GLOSSARY OF TERMS

Grades	Description
Stainless Steel 304	Used for general corrosive environments, such as industrial, coastal and fresh water. Good strength.
Stainless Steel 316	Ideal for marine applications (please note that the fastener must be able to breathe and be above the water line). Good for corrosive environments, especially geothermal applications. Good strength.
UNS 31803 (2205)	A specialty stainless steel especially useful for high strength and corrosion resistant applications. Available on indent only.
Class 4.6 Steel	Often described as Mild Steel (MS). Metric.
Grade 5.0 Steel	Often described as High Tensile Steel (HT). High strength for industrial applications. Imperial.
Grade 8.0 Steel	Often described as High Tensile Steel (HT). High strength for industrial applications. Imperial.
Class 8.8 Steel	Often described as High Tensile Steel (HT). High strength for industrial applications. Metric.
Copper	Longevity of life. Available on indent only.
Brass	Brass is often used in either the electrical industry or for decorative purposes.
Aluminium	Only aluminium fasteners held in stock are rivets and Huck fasteners. Ideal for boating purposes. All other aluminium fasteners are available on indent only.
Monel	Medium to High strength and corrosion resistance. Only monel fasteners held in stock are rivets. All other monel fasteners are available on indent only.

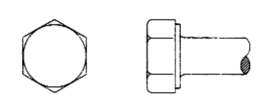
If stock is not held locally, each branch can call upon the nationwide network for backup. Mico Metals represent some of the most respected worldwide manufacturers and will source and indent specialist metals and fasteners to customers requirements.

Threads	Description
Metric Coarse Pitch	Identified by capital M placed before diameter e.g. M12. The absence of any statement as to the pitch is taken to indicate the fastener has a coarse thread pitch.
Metric Fine Pitch	Identified by capital M placed before the diameter, followed by the pitch e.g. M12 x 1.5. The pitch must be specified to accurately service a customer requirement for Metric Fine product. This is due to the fact that there are at least two pitches for some diameters of Metric Fine threads.
Unified National Fine	Identified by the abbreviation UNF
Unified National Coarse	Identified by the abbreviation UNC
British Standard Whitworth	Identified by the abbreviation BSW
British Standard Fine	Identified by the abbreviation BSF

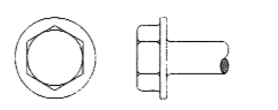
Refer to Thread table on page 63 to find Thread per Inch for differing thread types.

Finishes	Description
Self Coloured (SC)	Self coloured fasteners do not have a coating, which offers no corrosion protection at all. In external situations, rusting will commence within days of installation. Self Coloured is also referred to as Plain finish, plain, natural, or black.
Zinc Plated (ZP)	Zinc coating is common because it is inexpensive, thin, clean to handle, looks good and can be painted.
Zinc and Clear Chromate (BZP)	Because zinc can be easily scratched off, a chromate covering can be used to protect the fastener. Clear chromate is also known as 'Bright Zinc' because of the silvery and smooth look.
Zinc and Yellow Chromate (YZC)	Yellow chromate is similar to clear chromate, except for the yellow/gold colour. The chromate conversion is heavier than clear zinc, offering better corrosion protection. Yellow Chromate is often referrd to as YZC and zinc di chromate.
Hot Dipped Galvanised (GALV)	Dipping a fastener into a bath of molten zinc leaves a coating that is ten times thicker, and also approximately ten times the protection of zinc plating. The coating thickness means that allowances must be made for the threadfit. The final product is silver with a very rough appearance.
Mechanical Galvanised (M/G)	Mechanical Galvanizing is a more advanced form of the galvanization process, where fasteners are placed in a drum with molten zinc and mixed together with tiny spheres. The Spheres act to ensure that the zinc is evenly applied to the surface of the fastener. This method also allows for the zinc to adhere to the material better than the coating and dipping method. M/G has a minimum coverage of 40 micron for class 3.
Decorative Finishes	Decorative finishes are used to produce a decorative colour, rather than provide substantial corrosion protection. These fasteners are usually used indoors, where good looks are vital and corrosive elements are limited.

