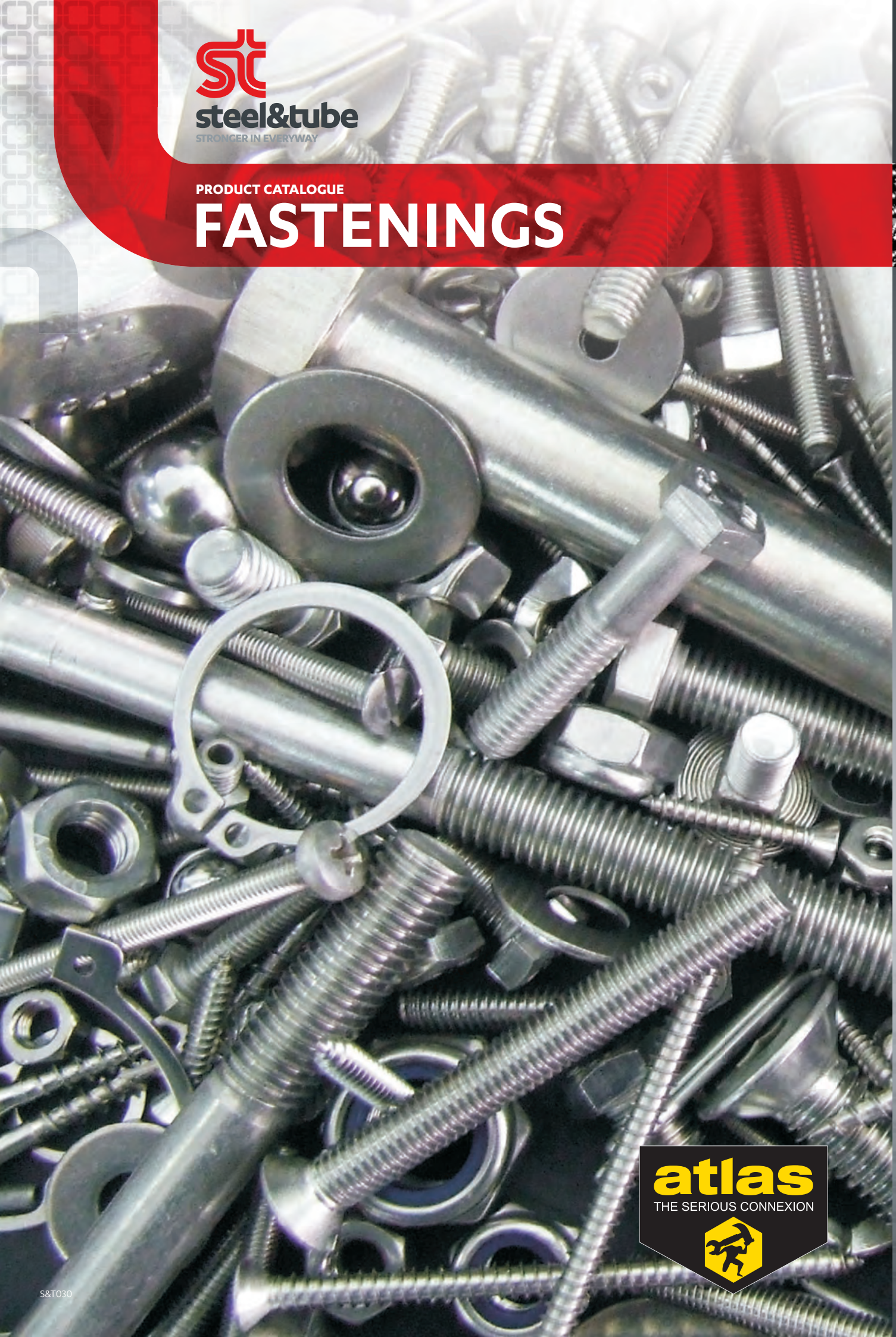
steel&tube
STRONGER IN EVERYWAY

PRODUCT CATALOGUE

FASTENINGS



atlas
THE SERIOUS CONNEXION

S&T030

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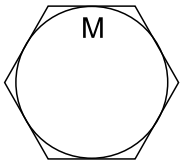
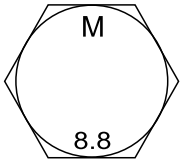
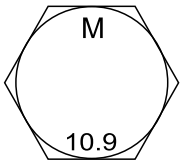
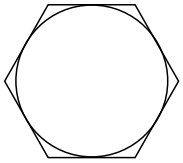
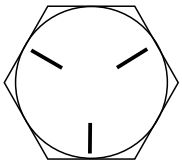
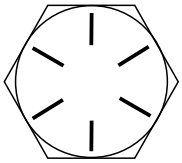
FASTENER SELECTION

An obvious function of a mechanical fastener is to hold two or more parts together and transmit a load. Immediately this can be qualified to include questions such as - How tightly? How permanently? What kind of parts? For what reasons? Answers to these and other questions must be obtained before a fastener can be intelligently selected. Some of the ramifications involved are indicated below.

FUNCTION OF FASTENER	INVESTIGATE OR CONSIDER
Hold two or more parts together	All mechanical fasteners.
Effect a permanent joint	Rivets and types of fasteners such as screwnails, Type U drive screws. Removable fasteners may be used to make permanent joints.
Enhance product appearance	Fasteners with decorative head such as rivets. Fasteners with special finishes and platings.
Discourage tampering or unauthorised disassembly	Permanent fasteners such as rivets. Removable fasteners that require tools not readily improvised such as socket screws, retaining rings.
Make a minimum weight connection	In general as much of the fastener as possible should fill voids made in the base materials. Projections where necessary should be kept to a minimum. Fastener materials should be selected for maximum strength to weight ratios for the type of forces involved.
Maintain sanitary conditions	Check fasteners material for compatilibility with the product, resistance of fastener to cleaning agents, etc.
Conduct heat or electricity	Suggests use of fastener materials with low specific heat and/or high electrical conductivity.
Promote safety in use of product	Avoid sharp fastener protrusions, use flush or low profile fasteners with smooth surfaces.
Permit rotation or pivoting of parts	Consider fastener with sealing elements made of rubber, plastic, metal, etc. Use liquid sealants.
Prevent loosening	Rivets, dowel pins, cotter pins, locknuts, retaining rings etc.
Maintain a Hermetic Seal	Locking fasteners such as locknuts, etc.

Other factors influencing selection of fasteners are cost (including cost of assembly), product's expected service life, static forces (tension, torsion, shear, etc.), corrosion, temperatures, assembly (whether manual, semi-automatic, automatic). Use of improper fasteners will at the very least adversely affect the profitability of a new or existing product. The above does not tell how to select a specific fastener for each particular application. Rather it discusses major considerations leading to the choice of the most economical fastener for any application.

BOLT HEAD MARKINGS - WHAT DO THEY MEAN?

MARKING	DESIGNATION	STRENGTH
	LOW TENSILE ISO METRIC	4.6, 4.8 Prop Class 5.6, 5.8 Prop Class 400 MPa, 500 MPa
	HIGH TENSILE ISO METRIC	8.8 Property Class 800 MPa
	HIGH TENSILE ISO METRIC	10.9 Property Class 1000 MPa
	LOW TENSILE IMPERIAL	Grade 1, 58,000 psi Grade 2, 72,000 psi
	HIGH TENSILE IMPERIAL	Grade 5 120,000 psi
	HIGH TENSILE IMPERIAL	Grade 8 150,000 psi
	HIGH TENSILE STRUCTURAL	8.8 Property Class 800 MPa

METRIC BOLTS: As bolts tensile strength is measured in megapascals the first digit represents MPa in multiples of 100.

e.g. 8 = 800 MPa
4 = 400 MPa

The second digit represents the amount of elasticity (stretch) before breaking — this is measured as a percentage difference to be deducted.

e.g. .8 = 20% stretch
.6 = 40% stretch

IMPERIAL BOLTS: The tensile strength is measured in tons per sq inch or 1000's of pounds per sq inch.

e.g. .28 TSI
or 62220 PSI

Grades 2, 5, 8 etc are used to indicate different tensile strengths but have no relevance to each other or actual measurements.

MILD STEEL BOLTS & NUTS

ENGINEERS BOLTS & NUTS

Typically to AS1111 & AS1112
DIN931

Class: 4.6

Available: Galvanised, Stainless Steel

Thread: ISO Metric

Diameters: M6, M8, M10, M12, M16, M20, M24, M30

CUP HEAD BOLTS & NUTS

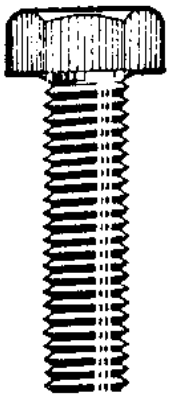
Typically to AS1390 & AS1112
DIN603

Class: 4.6

Available: Zinc, Galvanised, Stainless Steel

Thread: ISO Metric

Diameters: M6, M8, M10, M12, M16, M20, M24, M30



HEXAGON HEAD SET SCREWS

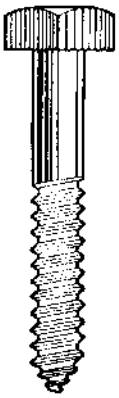
Typically to AS2451

Class: Grade 2

Available: Zinc

Thread: BSW

Diameters: $^{1}/_{4}$, $^{5}/_{16}$, $^{3}/_{18}$, $^{1}/_{2}$, $^{5}/_{8}$



HEXAGON HEAD COACH SCREWS

Typically to AS1393

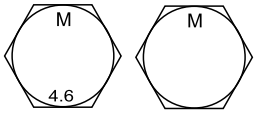
Class: 4.6

Available: Galvanised, Stainless Steel

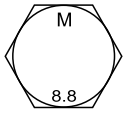
Diameters: M6, M8, M10, M12, M16, M20

BOLT IDENTIFICATION

Head marking definitions

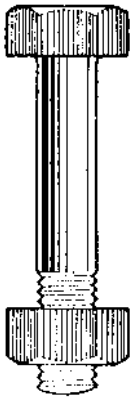


METRIC CLASS 4.6
(Mild Steel)



METRIC CLASS 8.8
(Hi tensile)

HIGH TENSILE BOLTS & NUTS



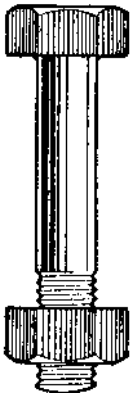
STANDARD BOLTS & NUTS

Typically to AS2465
ANSI B18.2.1

Grade: 5, 8 (UNF, UNC), Class 8.8, (metric)

Available: Zinc, Stainless Steel

Threads: ISO Metric, UNC, UNF



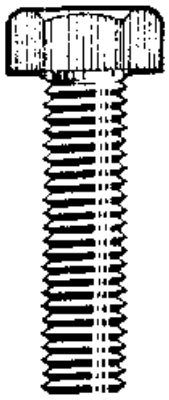
HT BOLTS & NUTS METRIC FINE/COARSE

Typically to AS1110

Class: 8.8

Available: Zinc

Threads: M6 (x .75p), M8 (x 1.0p), M10 (x 1.25p), M12(x 1.25 and 1.5p), M14(1.5p and 2.0p), M16 (x 1.5p), M18 (x 1.5p and 2.5p), M20 (x 1.5p), M22 (1.5p and 2.5p), M24 (2.0p)



HT SET SCREWS

Typically to AS1110

Grade: 5, Class 8.8 (metric)

Available: Zinc

Threads: ISO Metric Coarse & Metric Fine, UNC, UNF

HIGH STRENGTH FRICTION GRIP BOLTS, NUTS & WASHERS

These bolts are used where loads are transmitted through the joined members by nature of the clamping force produced by the bolts, with the result that the bolts are subjected to tensile stresses only, whereas rivets in riveted joints are subjected at the same time to shear and bearing stresses.

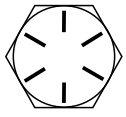
Class: 8.8 (Metric)

Available: Galvanised

Thread: Metric

Typically to AS1252

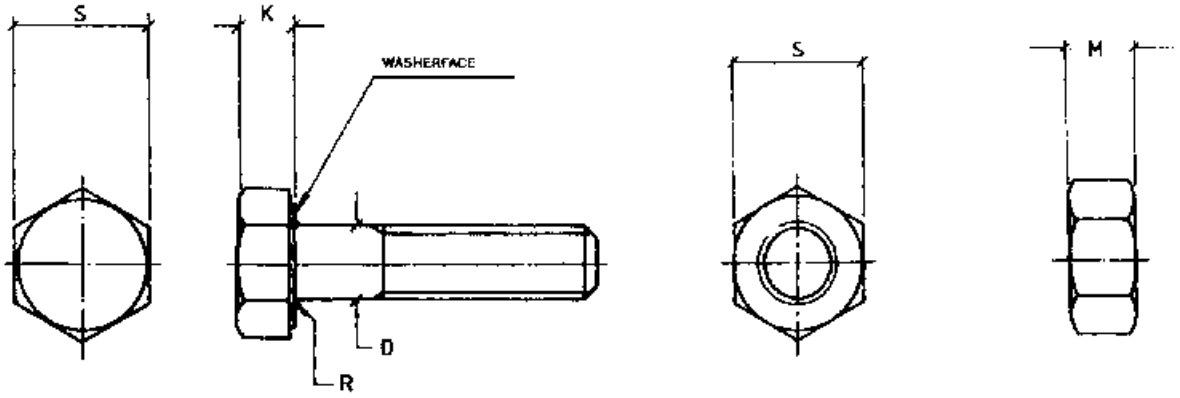
U.N.F./U.N.C. SAE GRADE 5 (High Tensile)



U.N.F./U.N.C. SAE GRADE 8 (Higher Tensile)

HIGH STRENGTH (METRIC)

BOLTS & NUTS - DIMENSIONS



GRADE 5 UNIFIED SERIES

Nom. Diameter	Threads Per Inch		**D** Shank Diameter in.		**S** Across flats in.		**R** Radius under head	**K** Height of head in.		**M** Thickness of nut	
	UNC	UNF	Max.	Min.	Max.	Min.	Min.	Max.	Min.	Max.	Min.
1/4	20	28	0.250	0.245	0.438	0.428	0.015	0.163	0.150	0.226	0.212
5/16	18	24	0.313	0.306	0.500	0.489	0.015	0.211	0.195	0.273	0.258
3/8	16	24	0.375	0.369	0.562	0.551	0.015	0.243	0.226	0.337	0.320
7/16	14	20	0.438	0.430	0.625	0.612	0.015	0.291	0.272	0.335	0.365
1/2	13	20	0.500	0.493	0.750	0.736	0.015	0.323	0.302	0.448	0.427
9/16	12	18	0.563	0.554	0.812	0.798	0.020	0.371	0.348	0.496	0.473
5/8	11	18	0.625	0.617	0.938	0.922	0.020	0.403	0.378	0.559	0.535
3/4	10	16	0.750	0.741	10125	1.100	0.020	0.483	0.455	0.665	0.617
7/8	9	14	0.875	0.866	10312	1.285	0.040	0.563	0.531	0.776	0.724
1	8	12	1.000	0.990	1.500	1.469	0.060	0.627	0.591	0.887	0.831

CLASS 8.8 (includes washer face)

Nom. Size	Pitch of thread mm	**D** Diameter of unthreaded shank mm		**S** Width across flats mm		**R** Radius under head mm min.	**K** Height of head mm max.	**M** Thickness of nut mm max.
		Max.	Min.	Max.	Min.			
M6	1.00	6.00	5.82	10.00	9.78	0.25	4.15	5.2
M8	1.25	8.00	7.78	13.00	12.73	0.4	5.45	6.8
M10	1.50	10.00	9.78	16.00	15.73	0.4	6.58	8.4
M12	1.75	12.00	11.73	18.00	17.73	0.6	7.68	10.8
M16	2.00	16.00	15.73	24.00	23.67	0.6	10.18	14.8
M20	2.50	20.00*	19.67	30.00	29.16	0.8	12.72	18.0
M24	3.00	24.00*	23.67	36.00	35.00	0.8	15.22	21.5

CLASS 4.6 (does not always include washer face)

M6	1.00	6.48	5.52	10.00	9.64	0.25	4.38	5.2
M8	1.25	8.58	7.42	13.00	12.57	0.4	5.68	6.8
M10	1.50	10.58	9.42	16.00	15.57	0.4	6.85	8.4
M12	1.75	12.70	11.30	18.00	17.57	0.6	7.95	10.8
M16	2.00	16.70	15.30	24.00	23.16	0.6	10.75	14.8
M20	2.50	20.84*	19.16	30.00	29.16	0.8	13.40	18.0
M24	3.00	24.84*	23.16	36.00	35.00	0.8	15.90	21.5
M30	3.50	30.84*	29.16	46.00	45.00	1.0	19.75	25.6
M36	4.0	37.00*	35.00	55.00	53.80	1.0	23.55	31.0

** Hot forged products may have shank diameter within the range allowed in AS 1252 - 1983.*

LENGTH OF THREAD

UNIFIED		**ISO METRIC**	
Nominal length of bolt	**Length of Thread**	**Nominal length of bolt**	**Length of Thread**
Up to and including 6”	2D + 1/4”	Up to and including 125mm	2D + 6mm
Over 6”	2D + 1/2”	Over 125mm up to and including 200mm	2D +12mm
		Over 200mm	2D + 25mm

Note: Bolts that are too short for minimum thread lengths are threaded close to the head and are designated as set screws.

