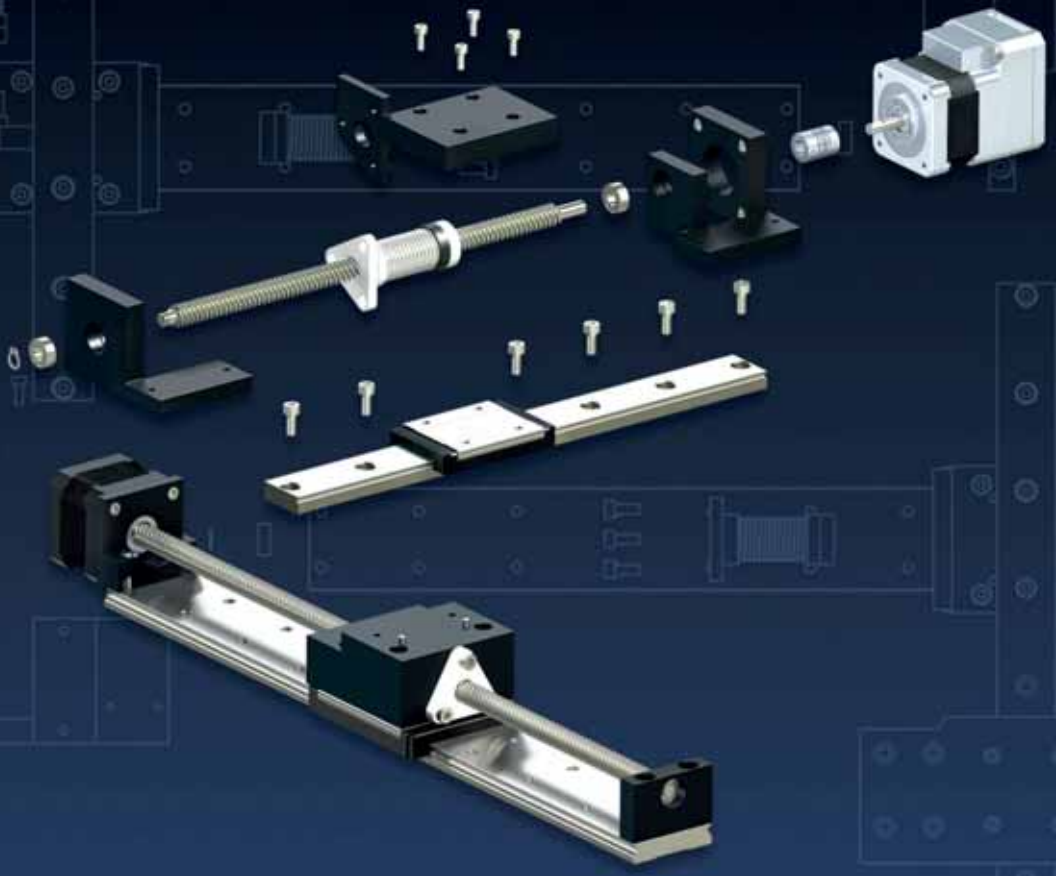
Reliance®
Precision Limited



Precise Motion Control Solutions

Brass, Ground and Precision Spur Gears

Contents

Brass, Ground and Precision Spur Gears

4

Section Contents

A complete precision gear range

With over 50 years of experience in the design and manufacture of precision spur gears, Reliance has developed an extensive range to suit a wide variety of customer applications. Alongside precision cut gears we offer hardened and precision ground gears for applications requiring higher load capacity and a very competitive range of brass gears for applications where there is a need to balance accuracy and load capacity against cost. Typical diameters range from 5 mm to 100 mm.

Precision cut gears

Our precision cut spur gear range offers anti-backlash, spur, hubless and hardened gears with many hundreds of thousands of combinations of bore size, face width, material, module and number of teeth. In line with our commitment to meeting customer requirements, any tooth number that can be configured for any given gear diameter can be supplied. This allows our customers ultimate flexibility when selecting their gear ratio and the ability to use the smallest or most practical centre distance.

Gears are available in standard modules from 0.2–1.5, bore sizes from 2–25 mm and to a minimum quality class of AQ10 (for definition of AQ10 see page T4-1). Manufactured from aerospace standard stainless steel and aluminium alloy Reliance standard precision gears can be specified for the most demanding applications. For customers that require higher transmission accuracy, to measure position more accurately or extend life in high speed applications, all Reliance's precision gears are available up to quality AQ14.

For applications that require more torque transmission, a standard range of 17-4 PH, hardened to condition H1025, is available. Further material choices are offered, commonly PEEK or acetal can be specified where low noise and/or insulating properties are required. For other application-specific requirements our engineers can help in the selection of exotic materials or add some customisation features to the component.

Reliance anti-backlash gears have been developed over a number of years and are manufactured with a two-piece construction. The fixed plate and hub are manufactured in one piece, which provides maximum integrity when attaching the gear to a shaft. This manufacturing method is far superior when compared to alternative anti-backlash designs which use a three-piece construction, with the hub and fixed plate joined together by a metal deformation technique such as swaging or riveting.

Plain precision gears

Anti-backlash gears

Hubless gears

Contact us for product information, design support and custom solutions

sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Modification service

Reliance has a dedicated manufacturing cell where modifications can be carried out quickly and economically to customer specification. Typically weight reduction features or alternative fixing methods are requested – please contact us to discuss your requirement.

On-line gear builder

For fast, efficient and accurate selection of our precision cut gears we provide a gear builder facility which is available to use on-line. The on-line selection process gives all the required technical and commercial information appropriate to the gear specification, including a 3D image, drawing, part description and item number, together with the price and delivery lead time.

Gear manufacture and test

On-line gear builder

Precision ground gears

The precision ground spur gear range, manufactured from chromium molybdenum steel hardened to 49-55 HRc, and with tooth profiles manufactured to ISO grade 5, is ideal for higher loaded, mechatronic applications. Available from stock or on short delivery the bore and the faces of the gears are purposely left soft to enable quick modification to suit alternative fixing or shaft diameter requirements.

Brass gears

The brass spur gear range is also available from stock or on a short delivery and provides customers with an economical alternative for less demanding applications. Manufactured from high grade brass, ISO CuZn39Pb3, the standard range of spur gears also includes pinion shafts with tooth numbers as low as 10 and a small range of internal gears (see page 5-15).

Design and manufacture of custom gears

Alongside our extensive range of standard catalogue gears Reliance also designs and manufactures bespoke gears to customers' requirements. Reliance has over 50 years of experience in gearing, ranging from high accuracy, long life applications such as radar and optical payload applications, to very short life highly loaded aerospace applications.

Gear specialists at Reliance are very happy to offer advice on the design strategy for custom gears and can help with datum positioning and dimensioning to achieve the best possible accuracy at the most economical cost. For example, simply utilising the mounting feature of the gear as the datum for the gear cutting operation avoids unnecessary tolerance build ups and interim manufacturing operations.

Reliance's engineers have a detailed knowledge of the principles of gear tooth generation and the resulting contact conditions. This enables them to work with engineers in other industries to offer advice on the modification of gear teeth to provide bespoke contact conditions that enhance the performance of the gear pair, or to achieve an imposed centre distance within the constraints of the design environment.

Typical market areas are aerospace, space, defence and down-hole instrumentation where performance-critical applications demand a deep understanding of gear geometry. Both external, internal and combination gears can be manufactured using high accuracy hobbing and shaping machines with a module range of between 0.2 to 1.5 module and a diameter range from 2 to 330 mm.

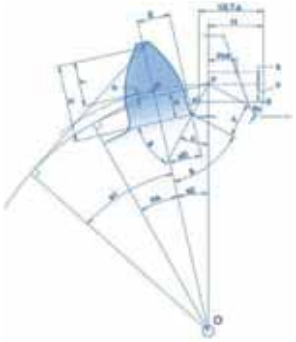
Custom gears can be manufactured from a range of materials such as, but not limited to, stainless steel, aluminium alloy, precipitation hardening steel, phosphor bronze, titanium and other speciality metals, as well as high performance polymers such as PEEK. Reliance also works very closely with accredited and formally approved surface coating and heat treatment specialists to provide most industry standard processes.

During manufacturing all gears are individually inspected for gear quality and size using a dual flank inspection process with maximum accuracies of 3 microns tooth-to-tooth and 5 microns total composite error. For demanding applications gears are inspected for lead, pitch and profile on our Klingelnberg P40 gear measuring machine.

Our expertise also extends to the associated structure in geared assemblies where we can provide design for manufacture advice or a full design from specification service. Typical projects can involve concept design, development testing, prototype manufacture, performance validation testing and production manufacture with final acceptance testing, see page 3-28.

Contact us for product information, design support and custom solutions

sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk



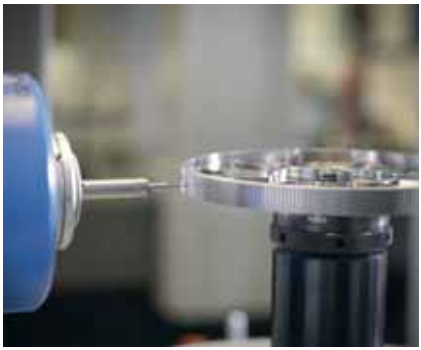
Custom gear design and development

Satellite gear, manufactured for SSTL, working in orbit

Custom gear manufacture

Gear deburring

Gear testing



Gear metrology

Wear and coating life test

Precision Gear Part Numbering

AP 05 S1 B4 F45 A - 55 B

Gear Type

Pin hub	**P**
Clamp hub	**C**
Hubless	**F**
Anti-backlash pin hub	**AP**
Anti-backlash clamp hub	**AC**
Anti-backlash clamp hub, miniature	**AR**

Drawing Issue / Separator / Number of Teeth

Gear Quality

AQ14	**A**
AQ12	**B**
AQ11	**C**
AQ10 (leave blank)*	

*Standard accuracy AQ10 (1.25 Mod, 20DP or finer), AQ9 (1.5 Mod, 16 DP or coarser).