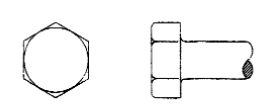
MICO METALS HEAD TYPES



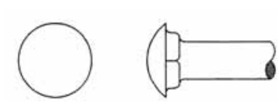
Hexagon Head
Normally referred to as Hexagon or Hex.
Note the small washer face under the head.



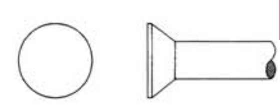
Hexagon Washer Head
Note the large flange under the head.



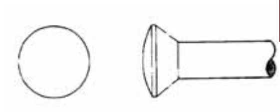
Full Bearing Hexagon
This will also be referred to as Hexagon or Hex. There is no washer face under the head.



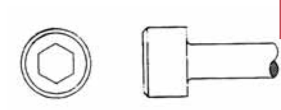
Cup Square Head
A shallow round head. The head shape is drawn here with a square under the neck, as typically found on Cup Square Bolts.



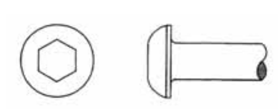
Countersunk Head
“Found on bolt, screw and socket recess products.



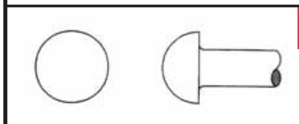
Raised Countersunk Head
Found on bolt and screw products. Bolts normally also have a square under the head, creating a form of plow bolt. In screws this head is often called oval.



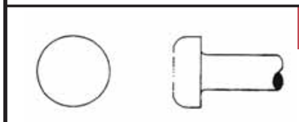
Cap Head
The standard head shape on the range of Socket Head Cap Screw products.



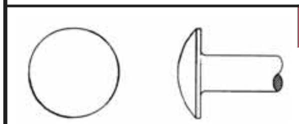
Button Head
Normally only found in standard fasteners in the socket recess product range



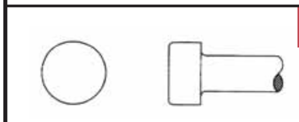
Round Head
A deeper head than cup head. In standard fasteners this shape is found mainly on woodscrew and imperial metal thread products.



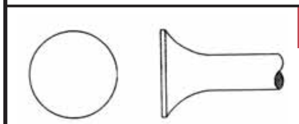
Pan Head
Major products featuring this head shape are self tappers and metric metal threads.
Note that the head is shallower than round head and that the top of the head tends to be flat.



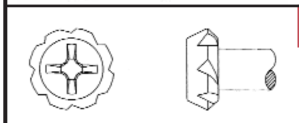
Mush Head
Another head shape from the screw product range. Note that the head diameter is larger and the head thinner than pan or round heads. Gutter bolts have this shape head.



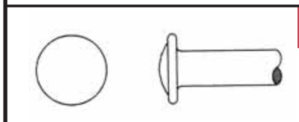
Cheese Head
A head shape from the screw product range, normally found on imperial metal threads.



Bugle Head
This head shape is normally only used on screw products, particularly fasteners used to screw plasterboard to steel or timber studs.



Flower Head
Reaming cutters formed around the edge of the head allow the screw to self embed in cement, steel and timber products.



Wafer Head
Another head shape used mainly on screws for the building industry. Most commonly, the head is found on self drilling screws.

MICO METALS DRIVE TYPES

External Hexagon

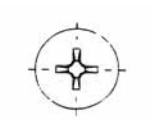
The most common drive type, and found on many bolt and screw products.

Internal Hexagon

Usually found on products referred to as socket head cap screws, socket set screws and similar associated products. Driven with a hexagon key.

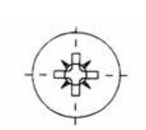
Slotted

Found on standard woodscrews, metal threads and self tappers. Driven by a conventional bladed screwdriver.



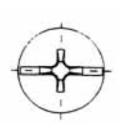
Phillips Recess

A form of cross recess. Driven by a Philip's screwdriver.



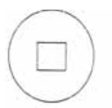
Pozi Drive Recess

The most common of cross recess, often available on screw products. Driven by a Pozi Drive Screwdriver.



Combination Recess/slot

This drive, consisting of a cross recess and a slot is found on some standard screws driven with either a cross recess or blade screwdriver.



Square

This drive consists of a square shaped recess punched into the head of the screw, driven by a square head screwdriver.