BOLTS & NUTS - DIMENSIONS

PROOF LOADS, ASSEMBLY TORQUES

Nominal		GRADE 5				GRADE 8			
		Proof Load of Bolt (min.)		Recommended Assembly Torque to Give Induced Preload Equal to 65% of Proof Load		Proof Load of Bolt (min.)		Recommended Assembly Torque to Give Induced Preload Equal to 65% of Proof Load	
	Thread	Tonf	lbf	lbf.ft	Nm	Tonf	lbf	lbf/ft	Nm
1/4	UNF	1.38	3100	8	10.8	1.94	4350	12	16
5/16	UNF	2.19	4900	17	23.0	3.10	6950	23	31
3/8	UNF	3.33	7450	30	40.7	4.69	10500	43	58
7/16	UNF	4.51	10100	48	65.0	6.34	14200	67	91
1/2	UNF	6.07	13600	74	100.3	8.57	19200	104	141
5/8	UNF	9.73	21800	150	203.4	13.71	30700	207	282
3/4	UNF	14.51	31700	260	352.5	20.00	44800	363	494
7/8	UNF	19.33	43300	410	555.9	27.28	61100	577	785
1	UNF	25.17	56400	610	827.0	35.54	79600	859	1168
1/4	UNC	1.21	2700	7	9.5	1.70	3800	10	14
5/16	UNC	1.99	4450	15	20.3	2.81	6300	21	29
3/8	UNC	2.95	6600	27	36.6	4.15	9300	38	52
7/16	UNC	4.04	9050	43	58.3	5.71	12800	60	82
1/2	UNC	5.40	12100	66	89.5	7.59	17000	92	125
5/8	UNC	8.57	19200	130	176.2	12.10	27100	183	249
3/4	UNC	12.68	28400	230	311.8	17.90	40100	325	442
7/8	UNC	17.54	39300	370	501.6	24.73	55400	523	711
1	UNC	22.99	51500	560	759.2	32.46	72700	785	1068

Nominal Diameter	CLASS 4.6		CLASS 8.8					CLASS 10.9		
	Bolt & Screw Proof Load Minimum	Recommended Assembly Torque to Give Induced Preload Equal to 65% of Proof Load	Bolt & Screw Proof Load Minimum			Recommended Assembly Torque to Give Induced Preload Equal to 65% of Proof Load		Bolt & Screw Proof Load Minimum		Recommended Assembly Torque to Give Induced Preload Equal to 65% of Proof Load
	kN PC 4.6	Nm PC 4.6	Kn	lbf	tonf	Nm	ft.lbs	kN	lbf	Nm
M6	4.54	3.54	11.7	2630	1.17	9	7	16.7	3750	13
M8	8.27	8.61	21.3	4790	2.14	22	16	30.4	6800	32
M10	13.10	17.00	33.8	7600	3.39	44	32	48.1	10800	63
M12	19.10	29.80	49.1	11050	4.93	77	57	70	15750	109
M16	35.50	73.90	91.4	20550	9.17	190	140	130	29250	270
M20	55.40	144.00	143.0	32150	14.34	372	274	203	45650	528
M24	79.80	249.00	205.0	46100	20.58	640	472	293	65900	914
M30	127.00	496.00	337.0	75800		1314		466	104850	1817
M36	185.00	864.00	490.0	110250		2297		678	152550	3173

NOTE:
The quoted torque figures are approximate and applicable to unplated, self colour condition only. For plated finishes use the following table:

Surface Condition		Factor
Galvanised	– Degreased	2.1
	– Lightly oiled	1.1
Zinc Plated	– Degreased	1.9
	– Lightly oiled	0.9

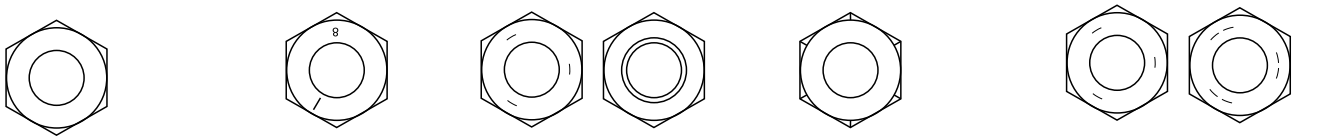
NUTS

C/F HEX NUTS

TYPICALLY TO DIN 934 & AS1112

Grade 5: UNC, UNF, BSW
Grade 8: UNC, UNF (1/2” dia. and larger)
Class 8: ISO Metric, Metric Fine

NUT IDENTIFICATION



METRIC CLASS 5 | METRIC CLASS 8 | S.A.E. GRADE 5 | S.A.E. GRADE8 | METRIC HIGH STRENGTH

MACHINED FULL NUTS

Finishes: Stainless Steel, Brass, Steel, Zinc.
Threads: ISO Metric, BSW

MACHINED LOCK NUTS

TYPICALLY TO DIN 439B

Available: Brass, Steel
Threads: ISO Metric, BSW

PRESSED NUTS

TYPICALLY TO DIN 562/936

Available: Steel, Zinc Plated, Brass
Threads: ISO Metric, BSW

CONE LOCK NUTS

TYPICALLY TO DIN 980/985

Available: Class 10 ISO Metric
Threads: Grade 5 UNC, UNF

CASTLE & SLOTTED NUTS

TYPICALLY TO DIN 935

Available: Steel
Threads: UNF, BSW, ISO Metric

NYLOC NUTS

TYPICALLY TO DIN 982/985

Available: Steel Zinc Plated, Stainless Steel
Threads: ISO Metric, BSW, UNC, UNF

NUTS

WING NUTS

Typically to DIN 314/315

Available: Steel Zinc Plated, Brass, Stainless Steel.

Threads: ISO Metric, BSW

TEE NUTS

Available: Steel Zinc Plated

Threads: ISO Metric, BSW

DOME NUTS

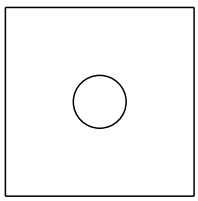
Typically to DIN 1587

Available: Brass, Nickel Plated, Stainless Steel

Threads: ISO Metric, BSW

WASHERS

SQUARE WASHERS

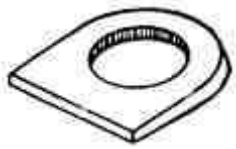


Specs: 50 x 50 x 3mm, 50 x 50 x 6mm, 60 x 60 x 6mm, 40 x 40 x 3mm, 40 x 40 x 6mm, 80 x 80 x 6mm

Finish: Galvanised and Stainless 304 & 316

Sizes: M10, M12, M16, M20, M24

TAPERWASHERS



Finishes: Galvanised

Sizes: M10, M12, M16, M20, M24

CUP WASHERS

Finishes: Brass, Nickel Plated, Florentine Bronze, Nylon, Stainless Steel

Sizes: No 4, No 6, No 8, No 10, No 12, No 14

STARLOCK PLAIN FIXING WASHERS

For use of a rigid, permanent fixing on shafts

Blue Varnish finish.

STARLOCK CAPPED FIXING WASHERS

Plain fixing washer with a polished chrome cap.

BLACK NEOPRENE WASHERS

Excellent for roofing screws and similar applications to effectively control leaks, squeaks, crazing and electrolysis.

Sizes: $^{3}/_{16}$, $^{1}/_{4}$ (12g, 14g)

HARDENED AND TEMPERED WASHERS

This washer is used specifically on high strength friction grip bolts under the tightening member to provide a uniform surface for tightening up the nut.

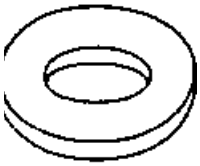
Sizes: M16 - M36

WASHERS

FLAT WASHERS

Available: Steel, Zinc Plated, Brass, Stainless Steel, Nylon
Sizes: M3, M4, M5, M6, M8, M10, M12, M16, M20, M22, M24
1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4, 7/8, 1”

AUTOMOTIVE WASHERS (GRADE 8) F436

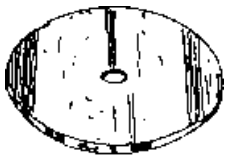


Available: Yellow Zinc Chromate
Sizes: 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1”, 1.1/4, 1.1/2

HEAVY ROUND WASHERS

Available: Galvanised, Zinc Plated, Stainless Steel
Thickness: 3mm or 2.5mm (on request)
Sizes: M6 to M50 incl. – 1/4 to 2” incl.

FENDER (PENNY) WASHERS



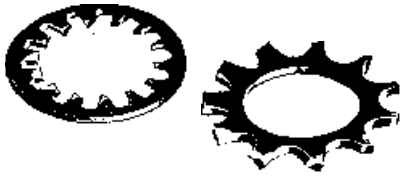
Available: Zinc Plated, Stainless Steel
Outside Diameter: 1.1/4” or 32mm
Sizes: M5, M6, M8, M10, M12, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2

SPRING WASHERS TYPICALLY TO DIN 127

Available: Galvanised, Zinc Plated, Stainless Steel
Sizes: M3, M4, M5, M6, M8, M10, M12, M16, M20, M24
1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4, 7/8,
1”, 1.1/4, 1.1/2, 1.3/4

STEEL INTERNAL AND EXTERNAL TOOTH LOCKWASHERS

TYPICALLY TO DIN 6797

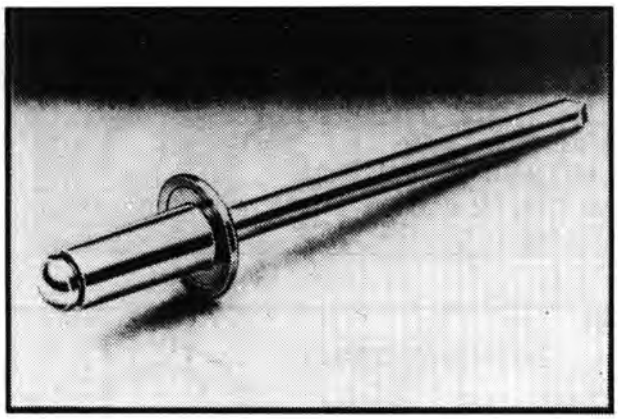


Available: Zinc Plated, Limited range of Stainless Steel
Sizes: M3, M4, M5, M6, M8, M10, M12, 1/4, 3/8, 1/2

FAN DISC LOCKWASHERS TYPICALLY TO DIN 6798

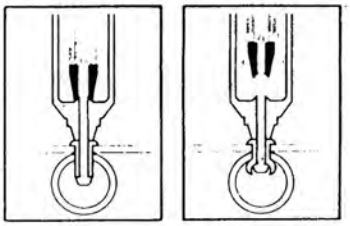
Available: Zinc Plated
Limited range available in metric and imperial.

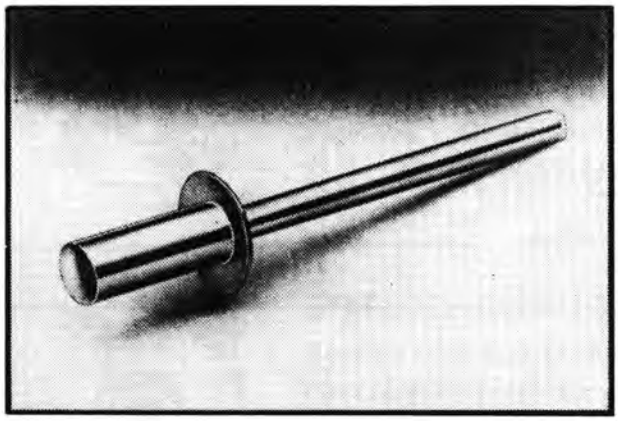
BLIND RIVETING SYSTEMS



STANDARD OPEN TYPE RIVETS

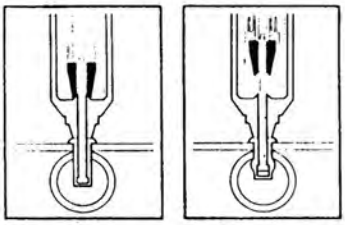
The Standard Open type rivet is intended for use in all normal blind riveting situations where the materials to be fastened do not present structural problems.
The rivet bodies are available in a range of materials for complete workpiece compatibility. This is a hollow rivet, pre-assembled on to a headed pin or mandrel. The mandrel is designed to fracture at a predetermined point during the setting operation, when the materials to be fastened have been drawn closely together and the joint is tight.

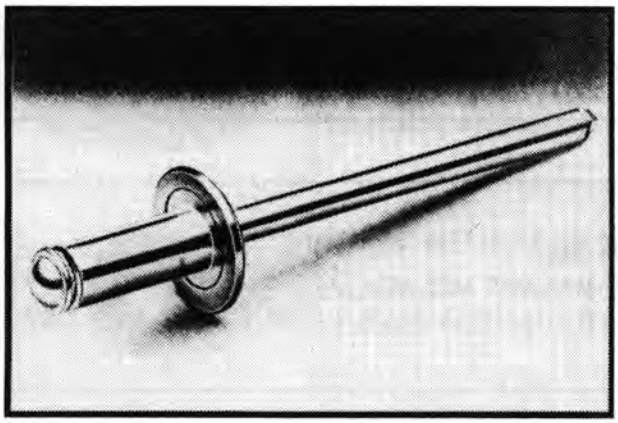




SEALED TYPE RIVETS

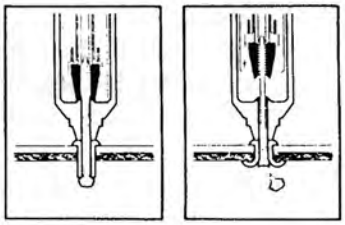
Designed for use where the fastening to be used has to be pressure or water tight. The Sealed blind rivet has a sealed end completely enclosing the mandrel head and the type provides 100% mandrel head retention; an important factor in many applications. This feature, combined with a high rate of radial expansion in setting, ensures that the set rivet will withstand pressures of up to 34 bar (500 lbf/in2) with copper rivets. The sealed rivet is a fastener of high shear and tensile strength and vibration resistance. Owing to its high rate of expansion in setting, it cannot be recommended for use in very soft or bittle materials.