Pitch

Module		DP	
1.5	**150**	16	**16#**
1.25	**125**	20	**20#**
1.0	**10**	32	**32#**
0.8	**08**	48	**48#**
0.6	**06**	64	**64#**
0.5	**05**	72	**72#**
0.4	**04**	80	**80#**
0.3	**03**	96	**96#**
0.25	**025**	100	**100#**
0.2	**02**	120	**120#**
1 mmCP	**1M**	1/10 "CP	**31#**
2 mmCP	**2M**	1/20 "CP	**62#**
2.5 mmCP	**25M**		

Face Width

2 mm	**F2**
3 mm	**F3**
3.3 mm	**F33**
3.5 mm	**F35**
4 mm	**F4**
4.5 mm	**F45**
5 mm	**F5**
6 mm	**F6**
6.5 mm	**F61**
7 mm	**F7**
8 mm	**F8**
8.9 mm	**F89**
10 mm	**F10**
12 mm	**F12**

Material Code

Aluminium alloy	**A1**
Stainless steel 303	**S1**
Stainless steel 316	**S2#**
Hardened stainless steel 17-4PH	**S8**
Brass	**B2#**
Acetal	**D1#**
PEEK polymer	**P1#**

Bore

Metric		Imperial	
2 mm	**B2**	5/64"	**B078#**
3 mm	**B3**	1/8"	**B125#**
4 mm	**B4**	0.12"	**B120#**
5 mm	**B5**	3/16"	**B187#**
6 mm	**B6**	1/4"	**B250#**
8 mm	**B8**	5/16"	**B312#**
10 mm	**B10**	3/8"	**B375#**
12 mm	**B12**	11/16"	**B687#**
15 mm	**B15**	1"	**B1000#**

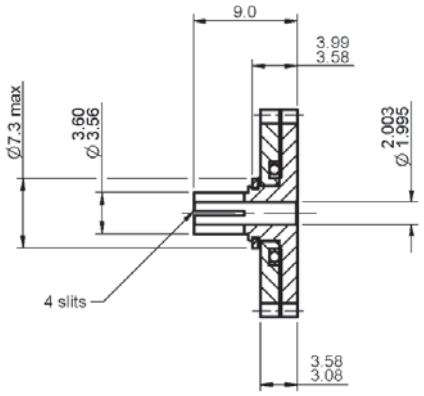
# indicates non-standard items. Please enquire for details regarding large modules, imperial pitches and bores, and alternative materials.

Part numbering information on this page refers to the precision gears from pagse 4-7 to 4-59.

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Clamp hub gears: page 4-36 to 4-50
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Part number selection table

Example Part No:- AR06S1B2F33A- 25

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
0.8	AR08S1B2F33A-	AR08A1B2F33A-	16 †	21
0.6	AR06S1B2F33A-	AR06A1B2F33A-	21	29
0.5	AR05S1B2F33A-	AR05A1B2F33A-	24	36
0.4	AR04S1B2F33A-	AR04A1B2F33A-	30	45
0.3	AR03S1B2F33A-	AR03A1B2F33A-	38	61
0.25	AR025S1B2F33A-	AR025A1B2F33A-	45	74
0.2	AR02S1B2F33A-	AR02A1B2F33A-	56	93

† Gears of 16 teeth will be modified - see page T4-8

Features and options

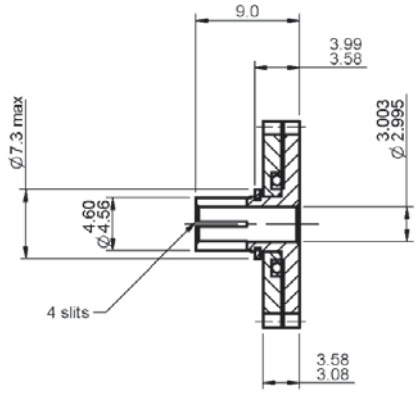
- Gear quality AQ10 as standard - see page T4-1
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°

Associated Products
Clamp hub gears: page 4-36 to 4-50
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4



Part number selection table

Example Part No:- AR06S1B3F33A- 25

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
0.8	AR08S1B3F33A-	AR08A1B3F33A-	16 †	21
0.6	AR06S1B3F33A-	AR06A1B3F33A-	21	29
0.5	AR05S1B3F33A-	AR05A1B3F33A-	24	36
0.4	AR04S1B3F33A-	AR04A1B3F33A-	30	45
0.3	AR03S1B3F33A-	AR03A1B3F33A-	38	61
0.25	AR025S1B3F33A-	AR025A1B3F33A-	45	74
0.2	AR02S1B3F33A-	AR02A1B3F33A-	56	93

† Gears of 16 teeth or fewer will be modified - see page T4-8

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

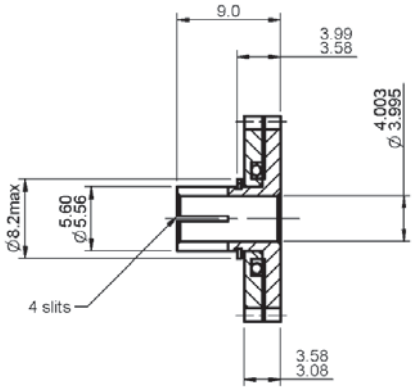
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Clamp hub gears: page 4-36 to 4-50
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Part number selection table

Example Part No:- AR06S1B4F33A- 25

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
0.8	AR08S1B4F33A-	AR08A1B4F33A-	18	21
0.6	AR06S1B4F33A-	AR06A1B4F33A-	22	29
0.5	AR05S1B4F33A-	AR05A1B4F33A-	26	36
0.4	AR04S1B4F33A-	AR04A1B4F33A-	32	45
0.3	AR03S1B4F33A-	AR03A1B4F33A-	41	61
0.25	AR025S1B4F33A-	AR025A1B4F33A-	49	74
0.2	AR02S1B4F33A-	AR02A1B4F33A-	60	93

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

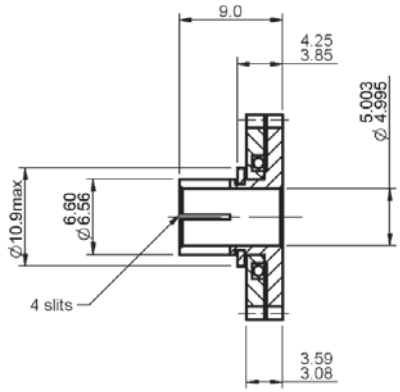
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Anti-Backlash Pinions Miniature

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°

Associated Products
Clamp hub gears: page 4-36 to 4-50
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4



Part number selection table

Example Part No:- AR06S1B5F33A- 25

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
0.8	AR08S1B5F33A-	AR08A1B5F33A-	19	21
0.6	AR06S1B5F33A-	AR06A1B5F33A-	24	29
0.5	AR05S1B5F33A-	AR05A1B5F33A-	28	36
0.4	AR04S1B5F33A-	AR04A1B5F33A-	34	45
0.3	AR03S1B5F33A-	AR03A1B5F33A-	44	61
0.25	AR025S1B5F33A-	AR025A1B5F33A-	52	74
0.2	AR02S1B5F33A-	AR02A1B5F33A-	65	93

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

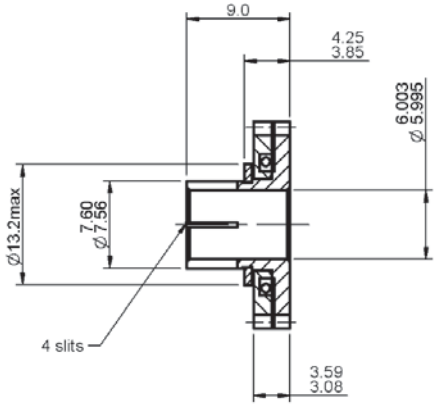
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Clamp hub gears: page 4-36 to 4-50
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Part number selection table

Example Part No:- AR06S1B6F33A- 26

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
0.8	AR08S1B6F33A-	AR08A1B6F33A-	21	21
0.6	AR06S1B6F33A-	AR06A1B6F33A-	26	29
0.5	AR05S1B6F33A-	AR05A1B6F33A-	31	36
0.4	AR04S1B6F33A-	AR04A1B6F33A-	38	45
0.3	AR03S1B6F33A-	AR03A1B6F33A-	49	61
0.25	AR025S1B6F33A-	AR025A1B6F33A-	58	74
0.2	AR02S1B6F33A-	AR02A1B6F33A-	72	93

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

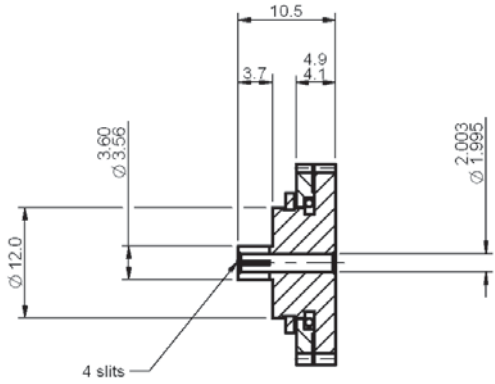
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Anti-Backlash Clamp Hub Pinions

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°

Associated Products
Clamp hub gears: page 4-36 to 4-50
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4



Part number selection table

Example Part No:- AC06S1B2F45A- 35

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AC150S1B2F45A-	AC150A1B2F45A-	14 †	22
1.25	AC125S1B2F45A-	AC125A1B2F45A-	16 †	27
1.0	AC10S1B2F45A-	AC10A1B2F45A-	19	35
0.8	AC08S1B2F45A-	AC08A1B2F45A-	23	44
0.6	AC06S1B2F45A-	AC06A1B2F45A-	29	59
0.5	AC05S1B2F45A-	AC05A1B2F45A-	34	72
0.4	AC04S1B2F45A-	AC04A1B2F45A-	42	90
0.3	AC03S1B2F45A-	AC03A1B2F45A-	55	121
0.25	AC025S1B2F45A-	AC025A1B2F45A-	65	146
0.2	AC02S1B2F45A-	AC02A1B2F45A-	80	183

