COLOUR DIE)
F39	ZINC PLATE & CLEAR TRIVALENT PASSIVATE
F40	DELTATONE & DELTASEAL BLACK (FREE FROM HEXAVALENT CHROMIUM)
F41	ZINC NICKEL PLATE, DE-EMBRITTLE & BLACK TRIVALENT PASSIVATE
F42	ZINC NICKEL PLATE & BLACK TRIVALENT PASSIVATE
F43	ZINC IRON PLATE & BLACK TRIVALENT PASSIVATE
F44	ZINC PLATE & BLACK TRIVALENT PASSIVATE
F45	ZINC NICKEL PLATE & CLEAR TRIVALENT PASSIVATE (BRIGHT FINISH)
F46	ZINC NICKEL PLATE, DE-EMBRITTLE & CLEAR TRIVALENT PASSIVATE
F47	ZINC PLATE, DE-EMBRITTLE & CLEAR TRIVALENT PASSIVATE WITHOUT SEALER
F48	ZINC PLATE, CLEAR TRIVALENT PASSIVATE AND SEAL (ZINKLAD 250)
F49	ZINC PLATE, DE-EMBRITTLE, CLEAR TRIVALENT PASSIVATE & SEAL (ZINKLAD 250)
F50	ZINC PLATE, THICK FILM PASSIVATE AND ADDITIONALLY SEAL / SST
F51	ZINC PLATE, DE-EMBRITTLE & YELLOW TRIVALENT PASSIVATE
F52	ZINC PLATE & TRIPASS CORROBLUE ELV
F53	ZINC PLATE, DE-EMBRITTLE & TRIPASS CORROBLUE ELV
F54	GEOMET 500 (REPLACES DACROMET A) F10
F55	SALT BATH NITRIDE TO AMS 2753B COMPOUND DEPTH .0003/.0010" SURFACE FILE HARD TO RC58.
F56	ZINC IRON PLATE, DE-EMBRITTLE & BLACK TRIVALENT PASSIVATE
F57	GEOMET 321 PLUS 10 VW 137 50, T602
F58	ELECTROLESS NICKEL PLATE
F59	CADMIUM PLATE TO DEF 03-19 AND CHROMATE PASSIVATE TO DEF 130
F60	BLACK PHOSPHATE DEF STAN 3-11 ROHS AND ELV COMPLIANT
F61	BLACK ANODISE ROHS & ELV COMPLIANT
F62	ZINC FLAKE COATING TO VW SPEC T630 TL233 SILVER
F63	BRIGHT NICKEL PLATE
F64	MANGANESE PHOSPHATE AND OIL
F65	ZINC NICKEL PLATE, DE-EMBRITTLE & Cr3 PASSIVATE TO KA SPEC PS224500
F66	ZINC NICKEL PLATE AND Cr3 PASSIVATE.
F67	ZINC PLATE, DE-EMBRITTLE & THICK FILM PASSIVATE AND ADDITIONALLY SEAL
F68	BLACK ON STAINLESS STEEL, STAY BLACK.

**English****Español****Italiano****Deutsch****Français****Nederlands****Polskie****Ball Studs****122**

Pernos de bola • Perni sferici • Kugelbolzen

Rotules • bal hengsten • Szpilki kulkowe

Dust Seals**124**

Guardapolvos • Parapolvere • Staub-Dichtungen

Joints de poussière • Stof zeehonden • uszczelki przeciwpyłowe

Nuts**126**

Tuercas • Dadi • Muttern

Noix • Noten • Orzechy

Washers**128**

Arandelas • Rondelle • Unterlegscheiben

Rondelles • Unterlegscheiben • Podkładki



ACCESSORIES

BALL STUDS

Description:

Ball studs are available in three different series that can be interchanged with corresponding ball joints, hardened threaded, burnished threaded and hardened riveting. Specials can be produced to suit customers requirements, so please enquire for any item not shown.

Material Specifications:

Ball stud: Steel 212A42 hardened and zinc plated and clear trivalent passivate.

