

# EYE BOLTS & EYE NUTS

## Eye Bolts - some common problems

Eye bolts are widely used for a variety of purposes including lifting operations. However, many people misunderstand the limitations of eye bolts and this can cause dangerous situations to arise. All eye bolts are held in place by the thread. Obviously, the length of the thread engagement is important but also the type of thread. Fine threads are unsuitable for lifting purposes as they provide insufficient landing area. A common error is to over-tighten eye bolts which **should only be tightened by hand**. Even tightening by hand can stress small diameter threads so for lifting purposes a minimum thread diameter of **12 mm** is recommended. The collar must be properly seated against the substrate. For this reason the tread on lifting eye bolts is relieved with a small recess at the junction of the collar to the thread to ensure a totally flat mating surface. Dynamo eye bolts were originally designed to be fixed into the tapped hole on the top of dynamos. The hole was in the centre of gravity and they were designed only to ever take a straight pull. Off axis loading by just 5° can stress the eye bolt. Collared eye bolts can take reduced loads at angles but **only in the plane of the eye**. If the eye bolts are to be used for bridles it will be unlikely that hand-tightening the eyes will result in alignment of the plane of the eyes within 5°. In this case fine shims will need to be added until the eye bolts align. To avoid this alignment problem Flints stocks the Starpoint VRS eye bolt that adjusts to the direction of the load and is an excellent solution for lifting items where the alignment may change during rigging [speaker cabinets or permanently installed multi-purpose lifting points etc.].

All lifting operations should be carried out by a competent person.

## Weight Loadings

Flints uses the information supplied by the manufacturers to give you an indication of the strength of the product. It can get a bit confusing! Generally speaking the Safe Working Load [SWL] is the same as the Working Load Limit [WLL], never more. The Working Load Limit is the maximum design load of the product, you may enforce a lower SWL for certain applications. This is generally expressed in kilogrammes [kg] or tonnes [t]. Some manufacturers express the strength as the Minimum Breaking Load MBL. We use Min BL because occasionally manufacturers use a "mean" breaking load. This is sometimes expressed as kilonewtons [kN] a unit of force. This can be converted to kg but strictly speaking it is kgf - kilogram force. You will then need to apply your own safety factor.

## Adjusting ratings for non-vertical loads

If it is stated that a load may be applied at an angle then the working load limit should be reduced as follows. If the direction of the pull is 45° the adjusted working load will be 30% of rated load. If the pull is 90° the adjusted working load will be 25% of the rated load. N.B. The pull must be in the same plane as the eye [+/- 5°]. N.B. For lifting purposes choose eye bolts M12 or greater.

## EYE BOLTS

### Drop Forged Collared Long and Short Shank Eye Bolts

Tested and certified. Unlike Dynamo eye bolts these may be used with loads applied at angles although the pull must be in the same plane as the eye. Suitable for trunnion lifting. Safe working loads will be reduced, see box. Choose M12 threads for lifting purposes. Self-colour. The above eye bolts comply to British Standards as follows: Short Shank code WIR15112 to BS 4278 Part 1 1984. [The scope of this standard starts at M12 - the M10 is machined from an M12 forging].

\* Long Shank code WIR15662 did conform to BS 529 Part 1 1944 but this standard has now been withdrawn.

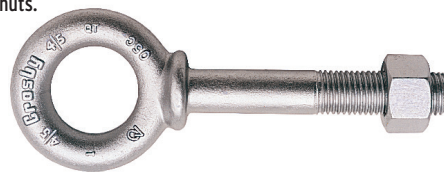
code	thread Ø	thread length	vertical SWL	internal eye Ø	price
WIR15110	M10	18mm	250kg	14mm	£2.18
WIR15112	M12	18mm	400kg	14mm	£2.81
WIR15662	M12	178mm	400kg	18mm	£12.60



### Crosby Forged Steel Rated Eye Bolts With Nuts [Type G277]



Made from forged steel, then hot-dip galvanised. Supplied with a hot-dip galvanised heavy hex nut. UNC Thread. These bolts are supplied with fitting instructions. The ultimate load is five times the manufacturer's working load. Loads may be applied at an angle [in the plane of the eye] but in these cases the collars of the bolts must be secured flush to the load surface. The rating must be reduced as shown in the information box at the top of this column. For vertical loads the shank may protrude. Although the bolts are supplied with nuts we also stock spare nuts as replacements or as locking nuts.