Tri Wing

A recess drive, with three rather than four driving arms. This drive is found in screws in electrical appliances to prevent disassembly by unqualified persons.

Torx Recess

A six sided recess which features curved driving faces. Most commonly found on high volume screw items in automotive or electrical applications. Special driving tools are required.

Tamper Resistant (security)

Anti theft drives used to avoid the unauthorised disassembly of a component. These drives take different forms and all require specialised driving tools for installation and removal.

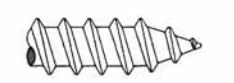
One Way

This drive utilises a standard bladed screwdriver for tightening. The fastener cannot be undone because the driving faces in the reverse direction are not formed.

Snake Eyes

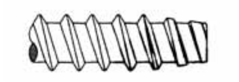
The head of the fastener has two holes which provide the driving feature.

MICO METALS POINT TYPES



Type AB

This point is found on Type AB self tappers, and a range of screws used for fastening timber or timber based building products. Its purpose is to assist the screw in engaging in the material being fastened.

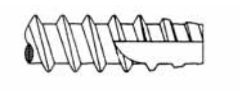


Type B

This point is applied to self tapping screws and generally specified where the screw is being driven into a shallow hole. Type B points provide for more full threads to be engaged in the material being fastened.

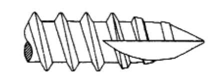
Type 17

Similar to Type AB point, except that screw material has been cut away. This feature, sometimes called a shank shot provides the ability for the screw to self drill through thin metal and then drill into the timber members of the structure.



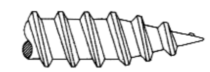
Type 25

A point designed to cut threads in plastic material. The presence of the shank slot provides the cutting ability and also for the clearance of cutting chips.



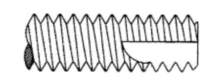
Type S

A self drilling point for use in joining sheet metals, steel cladding, or fixing timber, cement sheet or plasterboard to light metal structural members.



Needle Point

Suitable for use in situations where fasteners are required to pierce light metals. This point can be used in light metal to light metal joining or where there is a need to fix plasterboard to light steel structural members.

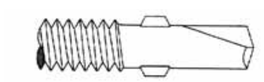


Type 23

Fasteners with this thread cutting point are designed for use in soft metals or die castings. Threads produced belong to the machine thread series.

Drill

A point designed to fasten material of varying types to steel. The shape of the drill point gives the fastener the ability to drill its own hole in most materials including steel. Once drilling is complete, the screw produces its own thread in the steel.



Winged Drill
Winged Tex

In thicker building materials such as plyboard, hardboard or cement sheet, the addition of wings cuts a slightly oversize hole permitting clear passage of the thread to engage with supporting steel structural members.

Thread Forming Point (Triobular)

These screws produce threads by moving material rather than cutting it away. In addition to the point form, where the shape of the thread is progressively developed, the shank of the screw takes the form of a rounded triangle. The point and the shank form provide the ability to produce the thread.

MEASUREMENT CONVERSION CHART

Iso Metric Course	mm	Decimal of an inch	Inch	Screw SWG Dia
	25.40	1.0000	1	
M24	24.00	0.9448		
M24	22.23	0.8750	7/8	
M20	20.00	0.7874		
M20	19.06	0.7500	3/4	
M16	16.00	0.6299		
M16	15.88	0.6250	5/8	
M16	14.29	0.5625	9/16	
M16	12.70	0.5000	1/2	
M12	12.00	0.4724		
M12	11.11	0.4375	7/16	
M10	10.00	0.3937		
M10	9.53	0.3750	3/8	
M8	8.00	0.3149		
M8	7.94	0.3125	5/16	
M8	6.35	0.2500	1/4	
M6	6.00	0.2362		
M6	5.49	0.2160		12
M6	5.30	0.2087		
M5	5.00	0.1968		
M5	4.83	0.1900		10
M5	4.76	0.1875	3/16	
M5	4.70	0.1850		
M5	4.17	0.1640		8
M5	4.10	0.1614		
M4	4.00	0.1574		
M4	3.97	0.1562	5/32	
M4	3.60	0.1417		
M4	3.51	0.1380		6
M4	3.20	0.1260		
M4	3.18	0.1250	1/8	5
M3	3.00	0.1181		
M3	2.84	0.1120		4
M3	2.79	0.1102		
M3	2.50	0.0984		