Features

- Metric & imperial thread sizes
- Course & fine threads
- Interchangeable with ball joints
- Burnished ball for smooth operation

Possible Applications

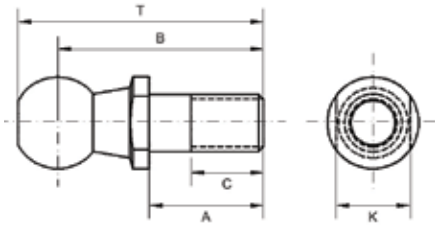
- Light to medium industrial/mechanical
- Construction equipment
- Agricultural equipment
- Industrial equipment

Temperature Range

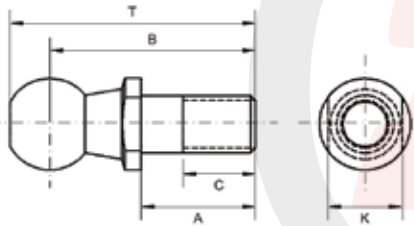
-40°C to +170°C

Specification

ELV & RoHS compliant



BALL STUDS: THREADED SERIES HARDENED (METRIC)



Stud: Steel 212A42, Hardened, Zinc Plated and Clear Trivalent Passivate

Specification: ELV and RoHS Compliant

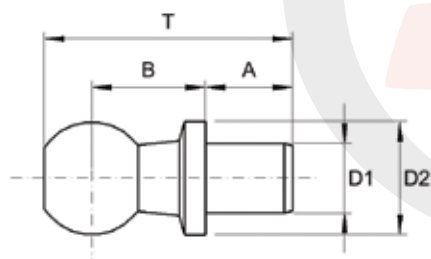


Part No. Right Hand	Ball Dia.	Stud Thread	A	B	C	K	T	Ball Type
M2662	8	M5X0.80	10.2	19.2	6.2	7	22.7	TYPE A
M2667	10	M6X1.00	12.5	23.5	8.5	8	28.0	TYPE A
M2671	13	M8X1.25	16.5	29.5	11.2	11	35.0	TYPE A
M2675	16	M10X1.50	20.0	36.0	12.7	13	43.0	TYPE A
M2679	16	M12X1.75	20.0	36.0	17.0	13	43.0	TYPE A
M2683	19	M14X1.50	28.0	48.0	17.2	16	56.5	TYPE A
M2687	19	M14X2.00	28.0	48.0	17.2	16	56.5	TYPE A

For stainless steel add 'SS' to part no. For example 'M2662 SS'

BALL STUDS: THREADED SERIES HARDENED (IMPERIAL)

Part No. Right Hand	Ball Dia.	Stud Thread	A	B	C	K	T	Ball Type
M1688	0.251	10 - 32 UNF	0.437	0.874	0.360	0.312	0.965	TYPE A
M1158	0.348	1/4 - 28 UNF	0.562	1.015	0.460	0.375	1.166	TYPE A
M1059	0.251	1/4 - 28 UNF	0.562	0.949	0.480	0.312	1.052	TYPE A
M1247	0.310	1/4 - 28 UNF	0.562	1.011	0.480	0.375	1.141	TYPE B
M2262	0.304	1/4 - 28 UNF	0.562	1.030	0.468	0.375	1.156	TYPE C
M1205	0.406	5/16 - 24 UNF	0.687	1.218	0.600	0.437	1.375	TYPE A
M1240	0.311	5/16 - 24 UNF	0.562	1.046	0.500	0.437	1.172	TYPE A
M1187	0.340	5/16 - 24 UNF	0.687	1.234	0.620	0.437	1.375	TYPE B
M2263	0.343	5/16 - 24 UNF	0.687	1.218	0.593	0.437	1.343	TYPE C
M1171	0.489	3/8 - 24 UNF	0.875	1.516	0.780	0.500	1.719	TYPE A
M1333	0.422	3/8 - 24 UNF	0.875	1.522	0.780	0.500	1.687	TYPE B
M2264	0.416	3/8 - 24 UNF	0.875	1.562	0.781	0.500	1.722	TYPE C
M2265	0.554	1/2 - 20 UNF	1.125	2.000	1.000	0.625	2.230	TYPE C

BALL STUDS: RIVETING SERIES HARDENED (METRIC)


Stud: Steel 212A42, Ball Induction Hardened,
Zinc Plated and Clear Trivalent Passivate

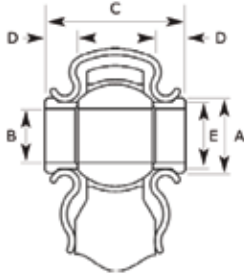
Specification: ELV and RoHS Compliant



Part No. Right Hand	Ball Dia.	A	B	T	D1	D2	Ball Type
M2691	8	4	9	16.5	5	8	5.000 / 5.075
M2692	8	7.5	9	20.0	5	8	5.000 / 5.075
M2693	10	4.5	11	19.5	6	10	6.000 / 6.075
M2694	10	8	11	23.5	6	10	6.000 / 6.075
M2695	13	5	13	23.5	8	13	8.000 / 8.090
M2696	13	10	13	28.5	8	13	8.000 / 8.090
M2697	16	6	16	29.0	10	16	10.000 / 10.090
M2698	16	13	16	35.0	10	16	10.000 / 10.090
M2699	19	12	20	40.5	14	19	14.000 / 14.110
M2700	19	18	20	46.5	14	19	14.000 / 14.110



ACCESSORIES



DUST SEALS & SPACERS: RDS - RDSS

Description:

Dust seals and spacers are available to suit standard rod ends and will give extra protection when used in harsh environments. In certain atmospheres condensation may occur and be trapped inside of the seal, therefore increasing the risk of corrosion. It is essential to use a suitable grease able to withstand water, a recommended grease is Shell Alvania No. 2 or equivalent.