† Gears of 16 teeth or fewer will be modified - see page T4-8

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

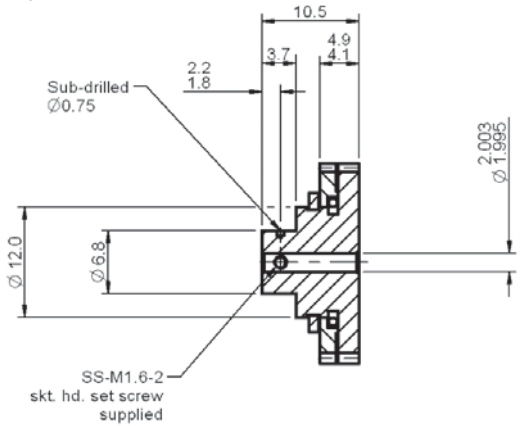
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Pin hub gears: page 4-37 to 4-51
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Part number selection table

Example Part No:- AP06S1B2F45A- 35

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AP150S1B2F45A-	AP150A1B2F45A-	14 †	22
1.25	AP125S1B2F45A-	AP125A1B2F45A-	16 †	27
1.0	AP10S1B2F45A-	AP10A1B2F45A-	19	35
0.8	AP08S1B2F45A-	AP08A1B2F45A-	23	44
0.6	AP06S1B2F45A-	AP06A1B2F45A-	29	59
0.5	AP05S1B2F45A-	AP05A1B2F45A-	34	72
0.4	AP04S1B2F45A-	AP04A1B2F45A-	42	90
0.3	AP03S1B2F45A-	AP03A1B2F45A-	55	121
0.25	AP025S1B2F45A-	AP025A1B2F45A-	65	146
0.2	AP02S1B2F45A-	AP02A1B2F45A-	80	183

† Gears of 16 teeth or fewer will be modified - see page T4-8

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

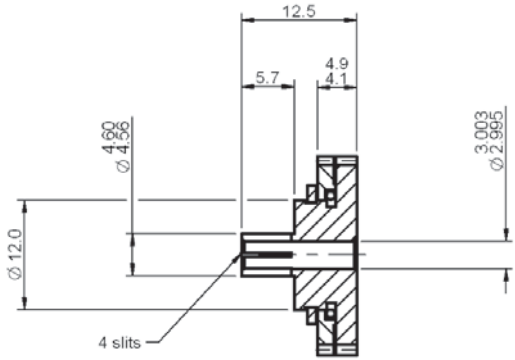
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Anti-Backlash Clamp Hub Pinions

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°

Associated Products
Clamp hub gears: page 4-36 to 4-50
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4



Part number selection table

Example Part No:- AC06S1B3F45A- 35

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AC150S1B3F45A-	AC150A1B3F45A-	14 †	22
1.25	AC125S1B3F45A-	AC125A1B3F45A-	16 †	27
1.0	AC10S1B3F45A-	AC10A1B3F45A-	19	35
0.8	AC08S1B3F45A-	AC08A1B3F45A-	23	44
0.6	AC06S1B3F45A-	AC06A1B3F45A-	29	59
0.5	AC05S1B3F45A-	AC05A1B3F45A-	34	72
0.4	AC04S1B3F45A-	AC04A1B3F45A-	42	90
0.3	AC03S1B3F45A-	AC03A1B3F45A-	55	121
0.25	AC025S1B3F45A-	AC025A1B3F45A-	65	146
0.2	AC02S1B3F45A-	AC02A1B3F45A-	80	183

† Gears of 16 teeth or fewer will be modified - see page T4-8

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

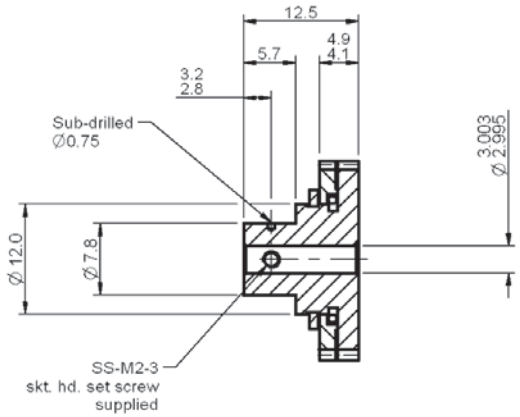
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Pin hub gears: page 4-37 to 4-51
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Part number selection table

Example Part No:- **AP06S1B3F45A-** **35**

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AP150S1B3F45A-	AP150A1B3F45A-	14 †	22
1.25	AP125S1B3F45A-	AP125A1B3F45A-	16 †	27
1.0	AP10S1B3F45A-	AP10A1B3F45A-	19	35
0.8	AP08S1B3F45A-	AP08A1B3F45A-	23	44
0.6	AP06S1B3F45A-	AP06A1B3F45A-	29	59
0.5	AP05S1B3F45A-	AP05A1B3F45A-	34	72
0.4	AP04S1B3F45A-	AP04A1B3F45A-	42	90
0.3	AP03S1B3F45A-	AP03A1B3F45A-	55	121
0.25	AP025S1B3F45A-	AP025A1B3F45A-	65	146
0.2	AP02S1B3F45A-	AP02A1B3F45A-	80	183

† Gears of 16 teeth or fewer will be modified - see page T4-8

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

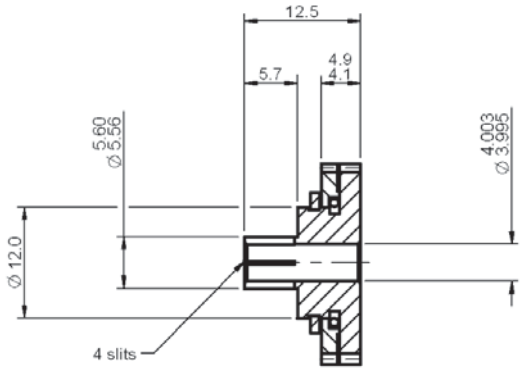
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Anti-Backlash Clamp Hub Pinions

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°

Associated Products
Clamp hub gears: page 4-36 to 4-50
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4



Part number selection table

Example Part No:- **AC06S1B4F45A- 35**

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AC150S1B4F45A-	AC150A1B4F45A-	14 †	22
1.25	AC125S1B4F45A-	AC125A1B4F45A-	16 †	27
1.0	AC10S1B4F45A-	AC10A1B4F45A-	19	35
0.8	AC08S1B4F45A-	AC08A1B4F45A-	23	44
0.6	AC06S1B4F45A-	AC06A1B4F45A-	29	59
0.5	AC05S1B4F45A-	AC05A1B4F45A-	34	72
0.4	AC04S1B4F45A-	AC04A1B4F45A-	42	90
0.3	AC03S1B4F45A-	AC03A1B4F45A-	55	121
0.25	AC025S1B4F45A-	AC025A1B4F45A-	65	146
0.2	AC02S1B4F45A-	AC02A1B4F45A-	80	183

† Gears of 16 teeth or fewer will be modified - see page T4-8

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

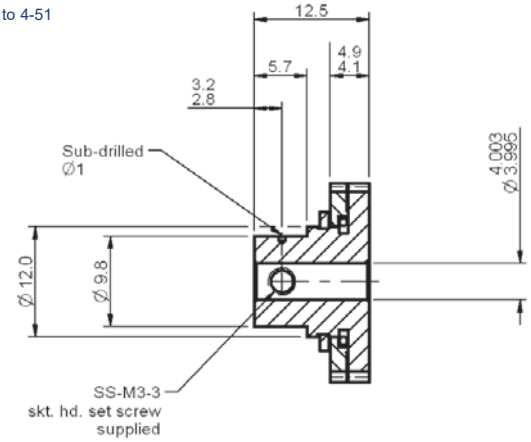
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Pin hub gears: page 4-37 to 4-51
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Part number selection table

Example Part No:- AP06S1B4F45A- 35

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AP150S1B4F45A-	AP150A1B4F45A-	14 †	22
1.25	AP125S1B4F45A-	AP125A1B4F45A-	16 †	27
1.0	AP10S1B4F45A-	AP10A1B4F45A-	19	35
0.8	AP08S1B4F45A-	AP08A1B4F45A-	23	44
0.6	AP06S1B4F45A-	AP06A1B4F45A-	29	59
0.5	AP05S1B4F45A-	AP05A1B4F45A-	34	72
0.4	AP04S1B4F45A-	AP04A1B4F45A-	42	90
0.3	AP03S1B4F45A-	AP03A1B4F45A-	55	121
0.25	AP025S1B4F45A-	AP025A1B4F45A-	65	146
0.2	AP02S1B4F45A-	AP02A1B4F45A-	80	183

† Gears of 16 teeth or fewer will be modified - see page T4-8

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

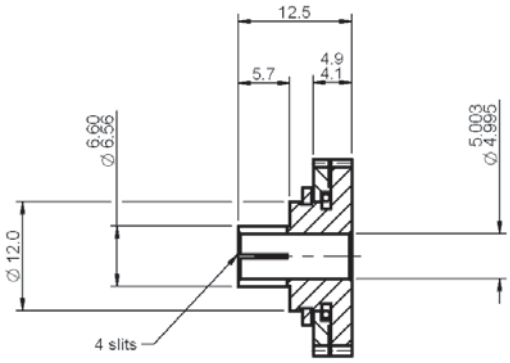
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Anti-Backlash Clamp Hub Pinions

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°

Associated Products
Clamp hub gears: page 4-36 to 4-50
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4