CONVERSION CHART

Stress				
Megapascals (Mpa)	to	Pounds Force/Sq. in (psi)	MPa x 145	= psi
Pounds Force/Sq. in. (psi)	to	Megapascals (Mpa)	psi / 145	= MPa
Megapascals (Mpa)	to	Newtons/Sq. mm (N/mm)	1 MPa	= 1N/mm

Force				
Kilonewton (kN)	to	Pounds Force (lbf)	kN x 225	= lbf
Pounds Force (lbf)	to	Kilonewton (kN)	lbf x 225	= kN

Torque				
Newton Metre (Nm)	to	Inch Pounds (in.lbs)	Nm x 8.85	= in.lbs
Inch Pounds (in.lbs)	to	Newton Metre (Nm)	in.lbs / 8.85	= Nm
Inch Pounds (in.lbs)	to	Foot pounds (ft.lbs)	in.lbs / 12	= ft.lbs
Foot pounds (ft.lbs)	to	Inch Pounds (in.lbs)	ft.lbs / 12	= in.lbs

GAUGE COMPARISON

Stress		
6 gauge	=	3.45mm
8 gauge	=	4.20mm
10 gauge	=	4.87mm
12 gauge	=	5.43mm
14 gauge	=	6.41mm

THREAD AND TAPPING CHART

	BSW		BSF		UNC		UNF		Metric		Isometric Pitch		Width across flange		
Nom. Dia.	Threads Per inch	Tapping Drill	Threads Per inch	Tapping Drill	Threads Per inch	Tapping Drill	Threads Per inch	Tapping Drill	Nominal Dia.	Tapping Drill	Coarse	Fine	BSW & BSF	UNC & UNF	ISO Metric
3/16	24	3.7mm	32	5/32	24	3.9mm	32	4.1mm	M5	4.2mm	0.80	0.50	0.324	0.312	8mm
1/4	20	5.1mm	26	5.4mm	20	13/64	28	7/32	M6	5.1mm	1.00	0.75	0.445	0.437	10mm
5/16	18	6.5mm	22	6.8mm	18	6.6mm	24	7.0mm	M8	6.8mm	1.25	1.00	0.525	0.500	13mm
3/8	16	5/16	20	21/64	16	8.0mm	24	8.5mm	M10	8.6mm	1.50	1.25	0.600	0.562	16mm
7/16	14	9.3mm	18	9.7mm	14	9.4mm	20	25/64	M12	10.4mm	1.75	1.25	0.710	0.625	18mm
1/2	12	27/64	16	7/16	13	10.9mm	20	29/64	M14	12.1mm	2.00	1.50	0.820	0.750	21mm
9/16	12	31/64	16	1/2	12	31/64	18	13.0mm	M16	14.0mm	2.00	1.50	0.920	0.812	24mm
5/8	11	17/32	14	14mm	11	35/64	18	14.5mm	M18	15.5mm	2.50	1.50	1.010	0.937	27mm
3/4	10	16.5mm	12	43/64	10	21/32	16	17.5mm	M20	17.5mm	2.50	1.50	1.200	1.125	30mm
7/8	9	49/64	11	20mm	9	49/64	14	20.5mm	M22	19.5mm	2.50	1.50	1.300	1.312	32mm
1	8	7/8	10	29/32	8	57/64	12	59/64	M24	21.0mm	3.00	2.00	1.480	1.500	36mm
1 1/8	7	63/64	9	1 1/64	7	63/64	12	1 3/64	M27	24.0mm	3.00	-	1.670	1.687	41mm
1 1/4	7	1 7/64	9	1 27/28	7	1 7/64	12	1 11/64	M30	36.5mm	3.50	-	1.860	1.875	46mm
1 3/8	6	1 13/64	8	1 1/4	6	1 7/32	12	33.0mm	M36	32.0mm	4.00	-	2.050	2.062	55mm
1 1/2	6	1 21/64	8	1 3/8	6	1 11/32	12	1 27/64	M39		4.00	-	2.220	2.250	60mm
1 3/4	5	1 35/64	7	1 39/64	5	1 9/16			M42		4.50	-	2.580	2.625	65mm
2	4.5	45mm	7	1 55/64	4.5	1 51/64			M48		5.00	-	2.760	3.000	75mm