Material Specifications:

Dust seal: Neoprene.

Spacer: Steel 230M07PB zinc plated and clear trivalent passivate.

Features

To suit both metric & imperial rod end bearings

Possible Applications

All rod end bearing applications

Temperature Range

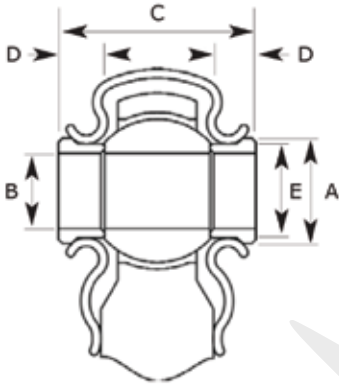
-30°C to +120°C

Specification

ELV & RoHS compliant



RUBBER DUST SEALS & SPACERS



Dust Seal: Neoprene Rubber
Spacer: Steel 230M07Pb, Zinc Plated and Clear Trivalent Passivate
Specification: ELV and RoHS Compliant



Part No.	To Suit Rod End Bore Sizes				
RDS-04	6mm	8mm	1/4"	5/16"	
RDS-06	10mm	3/8"	7/16"		
RDS-08	12mm	14mm	1/2"	5/8"	
RDS-12	16mm	18mm	20mm	22mm	3/4"

SPACERS (METRIC)

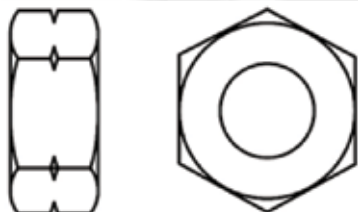
Part No.	Bore Size	A	B	C	D	E
RDSS-M06	6	10	6	21	6	8.5
RDSS-M08	8	12	8	24	6	10.0
RDSS-M10	10	14	10	26	6	12.5
RDSS-M12	12	18	12	28	6	15.0
RDSS-M14	14	20	14	35	8	16.5
RDSS-M16	16	22	16	37	8	19.0
RDSS-M18	18	24	18	39	8	21.0
RDSS-M20	20	26	20	41	8	24.0
RDSS-M22	22	28	22	44	8	25.5

SPACERS (IMPERIAL)

Part No.	Bore Size	A	B	C	D	E
RDSS-04	1/4	0.437	0.250	0.875	0.250	0.343
RDSS-05	5/16	0.500	0.312	0.937	0.250	0.437
RDSS-06	3/8	0.562	0.375	1.000	0.250	0.500
RDSS-07	7/16	0.625	0.437	1.062	0.250	0.562
RDSS-08	1/2	0.750	0.500	1.250	0.312	0.656
RDSS-10	5/8	0.875	0.625	1.375	0.312	0.781
RDSS-12	3/4	1.000	0.750	1.500	0.312	0.906



ACCESSORIES



LOCKING NUTS

Description:

Nuts are available in both grade 4 and grade 8, in full and half width sizes. They are used on many of our linkage assemblies to secure rod ends, ball joints and clevis joints into place.

Material Specifications:

Nut: Steel grade 4 and grade 8 zinc plated and clear trivalent passivate.

Features

Metric & imperial sizes
Full and half width sizes

Possible Applications

All rod end bearing applications
All linkage assembly applications

Temperature Range

-30°C to +120°C

Specification

ELV & RoHS compliant

NUTS: GRADE 4 (METRIC)



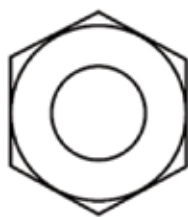
Nut: Grade 4 Steel, Zinc Plated and Clear Trivalent Passivate

Specification: ELV and RoHS Compliant



Part No. Right Hand	Part No. Left Hand	Thread	Type
M7000	M7001	M4 X 0.70	FULL
M7002	M7003	M4 X 0.70	THIN
M7007	M7008	M5 X 0.80	FULL
M7009	M7010	M5 X 0.80	THIN
M7014	M7015	M6 X 1.00	FULL
M7016	M7017	M6 X 1.00	THIN
M7025	M7026	M8 X 1.25	FULL
M7027	M7028	M8 X 1.25	THIN
M7033	M7034	M10 X 1.50	FULL
M7035	M7036	M10 X 1.50	THIN
M7040	M7041	M12 X 1.75	FULL
M7042	M7043	M12 X 1.75	THIN