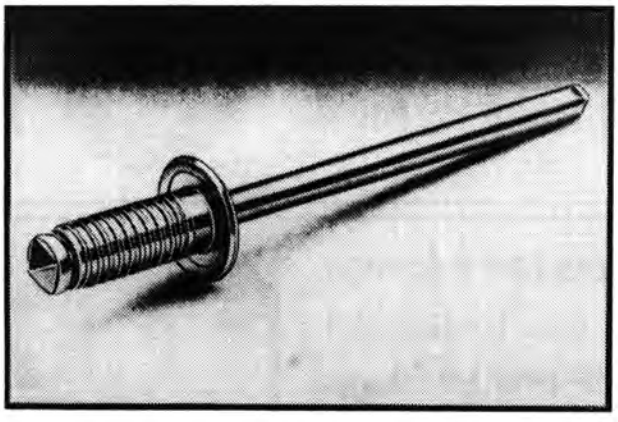




PEEL TYPE RIVETS

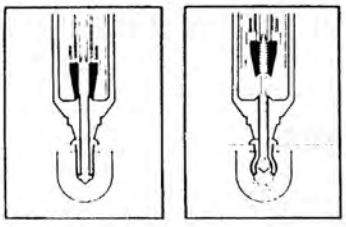
Specially developed for fastening soft or friable materials, Peel type rivets will secure blow-moulded or glass reinforced plastic, rubber and plywood, if required to metal panels or sections up to 13.5mm (.0531in.) thick. The Peel type rivet has an aluminium alloy body and a special carbon steel mandrel. On setting, the rivet body is split into four petals by the action of the mandrel head, producing a large blindside bearing area capable of withstanding high pull-out loads.





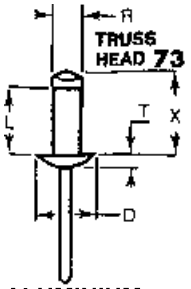
GROOVED TYPE RIVETS

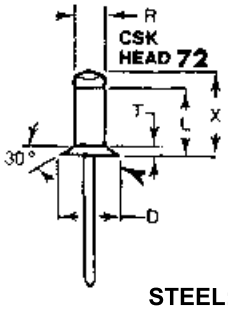
Developed for use in thick sections of soft or brittle materials such as hardboard, plywood, glassfibre, asbestos board, concrete and brick.
The Grooved type rivets gain their name from the series of grooves around the shank which engage into the workpiece on setting, and set inside the materials rather than against the rear face. Construction and setting action is similar to the Standard Open type. The body is of aluminium alloy with a carbon steel mandrel. The grooved type rivet, when set, is capable of withstanding high pull-out loads.



STANDARD BLIND RIVETS

	Grip Range	Grip Range	Aluminium		Steel	Monel		Stainless Steel		Typical Shell Length	Grip Range Rivet Clearance	Drill Size
No.3	(inches)	(mm)	73AS	72AS	73SS	73MS	72MS	73STST	73TST	(L)mm	(X)mm	(mm)
3/32"	1/16 - 1/8	1.6 - 3.2	3-2	-	-	-	-	-	-	5.5	7.5	2.5
2.4MM	1/8 - 3/16	3.2 - 4.8	3-3	-	-	-	-	-	-	7.0	9.0	2.5
	Up to 1/16	Up to 1.6	4-1	-	4-1	4-1	-	-	-	4.7	6.8	3.3
	1/16 - 1/8	1.6 - 3.2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	6.3	8.4	3.3
No.4	1/8 - 3/16	3.2 - 4.8	4-3	4-3	4-3	4-3	-	4-3	4-3	7.9	10.0	3.3
	3/16 - 1/4	4.8 - 6.4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	9.5	11.6	3.3
1/8"	1/4 - 5/16	6.4 - 7.9	4-5	-	4-5	4-5	-	-	-	11.1	13.2	3.3
	5/16 - 3/8	7.9 - 9.5	4-6	4-6	4-6	4-6	-	4-6	4-6	12.7	14.8	3.3
3.2MM	3/8 - 1/2	9.5 - 12.7	4-8	-	4-8	-	-	-	-	16.4	18.5	3.3
	1/2 - 5/8	12.7 - 15.9	4-10	-	-	-	-	-	-	20.1	22.2	3.3
	5/8 - 3/4	15.9 - 19.0	4-12	-	-	-	-	-	-	23.3	25.4	3.3
	Up to 1/16	Up to 1.6	5-1	-	5-1	5-1	-	-	-	5.5	7.8	4.1
No.5	1/16 - 1/8	1.6 - 3.2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	7.1	9.4	4.1
	1/8 - 3/16	3.2 - 4.8	5-3	5-3	5-3	5-3	-	5-3	5-3	8.7	11.0	4.1
5/32"	3/16 - 1/4	4.8 - 6.4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	10.3	12.6	4.1
	1/4 - 5/16	6.4 - 7.9	5-5	-	5-5	5-5	-	-	-	11.9	14.2	4.1
4.0MM	5/16 - 3/8	7.9 - 9.5	5-6	5-6	5-6	5-6	-	5-6	5-6	13.5	15.8	4.1
	3/8 - 1/2	9.5 - 12.7	5-8	-	5-8	-	-	-	-	17.1	19.4	4.1
	Up to 1/16	Up to 1.6	6-1	-	6-1	6-1	-	-	-	6.3	8.9	4.9
	1/16 - 1/8	1.6 - 3.2	6-2	6-2	6-2	6-2	6-2	6-2	6-2	7.9	10.5	4.9
	1/8 - 3/16	3.2 - 4.8	6-3	-	6-3	6-3	6-3	6-3	6-3	9.5	12.1	4.9
	3/16 - 1/4	4.8 - 6.4	6-4	6-4	6-4	6-4	6-4	6-4	6-4	11.0	13.6	4.9
No.6	1/4 - 5/16	6.4 - 7.9	6-5	-	6-5	6-5	-	-	-	12.6	15.2	4.9
	5/16 - 3/8	7.9 - 9.5	6-6	6-6	6-6	6-6	6-6	6-6	6-6	14.2	16.8	4.9
3/16"	3/8 - 1/2	9.5 - 12.7	6-8	6-8	6-8	6-8	-	-	-	17.9	20.5	4.9
	1/2 - 9/16	12.7 - 14.3	-	6-9	-	-	-	-	-	19.5	22.1	4.9
4.8MM	1/2 - 5/8	12.7 - 15.9	6-10	6-10	6-10	6-10	-	-	-	21.1	23.7	4.9
	5/8 - 3/4	15.9 - 19.0	6-12	-	-	-	-	-	-	24.2	26.8	4.9
	3/4 - 7/8	19.0 - 22.2	6-14	-	-	-	-	-	-	27.4	30.0	4.9
	7/8 - 1	22.2 - 25.4	6-16	6-16	-	-	-	-	-	30.6	33.2	4.9
	1 - 1.3/8	25.4 - 34.9	6-20	-	-	-	-	-	-	36.0	38.6	4.9
	3/16 - 1/4	4.8 - 6.4	8-4	-	8-4	-	-	-	-	12.6	16.6	6.5
No.8	1/4 - 3/8	6.4 - 9.5	8-6	-	8-6	-	-	-	-	15.8	19.8	6.5
	3/8 - 1/2	9.5 - 12.7	8-8	-	8-8	-	-	-	-	19.0	23.0	6.5
1/4"	1/2 - 5/8	12.7 - 15.9	8-10	-	-	-	-	-	-	22.1	26.1	6.5
	5/8 - 3/4	15.9 - 19.0	8-12	-	-	-	-	-	-	25.3	29.3	6.5
6.4MM	3/4 - 7/8	19.0 - 22.2	8-14	-	-	-	-	-	-	28.4	32.4	6.5





ALUMINIUM:
CODE
73AS: TRUSS HEAD
72AS: C/SUNK HEAD
MATERIALS
RIVET: AL. ALLOY 5056
STEM: CARBON STEEL

STEEL:
CODE
73SS: TRUSS HEAD
MATERIALS
RIVET: CARBON STEEL, GRADE 1010 ZN. PLTD.
STEM: CARBON STEEL, ZINC PLATED

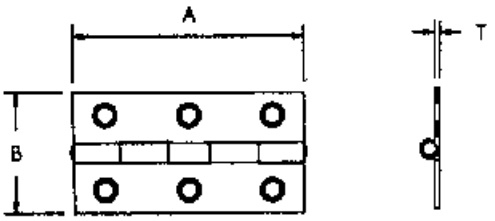
MONEL:
CODE
73MS: TRUSS HEAD
72MS: C/SUNK HEAD
MATERIALS
RIVET: TYPE 400, NICKEL COPPER ALLOY
STEM: CARBON STEEL, ZINC PATED

STAINLESS STEEL:
73STS TRUSS HEAD
MATERIALS
RIVET: 300 SERIES S/STEEL
STEM: CARBON STEEL

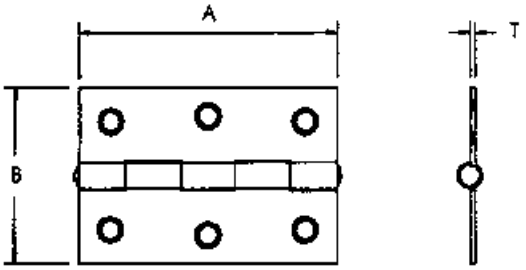
HINGES

BUTT HINGES

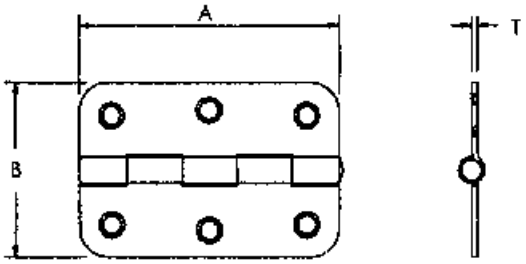
No. 5000 Narrow Butt Hinges
for Cupboard Doors



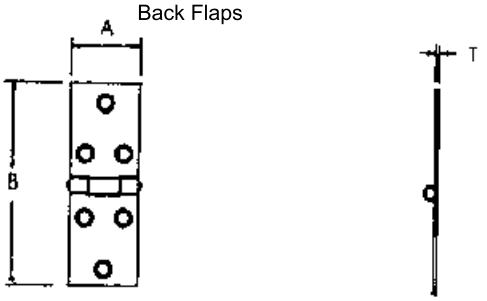
No. 333 Fixed Pin Butt Hinges
for Security Doors, Windows



No. 1840 Radius Loose Pin Butt Hinges
for Exterior Doors

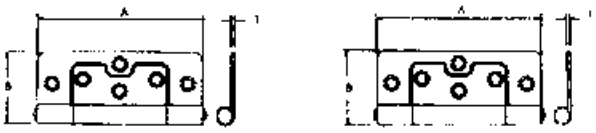


No. 814
Back Flaps



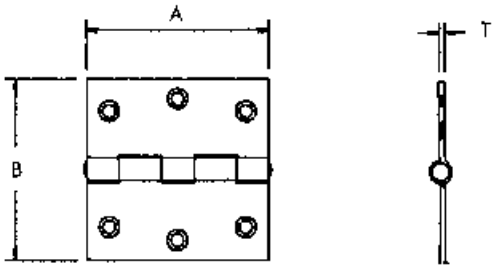
FLUSH BUTTS

No. 3000
Fixed Pin Flush Butt Hinges

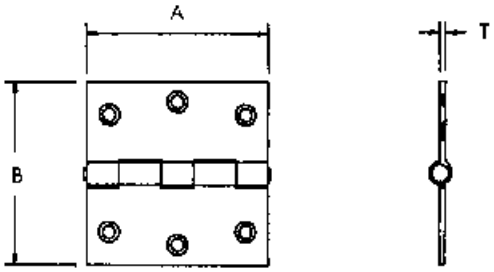


BROAD BUTTS

No. 808 Fixed Pin Broad Butt Hinges
for Exterior Security Doors Opening up to 180°



No. 804
Loose Pin Board Butt Hinges

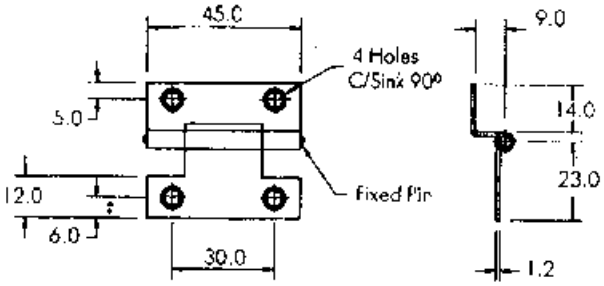


OVERLAY HINGES

No. 1000
for Cupboard Doors

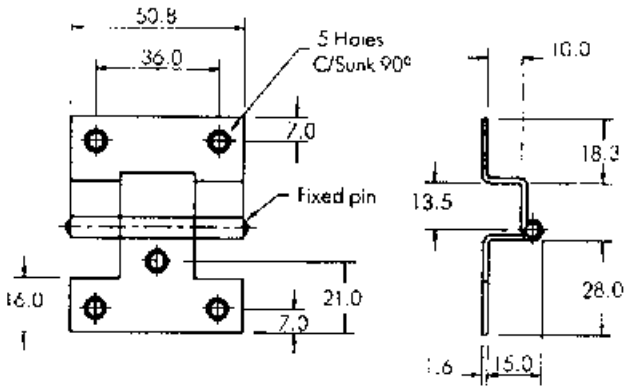
Suits all standard Overlay doors up to 16mm thick are not required to open much over 90°

(all dimensions are in millimetres)



No. 2000
for Cupboard Doors

Suits most overlay situations. Allows the door to open 180°



HINGES

STANDARD SIZES AVAILABLE

Hinge Series	Size "A" in Inches	Width "B" in Inches	Material Thickness "T" in Inches	Holes in each Hinge	Recommended Screw Gauge	Finish	Hinge Pin Material	Special Features
814	1"	2-29/32	.048	6	4	Bright Steel	Steel	—
	1½"	3-3/8	.064	6	6	Bright Steel Florentine Bronze	Steel Brass	—
808	3½"	3-1/2	.104	6	10	Bright Steel	Brass Brass	—
	4"	4	.104	8	10	Florentine Bronze Zinc Plated	Brass Brass	— —
804	3½"		.104	6	10	Bright Steel Florentine Bronze Zinc Plated Zinc Plated	Steel Steel Steel Brass	— — — —
	4"		.104	8	10	Bright Steel Florentine Bronze Zinc Plated Zinc Plated	Steel Steel Steel Brass	— — — —
3000	2½"		.0048	5	5	Florentine Bronze	Steel	Radius
5000	1"		.028	4	2	Bright Steel Florentine Bronze	Steel Steel	— —
	1½"		.036	4	3	Bright Steel Brass Florentine Bronze Zinc Plated	Steel Brass Brass Brass	— — — —

Hinge Series	Size "A" in Inches	Width "B" in Inches	Material Thickness "T: in Inches	Holes in each Hinge	Recommended Screw Gauge	Finish	Hinge Pin Material	Special Features
5000 (cont)	2"	1-3/16	.048	4	5	Bright Steel Brass Florentine Bronze Zinc Plated	Steel Brass Brass Brass	— — — —
	2½	1-5/16	.048	6	5	Bright Steel Brass Florentine Bronze Zinc Plated	Steel Brass Brass Brass	— — — —
333	3"	2	.064	6	7	Brass Florentime Bronze Zinc Plated	Brass Brass Brass	— — —
	3½"	2-1/4	.080	6	9	Florentine Bronze Zinc Plated	Brass Brass	— —
	4"	2-7/8	.080	8	9	Florentine Bronze Zinc Plated	Brass Brass	— —
1000	45mm	Refer	Sketch	4	5	Florentine Bronze	Steel	—
2000	50mm	Refer	Sketch	5	5	Florentine Bronze	Steel	—
1840	3"	2	.064	6	7	Bright Steel Brass Zinc Chromate Zinc Chromate Florentine Bronze Zinc Plated Zinc Plated	Steel Brass Steel Brass Steel Steel Brass	— — — — — — —
	3½"	2-1/4	.080	6	8	Zinc Chromate Zinc Chromate Florentine Bronze Florentine Bronze Florentine Bronze Florentine Bronze Zinc Plated Zinc Plated Zinc Plated	Steel Brass Steel Steel Steel Steel Steel Brass Brass	— — Radius — Unassembled Radius Un* — — Radius
	4"	2-7/8	.080	8	9	Zinc Chromate Brass Zinc Chromate Zinc Plated Zinc Plated	Steel Brass Steel Brass Brass	— — Radius — Radius