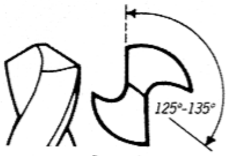
GENERAL GUIDE TO CORRECT DRILLING

Workplace Material Type	HB	Tons / inch	Kg / mm	Drill Type	HSS Type	Point Angle Degree	Drill Point Style Code (Refer Table 2)	Cutting Relief Code (Refer Table 3)	Speed Code (Refer Table 4)	Coolant
Carbon Steel										
Free Cutting	150	33	52	General Purpose	Standard	110 to 120	A	N	8	Soluble Oil Or Semi-Synthetic
0.3 to 0.4% Carbon	170	38	59						8	
0.4 to 0.4% Carbon	248	54	85						7	
0.4 to 0.7% carbon	206	44	69						7	
0.4 to 0.7% carbon	286	63	99				C	N-H	6	
Alloy Steel										
Steel Alloys	248	54	85	Standard Helix	Standard	118 to 125	A	N	7	Soluble Oil or Semi-Synthetic
	330	74	116				C	N-H	6	
	381	82	129		Cobalt				5	Soluble Oil - Extreme Pressure or Sulpho-Chlorinated
Stainless Steel										
Martensitic Free Cutting	248	54	85	Standard Helix	Standard	118 - 125	A	Empty	7	Soluble Oil - Extreme Pressure or Sulpho-Chlorinated
Martensitic Std Grade	As Supplied						C	N	6	
Austenitic Free Cutting									6	
Austenitic Std Grade						125-135			5	
Aluminium										
Aluminium Alloys	As Supplied			General purpose High Helix	Standard	135 to 145	C	N-S	10	Soluble Oil
Copper Alloys										
Brass Free Cutting	As Supplied			General Purpose Std to Low Helix	Standard	118 to 125	A-C	N	10	Soluble Oil
Brass Low Leaded										
Bronze Silicon									9	
Bronze Manganese										
Copper				Heavy Duty or General Purpose High Helix		125 to 135	C-D		7	
Bronze Aluminium				General Purpose Std Low Helix		118 to 125	A-C			
Bronze Cpommercial										
Bronze Phosphor										
Zinc										
Zinc Alloys	As Supplied			General Purpose Std or High Helix	Standard	118 to 125	C	N-S	10	Soluble Oil

GENERAL GUIDE TO CORRECT DRILLING

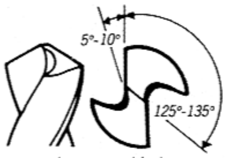
Table 2. Drill point styles

A
Standard



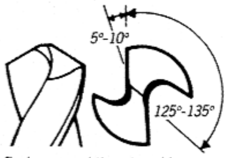
General Purpose

B
Point Relieved



Improves chisel edge chip flow. Recommended for soft materials.

C
Point Thinned



Reduces end thrust and improves centre cutting efficiency. Recommended for (1) Restoring chisel edge to original length after several regrinds. (2) For larger drill where the machine thrust is limited. (3) For difficult materials.

D
Centre Cutting
(Crankshaft Split)

Minimises end thrust. Maximises centre cutting efficiency. Recommended for difficult materials and deep hole drilling.

Table 3. Lip relief angle in degrees per drill diameter

Material Condition	Up to 2.5mm Up to3/32"	3mm 1/8"	5mm 3/16"	8mm 5/16"	11mm 7/16"	19mm 3/4"	32mm 1 1/4"	50mm 2"
N General	21	18	16	14	12	10	8	8
S Very Soft	26	23	20	18	15	13	10	10
H Very Hard	16	14	12	10	8	8	6	6