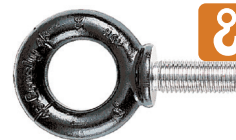


code	thread Ø	thread length	vertical WLL	internal eye Ø	price
CRO2776	3/8"	114mm	700kg	19.1mm	£20.10
CRO2778	1/2"	152mm	1180kg	25.4mm	£28.90
code	thread Ø				price
CRO88317	3/8"				£3.25

### Crosby Forged Steel- Rated Short Shank Eye Bolts [Type M279]



Made from quenched and tempered forged steel. Designed to be inserted into a tapped hole of at least the tapped length plus one half the diameter of the bolt. These bolts are supplied with fitting instructions. The ultimate load is five times the manufacturer's working load. Loads may be applied at an angle in the plane of the eye but ratings must be reduced as shown in the information box.



code	thread Ø	thread length	vertical WLL	internal eye Ø	price
CRO2792	M6	13mm	200kg	19.1mm	£22.90
CRO2796	M10	17mm	640kg	25.4mm	£29.60
CRO2798	M12	20.5mm	1000kg	30.2mm	£35.00

## DYNAMO EYE BOLTS

### Long Shank Dynamo Eye Bolts



Commercial quality drop forged eye bolts, intended to fix through a surface material with a hex nut to provide a single fixing point. The load must be a vertical pull and the bolt must be tightened down to the shoulder. Self-colour.



code	thread length	thread Ø	internal eye Ø	vertical SWL	price
WIR424	4"	3/8"	7/8"	250kg	£4.98
WIR425	4"	1/2"	1 1/8"	320kg	£6.60
WIR426	100mm	8mm	21mm	150kg	£3.93
WIR427	100mm	10mm	21mm	250kg	£3.97
WIR429	100mm	12mm	28mm	320kg	£4.99

## Short Shank Dynamo Eye Bolts

These eye bolts are primarily designed to go into tapped holes. The manufacturer's SWL will only apply if the tap depth is the full threaded length plus one half the diameter. The ultimate load is four times the manufacturer's vertical SWL. Suitable for vertical loads only. Self-colour.

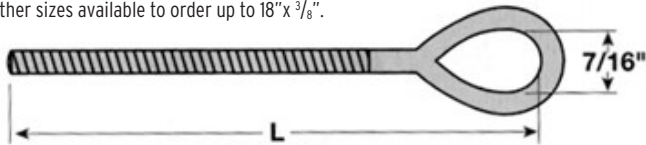


code	thread $\varnothing$	thread length	vertical SWL	internal eye	price
WIR420	3/8"	3/4" BSW	5cwt	13/16"	£5.95
WIR421	1/2"	1" BSW	10cwt	1 1/8"	£6.05
WIR419	8mm	18mm	150kg	21mm	£1.90
WIR422	10mm	18mm	250kg	21mm	£1.54
WIR423	12mm	18mm	320kg	21mm	£2.07

## COMMERCIAL FOLDED AND WELDED EYE BOLTS

### Folded and Welded Eye Bolts

A commercial quality straining eye bolt suitable for light duty non-lifting applications. Supplied with nut and washer. Zinc-plated. Other sizes available to order up to 18" x 3/8".

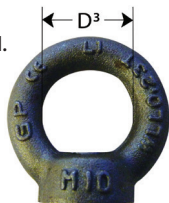


code	thread $\varnothing$	nom length +/- 5%	price
FIX3075	1/4"	6"	£1.38
FIX3073	5/16"	6"	£1.21
FIX3071	3/8"	6"	£1.38

## EYE NUTS

### Eye Nuts

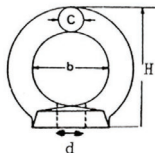
Made from C15 carbon steel to Din 582 with a safety factor of 4:1. Other sizes available to order. Self-colour.