NUTS: GRADE 4 (IMPERIAL)



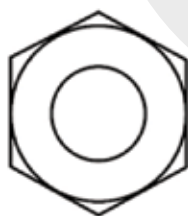
Nut: Grade 4 Steel, Zinc Plated and Clear Trivalent Passivate

Specification: ELV and RoHS Compliant



Part No. Right Hand	Part No. Left Hand	Thread	Type
M7050	M7051	10-32 UNF	FULL
M7060	M7061	1/4 UNF	FULL
M7062	M7063	1/4 UNF	THIN
M7070	M7071	5/16 UNF	FULL
M7072	M7073	5/16 UNF	THIN
M7080	M7081	3/8 UNF	FULL
M7082	M7083	3/8 UNF	THIN
M7090	M7091	7/16 UNF	FULL
M7092	M7093	7/16 UNF	THIN

NUTS: GRADE 8 (METRIC)



Nut: Grade 8 Steel, Zinc Plated and Clear Trivalent Passivate

Specification: ELV and RoHS Compliant



Part No. Right Hand	Part No. Left Hand	Thread	Type
M7814	M7815	M6 X 1.00	FULL
M7825	M7826	M8 X 1.25	FULL
M7827	M7828	M8 X 1.25	THIN
M7833	M7834	M10 X 1.50	FULL
M7835	M7836	M10 X 1.50	THIN
M7840	M7841	M12 X 1.75	FULL
M7842	M7843	M12 X 1.75	THIN



ACCESSORIES

WASHERS

Description:

Washers are available in both metric and imperial sizes. They are used on many of our linkage assemblies to help secure rod ends, ball joints and clevis joints into place.

Material Specifications:

Steel 230M07PB zinc plated and clear trivalent passivate.

Features:

Metric & imperial sizes

Possible Applications:

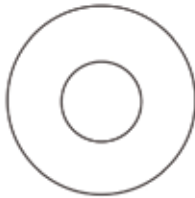
All rod end bearing applications
All linkage assembly applications

Temperature Range:

-30°C to +120°C

Specification:

ELV & RoHS compliant



PLAIN WASHERS: STANDARD (METRIC)



Washer: Steel

Specification: ELV and RoHS Compliant



Part No. Right Hand	Ball Dia.	Stud Thread	A	B
M7100		10	5.3	1.0
M7111	Special Plain Washer	17	8.4	1.6
M7112	DIN 125 Form B Plain Washer	24	13.0	1.6
M7113	Special Plain Washer	30	17.0	2.0
M7114	Special Plain Washer	21	8.4	1.6
M7117	Special Plain Washer	33	21.0	2.5

PLAIN WASHERS: STANDARD (METRIC)

Part No. Right Hand	Ball Dia.	Stud Thread	A	B
M7101	Plain Washer	0.442 / 0.432	0.268 / 0.263	0.032
M7102	Plain Washer	0.510 / 0.490	0.332 / 0.327	0.032
M7116	Plain Washer	0.625 / 0.615	0.332 / 0.327	0.072
M7103	Plain Washer	0.580 / 0.555	0.415 / 0.410	0.032
M7104	Plain Washer	0.753 / 0.743	0.514 / 0.512	0.039
M7105	Plain Washer	1.250 / 1.240	0.656 / 0.651	0.072
M7106	Plain Washer	1.375 / 1.365	0.656 / 0.651	0.072
M7107	Plain Washer	1.625 / 1.615	0.656 / 0.651	0.128
M7108	Plain Washer	2.000 / 1.990	0.656 / 0.651	0.128
M7109	Plain Washer	0.875 / 0.870	0.395 / 0.390	0.072
M7110	Plain Washer	1.500 / 1.480	0.333 / 0.328	0.057

“We are proud to be a European manufacturer; it is a privilege to supply our products to some of the world’s most prestigious original equipment manufacturers in the Agricultural, Automotive, Construction, Industrial and Motor Sport sectors”.



“Our distributor network is vital to the continued global growth of the DUNLOP brand and our valued distributor partners form the perfect link between manufacturer and end user”.



“Our commitment to our staff, our customers and the environment is of paramount importance to our company, we will continue to develop our organisational skills to further enhance our company’s potential, to engage in sustainable practices and anticipate the needs and expectations of our customers”.



“We love our products”.

Ray Mifsud, Managing Director.

A handwritten signature in black ink, appearing to read 'R. Mifsud'.

#WeLoveOurProducts





LINKAGES

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