Part number selection table

Example Part No:- AC06S1B5F45A- 35

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AC150S1B5F45A-	AC150A1B5F45A-	14 †	22
1.25	AC125S1B5F45A-	AC125A1B5F45A-	16 †	27
1.0	AC10S1B5F45A-	AC10A1B5F45A-	19	35
0.8	AC08S1B5F45A-	AC08A1B5F45A-	23	44
0.6	AC06S1B5F45A-	AC06A1B5F45A-	29	59
0.5	AC05S1B5F45A-	AC05A1B5F45A-	34	72
0.4	AC04S1B5F45A-	AC04A1B5F45A-	42	90
0.3	AC03S1B5F45A-	AC03A1B5F45A-	55	121
0.25	AC025S1B5F45A-	AC025A1B5F45A-	65	146
0.2	AC02S1B5F45A-	AC02A1B5F45A-	80	183

† Gears of 16 teeth or fewer will be modified - see page T4-8

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

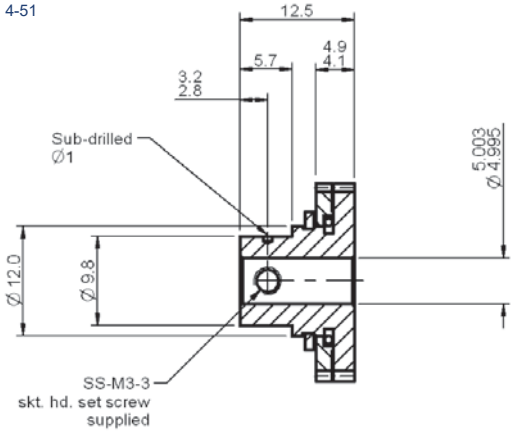
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Pin hub gears: page 4-37 to 4-51
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Part number selection table

Example Part No:- AP06S1B5F45A- 35

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AP150S1B5F45A-	AP150A1B5F45A-	14 †	22
1.25	AP125S1B5F45A-	AP125A1B5F45A-	16 †	27
1.0	AP10S1B5F45A-	AP10A1B5F45A-	19	35
0.8	AP08S1B5F45A-	AP08A1B5F45A-	23	44
0.6	AP06S1B5F45A-	AP06A1B5F45A-	29	59
0.5	AP05S1B5F45A-	AP05A1B5F45A-	34	72
0.4	AP04S1B5F45A-	AP04A1B5F45A-	42	90
0.3	AP03S1B5F45A-	AP03A1B5F45A-	55	121
0.25	AP025S1B5F45A-	AP025A1B5F45A-	65	146
0.2	AP02S1B5F45A-	AP02A1B5F45A-	80	183

† Gears of 16 teeth or fewer will be modified - see page T4-8

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

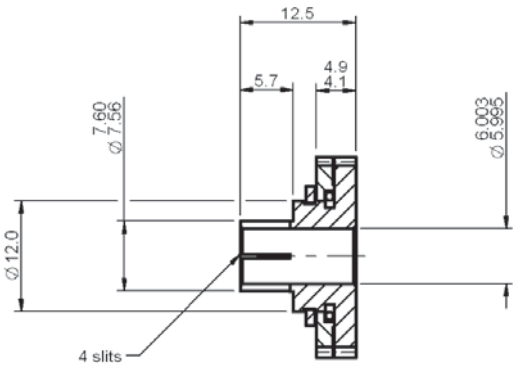
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Anti-Backlash Clamp Hub Pinions

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°

Associated Products
Clamp hub gears: page 4-36 to 4-50
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4



Part number selection table

Example Part No:- AC06S1B6F45A- 35

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AC150S1B6F45A-	AC150A1B6F45A-	14 †	22
1.25	AC125S1B6F45A-	AC125A1B6F45A-	16 †	27
1.0	AC10S1B6F45A-	AC10A1B6F45A-	19	35
0.8	AC08S1B6F45A-	AC08A1B6F45A-	23	44
0.6	AC06S1B6F45A-	AC06A1B6F45A-	29	59
0.5	AC05S1B6F45A-	AC05A1B6F45A-	34	72
0.4	AC04S1B6F45A-	AC04A1B6F45A-	42	90
0.3	AC03S1B6F45A-	AC03A1B6F45A-	55	121
0.25	AC025S1B6F45A-	AC025A1B6F45A-	65	146
0.2	AC02S1B6F45A-	AC02A1B6F45A-	80	183

† Gears of 16 teeth or fewer will be modified - see page T4-8

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

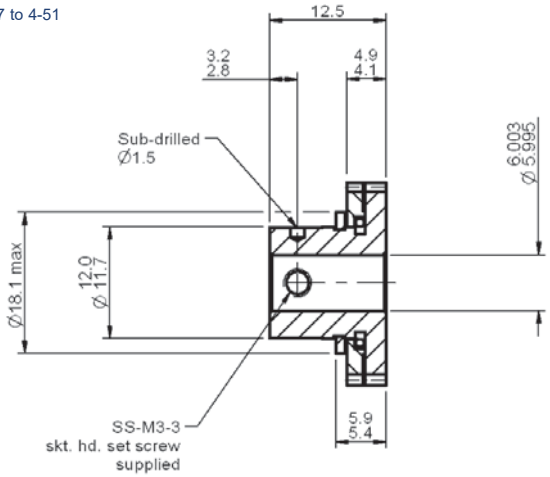
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Pin hub gears: page 4-37 to 4-51
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Part number selection table

Example Part No:- AP06S1B6F45A- 35

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AP150S1B6F45A-	AP150A1B6F45A-	14 †	22
1.25	AP125S1B6F45A-	AP125A1B6F45A-	16 †	27
1.0	AP10S1B6F45A-	AP10A1B6F45A-	19	35
0.8	AP08S1B6F45A-	AP08A1B6F45A-	23	44
0.6	AP06S1B6F45A-	AP06A1B6F45A-	29	59
0.5	AP05S1B6F45A-	AP05A1B6F45A-	34	72
0.4	AP04S1B6F45A-	AP04A1B6F45A-	42	90
0.3	AP03S1B6F45A-	AP03A1B6F45A-	55	121
0.25	AP025S1B6F45A-	AP025A1B6F45A-	65	146
0.2	AP02S1B6F45A-	AP02A1B6F45A-	80	183

† Gears of 16 teeth or fewer will be modified - see page T4-8

Features and options

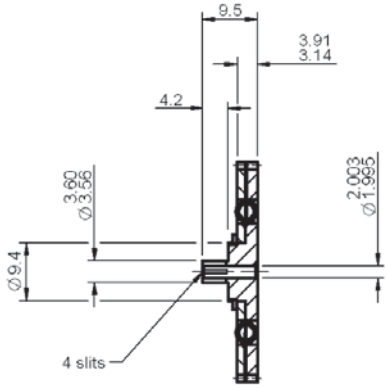
- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Anti-Backlash Clamp Hub Gears

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Associated Products
Clamp hub gears: page 4-36 to 4-50
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4

Part number selection table

Example Part No:- AC06S1B2F35A- 65

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AC150S1B2F35A-	AC150A1B2F35A-	24	46
1.25	AC125S1B2F35A-	AC125A1B2F35A-	28	56
1.0	AC10S1B2F35A-	AC10A1B2F35A-	34	70
0.8	AC08S1B2F35A-	AC08A1B2F35A-	42	88
0.6	AC06S1B2F35A-	AC06A1B2F35A-	55	119
0.5	AC05S1B2F35A-	AC05A1B2F35A-	66	143
0.4	AC04S1B2F35A-	AC04A1B2F35A-	81	179
0.3	AC03S1B2F35A-	AC03A1B2F35A-	107	240
0.25	AC025S1B2F35A-	AC025A1B2F35A-	128	289
0.2	AC02S1B2F35A-	AC02A1B2F35A-	159	361

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

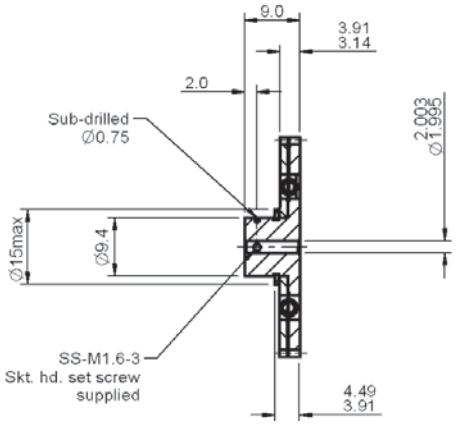
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Pin hub gears: page 4-37 to 4-51
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Part number selection table

Example Part No:- AP06S1B2F35A- 65

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AP150S1B2F35A-	AP150A1B2F35A-	24	46
1.25	AP125S1B2F35A-	AP125A1B2F35A-	28	56
1.0	AP10S1B2F35A-	AP10A1B2F35A-	34	70
0.8	AP08S1B2F35A-	AP08A1B2F35A-	42	88
0.6	AP06S1B2F35A-	AP06A1B2F35A-	55	119
0.5	AP05S1B2F35A-	AP05A1B2F35A-	66	143
0.4	AP04S1B2F35A-	AP04A1B2F35A-	81	179
0.3	AP03S1B2F35A-	AP03A1B2F35A-	107	240
0.25	AP025S1B2F35A-	AP025A1B2F35A-	128	289
0.2	AP02S1B2F35A-	AP02A1B2F35A-	159	361

Features and options

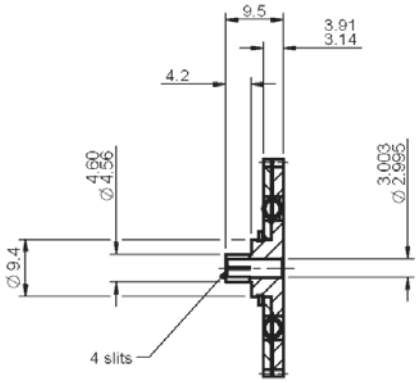
- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Anti-Backlash Clamp Hub Gears

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Associated Products
Clamp hub gears: page 4-36 to 4-50
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4