Table 4. Drill speed in revolutions per minute

Surface Speed per minute			Up to 2.5mm	3mm	5mm	8mm	11mm	19mm	32mm	50mm
Number	Metres	Feet	Up to3/32"	1/8"	3/16"	5/16"	7/16"	3/4"	1 1/4"	2"
5	10.5 - 13.5	35 - 45	1400-1780	1100-1400	700-890	430-540	310-390	180-225	107-135	68-85
6	14.5 - 18.0	48 - 60	1900-2380	1500-1880	960-1190	590-730	425-520	255-300	145-180	93-115
7	19.5 - 24.0	64 - 80	2550-3180	2000-2500	1280-1590	780-970	560-700	330-400	195-240	125-150
8	26 - 34	85 - 110	3380-4300	2700-3400	1700-2100	1050-1300	750-960	440-550	260-330	165-210
9	36 - 46	118 - 150	4700-5960	3700-4700	2400-2900	1450-1800	1050-1300	600-760	360-450	230-280
10	19 - 61	160 - 200	6400-7900	5000-6200	3200-3900	2000-2400	1400-1750	820-1000	490-600	310-380

TEK SCREWS

Metal Drilling Capacity

Gauge	Diameter (mm)	Threads per inch	Max Thickness
6	3.0	20	2.3mm
8	3.4	18	2.5mm
10	4.0	16	4.0mm
10	4.1	24	4.0mm
12	4.5	14	5.0mm
12	5.0	24	5.0mm
14	5.4	10	5.3mm
14	5.7	20	5.3mm

Metal Mechanical Properties

Gauge	Threads per inch	Min. Axial Force for Withdrawal (steel Plate 1.6mm)	Min Axial Tensile Strength	Min. Ultimate Torsional Strength
10	16	2.5 KN	8.60 KN	6.9 Nm
10	24	2.5 KN	10.01 KN	7.3 Nm
12	14	2.8 KN	11.63 KN	10.69 Nm
12	24	2.8 KN	14.44 KN	11.3 Nm
14	10	3.1 KN	14.95 KN	14.1 Nm
14	20	3.1 KN	18.90 KN	17.6 Nm

RIVET TROUBLE SHOOTING GUIDE

Problem	Contributing Factors	Solution
Mandrel Protusion: where mandrel breaks in the correct place but travels up the rivet to protude through the head. May also extrude ring of material from the head of rivet.	Oversize nosepiece	Replace
	Worn nosepiece	Replace
	Oversize holes	Drill recommended hole
	Overlength rivet	Select correct length
	Compressible material	Select Lower break load rivet
Remote Break: where the mandrel breaks at any point, leaving a length of mandrel protuding from the rivet head.	Excessive jaw bite (check teeth marks on mandrel)	Examine/ repair tool
	Double cycling of tool	Adjust tool stroke
	Long rivet	Select shorter rivet
	Operator action (bending mandrel)	Train operator
	Out of round holes	Drill correct holes
Rivet fails to set tightly	Remote break	Refer Remote Break above
Base Metal Cracks (ie plastics)	Many plastics are not suitable for use with general rivets	Change plastics Washers may help Soft rivets or peel rivets
Requires several tool cycles to set rivet	Rivet too long	Select right rivet
	Tool not operating properly	Check air pressure Adjust stroke Prime air tools Clean Jaws Replace worn jaws (check teeth marks on mandrel).
	Improper operating action	Training
	Wrong nosepiece	Select correct nosepiece
Mandrel head ejects	Rivet too short	Select correct length rivet
Rivet shears during setting	Undersize holes	Drill correct hole size
	Materials too thin	Check minimum plate thickness
Jamming tools (bent mandrels)	Improper operating action	Train operator
Jaws slipping on mandrels	Dirt in jaw teeth	Clean Jaws
	Worn jaw teeth	Replace jaws
	Fatigues jaw pusher spring	Replace jaw pusher spring
	Loose jaw guide or pulling Head Adaptor	Tighten
Jaws fail to open	Nosepiece loose	Tighten
	Jaws sticking to jaw guide	Clean and lubricate
	Dirt packed inside front of Nose Housing	Clean and lubricate. Remove Nose Housing and scrape out dirt buildup if necessary.
	Fatigued Return Spring	Replace
	Excess oil	Drain oil excess
Shortened stroke	Insufficient oil	Add oil
Slow pulling action	Air Line plugged	Check air line
	Low air pressure	Check air supply
	Damaged Air Valve	Replace
	Sludge in Intensifier Chamber Sleeve	Clean. Check air supply.
Slow return	Fatigued Return Spring	Replace
	Damaged Air Valve	Replace
	Sludge in Intensifier Chamber Sleeve	Clean. Check air supply.
Excessive oil leakage; **1. Noted on rear of tool** **2. Noted on Return Spring** **3. Noted at Trigger Port or Trigger Rod Cover**	Damaged or worn Hydraulic Piston Seal	Replace
	Damaged or worn Sleeve Seal	Replace
	Damaged or worn Rarn Seal	Replace