* Radius Unassembled

Stainless Steel Butt Hinges

Available : 100x75,100x100

Type : Fixed Pin, Loose Pin - Radius, Square

Brass Butt Hinges

Available : 100x76,100x102

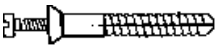
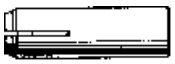
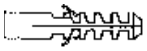
Type : Loose Pin

Piano Hinge

Available : Steel Punched and Unpunched

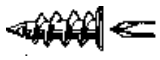
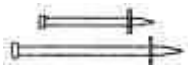
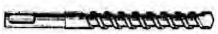
Finishes : Plain, Zinc Plated, Stainless Steel

CONSTRUCTION FASTENERS QUICK SELECTION GUIDE

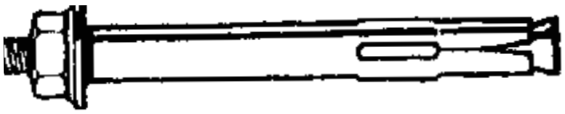
Fixing Type		Use In					Composition	Light (L) Medium (M) Heavy Duty (H)	General Information
		Con.	Block	Brick	Stone				
ONE STEP ANCHORS									
	Sleeve Anchors	•	•	•	•		Steel, 316 S/Steel	M	All purpose fixing anchor
	Thru Bolts	•					Steel, 316 S/Steel	M	For deeper fixing
	Screw Bolts	•	•	•	•		High tensile 10.9 Baron Steel	H	Reusable, close to edge
	Metal Pin Anchors	•	•	•	•		Zamac alloy body with Carbon Steel or Stainless Steel pins	H	Non removable,high pullout strengths for straps and brackets
	Nylon Anchors	•	•	•			Nylon, Steel and S/Steel pins	L	Through fixing, multiple heads
	Spikes	•	•	•	•		316 S/Steel	M	All purpose, tamper proof, vibration resistant
	Split Drives	•	•	•	•		Steel	M	All purpose, vibration resistant, tamper proof
BOLT ANCHORS									
	Drop-In Anchors	•			•		Steel, 316 S/Steel	M	Flush set, internal thread permanent anchor
	Hollow Set Drop-In	•	•	•	•		Zamac body, Steel cone	M	Ideal for hollow base materials such as brick, block, drycore
SCREW ANCHORS									
	Wall Plugs	•	•	•	•		Plastic	L	Used with wood or self tapping screws
	Screw Plugs		•	•			Nylon	L	Can be set in poorest materials

QUICK SELECTION GUIDE

CONSTRUCTION FASTENERS

Fixing Type	Use In					Composition	Light (L) Medium (M) Hea vy Duty (H)	General Information
	Con.	Block	Brick	Stone	Plas. Board			
CAVITY FIXINGS / FILLER								
 Hollow Wall Anchor					•	Steel	M	Strongest anchor available for plaster Board
 Plaster Board Anchor					•	Nylon, Cast metal	L	Self drilling anchor, use No 8 screw
 Spring, Gravity Toggle					•	Steel	M	Useful in lath and plaster
 Plastic Toggle	•	•			•	Polypropylene	L	Stays in place if screws removed
CEILING ANCHORS								
 Tie Wire Spike	•	•				Steel	M	Ideal for suspended ceilings
 Suspension Anchor	•	•				Steel	M	Ideal for suspended ceilings
 Hook Bolt	•	•				Steel	M	Ideal for suspended ceilings and electrical wire
 Eye Bolt	•	•				Steel	M	Ideal for suspended ceilings
 Tie Wire Anchor	•					Steel	M	Ideal for suspended ceilings
 Tie Wire						Steel	M	Fasten to rod
CHEMICAL ANCHORS								
 Capsules & Studs	•			•		Resin	H	Used with studs, sockets or safety
POWDER ACTUATED								
 Drive Pins	•	•		•		Steel	L	Suit various tools
 Steel Discs							L	16mm Dia & 22mm Dia
TOOLS								
 Setting Tools								
 Multi Fit Drill Bits								Hammer drills to suit all rotary hammer tools

SLEEVE ANCHOR



Sleeve Anchors are economical general purpose “load controlled” expansion anchors.
They provide acceptable performance in many fixing applications which are not subject to structural, fluctuating or other critical loads.

- Economical and easy to install.
- Sleeve Anchors are complete, ready to use.
- Holes for the fixture and base material are of the same diameter.
- Fasten into : concrete, solid brick and masonry.

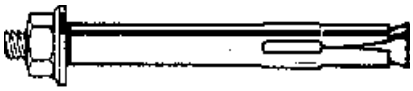
• • The embedment depths, edge distances and anchor spacings shown are the minimum values recommended to achieve the maximum pullout load. Shallower embedment and closer spacings and edge distances will reduce the anchor load capacities.

• • These values are maximum recommended working loads in concrete with a compressive strength of 25MPa. The working loads are designed to provide a factor of safety of 4 against ultimate failure. Note that the “first slip” load is likely to be lower than these loads.

Working Load Capacities - Hex Nut, Mild Steel, Zinc and Galv

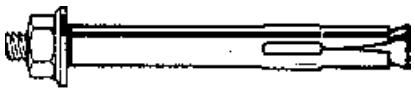
Hole Dia. mm	Thread Size M	Embed Depth mm	Edge Distance mm	Spacing Between mm	Setting Torque Nm	Pullout Capacity kN	Shear Capacity kN
6.5	5	35	35	70	2.1	1.47	1.9
8	6	40	45	90	3.5	2.10	3.0
10	8	50	65	130	8.6	2.90	4.2
12	10	60	75	150	17.0	5.11	5.3
16	12	65	105	210	29.8	6.52	10.5
20	16	75	125	250	73.9	7.82	17.20

HEX NUT - Mild Steel



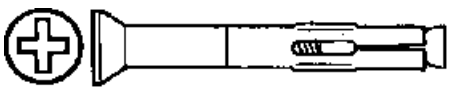
Anchor Length	Anchor and Drill Diameter	Anchor Effective Depth
25mm	6.5mm	20mm
36mm	6.5mm	20mm
55mm	6.5mm	20mm
40mm	8.0mm	30mm
65mm	8.0mm	30mm
85mm	8.0mm	30mm
40mm	10.0mm	35mm
50mm	10.0mm	35mm
60mm	10. 0mm	35mm
75mm	10.0mm	35mm
97mm	10.0mm	35mm
60mm	12.0mm	40mm
75mm	12.0mm	40mm
99mm	12.0mm	40mm
129mm	12.0mm	40mm
65mm	16.0mm	70mm
111mm	16.0mm	70mm
147mm	16.0mm	70mm

HEX NUT - 316 Stainless Steel



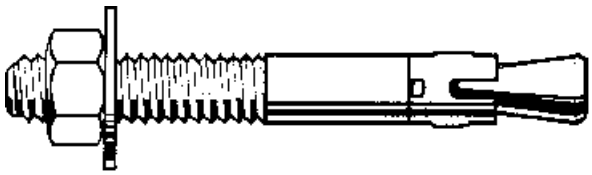
Anchor Length	Anchor and Drill Diameter	Anchor Effective Depth
36mm	6.5mm	20mm
55mm	6.5mm	20mm
40mm	8.0mm	30mm
65mm	8.0mm	30mm
50mm	10.00mm	35mm
77mm	10.00mm	35mm
97mm	10.00mm	35mm
60mm	12.0mm	40mm
75mm	12.0mm	40mm
99mm	12.0mm	40mm

FLAT HEAD - Mild Steel Zinc Chromate



Anchor Length	Anchor and Drill Diameter	Anchor Effective Depth
60mm	8mm	25mm

THRU BOLTS



Thru Bolts are general purpose “load controlled” expansion anchors.
They offer superior shear strength than sleeve anchors for the same size hole in the base material. They should not be used for applications subject to structural, fluctuating or other critical loads.

- Easy to install.
- Thru Bolts are complete, ready to use.
- Holes for the fixture and base material are the same diameter.
- Fasten into most building materials: concrete, solid brick and masonry.
- Bolt and hole diameters equal for full shear capacity.

Working Load Capacities

Hole Dia. mm	Thread Size M	Embed Depth mm	Edge Distance mm	Spacing Between mm	Setting Torque Nm	Pullout Capacity kN	Shear Capacity kN
12	12	60	90	150	29.8	3.5	6.0
16	16	80	120	210	73.9	6.5	10.0
20	20	100	160	250	144.0	9.1	17.0

Hot Dipped Galvanised

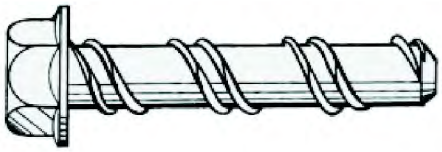
Anchor Length	Anchor and Drill Diameter	Anchor Effective Depth
80mm	12mm	48mm
100mm	12mm	48mm
140mm	12mm	48mm
100mm	16mm	64mm
125mm	16mm	64mm
140mm	16mm	64mm
180mm	16mm	64mm
120mm	20mm	80mm
60mm	20mm	80mm

Zinc Chromate

Anchor Length	Anchor and Drill Diameter	Anchor Effective Depth
80mm	12mm	48mm
100mm	12mm	48mm
100mm	16mm	64mm
125mm	16mm	64mm
120mm	20mm	80mm

Also Available: 316 Stainless Steel

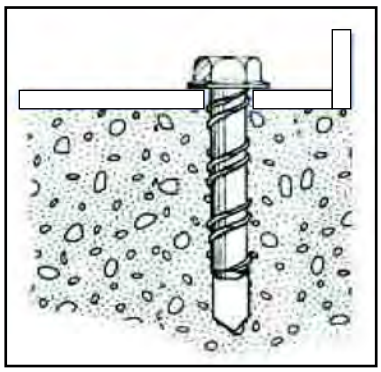
SCREWBOLT



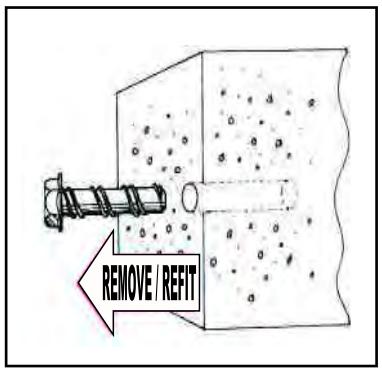
ADVANTAGES:

- **high strength**
- **shallow embedment ability**
- **replaces all common sleeve and resin anchors**
- **does not turn in the hole**
- **fixes instantly**
- **full range of head styles**
- **can be removed and refitted**
- **close to edge fixing**
- **single fixing for all substrates**
- **high speed installation**
- **cuts its own thread**
- **neat appearance**

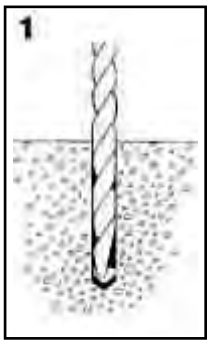
Close to the edge fixing ability.



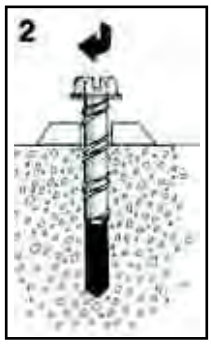
Remove & replace in the same hole.



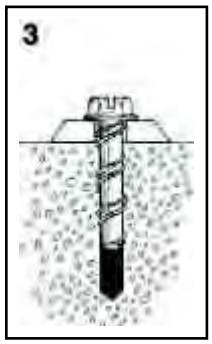
Simple and Effective



1. Drill Hole



2. Screw in the Screwbolt



3. Fixing completed

HOLE PREPARATION

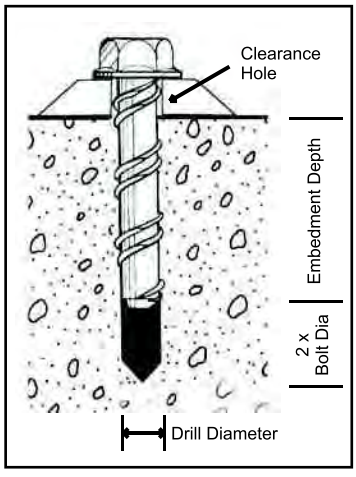
Use the right drill

Check that the drill bit diameter is correct for the Screwbolt size and substrate (refer to Table1 for specifc details).

Screwbolt is designed to function correctly with DIN standards. Drill bits must not be worn below normal tolerance levels.

Drill deep enough.

The hole depth must be at least the embedment depth of the Screwbolt plus twice the diameter of the Screwbolt (see diagram). Clean out excess dust.



SCREWBOLT INSTALLATION

Use a good socket.

We recommend the use of a quality full hexagon socket or hexagon male drive with a ratchet spanner. Alternatively, where the substrate allows, a torque controlled impact wrench can be used.

Apply pressure to start.

Ensure that continual pressure is applied (see diagram), particularly when engaging the first thread.

Back-off if tight.

During installation, debris or dust created by the thread cutting action may cause some resistance to be experienced. This is easily overcome by unscrewing the Screwbolt for one turn or more, and then continuing to fix to full embedment.

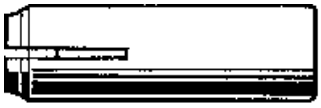
Do not over tighten.

Care should be taken not to exceed maximum specifed torque when tightening.

Size Single Thread	Max. Fixing Thickness mm	Drill Size mm	Embedment Depth mm	Head (Socket) Size mm	Tension (30mpa) Kn	Shear Kn
6 x 30	3	6	40	13	2.5	3.9
6 x 50	20	6	40	13	2.5	3.9
8 x 55	16	8	40	16	3.8	5.7
8 x 80	41	8	50	16	5.5	6.25
8 x 100	50	8	50	16	5.5	6.25
10 x 60	15	10	45	18	6.2	6.25
10 x 80	32	10	60	18	8.2	12.3
10 x 100	50	10	60	18	8.2	12.3
10 x 140	80	10	90	18	15.5	23.25
12 x 75	20	12	55	19		
12 x 100	46	12	85	19		
12 x 150	96	12	90	19		

Table 1

DROP IN ANCHORS



Drop-Ins are flush finishing standard machine bolt anchors suitable for light duty fastenings into concrete, solid brick, cement block and other masonry materials.

Thread Diameter	Thread Depth	Hole Diameter	Anchor Length
6mm	9mm	8mm	25mm
8mm	12mm	10mm	30mm
10mm	15mm	12mm	40mm
12mm	18mm	16mm	50mm
16mm	24mm	20mm	65mm
20mm	35mm	25mm	80mm

- Deformation controlled anchors (impact setting).
- Easy to install.
- Flush fitting low profile fixing at desired depth.
- Economical.
- Standard bolts may be used.