code	thread $\varnothing$	WLL	internal D <sup>3</sup>	price
WIR17306	M6	70kg	20mm	£1.23
WIR17308	M8	140kg	20mm	£1.86
WIR17310	M10	230kg	25mm	£2.44
WIR17312	M12	340kg	30mm	£2.99

### Stainless Steel Eye Nuts

Made to Din 582 from AISI 316 marine-grade stainless steel.



code	thread $\varnothing$	height H	int. eye $\varnothing$ b	min BL KN	min BL KGF	price
WIR103206	M6	28mm	16mm	6.2kN	632kg	£1.15
WIR103208	M8	33mm	20mm	8.2kN	836kg	£1.20
WIR103210	M10	42mm	25mm	13.5kN	1376kg	£2.39
WIR103212	M12	51mm	30mm	20kN	2039kg	£3.45

## STAINLESS STEEL EYE BOLTS

### Small Stainless Steel Eye Bolts

Smart collared eye bolt from AISI 304 marine-grade stainless steel ideal for securing small handrail or display wires.



code	thread $\varnothing$	thread length	int. eye $\varnothing$	min BL KGF	price
WIR370650	M6	50mm	13mm	1300kg	£8.21
WIR370600	M6	100mm	13mm	1300kg	£8.63
WIR370850	M8	50mm	15mm	2400kg	£9.24
WIR370800	M8	100mm	15mm	2400kg	£11.03

### Short Shank Stainless Steel Eye Bolts

Manufactured to Japanese Industrial Standard [JIS B 1168] from AISI 316 marine-grade stainless steel.



code	thread $\varnothing$	thread length	int. eye $\varnothing$	min BL KN	min BL KGF	price
WIR8316SS	M6	10mm	15mm	8.2kN	835kg	£1.50
WIR8318SS	M8	15mm	20mm	14.5kN	1478kg	£1.55
WIR83110SS	M10	18mm	25mm	22.6kN	2303kg	£2.41
WIR83112SS	M12	22mm	30mm	32.6kN	3323kg	£3.30

### Long Shank Stainless Steel Eye Bolts

Made from AISI 316 marine-grade stainless steel. Supplied with nut and washer.



code	thread $\varnothing$	thread length	int. eye $\varnothing$	min BL KN	min BL KGF	price
WIR812660SS	M6	60mm	15mm	8.2kN	835kg	£2.05
WIR812880SS	M8	80mm	20mm	14.5kN	1478kg	£2.13
WIR81210100SS	M10	100mm	25mm	22.6kN	2303kg	£3.85
WIR81212120SS	M12	120mm	30mm	32.6kN	3323kg	£5.65

### Stainless Steel Eye Bolts with Ring

Made from AISI 316 marinegrade stainless steel. Supplied with nut and washer.



code	thread $\varnothing$	thread length	int. ring $\varnothing$	min BL KN	min BL KGF	price
WIR8136100SS	M6	74mm	35mm	7kN	713kg	£2.25
WIR8138100SS	M8	60mm	45mm	12.4kN	1264kg	£2.95
WIR81310150SS	M10	90mm	50mm	19.4kN	1977kg	£3.83

# EYE BOLTS & EYE NUTS

## SPECIALITY EYE BOLTS

### Starpoint VRS F

Often referred to as "Pink Ladies". The pull on most eye bolts has to be restricted to the plane of the eye but the Starpoint VRS adjusts through 360° to align with the direction of pull. The star-shaped design and striking fluorescent pink powder coating clearly distinguishes it from other eye bolts. Each bolt has a clear WLL indication for the most unfavourable load direction. Made from high tensile and annealed forged material 1.6541. 100% electromagnetic crack detected to EN 1677-1. With a 4:1 design factor. Refer to flints.co.uk/downloads for data sheets.