Part number selection table

Example Part No:- AC06S1B3F35A- 65

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AC150S1B3F35A-	AC150A1B3F35A-	24	46
1.25	AC125S1B3F35A-	AC125A1B3F35A-	28	56
1.0	AC10S1B3F35A-	AC10A1B3F35A-	34	70
0.8	AC08S1B3F35A-	AC08A1B3F35A-	42	88
0.6	AC06S1B3F35A-	AC06A1B3F35A-	55	119
0.5	AC05S1B3F35A-	AC05A1B3F35A-	66	143
0.4	AC04S1B3F35A-	AC04A1B3F35A-	81	179
0.3	AC03S1B3F35A-	AC03A1B3F35A-	107	240
0.25	AC025S1B3F35A-	AC025A1B3F35A-	128	289
0.2	AC02S1B3F35A-	AC02A1B3F35A-	159	361

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

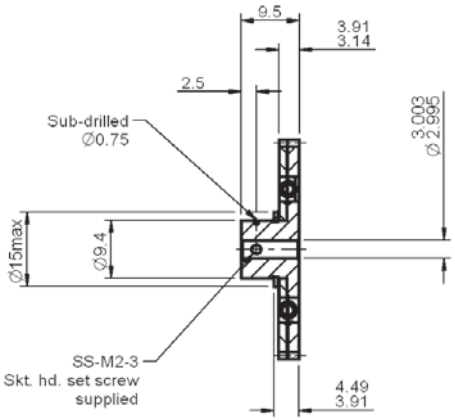
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Pin hub gears: page 4-37 to 4-51
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Part number selection table

Example Part No:- AP06S1B3F35A- 65

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AP150S1B3F35A-	AP150A1B3F35A-	24	46
1.25	AP125S1B3F35A-	AP125A1B3F35A-	28	56
1.0	AP10S1B3F35A-	AP10A1B3F35A-	34	70
0.8	AP08S1B3F35A-	AP08A1B3F35A-	42	88
0.6	AP06S1B3F35A-	AP06A1B3F35A-	55	119
0.5	AP05S1B3F35A-	AP05A1B3F35A-	66	143
0.4	AP04S1B3F35A-	AP04A1B3F35A-	81	179
0.3	AP03S1B3F35A-	AP03A1B3F35A-	107	240
0.25	AP025S1B3F35A-	AP025A1B3F35A-	128	289
0.2	AP02S1B3F35A-	AP02A1B3F35A-	159	361

Features and options

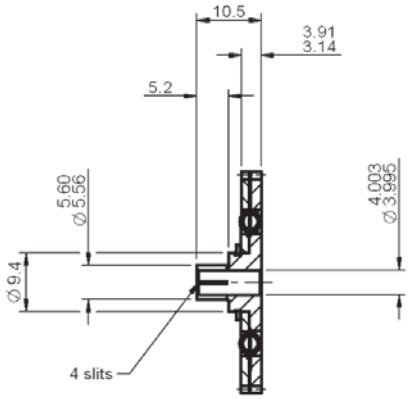
- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Anti-Backlash Clamp Hub Gears

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Associated Products
Clamp hub gears: page 4-36 to 4-50
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4

Part number selection table

Example Part No:- **AC06S1B4F35A- 65**

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AC150S1B4F35A-	AC150A1B4F35A-	24	46
1.25	AC125S1B4F35A-	AC125A1B4F35A-	28	56
1.0	AC10S1B4F35A-	AC10A1B4F35A-	34	70
0.8	AC08S1B4F35A-	AC08A1B4F35A-	42	88
0.6	AC06S1B4F35A-	AC06A1B4F35A-	55	119
0.5	AC05S1B4F35A-	AC05A1B4F35A-	66	143
0.4	AC04S1B4F35A-	AC04A1B4F35A-	81	179
0.3	AC03S1B4F35A-	AC03A1B4F35A-	107	240
0.25	AC025S1B4F35A-	AC025A1B4F35A-	128	289
0.2	AC02S1B4F35A-	AC02A1B4F35A-	159	361

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

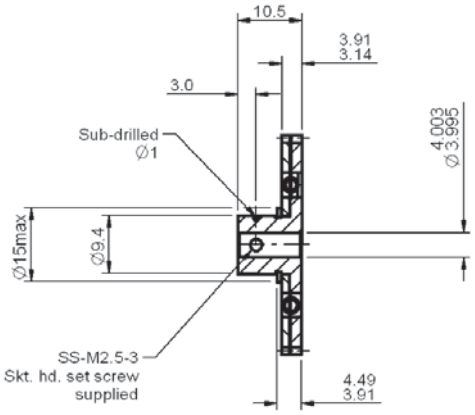
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Pin hub gears: page 4-37 to 4-51
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Part number selection table

Example Part No:- AP06S1B4F35A- 65

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AP150S1B4F35A-	AP150A1B4F35A-	24	46
1.25	AP125S1B4F35A-	AP125A1B4F35A-	28	56
1.0	AP10S1B4F35A-	AP10A1B4F35A-	34	70
0.8	AP08S1B4F35A-	AP08A1B4F35A-	42	88
0.6	AP06S1B4F35A-	AP06A1B4F35A-	55	119
0.5	AP05S1B4F35A-	AP05A1B4F35A-	66	143
0.4	AP04S1B4F35A-	AP04A1B4F35A-	81	179
0.3	AP03S1B4F35A-	AP03A1B4F35A-	107	240
0.25	AP025S1B4F35A-	AP025A1B4F35A-	128	289
0.2	AP02S1B4F35A-	AP02A1B4F35A-	159	361

Features and options

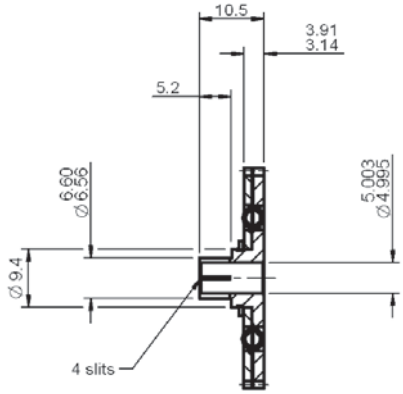
- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Anti-Backlash Clamp Hub Gears

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Associated Products
Clamp hub gears: page 4-36 to 4-50
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4

Part number selection table

Example Part No:- **AC06S1B5F35A- 65**

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AC150S1B5F35A-	AC150A1B5F35A-	24	46
1.25	AC125S1B5F35A-	AC125A1B5F35A-	28	56
1.0	AC10S1B5F35A-	AC10A1B5F35A-	34	70
0.8	AC08S1B5F35A-	AC08A1B5F35A-	42	88
0.6	AC06S1B5F35A-	AC06A1B5F35A-	55	119
0.5	AC05S1B5F35A-	AC05A1B5F35A-	66	143
0.4	AC04S1B5F35A-	AC04A1B5F35A-	81	179
0.3	AC03S1B5F35A-	AC03A1B5F35A-	107	240
0.25	AC025S1B5F35A-	AC025A1B5F35A-	128	289
0.2	AC02S1B5F35A-	AC02A1B5F35A-	159	361

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

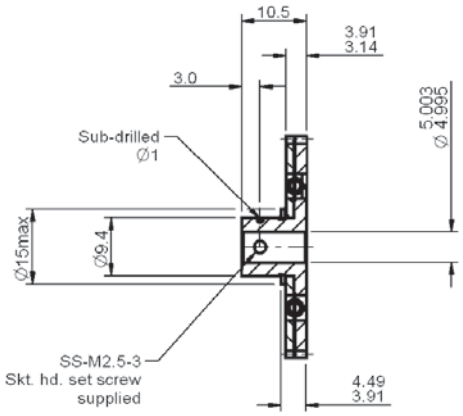
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Pin hub gears: page 4-37 to 4-51
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Part number selection table

Example Part No:- AP06S1B5F35A- 65

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AP150S1B5F35A-	AP150A1B5F35A-	24	46
1.25	AP125S1B5F35A-	AP125A1B5F35A-	28	56
1.0	AP10S1B5F35A-	AP10A1B5F35A-	34	70
0.8	AP08S1B5F35A-	AP08A1B5F35A-	42	88
0.6	AP06S1B5F35A-	AP06A1B5F35A-	55	119
0.5	AP05S1B5F35A-	AP05A1B5F35A-	66	143
0.4	AP04S1B5F35A-	AP04A1B5F35A-	81	179
0.3	AP03S1B5F35A-	AP03A1B5F35A-	107	240
0.25	AP025S1B5F35A-	AP025A1B5F35A-	128	289
0.2	AP02S1B5F35A-	AP02A1B5F35A-	159	361

Features and options

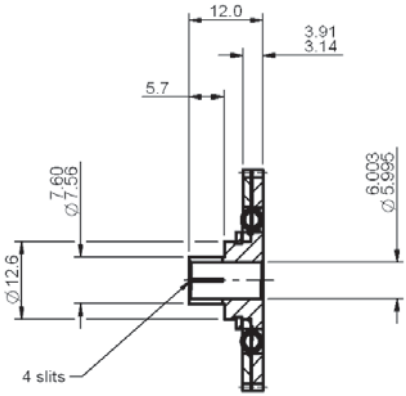
- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Anti-Backlash Clamp Hub Gears

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Associated Products
Clamp hub gears: page 4-36 to 4-50
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4

Part number selection table

Example Part No:- AC06S1B6F35A- 65

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AC150S1B6F35A-	AC150A1B6F35A-	24	46
1.25	AC125S1B6F35A-	AC125A1B6F35A-	28	56
1.0	AC10S1B6F35A-	AC10A1B6F35A-	34	70
0.8	AC08S1B6F35A-	AC08A1B6F35A-	42	88
0.6	AC06S1B6F35A-	AC06A1B6F35A-	55	119
0.5	AC05S1B6F35A-	AC05A1B6F35A-	66	143
0.4	AC04S1B6F35A-	AC04A1B6F35A-	81	179
0.3	AC03S1B6F35A-	AC03A1B6F35A-	107	240
0.25	AC025S1B6F35A-	AC025A1B6F35A-	128	289
0.2	AC02S1B6F35A-	AC02A1B6F35A-	159	361