SETTING TOOL

Working Load Capacities

Hole Dia.	Thread Size	Anchor Length	Thread Depth	Edge Distance	Spacing Between	Setting Torque	Pullout Capacity	Shear Capacity
mm	mm	mm	mm	mm	mm	Nm	kN	kN
8	6	25	9	100	100	3.5	2.5	1.4
10	8	30	12	110	125	8.5	3.1	2.2
12	10	40	15	130	150	17	4.8	3.4
16	12	50	16	160	200	30	7.2	5.4
20	16	65	24	225	250	74	9.7	11.2
25	20	80	35	280	300	144	14.6	15.7

- Setting torques for standard 4.6 grade bolts or threaded rods.
- The embedment depths, edge distances and anchor spacings shown are the minimum values recommended to achieve the maximum pullout load in 25MPa concrete. Shallower embedment and closer spacings and edge distances will reduce the anchor load capacities. The working loads are designed to provide a factor of safety of 4 against ultimate failure. Please refer to Reids engineers for special cases.

HOLLOW SET DROP-IN

The Hollow Set Drop-in is designed for anchoring in hollow base materials such as hollow concrete block, brick with weep holes, and hollow core precast concrete plank. It can also be used in solid base materials.

Size	Drill Diameter	Min Hole Depth (mm)
M 10 x 40mm	16mm	40mm

CHEMICAL ANCHORS – CAPSULE

Suit Stud Diameter	Hole Diameter	Hole Depth
8mm	10mm	80mm
10mm	12mm	90mm
12mm	14mm	110mm
16mm	18mm	125mm
20mm	25mm	170mm
24mm	26mm	210mm

Chemical Anchors provide a reliable resin based anchoring system for concrete, brick and masonry in applications where the use of conventional mechanical anchoring systems are unsatisfactory.

- Useful for installation close to edges.
- No expansion forces.
- Once cured the resin provides a stress free bond with the surrounding materials.
- May be used for vibrating loads.
- Stainless steel studs for corrosive applications.

Curing time
Curing times vary according to atmospheric and base material temperatures at the time of installation.

ºC	ºC	Curing Time
-.5	to 0	5 hours
0	to 10	1 hour
10	to 20	20 mins
	over 20	10 to 15 mins

Installation Data and Working Loads

Hole Dia.	Thread Size	Hole Depth	Stud Length	Edge Dist	Spacing Between	Preload Torque	Tension Capacity	Shear Capacity
mm	M	mm	mm	mm	mm	Nm	kN	kN
10	8	80	110	60	80	8.6	5.5	3.5
12	10	90	130	75	90	17.0	7.5	5.0
14	12	110	160	100	110	29.8	10.0	7.0
18	16	125	190	175	120	73.9	20.5	13.0
25	20	170	260	200	150	144/249	23.0	21.5

- It is possible (although not recommended) to use chemical anchors overhead because the sand aggregate and adhesive resin are premixed. This minimises loss of resin during installation and curing. We recommend that in overhead applications precautions be taken to prevent leakage of the resin after installation.
- • These values are minimum recommended edge distances for loads applied in shear. Closer edge distances may be possible for anchors loaded in tension.
- •• The embedment depths, edge distances and anchor spacings shown are the minimal recommended to achieve the maximum pullout load in 25MPa concrete. Shallower embedment and closer spacings and edge distances will reduce the anchor load capacities. Please refer to Reids engineers for special cases. Loads include the factor of 4 against ultimate failure for the pullout and shear capacities shown.
- A full series of anchor lengths is available to fasten a wide range of fixture thicknesses.

CHEMICAL ANCHORS – MILD STEEL STUDS*
With nuts and washers.

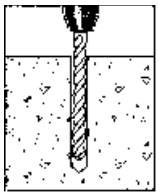
To be used in conjunction with chemical anchors.

* Also available 316 Stainless Steel.

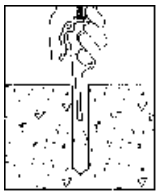
Suit Stud Diameter	Hole Diameter	Hole Depth	Length	Fastens Material Up To
8mm	10mm	80mm	110mm	18mm
10mm	12mm	90mm	130mm	26mm
12mm	14mm	110mm	160mm	34mm
16mm	18mm	125mm	190mm	45mm
20mm	25mm	170mm	260mm	55mm
24mm	28mm	210mm	300mm	75mm

INSTALLATION

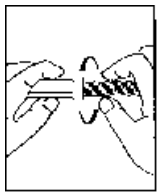
Drill a hole using the required carbide tipped bit to the embedment depth required. The tolerance of the drill bit used should meet the requirements of ISO/DIN Standard 8035.



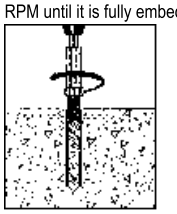
Blow the hole clean with compressed air, brush the hole, and blow it clean again. Holes may be dry or damp, but should be free of standing water or frost. Insert the capsule into the hole. Either end of the capsule may be inserted first.



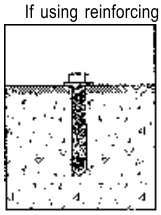
Thread the nut onto the anchor rod leaving 3 to 4 threads exposed. Then thread the rod coupler onto the threaded rod until it is tight against the nut. If using reinforcing, insert the bar into the proper size coupler.



Select the drive unit, insert it into a rotary hammer drill and engage the coupling to be used. Insert the chisel point of the rod or rebar into the hole to break the glass capsule. Spin it into the capsule at a speed of 250 to 500 RPM until it is fully embedded.

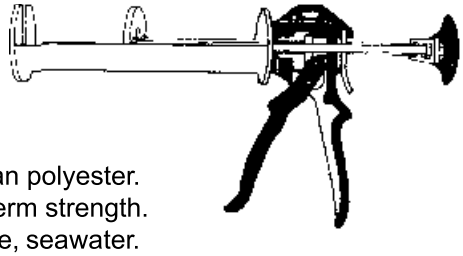


Once the rod or bar is fully embedded, turn the rotary hammer drill off immediately. If installing threaded rod, pull the driver out of the coupling while holding the rod. Hold the hex nut with a wrench to unthread the coupler. If using reinforcing bar,release the set lever and slide the coupler off the bar.



CHEMICAL ANCHORS

ACRYLIC, POLYESTER INJECTION SYSTEM – SWIFTCHEM



- Easy to use, fast setting and economical.
- Consistent, reliable performance.
- Special valve in the hardener tube reduces waste.
- Red colour helps achieve the perfect chemical mix.
- Versatile: for studs, rebar starters etc.
- Stress free anchoring close to edges.
- Ideal anchorage for low strength base materials.
- High bond strength, less creep and better high temperature resistance than polyester.
- Absorbs less water than conventional polyester resins, retaining its long term strength.
- Excellent resistance to wet and corrosive environments e.g. water, sewage, seawater.
- May be used for vibrating loads: machine anchoring.
- Specially designed cartridge seals and piston prevents leakage and reduces smell.
- Durable Polyamide cartridge protects the contents from evaporation and increases shelf life.
- Shut-off valve reduces overrun and enables re-use of the cartridge with fresh mixing nozzles.
- Load bearing is usually limited by the base material.
- Can be used in all positions.
- Long shelf life, less sensitive than normal polyester.
- Developed in conjunction with the world leaders in chemical anchoring technology.
- Allow full curing time before subjecting the anchor to load.
- Gel and curing times vary according to atmospheric and base material temperatures.

Typical Seting Times

Temperature ºC	Gel Time mins	Cure mins
5	10	90
20	6	45
30	4	30
40	2	25

Chemical anchoring systems cannot be recommended for base material temperatures less than 5ºC.

Installation Data and working Loads

Stud Dia.	Hole Dia. mm	Embed Depth mm	Approx. Holes per pack	Edge Distance mm	Spacing Between mm	Preload Torque Nm	Pullout Capacity kN	Shear Capacity kN
M6	8	60	210	30	60	3.5	2.9	1.6
M8	10	80	115	40	80	8.6	5.2	2.9
M10	12	90	90	45	100	17.0	8.3	4.6
M12	14	110	55	55	120	29.8	12.1	6.7
M16	18	125	33	65	160	73.9	22.6	12.6
M20	24	170	12	85	200	144	35.3	19.6
M24	26	210	11	100	240	249	50.8	28.2

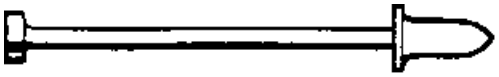
• • The embedment depths, edge distances and anchor spacings shown are the minimum values recommended to achieve the max pullout load. Shallower embedment and closer spacings and edge distances will reduce the anchor load capacities.

• • These values are a guide only and have been based on the maximum recommended working loads in concrete – with a compressive strength of 30MPa. The working loads are based on studs and threaded bolts of ISO grade 4.6 with dimensions to AS 1111. The recommended loads are valid for fully cured normal weight concrete. Bolts and studs of other materials and in different base materials will have different working loads.

• All structural bolts should be preloaded. Apply a torque to the bolt to the values in the table above.

MASONRY FASTENINGS POWDER ACTUATED

DRIVE PINS 8MM
FOR CONCRETE AND STEEL
Suitable for use in the following tools:
EXPRESS 660, RAMSET J20 (NEW ZEALAND ONLY)



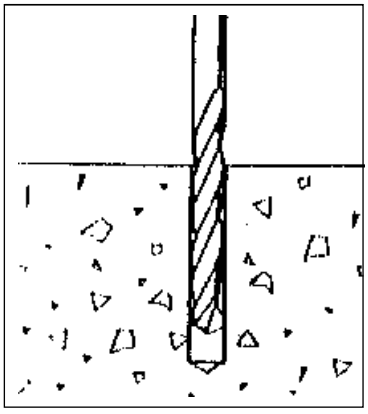
Head Size	Length	Shank Diameter
8mm	20mm	3.8mm
8mm	30mm	3.8mm
8mm	40mm	3.8mm
8mm	50mm	3.8mm
8mm	65mm	3.8mm
8mm	75mm	3.8mm
8mm	90mm	3.8mm
8mm	100mm	3.8mm

SPLIT DRIVE ANCHORS

Vibration resistant, difficult to remove medium strength method of fastening to block, brick, concrete or stone. Simple, quick and efficient to install, just drill a hole and hammer the split drive anchor in.

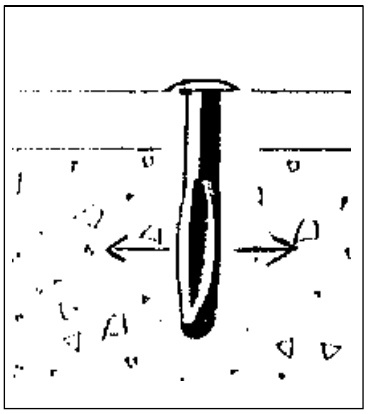
Head	Size	Hole Diameter mm	Embed Depth mm	Tension 40mpa kgs	Shear kgs
Flat	5 x 63	5	22	613	691
Flat	6.5 x 50	6.5	29	1000	1054
Flat	6.5 x 75	6.5	29	1000	1054
Flat	6.5 x 100	6.5	29	1000	1054
Mush	5 x 32	5	22	613	691
Mush	5 x 38	5	22	613	691
Mush	5 x 50	5	22	613	691
Mush	6.5x50	6.5	29	1000	1054

MUSH HEAD **FLAT HEAD**



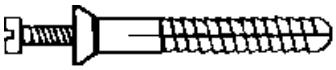
INSTALLATION

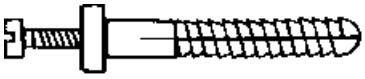
Drill hole into the base material to a depth of at least 12mm deeper than the embedment required. Blow the hole clean of dust and other material.

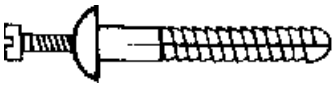


Drive the anchor through the fixture into the anchor hole until the head is firmly seated against the fixture. Be sure the anchor is driven to the required embedment depth.

NYLON ANCHORS







Nylon Anchors are versatile, light duty, simple to use and an economical means of solving thousands of lightweight applications.
They enable excellent fixings to be made into a wide variety of base materials: timber, concrete, steel and most solid materials.

- Simple two part fixing with a “nail-screw” and nylon sleeve.
- The sleeve is split over part of its length and expands as the nail is driven home.
- Ribbed exterior assists holding power.
- Easily removed.
- Suitable for solid materials and hollow block.
- Zinc plated nail.
- Nylon sleeves with round, mushroom or flat (countersunk) head cater for a wide range of applications.
- The nylon sleeve provides insulation – useful for electrical or corrosive applications.

METAL PIN ANCHORS

Similar to nylon anchors, these have a special diecast zinc alloy sleeve with a mushroom head.

- Higher load capacity than nylon anchors.
- Useful for applications with heat and fire where nylon anchors cannot be used.

Working Load Capacities (Metal & Nylon)

Type	Hole Diameter mm	Embedment Depth mm	Pullout Capacity kN*	Shear Capacity kN*
Nylon Anchor	5	20	0.17	0.50
Nylon Anchor	6.5	25	0.27	0.80
Metal Pin Anchor	6.5	25	1.00	2.30

- Sizes of nylon anchor shown are for round head. Loads etc are equivalent for mushroom and flat countersunk head styles.

- Anchors should be inserted into the base material at least to a depth equal to 50% of the length of the anchor sleeve and to the embedment depths shown when placed into solid materials e.g. concrete or masonry.
- * Shallower embedment and close edge distances may reduce the anchor load capacities.
- * The working load capacities are only a guide for anchors set in solid concrete. Loads should be reduced for weak base materials.
- A full series of anchor lengths is available to fasten a wide range of fixture thicknesses.
- Nylon anchors are available with the round, mushroom or countersunk head styles to suit your particular application.

NYLON ANCHORS – ROUND HEAD

Drill Diameter	Anchor Length
5mm	25mm
5mm	40mm
6.5mm	25mm
6.5mm	40mm
6.5mm	50mm

NYLON ANCHORS – MUSHROOM HEAD

Drill Diameter	Anchor Length
5mm	20mm
5mm	25mm
6.5mm	20mm
6.5mm	25mm
6.5mm	40mm
6.5mm	50mm
6.5mm	75mm

NYLON ANCHORS – FLAT HEAD

Drill Diameter	Anchor Length
5mm	25mm
5mm	40mm
6.5mm	25mm
6.5mm	40mm
6.5mm	50mm
6.5mm	75mm

METAL PIN ANCHORS – MUSHROOM HEAD

Drill Diameter	Anchor Length
6.5mm	32mm
6.5mm	50mm

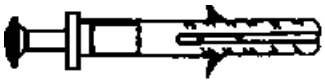
SCREW ANCHORS MASONRY FASTENINGS

SCREW PLUGS

Nylon plug with barbs to ensure that plug can be set in poor material. Heavy ribbing improves pull out strengh

Hole Diameter	Screw Gauges	Anchor Length
5mm	4-7	25mm
6mm	7-10	30mm
8mm	10-14	40mm
10mm	14-18	50mm
12mm	18-24	60mm

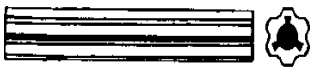
HAMMER-IN FIXINGS



Heavy duty Nylon Anchor with profiled internal and external sleeve for extra grip.

Drill Diameter	Anchor Length
6mm	100mm
8mm	100mm

PLASTIC WALL PLUGS (FRAME PACKS)



Simple plastic plug for use in brickwork, blockwork or concrete.