SELF DRILLING SCREW TROUBLE SHOOTING GUIDE

Problem	Contributing Factors	Solution
Wandering Point	Screw not perpendicular to material	Position screw at 90º angle to material that is being drilled
	Insufficient tension placed on screw head	Increase drill pressure
Screw sways and will not start drilling	Damaged or worn bit	Replace Driver bit
	Incorrect socket being used	Replace socket with correct size/drive.
Screw is unable to penetrate material	Screwdriver is running in reverse option.	Flick switch to forward drilling
	Material is too hard or thick for screw drive.	Predrill Pilot Hole
Breaking Drill Points	Drill point breaking due to excessive gap between materials	"Reduce the gap between the materials being fastened, by correct clamping procedures.
Will not screw into pre-drilled holes	Material thickness exceeds drill point capacity.	Ensure drilling capacity of screw point is within the thickness of the materials
	Screw gun has insufficient power	Use a more powerful screwgun Reduce length of extention lead if possible.
Breaking heads due to tightening of screws	Screw is being overtightened due to incorrect tool	Use a tool with a Depth Locator and Torque Gauge.
	Torque clutch set too high.	Use torque clutch to reduce the level of torque
	Depth locator is set too low	Use a screwgun with an adjustable depth locating nose piece, that releases pressure once screw head reaches the required depth.
Screw stripping	Tool is incorrectly set	Reduce torque by adjusting torque clutch, or adjust the depth locator.
Premature deterioration of drive bits.	Excessive pressure is being applied due to incorrecttool being used	Adjust depth locator and torque clutch
	Using incorrect driver bit	Replace with correct driver bit
Wood lifting up when threading in Wing Drillers	Premature breaking off of wings	Reduce drilling pressure.
	Screw is driving into knot of the wood. knots.	Choose position to avoid wood

POWER HACKSAW BLADES TROUBLE SHOOTING GUIDE

Problem	Contributing Factors
Blade Breakage	Material has worked loose in the vise Too light a blade for too heavy a feed Using a new blade in a cut made by a previous blade Too large a pitch Blade is worn out Material jamming against blade when cut is finished Insufficient or excessive blade tension Starting the cut with the blade resting on the stock
Teeth Stripping out	Too few teeth in contact when sawing thin sections Sawing on sharp edge or corner Material moving during sawing Tooth pitch too small - chip space clogged and overloaded
Crooked Cutting	Insufficient blade tension Excessive feed pressure Excessive stroke rate Saw frame out of line or bearings worn Hard spot in the stock Blade held in blade holder insecurely or out of square, due to wear on pins or face of clamp Tooth set worn on one side
Abnormal Tooth Wear	Material too hard to cut, or with hard inclusions Blade fails to lift correctly on return stroke Failure to use correct coolant or cutting compound Excessive feed pressure - chip pockets become clogged and blade slides across workpiece Excessive speed on hard material Insufficient feed pressure - blade slides across workpiece Incorrect toothsize - too many teeth on soft material, too few on hard material Using a new blade in a previous cut

Tension

Blades must be correctly tensioned for effective cutting. Inusufficient tension could result in the blade bending upwards, twisting and producing a crooked cut. It also allows the blade to wear quickly. Excessive tension can result in blade breakage, and is not good for the machine frame. Tensioning can be carried out with a torque wrench or a tensiometer.

Stroke Rate

The stroke rate used on any given job depends on the machinability of the material. As a general rule for maximum blade life, the stroke rate should be low and feed rate moderate. Harder materials call for a lower stroke rate and a higher feed rate.