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

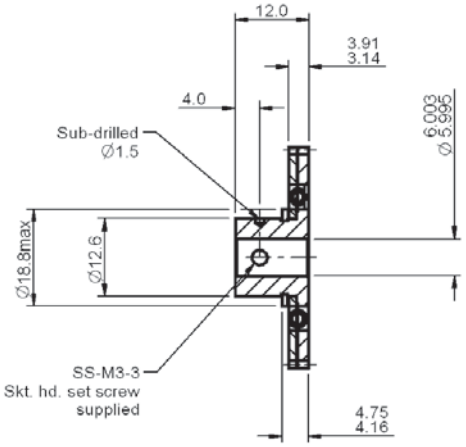
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Pin hub gears: page 4-37 to 4-51
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Part number selection table

Example Part No:- AP06S1B6F35A- 65

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AP150S1B6F35A-	AP150A1B6F35A-	24	46
1.25	AP125S1B6F35A-	AP125A1B6F35A-	28	56
1.0	AP10S1B6F35A-	AP10A1B6F35A-	34	70
0.8	AP08S1B6F35A-	AP08A1B6F35A-	42	88
0.6	AP06S1B6F35A-	AP06A1B6F35A-	55	119
0.5	AP05S1B6F35A-	AP05A1B6F35A-	66	143
0.4	AP04S1B6F35A-	AP04A1B6F35A-	81	179
0.3	AP03S1B6F35A-	AP03A1B6F35A-	107	240
0.25	AP025S1B6F35A-	AP025A1B6F35A-	128	289
0.2	AP02S1B6F35A-	AP02A1B6F35A-	159	361

Features and options

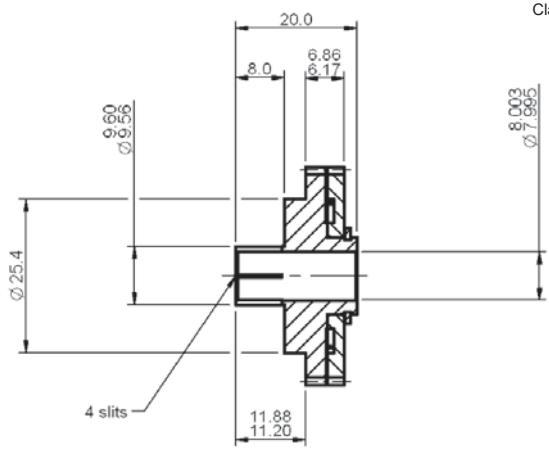
- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Anti-Backlash Clamp Hub Gears

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Associated Products
Clamp hub gears: page 4-36 to 4-50
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4

Part number selection table

Example Part No:- AC06S1B8F61A- 90

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AC150S1B8F61A-	AC150A1B8F61A-	21	75
1.25	AC125S1B8F61A-	AC125A1B8F61A-	25	91
1.0	AC10S1B8F61A-	AC10A1B8F61A-	30	114
0.8	AC08S1B8F61A-	AC08A1B8F61A-	37	143
0.6	AC06S1B8F61A-	AC06A1B8F61A-	48	192
0.5	AC05S1B8F61A-	AC05A1B8F61A-	56	230
0.4	AC04S1B8F61A-	AC04A1B8F61A-	70	289
0.3	AC03S1B8F61A-	AC03A1B8F61A-	92	386
0.25	AC025S1B8F61A-	AC025A1B8F61A-	110	463
0.2	AC02S1B8F61A-	AC02A1B8F61A-	136	580

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

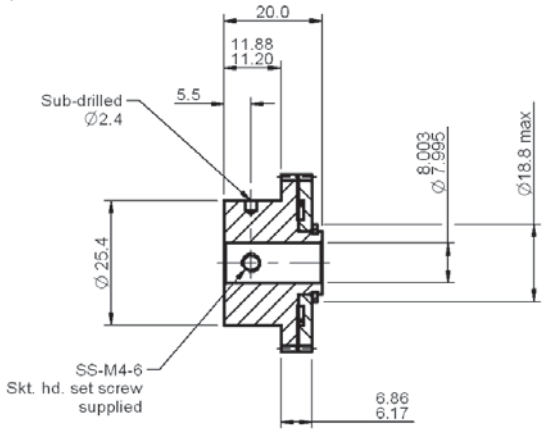
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Pin hub gears: page 4-37 to 4-51
Shafts: page 11-1
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Part number selection table

Example Part No:- AP06S1B8F61A- 90

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AP150S1B8F61A-	AP150A1B8F61A-	21	75
1.25	AP125S1B8F61A-	AP125A1B8F61A-	25	91
1.0	AP10S1B8F61A-	AP10A1B8F61A-	30	114
0.8	AP08S1B8F61A-	AP08A1B8F61A-	37	143
0.6	AP06S1B8F61A-	AP06A1B8F61A-	48	192
0.5	AP05S1B8F61A-	AP05A1B8F61A-	56	230
0.4	AP04S1B8F61A-	AP04A1B8F61A-	70	289
0.3	AP03S1B8F61A-	AP03A1B8F61A-	92	386
0.25	AP025S1B8F61A-	AP025A1B8F61A-	110	463
0.2	AP02S1B8F61A-	AP02A1B8F61A-	136	580

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

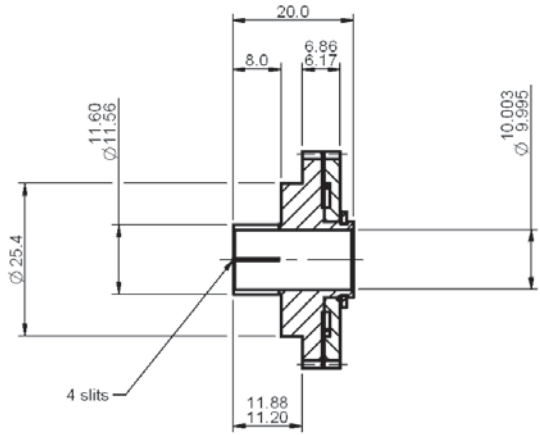
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Anti-Backlash Clamp Hub Gears

All dimensions in mm
General tolerances ±0.13mm
Pressure angle 20°

Associated Products
Clamp hub gears: page 4-36 to 4-50
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4



Part number selection table

Example Part No:- AC06S1B10F61A- 90

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AC150S1B10F61A-	AC150A1B10F61A-	21	75
1.25	AC125S1B10F61A-	AC125A1B10F61A-	25	91
1.0	AC10S1B10F61A-	AC10A1B10F61A-	30	114
0.8	AC08S1B10F61A-	AC08A1B10F61A-	37	143
0.6	AC06S1B10F61A-	AC06A1B10F61A-	48	192
0.5	AC05S1B10F61A-	AC05A1B10F61A-	56	230
0.4	AC04S1B10F61A-	AC04A1B10F61A-	70	289
0.3	AC03S1B10F61A-	AC03A1B10F61A-	92	386
0.25	AC025S1B10F61A-	AC025A1B10F61A-	110	463
0.2	AC02S1B10F61A-	AC02A1B10F61A-	136	580

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

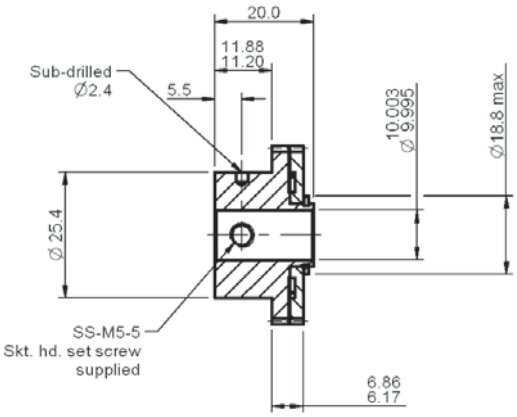
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Pin hub gears: page 4-37 to 4-51
Shafts: page 11-1
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13mm
Pressure angle 20°



Part number selection table

Example Part No:- **AP06S1B10F61A- 90**

Standard Modules	Basic Part Number Standard Materials		Number of Teeth	
	Stainless Steel	Aluminium Alloy	Min	Max
1.5	AP150S1B10F61A-	AP150A1B10F61A-	21	75
1.25	AP125S1B10F61A-	AP125A1B10F61A-	25	91
1.0	AP10S1B10F61A-	AP10A1B10F61A-	30	114
0.8	AP08S1B10F61A-	AP08A1B10F61A-	37	143
0.6	AP06S1B10F61A-	AP06A1B10F61A-	48	192
0.5	AP05S1B10F61A-	AP05A1B10F61A-	56	230
0.4	AP04S1B10F61A-	AP04A1B10F61A-	70	289
0.3	AP03S1B10F61A-	AP03A1B10F61A-	92	386
0.25	AP025S1B10F61A-	AP025A1B10F61A-	110	463
0.2	AP02S1B10F61A-	AP02A1B10F61A-	136	580

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

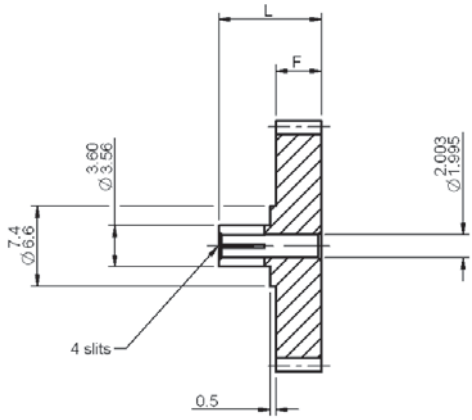
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°

Associated Products
Anti-backlash gears: page 4-7 to 4-34
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4