Colour	Length	Drill Diameter	Screw Gauge
White	25mm	5mm	4-6
White	35mm	5mm	4-6
Red	25mm	6mm	8-9
Red	35mm	6mm	8-9
Green	25mm	7mm	10-12
Green	35mm	7mm	10-12
Blue	35mm	8mm	13-15

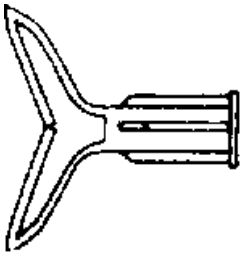
CEILING ANCHORS

	Description	Part No	Size mm	Hole size mm	Tie Wire Min. Embeded mm	Hole Size	Thread
	**SUSPENSION ANCHOR**	6525SUSA	6.5 x 25	6.5	25		
		6535SUSA	6.5 x 35	6.5	35		
		6540SUSA	6.5 x 40	6.5	40		
	**EYE BOLT**	840EBSA	8 x 45	8	45		

CAVITY ANCHORS

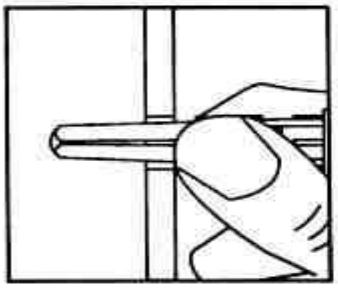
PLASTIC TOGGLES

Medium duty cavity fixing.

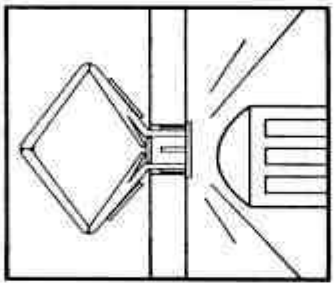


Drill Diameter	Fastens To Mat. Thickness	Screw
8mm	3-6mm	Self Tapper
8mm	7-13mm	Self Tapper
8mm	14-18mm	Self Tapper
8mm	19-26mm	Self Tapper

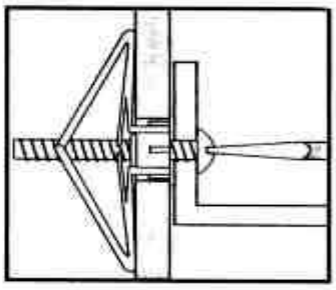
INSTALLATION



Drill a 8mm hole through the base material. Select the proper size Poly-Toggle based on wall thickness. Squeeze the Poly-Toggle flat and push through the hole.



Tap the Poly-Toggle through the wall until the flange is seated flush against the outer wall.



Position the fixture, insert the screw through the fixture into the Poly-Toggle, and tighten until it feels secure.

SPRING TOGGLES

Heavy duty all metal spring loaded cavity fixing, particularly useful in plaster.

Drill Diameter	Fastens To Mat. Thickness	Screw Diameter
12mm	50mm	1/8”
12mm	75mm	1/8”
15mm	50mm	3/16”
15mm	75mm	3/16”
15mm	75mm	1/4”

CAVITY FIXINGS

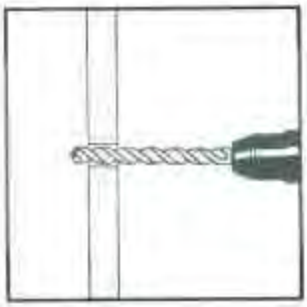
HOLLOW WALL ANCHORS

Heavy duty cavity fixing

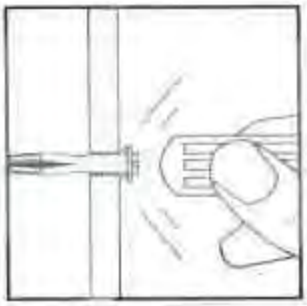
All-metal, for mounting heavy items such as radiators on plasterboard or other soft-faced partitioning

Drill Diameter	Fastenes To Mat. Thickness	Screw Diameter
8mm	5mm	1/8”
8mm	10mm	1/8”
8mm	16mm	1/8”
8mm	23mm	1/8”
10mm	16mm	3/16”
12mm	16mm	1/4”

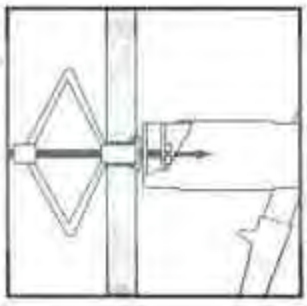
INSTALLATION



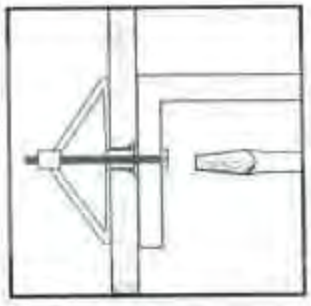
Drill a hole through the base material into the hollow area. The Drive version of the Anchor can be driven directly into the wallboard.



Insert the Anchor until the gripper prongs are embedded in the base material. Maintain the pressure with the screwdriver while turning the screw until a definite resistance is felt, indicating that the Anchor is set.



For faster setting, use the Anchor setting tool. Back the screw head out 2-3 turns, slide the tool behind the screw head, then squeeze the tool to expand the Anchor. This tool fits all sizes.



To complete the installation, remove the screw, line up the mounting hole of the item to be fastened, re-insert the screw and tighten.

HOLLOW WALL ANCHOR SETTING TOOL – PLIER TYPE HWT-1

PLASTER BOARD ANCHOR

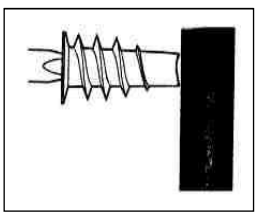
A one piece self drilling Anchor designed for use in hollow gypsum wallboard for light duty loads. Available in nylon and zinc alloy.

Self Tapping Screw Gauges
6 or 8
6 or 8

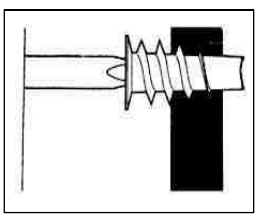
* Each box contains 1 tool for inserting Anchor.

NYLON

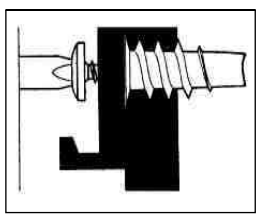
ZINC



Position the fixture and mark out the holes. Using the appropriate Pozidrive screwdriver push the fixing into the base material to create a small pilot hole.
Where difficult e.g. heavy wallpaper or skimmed plasterboard, use tip of screwdriver to break the surface and create the small pilot hole.



Screw in the fixing until flush with the base material.



Place the fixture in position (maximum thickness 16mm), insert the screw and tighten until secure.

CEMENT BOARD FASTENERS

Type 17 C/Sunk Phillips Screw

Ribbed Type 17 C/Sunk Phillips Screw

Needle Point Villaboard® Screw

Ribbed Villaboard® S/Steel Screw

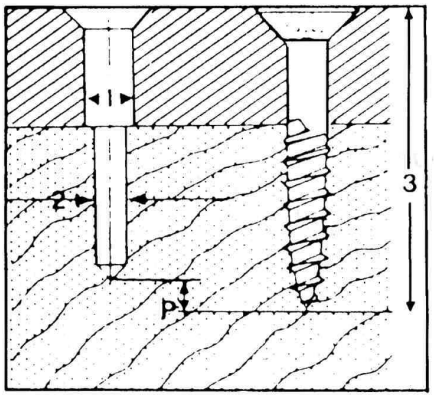
Drill Point Villaboard® Screw

Flat Head S/Steel

	VILLABOARD® SCREWS STEEL – ENVIRODRAB PLATED					TYPE 17 COUNTERSUNK PHILLIPS DRIVE 316 S/STEEL			VILLABOARD® WOODSCREWS COUNTERSUNK PHILLIPS 3/6 S/STEEL	FLAT HEAD NAILS 316 S/STEEL	
	Needle Point		Drill Point								
	6 x 30 (Ribbed)	6 x 40 (Ribbed)	6 x 25 (Ribbed)	6 X 40 (Ribbed)	6 x 50 (Ribbed)	9 x 40	10 x 40	10 x 50 (External Apps)	7 x 30 (Ribbed)	2.8 x 40	2.8 x 50
VILLABOARD®											
Timber Framing	•	■									
Steel Framing			•	■	■						
VILLABOARD® SOFFITS											
6mm & 9mm										•	
Timber Framing	•	■							•		
Steel Framing .55 to .7mm	•	■									
Steel Framing .7mm to 1.6mm	■				•						
4.5mm									•		
HARDIFLEX®											
4.5mm & 6mm										•	
Timber Framing 6mm									•		
Steel Framing 6mm	•			•							
HARDIPANEL®											
Timber Framing										•	
Timber Framing (Titan Only)							•				
Steel Framing (Titan & Compressed)								•			
Steel Framing (Compressed Only)									•		
WEATHERBOARD											
Timber Framing										•	•
HARDIBACKER®											
Timber Framing										•	
SILKLINE											
4.5mm										•	
HARDITEX®											
Standard Board									•	•	•

NOTE: As James Hardie boards are not fire rated and will crack under intense heat applications where Gib or Triple S has been fixed first with Hardie board on top, the application will require the alternative longer screw marked ■

WOODSCREWS



1 Hole approx. equal to nominal screw diameter.

2 Pilot hole drill size.

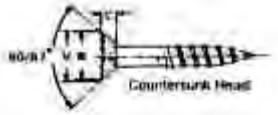
3 Length of wood screw.

P Difference between depth of pilot hole and length of screw for optimum holding power. "P" is equivalent to three thread pitches.

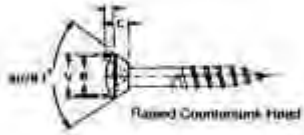
PILOT HOLE SIZES

Screw Gauge	P	HARD WOODS			SOFT WOODS		
		Pilot Hole Dia.	Drill Sizes		Pilot Hole Dia.	Drill Sizes	
			Fraction	mm		Fraction	mm
3	1/8"	.057			1.45	No Pilot Hole necessary for these sizes	
4	1/8"	.066			1.70		
5	5/32"	.073			1.85		
6	5/32"	.082		2.10	.059		1.5
7	3/16"	.091	3/32"	2.30	.066		1.70
8	7/32"	.097		2.50	.071		1.80
9	1/4"	.103		2.65	.078	5/64"	2.00
10	1/4"	.108	7/64"	2.75	.084		2.15
12	5/16"	.124	1/8"	3.15	.097		2.50
14	11/32"	.140	9/64"	3.60	.108	7/64"	2.75

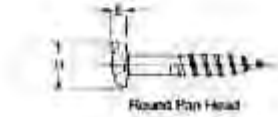
DIMENSIONS



TYPICALLY TO DIN 97



TYPICALLY TO DIN 95



TYPICALLY TO DIN 96

Screw Gauge	Nominal Size Dec. n.	COUNTERSUNK & RAISED COUNTERSUNK				ROUND HEADS		SLOT WIDTH	Driver Point No.
		V*	B Min.	C Max.	H (Raised only) Nom.	D Max.	E Max.	S Min.	
3	0.094	0.199	0.179	0.054	0.024	0.189	0.071	0.030	1
4	0.108	0.230	0.205	0.064	0.027	0.215	0.081	0.032	1
5	0.122	0.261	0.232	0.073	0.030	0.241	0.090	0.035	2
6	0.136	0.291	0.258	0.082	0.034	0.267	0.100	0.040	2
7	0.150	0.323	0.285	0.091	0.038	0.293	0.109	0.040	2
8	0.164	0.353	0.312	0.100	0.041	0.319	0.118	0.045	2
9	0.178	0.384	0.338	0.109	-	0.345	0.127	0.045	2
10	0.192	0.414	0.365	0.117	0.048	0.372	0.136	0.050	2
12	0.220	0.476	0.418	0.135	0.055	0.424	0.154	0.055	3
14	0.248	0.538	0.472	0.153	-	0.476	0.171	0.065	3

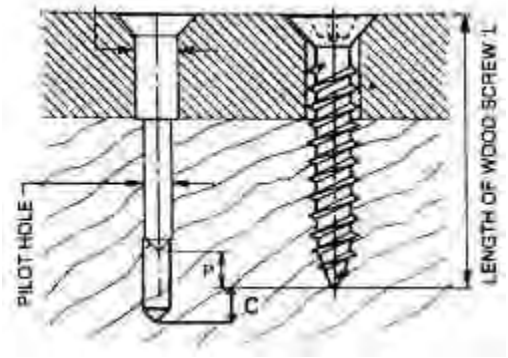
TWINFAST woodscrews

Recommended for use with all types of particle board and soft timbers. Twinfast screws have the following advantages over conventional woodscrews:

1) Parallel twin threads provide almost twice the pitch providing greater holding power. Fewer turns required result in faster production.

2) Parallel core diameter eliminates the tendency to split timber which often happens with ordinary woodscrews due to their wedge shape core.

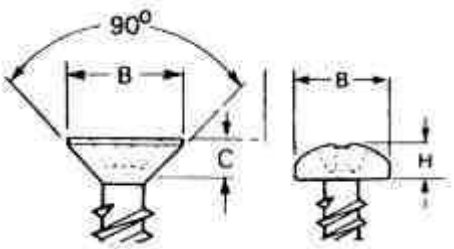
PILOT HOLE APPROX. EQUAL TO NOMINAL DIA.



P = Pilot hole in Particle Board should be shorter than the screw length by the pilot length (3 threads).

C = In Customwood the pilot hole should be longer than the screw length.

POZIDRIV RECESS



PILOT HOLES NB. THESE SIZES ARE CRITICAL			
Screw Gauge	PINUS	PARTICLE BOARD	CUSTOMWOOD
	Drill Sizes	Drill Sizes	Drill Sizes
	mm	mm	mm
4	1.80	1.25	2
5	2.10	1.45	2.4
6	2.40	1.60	2.6
7	2.70	4.65	2.7
8	2.95	1.95	3.0
9	3.00	2.10	Not recommended

HEAD DIMENSIONS					
Screw Gauge	COUNTERSUNK		ROUND		ALL HEADS
	B max.	C max.	B max.	H max.	Driver Point No.
	mm	mm	mm		
4	5.5	1.6	5.6	2.0	1
5	6.2	1.9	6.2	2.3	2
6	6.9	2.1	6.9	2.5	2
7	7.6	2.3	7.5	2.7	2
8	8.3	2.5	8.2	2.9	2
9	9.0	2.8	8.8	3.3	2

SCREWS

SUREFIX SCREWS

The surefix woodscrew is a hardened self drilling countersinking woodscrew.
It has an extra sharp hardened point which means no pilot hole is required. (Although care is required near the timber edge). Extra coarse thread for ease of driving and ribs under the head for self countersinking. Designed for applications where pilot holes are undesirable and high clamp loads are required.
The surefix screw is available in zinc chromate finish – other finishes can be supplied should you require them.
We can also offer in 304 stainless steel finish: Squaredrive recess only.

Ribs under head for self countersinking (surefix only).

Extra coarse threading for ease of driving.

Extra sharp point, no pilot hole required.

POZIDRIVE RECESS

SIZES		
6 x 1/2		
6 x 5/8	8 x 5/8	
6 x 3/4	8 x 3/4	
6 x 1	8 x 1	
6 x 1.1/4	8 x 1.1/8	
6 x 1.1/2	8 x 1.1/4	
	8 x 1.1/2	
	8 x 1.5/8	
	8 x 1.3/4	
	8 x 2	
	8 x 2.1/2	10 x 2.1/2
		10 x 3

SQUARE DRIVE

SIZES	
8 x 3/4	
8 x 1	
8 x 1 1/8	
8 x 1 1/4	
8 x 1 1/2	
8 x 1 5/8	
8 x 1 3/4	
8 x 2	
8 x 2 1/2	10 x 2 1/2
8 x 3	10 x 3
	10 x 4

HINGE SCREWS

The hinge screw is a surefix without ribs for use with hinges to give the same high clamping and self drilling advantages as the ribbed version but fitting flush into the hinges.
The hingescrew is available in B.M.A. and bright zinc, again other finishes can be supplied on request.