Feed Rate

For effective cutting performance, the correct combinationof stroke and feed rates must be found. Excessive feed pressure may give rise totooth stripping, cutting out of square or blade breakage. Insufficient feed pressure may cause the saw teeth to slide and not cut the workpiece, resulting in overheating and rapid wear. A general rule is to use the highest possiblefeed pressure while reducing the stroke rate for efficient cutting.

Problem

Maximum rigidity of the workpiece is essential for effective performance. Any movement of the work away from the line of cut while sawing will result in badly chipped teeth, or probable fracture of the blade. Attention to these points will give longer blade life, more efficient cutting, and a reduction in scrap.

Maximum rigidity of the workpiece is essential for effective performance. Any movement of the work away from the line of the cut hile sawing will result in badly chiped teeth, or probable fracture of the blade. Attention to these points will give longer blade life, more efficient cutting, and a reduction in scrap.

GALVANIC COMPATABILITY OF DIFFERING METAL TYPES

Galvanic corrosion is caused when two metals are in electrical contact with the precence of an electrolyte.
The boxed number below denotes the compatability of two metals. Numbers range between 34 and 0, with a number closer to zero the most favourable (0 is ideal). When fastening an aluminium 1100 material, then aluminium 2017-T (2) has better compatability than Steel (3). Aluminium 1100 would be the ideal material of choice to fasten to Aluminium 1100 (0).

Corrosion Order of Alloys	Magnesium	Magnesium Alloys	Zinc	Aluminium, 1100	Cadium	Aluminium, 2017-T	Steel or Iron	Cast Iron	Stainless, chrome (Active)	Ni-resist	Stainless, 18Cr, 8 Ni (Active)	Stainless - 18Cr, 8Ni, 3Mo (Active)	Hastelloy C	Lead-tin Solders	Lead	Tin	Nickel (active)	Inconel (active)	Hastelloy A	Hastelloy B	Brasses	Copper	Bronzes	Copper-Nickel Alloys	Monel	Silver Solder	Nickel (Passive)	Inconel (Passive)	Stainless, chrome (Passive)	Stainless - 18Cr, 8Ni (Passive)	Stainless - 18Cr, 8Ni, 3Mo (Passive)	Silver	Graphite	Gold	Platinum
Platinum	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Gold	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	14	12	11	10	9	8	8	6	6	5	4	2	2	0	
Graphite	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	4	2	2	0		
Silver	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0			
Stainless-18Cr,8Ni,3Mo (Passive)	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0				
Stainless-18Cr,8Ni (Passive)	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0					
Stainless, chrome (Passive)	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0						
Inconel (Passive)	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0							
Nickel (Passive)	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0								
Silver Solder	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0									
Monel	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0										
Copper-Nickel Alloys	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0											
Bronzes	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0												
Copper	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0													
Brasses	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0														
Hastelloy B	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0															
Hastelloy A	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0																
Inconel (Active)	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0																	
Nickel (Active)	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0																		
Tin	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0																			
Lead	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0																				
Lead-tin Solders	13	12	11	10	9	8	7	6	5	4	3	2	1	0																					
Hastelloy C	12	11	10	9	8	7	6	5	4	3	2	1	0																						
Stainless-18Cr,8Ni,3Mo (Active)	11	10	9	8	7	6	5	4	3	2	1	0																							
Stainless, 18Cr, 8 Ni (Active)	10	9	8	7	6	5	4	3	2	1	0																								
Ni-resist	9	8	7	6	5	4	3	2	1	0																									
Stainless, chrome (Active)	8	7	6	5	4	3	2	1	0																										
Cast Iron	7	6	5	4	3	2	1	0																											
Steel or Iron	6	5	4	3	2	1	0																												
Aluminium, 2017-T	5	4	3	2	1	0																													
Cadium	4	3	2	1	0																														
Aluminium, 1100	3	2	1	0																															
Zinc	2	1	0																																
Magnesium Alloys	1	0																																	
Magnesium	0																																		

The less noble metal will be the metal that will be sacrificed (the anode), while the metal that is more noble will be protected (cathodic).
If Aluminium 1100 and Zinc are joined together then zinc will be anodic and corode more rapidly, while the aluminium will be cathodic.
Corrosion can be detered by isolating cracks, crevices, sharp bends, scale and surface deposits between interface areas where possible.