When F=2, L=7
F=4, L=9



Part number selection table

Example Part No:- **C06S1B2** **F2A-** **25**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth		
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max F2A	Max F4A
1.5	**C150S1B2**	**C150A1B2**	**F2A-** (2 mm) or **F4A-** (4 mm)	**12 †**	**21**	**72**
1.25	**C125S1B2**	**C125A1B2**		**12 †**	**25**	**86**
1.0	**C10S1B2**	**C10A1B2**		**12 †**	**32**	**109**
0.8	**C08S1B2**	**C08A1B2**		**13 †**	**41**	**136**
0.6	**C06S1B2**	**C06A1B2**		**14 †**	**56**	**183**
0.5	**C05S1B2**	**C05A1B2**		**14 †**	**67**	**220**
0.4	**C04S1B2**	**C04A1B2**		**15 †**	**85**	**275**
0.3	**C03S1B2**	**C03A1B2**		**17**	**114**	**368**
0.25	**C025S1B2**	**C025A1B2**		**18**	**137**	**442**
0.2	**C02S1B2**	**C02A1B2**		**20**	**172**	**553**

† Gears of 16 teeth or fewer will be modified - see page T4-8
# Alternative materials - replace **S1** in the part number with **B2** for brass

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

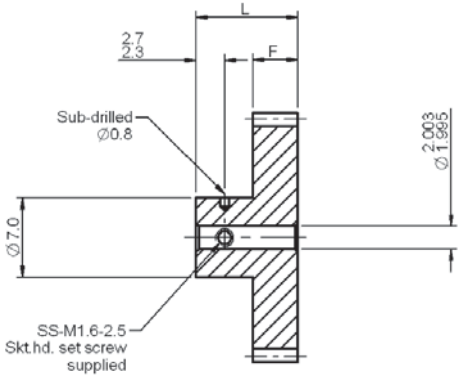
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Anti-backlash gears: page 4-13 to 4-35
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



When F=2, L=7
F=4, L=9

Part number selection table

Example Part No:- P06S1B2 F2A- 25

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth		
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max F2A	Max F4A
1.5	P150S1B2	P150A1B2	F2A- (2 mm) or F4A- (4 mm)	12 †	21	72
1.25	P125S1B2	P125A1B2		12 †	25	86
1.0	P10S1B2	P10A1B2		12 †	32	109
0.8	P08S1B2	P08A1B2		13 †	41	136
0.6	P06S1B2	P06A1B2		15 †	56	183
0.5	P05S1B2	P05A1B2		18	67	220
0.4	P04S1B2	P04A1B2		21	85	275
0.3	P03S1B2	P03A1B2		27	114	368
0.25	P025S1B2	P025A1B2		31	137	442
0.2	P02S1B2	P02A1B2		38	172	553

† Gears of 16 teeth or fewer will be modified - see page T4-8
# Alternative materials - replace **S1** in the part number with **B2** for brass, or **S8** for hardened stainless steel

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

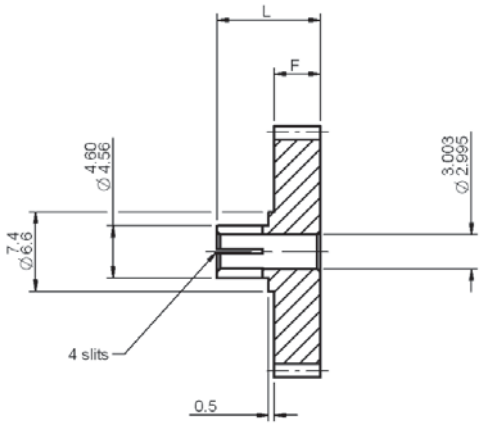
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°

Associated Products
Anti-backlash gears: page 4-7 to 4-34
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4

When F=2, L=7
F=4, L=9



Part number selection table

Example Part No:- **C06S1B3** **F2A-** **25**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth		
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max F2A	Max F4A
1.5	**C150S1B3**	**C150A1B3**	**F2A-** (2 mm) or **F4A-** (4 mm)	**12 †**	**21**	**72**
1.25	**C125S1B3**	**C125A1B3**		**13 †**	**25**	**86**
1.0	**C10S1B3**	**C10A1B3**		**13 †**	**32**	**109**
0.8	**C08S1B3**	**C08A1B3**		**14 †**	**41**	**136**
0.6	**C06S1B3**	**C06A1B3**		**15 †**	**56**	**183**
0.5	**C05S1B3**	**C05A1B3**		**16 †**	**67**	**220**
0.4	**C04S1B3**	**C04A1B3**		**18**	**85**	**275**
0.3	**C03S1B3**	**C03A1B3**		**20**	**114**	**368**
0.25	**C025S1B3**	**C025A1B3**		**22**	**137**	**442**
0.2	**C02S1B3**	**C02A1B3**		**25**	**172**	**553**

† Gears of 16 teeth or fewer will be modified - see page T4-8
# Alternative materials - replace **S1** in the part number with **B2** for brass

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

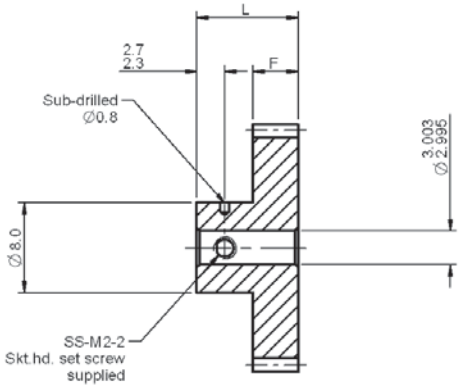
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Anti-backlash gears: page 4-13 to 4-35
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



When F=2, L=7
F=4, L=9

Part number selection table

Example Part No:- **P06S1B3** **F2A-** **25**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth		
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max F2A	Max F4A
1.5	**P150S1B3**	**P150A1B3**	**F2A-** (2 mm) or **F4A-** (4 mm)	**12 †**	**21**	**72**
1.25	**P125S1B3**	**P125A1B3**		**13 †**	**25**	**86**
1.0	**P10S1B3**	**P10A1B3**		**13 †**	**32**	**109**
0.8	**P08S1B3**	**P08A1B3**		**14 †**	**41**	**136**
0.6	**P06S1B3**	**P06A1B3**		**17**	**56**	**183**
0.5	**P05S1B3**	**P05A1B3**		**20**	**67**	**220**
0.4	**P04S1B3**	**P04A1B3**		**23**	**85**	**275**
0.3	**P03S1B3**	**P03A1B3**		**30**	**114**	**368**
0.25	**P025S1B3**	**P025A1B3**		**35**	**137**	**442**
0.2	**P02S1B3**	**P02A1B3**		**43**	**172**	**553**

† Gears of 16 teeth or fewer will be modified - see page T4-8
# Alternative materials - replace **S1** in the part number with **B2** for brass, or **S8** for hardened stainless steel

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

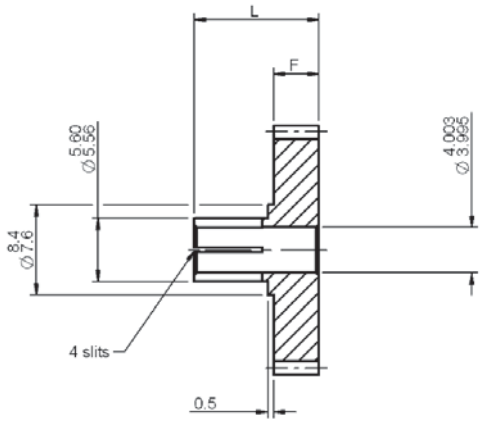
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°

Associated Products
Anti-backlash gears: page 4-7 to 4-34
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4

When F=2, L=9
F=4, L=11



Part number selection table

Example Part No:- **C06S1B4** **F2A-** **25**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth		
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max F2A	Max F4A
1.5	**C150S1B4**	**C150A1B4**	**F2A-** (2 mm) or **F4A-** (4 mm)	**13 †**	**21**	**72**
1.25	**C125S1B4**	**C125A1B4**		**14 †**	**25**	**86**
1.0	**C10S1B4**	**C10A1B4**		**14 †**	**32**	**109**
0.8	**C08S1B4**	**C08A1B4**		**15 †**	**41**	**136**
0.6	**C06S1B4**	**C06A1B4**		**17**	**56**	**183**
0.5	**C05S1B4**	**C05A1B4**		**18**	**67**	**220**
0.4	**C04S1B4**	**C04A1B4**		**20**	**85**	**275**
0.3	**C03S1B4**	**C03A1B4**		**24**	**114**	**368**
0.25	**C025S1B4**	**C025A1B4**		**26**	**137**	**442**
0.2	**C02S1B4**	**C02A1B4**		**30**	**172**	**553**

† Gears of 16 teeth or fewer will be modified - see page T4-8
# Alternative materials - replace **S1** in the part number with **B2** for brass

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

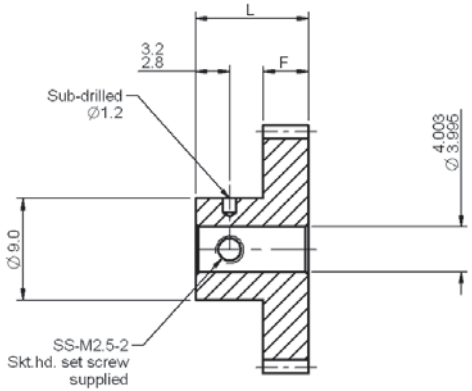
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Anti-backlash gears: page 4-13 to 4-35
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



When F=2, L=8
F=4, L=10

Part number selection table

Example Part No:- **P06S1B4** **F2A-** **25**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth		
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max F2A	Max F4A
1.5	**P150S1B4**	**P150A1B4**	**F2A-** (2 mm) or **F4A-** (4 mm)	**13 †**	**21**	**72**
1.25	**P125S1B4**	**P125A1B4**		**14 †**	**25**	**86**
1.0	**P10S1B4**	**P10A1B4**		**14 †**	**32**	**109**
0.8	**P08S1B4**	**P08A1B4**		**15 †**	**41**	**136**
0.6	**P06S1B4**	**P06A1B4**		**19**	**56**	**183**
0.5	**P05S1B4**	**P05A1B4**		**22**	**67**	**220**
0.4	**P04S1B4**	**P04A1B4**		**26**	**85**	**275**
0.3	**P03S1B4**	**P03A1B4**		**34**	**114**	**368**
0.25	**P025S1B4**	**P025A1B4**		**39**	**137**	**442**
0.2	**P02S1B4**	**P02A1B4**		**48**	**172**	**553**