Non Ribbed.

Extra coarse threading for ease of driving.

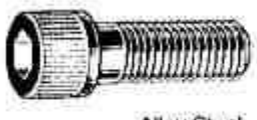
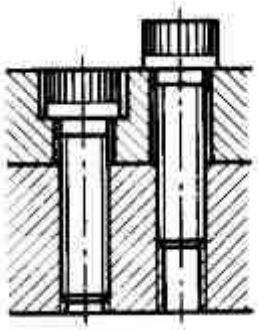
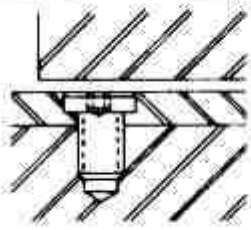
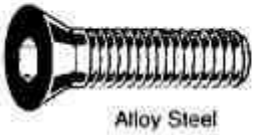
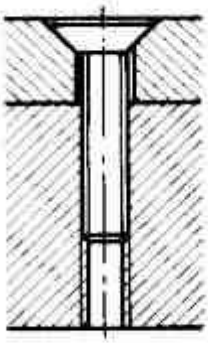
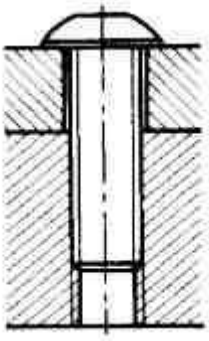
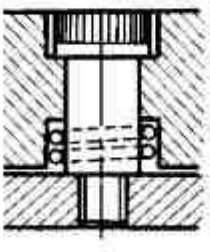
Extra sharp point, no pilot hole required.

POZIDRIVE RECESS

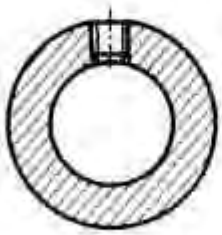
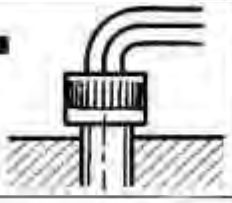
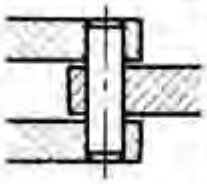
SQUARE DRIVE

SIZES		
5 x 1/2	6 x 1/2	8 x 1/2
5 x 5/8	6 x 5/8	8 x 5/8
5 x 3/4	6 x 3/4	8 x 3/4
5 x 1	6 x 1	8 x 1
5 x 1.1/4	6 x 1.1/4	8 x 1.1/4
		8 x 1.1/2
		8 x 1.3/4
		8 x 2

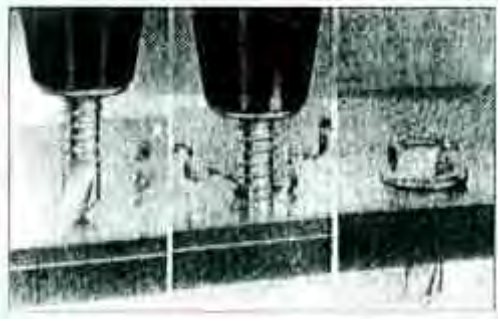
SOCKET SCREWS

Type	Application/Features	Available In
Socket Head Cap Screws  Alloy Steel  Stainless Steel	 Suitable for all high tensile applications. Use Stainless for corrosive-cryogenic or elevated temperatures. TYPICALLY TO DIN 912	ISO Metric, BSW, UNC, UNF ISO Metric, BSW, UNC
Socket Low Head Cap Screw  Alloy Steel	 Suitable for use in parts too thin for std. SHCS; and for applications with limited clearances. TYPICALLY TO DIN 7984	ISO Metric, UNC
Flat Head Screws  Alloy Steel  Stainless Steel	 Controlled angle under the head ensures maximum flushness and sidewall contact. Non-slip wall contact. Non-slip Hex socket prevents marring of material. Note: Inclined angle under the head varies as follows: BSW & BSF Threads – 90° UNC & UNF Threads – 82° Metric Threads – 90° TYPICALLY TO DIN 7991	ISO Metric, BSW, UNC, UNF ISO Metric, BSW, UNC
Button Head Screws  Alloy Steel  Stainless Steel	 Low heads streamline design. Use them in materials too thin to countersink: also for non-critical loading requiring heat treated screws. TYPICALLY TO ISO 7380	ISO Metric, BSW, UNC, UNF ISO Metric, BSW, UNC
Shoulder Screws  Alloy Steel	 Replaces costly special parts – shafts, pivots, pins, guides, linkages and trunnion mountings. Also standard for tool and die industries. TYPICALLY TO ISO 7379	ISO Metric, BSW, UNC

SOCKET SCREWS

Type	Application/Features	Available In
Socket Set Screws  Alloy Steel  Stainless Steel 	Fasten collars, sheaves, gears, knobs on shafts. Locate machine parts. TYPICALLY TO DIN 916	ISO Metric, BSW, UNC, UNF
	Self locking knurled cup points are standard. TYPICALLY TO DIN 914	ISO Metric, BSW
Wrenches  	Tough, ductile, for high torquing; corner's won't round; accurate fit in all types of socket screws. Size marked for quick identification. TYPICALLY TO DIN 911	Metric, Imperial, Short Arm, Long Arm
Tension Pin, Roll Pin  	Fits standard size holes. Self locking, reusable, lightweight. Strong chamfered ends. Standard product is cadmium plated. TYPICALLY TO DIN 7343	Metric, Imperial

SELF DRILLING SCREWS



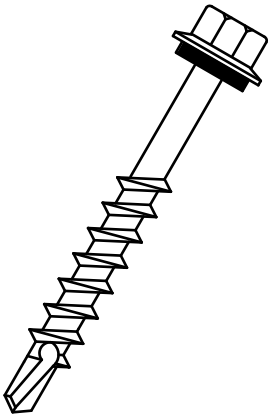
FASTENING IN ONE EASY OPERATION.

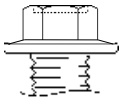
Self drilling screws combine drilling, tapping and fastening into one easy operation – and this complete fastening operation is done in material up to 6mm thick in under 10 seconds. Less time than is normally required to drill a hole alone! Available in various lengths and head styles to assist your fastening requirements. Best results are obtained with power screw drivers operating between 2000 and 2500rpm equipped with depth-locating or torque sensor clutch devices, and fitted with high quality sockets or screwdriver bits.

SELF DRILLING INTO STEEL

Labour time is considerably reduced and only one tool is required.

Available:





Hex Washer Head — Drive

Diameters: 8g, 10g, 12g, 14g — 8g - 1/4 hex, 10g - 1/4 hex, 12g - 5/16 hex, 14g - 3/8 hex

Finish: Class 2, Yellow Zinc Chromate; Class 4, Mech Galv; Stainless Steel

Pan Phillips Head

Diameter: 8g — No 2 Phillips

Finish: Class 3&4, Yellow Zinc Chromate; Stainless Steel

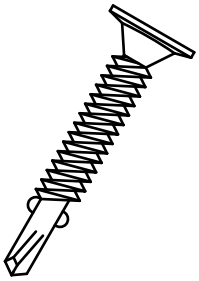
Wafer Phillips Head

Diameter: 10g — No 2 Phillips

Finish: Class 3&4, Yellow Zinc Chromate

Recommended Drill Speed: 2000rpm – 2500rpm（Steel）

Recommended Drill Speed: 300rpm（Stainless Steel）



COUNTERSUNK WING TEKS

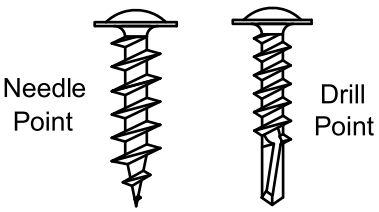
These are designed to attach timber and plywood to steel framing without the pre-drilling of holes. The “wings” drill a clearance hole in the timber and then snap off as they reach the steel. The Teks point then drills, taps and fasteners into the framing member. This provides a high clamping force between members.

The standard drive is a Phillips. — Drive

Available: 10g — No 2 Phillips

Finish: Class 3, Yellow Zinc Chromate

Recommended Drill Speed: 2000rpm – 2500rpm



STITCHING SCREWS

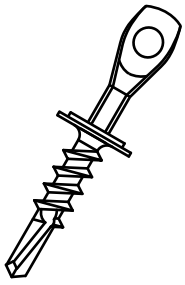
Designed for quick applications attaching sheetmetal claddings and ridge valleys into steel purlins

Head: Button — Drive

Available: 8g — No. 2 Phillips

Finish: Yellow Zinc Chromate

Recommended Drill Speed: 2000rpm-2500rpm



TIE-WIRE SELF DRILLING SCREWS

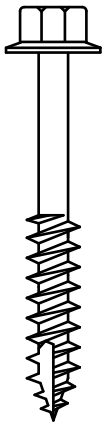
Self drilling into steel purlins for suspended ceilings, ducting or other interior suspended applications.

Available: 14g

Finish: Yellow Zinc Chromate

Recommended Drill Speed: 2000rpm-2500rpm

SELF DRILLING SCREWS



SELF DRILLING WOOD SCREWS "TYPE 17"

"Type 17" screws drill their own holes. "Type 17" self-drilling wood screws speed up fixing to timber purlins and girts. Pre-drilling of material is eliminated. "Type 17's" drill, fasten and seal in one easy operation. Head styles are: hexagon, pan, wafer and countersunk. Sealing is provided by neoprene washers, aluminium and neoprene bonded washers and Dowty Spats for double seals on asbestos cement profles.

Available: 12g, 14g

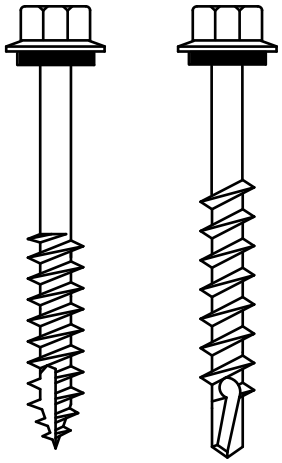
Finish: Yellow Zinc Chrome, Class 4

Recommended Drill Speed: 800rpm – 1500rpm

Drive
12g - 5/16 hex
14g - 3/8 hex

Also limited range available in Stainless Steel.

Recommended Drill Speed: 900rpm for soft timber
500rpm for hard timber

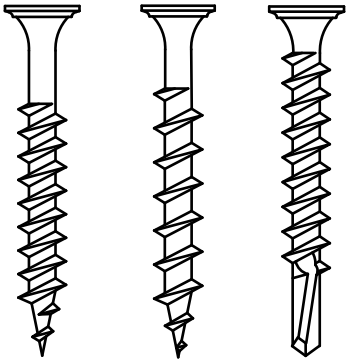


ROOFING SCREWS

Self drilling into steel (Steelfix) and wood (Type 17 woodfix) assembled with neoprene (low carbon) washers. All screws are imported in Class 4 finish.

Also available are a small variety of two pot paint colours suitable for common roofing/cladding.

Stainless steel screws available on request as are a variety of profile washers as below in galvanised steel, aluminium (bonded on request) plus neoprene washers with low carbon content.



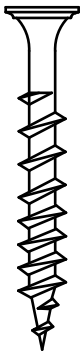
DRYWALL SCREWS – SCAVENGER HEAD, PHILLIPS DRIVE

This type of screw covers all likely fixing situations. Fixing to light gauge metal framing, to heavy gauge metal framing, to wood framing, or laminating wall board to wall board. Scavenger head design provides for natural countersinking without tearing. Heat treatment provides hard drill points and prevents burring by the driving bit on the screw. Yellow zinc plated finish prevents corrosion and provides good adhesion for stopping and will not bleed when covered.

Needle Point – Fine and Coarse Threads 6 x 25 6 x 30 7 x 50 No 2 Phillips

Drive Drill Point – Fine Thread 6 x 25 6 x 30 6 x 41 No 2 Phillips

Recommended Drill Speed: 1800rpm – 2500rpm



DRYWALL SCREWS – SCAVENGER HEAD, PHILLIPS DRIVE COARSE/FINE THREAD COMBO

Thread increases installation speed and higher pullout strength. Will penetrate 0.8mm steel battens.

One thread replaces fine and coarse threads in other drywall screws.

Sizes available: 6 x 25, 6 x 30, 6 x 41.Drive: No. 2 Phillips

Finish: Yellow Zinc

Recommended Drill Speed: 1800rpm-2500rpm

SCREWS

SELF TAPPING & THREADCUTTING SCREWS

Hardened Self-Tapping Sheet Metal Screws are intended for joining sheet metal only, they are so threaded and hardened as to make it possible for them to form a thread in the metal as they are screwed in, without stripping or otherwise injuring their own thread, thereby eliminating the necessity for tapping operations and other holding devices.
There is an endless variety of metal products for which Hardened Self-Tapping Sheet Metal Screws may be used with a substantial saving of time and labour, etc.
Self-Tapping Screws are manufactured in various types as shown in the following pages, the most popular being 'AB' and 'B' and it is recommended that Type 'AB' are used for light sheet metal work, not heavier than 18 gauge (.050") and Type 'B' for joining and making fastenings to sheet metal from 28 gauge (.016") to 6 gauge (.198") also aluminium and die castings, plastics and a variety of other materials.
Thread Cutting Screws are designed to cut mating theads in metal, plastic and other material without pre-tapped holes. The mating thread cut by the screw fits the screw threads closely and no clearance is necessary. This close fit keeps the screw tight even under vibrating conditions and prevents it backing out.

RECOMMENDED HOLE & DRILL SIZES

Types AB, B self-tapping screws
1m mild steel, brass, aluminium alloy, stainless steel and monel metal sheet

NOTE: It is important that the correct hole size is used and the recommendations below should be followed, but if very hard material is used a hole size slightly larger may have to be used, and in very soft material a smaller hole may be necessary.

Screw size (No.) and nominal dia.	Material thickness			Pierced or extruded hole dia. in.	Drilled or clean punched holes		
	in.	mm	SWG or fraction		Hole dia. required in.	Drill size	
						mm	Alternatives
4 (0.112")	0.018	0.45	26	–	0.081	2.05	46
	0.036	0.91	20	0.098	0.091	2.30	42
	0.064	1.62	16	–	0.095	2.40	41
	0.080	2.03	14	–	0.102	2.60	38
6 (0.138")	0.018	0.45	26	–	0.092	2.35	42
	0.036	0.91	20	0.111	0.110	2.80	35
	0.064	1.62	16	–	0.116	2.95	32
	0.080	2.30	14	–	0.122	3.10	31
	0.104	2.64	12	–	0.126	3.20	30
7 (0.151")	0.036	0.91	20	0.120	0.118	3.00	32
	0.064	1.62	16	–	0.126	3.20	1/8"
	0.080	2.03	14	–	0.130	3.30	30
	0.104	2.64	12	–	0.134	3.40	29
8 (0.164")	0.028	0.71	22	–	0.114	2.90	33
	0.036	0.91	20	0.136	0.122	3.10	1/8"
	0.048	1.22	18	–	0.126	3.20	30
	0.064	1.62	16	–	0.134	3.40	29
	0.104	2.64	12	–	0.146	3.70	26
	0.125	3.18	1/8"	–	0.150	3.80	25
10 (0.186")	0.028	0.71	22	–	0.134	3.40	29
	0.048	1.22	18	–	0.142	3.60	28
	0.064	1.62	16	–	0.150	3.80	25
	0.104	2.64	12	–	0.161	4.10	20
	0.125	3.18	1/8"	–	0.169	4.30	18
	0.187	4.75	3/16"	–	0.177	4.50	16
12 (0.212")	0.028	0.71	22	–	0.161	4.10	20
	0.048	1.22	18	–	0.169	4.30	18
	0.064	1.62	16	–	0.177	4.50	16
	0.104	2.64	12	–	0.189	4.80	12
	0.125	3.18	1/8"	–	0.193	4.90	10
	0.187	4.75	3/16"	–	0.201	5.10	7
14 (0.242")	0.048	1.22	18	–	0.189	4.80	12
	0.064	1.62	16	–	0.205	5.20	6
	0.080	2.03	14	–	0.213	5.40	3
	0.125	3.18	1/8"	–	0.224	5.70	1
	0.186	4.75	3/16"	–	0.232	5.90	A
	0.250	6.35	1/4"	–	0.236	6.00	B

TYPE AB
The Type AB is literally a combination of the Type A and Type B screws. It was originally designated the TYPE A but this was changed to avoid confusion with a "British Association" screw. It features the same number of threads as a Type B but has a sharp point similar to Type A. For use in sheet metals, plywood, and resin impregnated materials.