- ✓ Ideal for bridle applications as there is no need for shims
- ✓ Safest option for hanging points when the final pull direction can not be pre-determined
- ✓ Clearly visible pink marking for reassurance
- ✓ Rated to the most unfavourable load



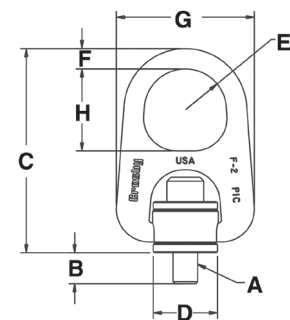
code	description	thread ø	WLL	List Price
WIR7104029	VRS-F-M10	M10	400kg	£43.75
WIR7101313	VRS-F-M12	M12	750kg	£53.99

## HOIST RINGS

### Crosby® HR-1000M Heavy Lift Swivel Hoist Rings

This heavy duty hoist ring will self-adjust to the load direction without compromising the WLL. The larger eye on this ring will allow for a bigger component to connect than a typical eyebolt - eg the user could easily hook on a chain hoist, without needing additional components. RFID equipped for easy identification and security for sites with the necessary infrastructure. Individually stamped with Crosby® or "CG", PIC [Product Identification Code], WLL, and recommended torque value for traceability and ease of use. They are also individually proof tested to 2.5 x stated WLL. We've opted to stock two sizes, but all Crosby® products are available to order. Please note, the full thread length must be fully engaged with the work piece, rather than passed through and secured with a nut - they should be fitted using a torque wrench set to the recommended torque. The user should always follow manufacturer's assembly and safety guidance.

For torque wrenches see page 195.

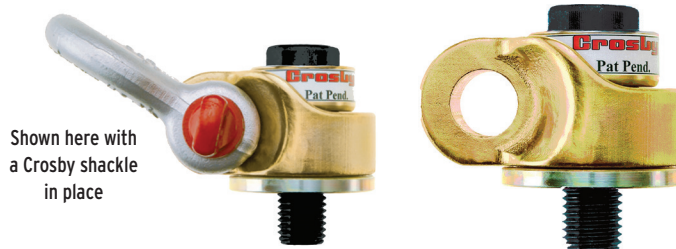
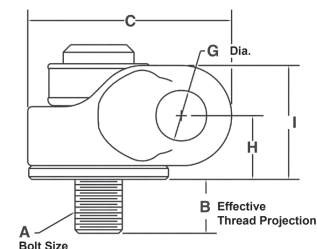
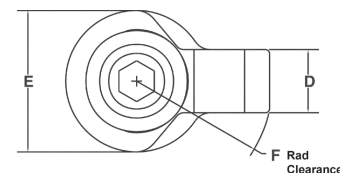


code	size [A]	B	C	D	E(r)	F	G	H	WLL [5:1]	torque	price
CRO1068325	M12	15.5	162	49.8	31.8	19.1	107	63.5	1050kg	38Nm	£202.09

### Crosby® HR-1200M Side Pull Hoist Rings

The primary benefit of using these is that the user can gain extra height when positioning a work piece compared to a top mounted ring; they are rated at 100% WLL for angles up to 90°. Simply use a shackle to connect to a wire rope/sling, passing the pin through the ring for maximum security and loading. Crosby® recommend using their own red pin shackles (page 201) and we have listed the recommend sizes and codes below. Individually stamped with a PIC [Product Identification Code] for material traceability, along with the WLL. They are individually proof tested to 2.5 x stated WLL. We've opted to stock two sizes, but all Crosby® products are available to order. Please note, the full thread length must be fully engaged with the work piece rather than passed through and secured with a nut - they should be fitted using a torque wrench set to the recommended torque. The user should always follow manufacturer's assembly and safety guidance.

To see the full spec and pricing of the compatible shackles recommended by Crosby® see page 201. For torque wrenches see page 195.



Shown here with a Crosby shackle in place

code	description	size [A]	B	C	D	E	F	G	H	I	WLL [5:1]	torque	price
CRO1067803	Crosby Compatible Shackles 2 t CRO2096 / 3.25 t CRO2097	M8	16.9	49	18.3	25.4	39.6	20.3	21.6	36.3	300kg	10Nm	£123.29
CRO1067811	Crosby Compatible Shackles 3.25 t CRO2097 / 4.75 t CRO2109	M12	16.9	49	18.3	25.4	39.6	20.3	21.6	36.3	400kg	16Nm	£149.25