TYPE B
Type "B" hardened Tapping Screws were designed to extend the many advantages of the Type "A" to a broader range of applications such as heavy gauge sheet metal, non-ferrous castings, plastics, etc. The Type "B" forms a mating thread in a drilled, punched or threaded hole. Resists vibration, tension, and sheads dross better than machine screws in pretapped holes.

TYPE 23
Type 23 Threadcutting screws are manufactured to machine screw threads for use into soft metals such as aluminium castings.

TYPE 23 DECK SCREWS
Simply pre-drill a hole then drive screw home – it taps its own thread as it is driven. Countersunk Phillips Head – Zinc plated. M6 x 45, M6 x 60. Bugle Phillips Head – Zinc plated. M6 x 45.

TYPE 25
Type 25 Threadcutting Screws are manufactured to self tapping screw threads for use into plastics.

TRI-LOBULAR (TAPTITE) THREAD ROLLING SCREWS
Designed to be used in a variety of materials and applications these screws are of particular beneft in the building automotive, electronic and white goods industries. The '3 sided' or tri-lobular shape and the specially designed threads and points allow the screw to form mating internal threads by applying intermittent forming pressures at the crest (or points) of the screw's thread rather than over its full flank.

TYPE M
Harder and heavier gauge metals

TYPE P
Soft metals & plastics

SCREWS

HAMMER DRIVE SCREWS – HARDENED STEEL

TYPE U

For permanent fastenings to ferrous and non-ferrous castings, plastics, sheet metals. The Type U Hammer Drive Screw can be driven with a press, hopper-fed driver or ordinary hammer. Cannot be readily removed.

NOTES:

1. The material should be thick enough to provide adequate thread engagement and normally should not be less than the screw diameter.

2. In applications in plastic, the rigidity of the section and the brittleness of the plastic must be considered.

APPROX.	Screw size (No.) and nominal dia.	Thin Sheet Metal. Non-ferrous Castings Plastics, etc.			Cast Iron and Thick Sheet Metal			Clearance Hole		
		Hole dia required ins.	Drill Size		Hole dia required ins.	Drill Size		Hole dia required ins.	Drill Size	
			mm	Aternatives		mm	Aternatives		mm	Aternatives
1/16	00 (.059")	.051	1.30	55	.055	1.40	54	.007	1.70	51
5/64	0 (.074")	.065	1.65	52	.069	1.75	50	.002	2.10	45
3/32	2 (.099")	.087	2.20	44	.091	2.30	42	.107	2.70	36
1/8	4 (.114")	.100	2.55	39	.106	2.70	36	.125	1/8"	–
9/64	6 (.130")	.122	3.10	31	.130	3.30	30	.150	3.00	25
	7 (.152")	.134	3.40	29	.142	3.60	27	.166	4.20	19
5/32	8 (.165")	.146	3.70	27	.164	3.90	23	.181	4.60	15

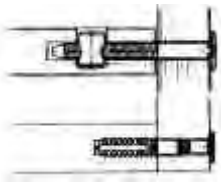
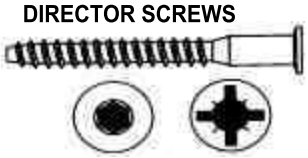
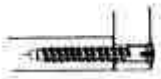
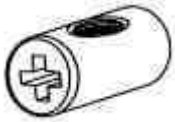
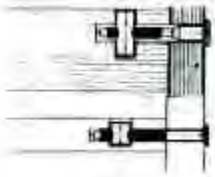
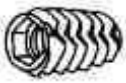
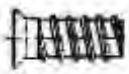
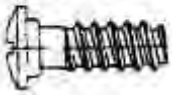
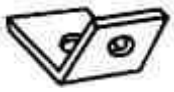
HAMMER DRIVE SCREWS – 18-8 STAINLESS STEEL

NOTES:

18-8 Grade stainless steel self-tapping screws are softer than case hardened steel screws and therefore care must be exercised in using them. They cannot be used in very hard material.

Screw size (No.) and nominal dia.	In Non-ferrous Castings			In Plastics		
	Hole dia required ins.	Drill Size		Hole dia required ins.	Drill Size	
		mm	Aternatives		mm	Aternatives
00 (059")	.055	1.40	54	.051	1.30	55
0 (074")	.071	1.80	50	.067	1.70	51
2 (099")	.089	2.25	43	.087	2.20	44
4 (114")	.108	2.75	36	.104	2.65	37
6 (130")	.125	1/8"	–	.118	3.00	31

FURNITURE FASTENERS

FASTENERS	APPLICATIONS	Pilot Hole SIZE	RANGE	FINISH
JOINT CONNECTOR BOLTS  M4 HEX SOCKET DRIVE			M6 x 45 50 60 70 80 100 M6 x 35 40 45 50 M6 x 60 70 80 100	FLORENTINE BRONZE /STAINLESS BRASS PLATED
 SOCKET CAP MUSHROOM CAPS CAP NUTS			M6 x 20	BRASS PLATED
DIRECTOR SCREWS  HEX SOCKET, POZIDRIVE			HEX DRIVE- M6.3 X 50 POZIDRIV- M5 X 50 M6.3 X 50 M7 X 50	ZINC PLATED
CROSS DOWELS 			M6 x 13 20	CAST ZINC
 INSERT NUTS TYPE D		8.7-9.0	M6 x 13 20	CAST ZINC
 INSERT NUTS TYPE E		8.7-9.0 11.2-11.5	M6 x 13 20 M8 x 20	CAST ZINC
HANGER BOLTS 			5/16 UNC x 2, 2 1/2, 3 3/8 UNC x 2 1/2, 3 M8 x 50	ZINC PLATED
 EURO SCREWS COUNTERSUNK POZIDRIVE  PAN POZIDRIVE		5.0 5.0 5.0	6.3 x 11 6.3 x 13 6.3 x 11	ZINC PLATED
 L BRACKETS			15 x 15 25 x 25	ZINC PLATED

CONVERSION TABLES

Inches		mm.	Wood Screw Gauge	Imperial Standard Wire Gauge
Decimals	Fractions			
.0124				30
.0136				29
.0148				28
.0156	1/64	.3969		
.0164				27
.018				26
.020				25
.022				24
.024				23
.028				22
.031	1/32	.7938		
.032				21
.036				20
.039		1.000		
.040				19
.046	3/64	1.190		
.048				18
.056				17
.060			0	
.062	1/16	1.587		
.064				16
.070			1	
.072				15
.078	5/64	2.000		
.080				14
.082			2	
.092				13
.093	3/32	2.381		
.094			3	
.104				12
.108			4	
.109	7/64	2.778		
.116				11
.118		3.000		
.122			5	
.125	1/8	3.175		
.128				10
.136			6	
.140	9/64	3.571		
.144				9
.150			7	
.156	5/32	3.968		
.157		4.000		
.160				8
.164			8	
.171	11/64	4.365		

Inches		mm.	Wood Screw Gauge	Imperial Standard Wire Gauge
Decimals	Fractions			
.176				7
.178			9	
.187	3/16	4.762		
.192			10	6
.196		5.000		
.203	13/64	5.159		
.212				5
.218	7/32	5.556		
.220			12	
.232				4
.234	15/64	5.953		
.236		6.000		
.248			14	
.250	1/4	6.350		
.252				3
.265	17/64	6.746		
.275		7.000		
.276			16	2
.281	9/32	7.143		
.296	19/64	7.540		
.300				1
.304			18	
.312	5/16	7.937		
.315		8.000		
.324				0
.328	21/64	8.334		
.332			20	
.343	11/32	8.731		
.348				2/0
.354		9.000		
.359	23/64	9.128		
.360			22	
.372				3/0
.375	3/8	9.525		
.390	25/64	9.921		
.393		10.000		
.400				4/0
.406	13/32	10.318		
.421	27/64	10.715		
.432				5/0
.433		11.000		
.437	7/16	11.112		
.453	29/64	11.509		
.464				6/0
.468	15/32	11.906		
.472		12.000		

Inches		mm.
Decimals	Fractions	
.484	31/64	12.303
.500	1/2	12.75
.511		13.00
.515	33/64	13.09
.531	17/32	13.49
.546	35/64	13.89
.551		14.00
.562	9/16	14.23
.578	37/64	14.68
.590		15.00
.593	19/32	15.08
.609	39/64	15.47
.625	5/8	15.88
.629		16.00
.640	41/64	16.27
.656	21/32	16.66
.669		17.00
.671	43/64	17.06
.687	11/16	17.46
.703	45/64	17.86
.708		18.00
.718	23/32	18.26
.734	47/64	18.65
.748		19.00
.750	3/4	19.05
.765	49/64	19.44
.781	25/32	19.84
.787		20.00
.796	51/64	20.24
.812	13/16	20.63
.826		21.00
.828	53/64	21.03
.843	27/32	21.43
.859	55/64	21.82
.866		22.00
.875	7/8	22.22
.890	57/64	22.62
.905		23.00
.906	29/32	23.01
.921	59/64	23.41
.937	15/16	23.81
.944		24.00
.953	61/64	24.20
.968	31/32	24.60
.984	63/64	25.00
1.000	1	25.40

SCREW THREADS

Nominal Size	Major of Thread In Diameter	NUMBER OF THREADS PER INCH
		BSW
1/8	0.1250	40
5/32	0.1562	32
3/16	0.1875	24
7/32	0.2187	24
1/4	0.2500	20
5/16	0.3125	18
3/8	0.3750	16
7/16	0.4375	14
1/2	0.5000	12
9/16	0.5625	12
5/8	0.6250	11
3/4	0.7500	10
7/8	0.8750	9
1	1.0000	8
1.1/8	1.1250	7
1.1/4	1.2500	7
1.3/8	1.3500	7
1.1/2	1.5000	6
1.3/4	1.7500	5
2	2.0000	4.5
2.1/4	2.2500	4
2.1/2	2.5000	4
2.3/4	2.7500	3.5
3	3.0000	3.5

Nominal Size	Major of Thread In Diameter	NUMBER OF THREADS PER INCH	
		UNC	UNF
4	0.1120	40	
6	0.1380	32	
8	0.1640	32	
10	0.1900	24	32
1/4	0.2500	20	28
5/16	0.3125	18	24
3/8	0.3750	16	24
7/16	0.4375	14	20
1/2	0.5000	13	20
9/16	0.5625	12	18
5/8	0.6250	11	18
3/4	0.7500	10	16
7/8	0.8750	9	14
1	1.0000	8	12
1.1/8	1.1250	7	12
1.1/4	1.2500	7	12
1.3/8	1.3750	6	12
1.1/2	1.5000	6	12
1.3/4	1.7500	5	
2	2.0000	4.5	
2.1/4	2.2500	4.5	
2.1/2	2.5000	4	
2.3/4	2.7500	4	
3	3.0000	4	

SHEET GAUGES

	Thickness	
Gauge	Inches	MM
1	0.300"	7.62
2	0.276"	7.01
3	0.252"	6.4
4	0.232"	5.89
5	0.212"	5.38
6	0.192"	4.88

	Thickness	
Gauge	Inches	MM
7	0.176"	4.47
8	0.160"	4.06
9	0.144"	3.66
10	0.128"	3.25
11	0.116"	2.95
12	0.104"	2.64

	Thickness	
Gauge	Inches	MM
13	0.092"	2.34
14	0.080"	2.03
15	0.072"	1.83
16	0.064"	1.63
17	0.056"	1.42
18	0.048"	1.22

	Thickness	
Gauge	Inches	MM
19	0.040"	1.05
20	0.036"	0.91
21	0.032"	0.81
22	0.028"	0.71
23	0.024"	0.61
24	0.022"	0.56

	Thickness	
Gauge	Inches	MM
25	0.02"	0.51
26	0.018"	0.46
27	0.0164"	0.42
28	0.0148"	0.38
29	0.0136"	0.35
30	0.0124"	0.32

DRILL CHART FOR BOLTS AND SCREWS

TAPPING DRILL TABLES ISO METRIC THREADS

BOLT DIA.	Coarse Pitch	Fine Pitch	Tapping HOLE
1.6	0.35		1.25
1.8	0.35		1.45
2.0	0.40		1.65
2.2	0.45		1.75
2.5	0.45		2.10
3.0	0.50		2.55
3.5	0.60		2.95
4.0	0.70		3.40
4.5	0.75		3.80
5.0	0.80		4.30
6.0	1.00		5.10
8.0	1.25		6.90
10.0	1.50		8.60
10.0		1.25	8.90
12.0	1.75		10.20
12.0		1.25	10.50
14.0	2.00		12.20
14.0		1.50	12.50
16.0	2.00		14.25
16.0		1.50	14.50
18.0	2.50		15.75
18.0		1.50	16.50
20.0	2.50		17.50
20.0		1.50	18.50
22.0	2.50		19.50
22.0		1.50	20.50
24.0	3.00		21.00
24.0		2.00	22.00
27.0	3.00		24.00
30.0	3.50		26.50
33.0	3.50		29.50
36.0	4.00		32.00
39.0	4.00		35.00
42.0	4.50		37.50
45.0	4.50		40.50
48.0	5.00		43.00
52.0	5.00		47.00
56.0	5.50		50.50
60.0	5.50		54.50
64.0	6.00		58.00

SELF TAPPING & THREAD CUTTING SCREWS

Screw Size (No) & Nom dia	MATERIAL THICKNESS in	mm	SWG	DRILL Dia mm
4 (0.112")	0.018	0.45	26	2.05
	0.036	0.91	20	2.30
	0.064	1.62	16	2.40
	0.080	2.03	14	2.60
6 (0.138")	0.018	0.45	26	2.35
	0.036	0.91	20	2.80
	0.064	1.62	16	2.95
	0.080	2.03	14	3.10
	0.104	2.64	12	3.20
7 (0.151")	0.036	0.91	20	3.00
	0.064	1.62	16	3.20
	0.080	2.03	14	3.30
	0.104	2.64	12	3.40
8 (0.164")	0.028	0.71	22	2.90
	0.036	0.91	20	3.10
	0.048	1.22	18	3.20
	0.064	1.62	16	3.40
	0.104	2.64	12	3.70
	0.125	3.18	1/8"	3.80
10 (0.186")	0.028	0.71	22	3.40
	0.048	1.22	18	3.60
	0.064	1.62	16	3.80
	0.104	2.64	12	4.10
	0.125	3.18	1/8"	4.30
	0.187	4.75	3/16"	4.50
12 (0.212")	0.028	0.71	22	4.10
	0.048	1.22	18	4.30
	0.064	1.62	16	4.50
	0.104	2.64	12	4.80
	0.125	3.18	1/8"	4.90
	0.187	4.75	3/16"	5.10
14 (0.242")	0.048	1.22	18	4.80
	0.064	1.62	16	5.20
	0.080	2.03	14	5.40
	0.125	3.18	1/8"	5.70
	0.187	4.75	3/16"	5.90
	0.250	6.35	1/4"	6.00

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