† Gears of 16 teeth or fewer will be modified - see page T4-8
# Alternative materials - replace **S1** in the part number with **B2** for brass, or **S8** for hardened stainless steel

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

Technical support

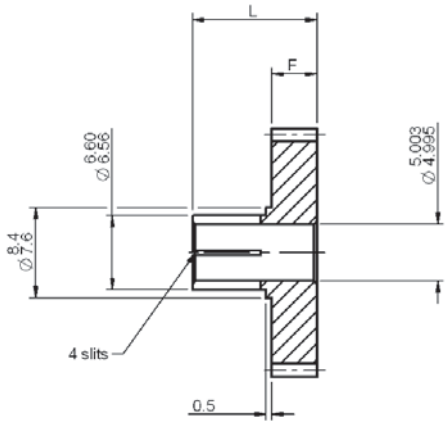
- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Clamp Hub Spur Gears

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°

Associated Products
Anti-backlash gears: page 4-7 to 4-34
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4

when F=2, L=9
F=4, L=11



Part number selection table

Example Part No:- **C06S1B5** **F2A-** **25**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth		
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max F2A	Max F4A
1.5	**C150S1B5**	**C150A1B5**	**F2A-** (2 mm) or **F4A-** (4 mm)	**14 †**	**21**	**72**
1.25	**C125S1B5**	**C125A1B5**		**14 †**	**25**	**86**
1.0	**C10S1B5**	**C10A1B5**		**15 †**	**32**	**109**
0.8	**C08S1B5**	**C08A1B5**		**17**	**41**	**136**
0.6	**C06S1B5**	**C06A1B5**		**19**	**56**	**183**
0.5	**C05S1B5**	**C05A1B5**		**20**	**67**	**220**
0.4	**C04S1B5**	**C04A1B5**		**23**	**85**	**275**
0.3	**C03S1B5**	**C03A1B5**		**27**	**114**	**368**
0.25	**C025S1B5**	**C025A1B5**		**30**	**137**	**442**
0.2	**C02S1B5**	**C02A1B5**		**35**	**172**	**553**

† Gears of 16 teeth or fewer will be modified - see page T4-8
# Alternative materials - replace **S1** in the part number with **B2** for brass

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

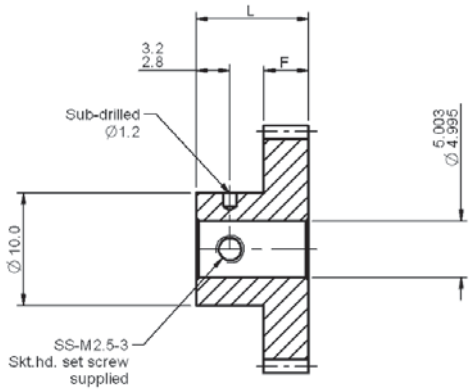
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Anti-backlash gears: page 4-13 to 4-35
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



when F=2, L=8
F=4, L=10

Part number selection table

Example Part No:- **P06S1B5** **F2A-** **25**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth		
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max F2A	Max F4A
1.5	**P150S1B5**	**P150A1B5**	**F2A-** (2 mm) or **F4A-** (4 mm)	**14 †**	**21**	**72**
1.25	**P125S1B5**	**P125A1B5**		**14 †**	**25**	**86**
1.0	**P10S1B5**	**P10A1B5**		**15 †**	**32**	**109**
0.8	**P08S1B5**	**P08A1B5**		**17**	**41**	**136**
0.6	**P06S1B5**	**P06A1B5**		**21**	**56**	**183**
0.5	**P05S1B5**	**P05A1B5**		**24**	**67**	**220**
0.4	**P04S1B5**	**P04A1B5**		**29**	**85**	**275**
0.3	**P03S1B5**	**P03A1B5**		**37**	**114**	**368**
0.25	**P025S1B5**	**P025A1B5**		**43**	**137**	**442**
0.2	**P02S1B5**	**P02A1B5**		**53**	**172**	**553**

† Gears of 16 teeth or fewer will be modified - see page T4-8
# Alternative materials - replace **S1** in the part number with **B2** for brass, or **S8** for hardened stainless steel

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

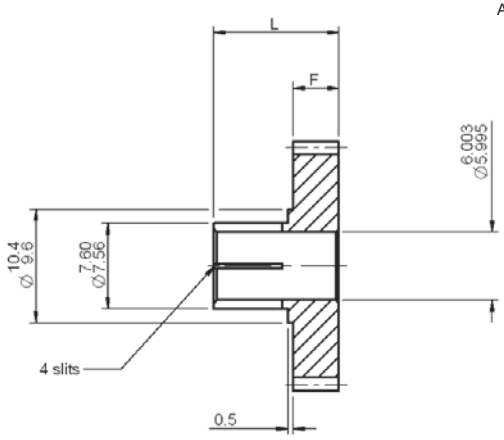
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°

Associated Products
Anti-backlash gears: page 4-7 to 4-34
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4

When F=3, L=10
F=4, L=11
F=6, L=13



Part number selection table

Example Part No:- **C06S1B6** **F3A-** **75**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth	
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max
1.5	**C150S1B6**	**C150A1B6**	**F3A-** (3 mm)	**14 †**	**72**
1.25	**C125S1B6**	**C125A1B6**		**15 †**	**86**
1.0	**C10S1B6**	**C10A1B6**	or	**16 †**	**109**
0.8	**C08S1B6**	**C08A1B6**		**18**	**136**
0.6	**C06S1B6**	**C06A1B6**	**F4A-** (4 mm)	**20**	**183**
0.5	**C05S1B6**	**C05A1B6**		**22**	**220**
0.4	**C04S1B6**	**C04A1B6**	or	**25**	**275**
0.3	**C03S1B6**	**C03A1B6**		**30**	**368**
0.25	**C025S1B6**	**C025A1B6**	**F6A-** (6 mm)	**34**	**442**
0.2	**C02S1B6**	**C02A1B6**		**40**	**553**

† Gears of 16 teeth or fewer will be modified - see page T4-8
# Alternative materials - replace **S1** in the part number with **B2** for brass

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

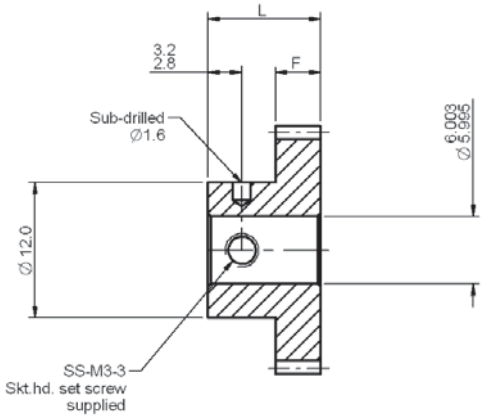
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Anti-backlash gears: page 4-13 to 4-35
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



When F=3, L=9
F=4, L=10
F=6, L=12

Part number selection table

Example Part No:- **P06S1B6** **F3A-** **75**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth	
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max
1.5	**P150S1B6**	**P150A1B6**	**F3A-** (3 mm)	**14 †**	**72**
1.25	**P125S1B6**	**P125A1B6**		**15 †**	**86**
1.0	**P10S1B6**	**P10A1B6**	or	**16 †**	**109**
0.8	**P08S1B6**	**P08A1B6**		**19**	**136**
0.6	**P06S1B6**	**P06A1B6**	**F4A-** (4 mm)	**23**	**183**
0.5	**P05S1B6**	**P05A1B6**		**27**	**220**
0.4	**P04S1B6**	**P04A1B6**	or	**33**	**275**
0.3	**P03S1B6**	**P03A1B6**		**43**	**368**
0.25	**P025S1B6**	**P025A1B6**	**F6A-** (6 mm)	**50**	**442**
0.2	**P02S1B6**	**P02A1B6**		**62**	**553**

† Gears of 16 teeth or fewer will be modified - see page T4-8
# Alternative materials - replace **S1** in the part number with **B2** for brass, or **S8** for hardened stainless steel

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

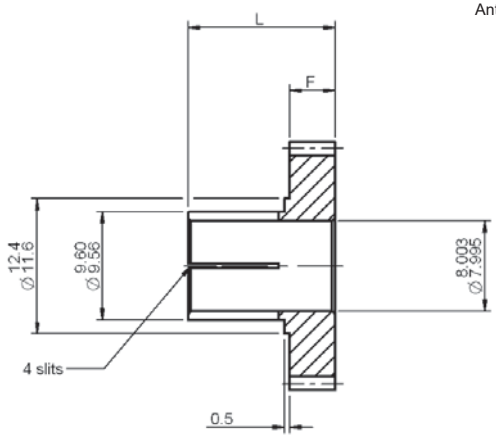
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°

Associated Products
Anti-backlash gears: page 4-7 to 4-34
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4

When F=4, L=13
F=6, L=15



Part number selection table

Example Part No:- **C06S1B8** **F4A-** **75**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth	
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max
1.5	**C150S1B8**	**C150A1B8**	**F4A-** (4 mm) or **F6A-** (6 mm)	**16 †**	**72**
1.25	**C125S1B8**	**C125A1B8**		**17**	**86**
1.0	**C10S1B8**	**C10A1B8**		**18**	**109**
0.8	**C08S1B8**	**C08A1B8**		**20**	**136**
0.6	**C06S1B8**	**C06A1B8**		**24**	**183**
0.5	**C05S1B8**	**C05A1B8**		**26**	**220**
0.4	**C04S1B8**	**C04A1B8**		**30**	**275**
0.3	**C03S1B8**	**C03A1B8**		**37**	**368**
0.25	**C025S1B8**	**C025A1B8**		**42**	**442**
0.2	**C02S1B8**	**C02A1B8**		**50**	**553**

† Gears of 16 teeth will be modified - see page T4-8
# Alternative materials - replace **S1** in the part number with **B2** for brass

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

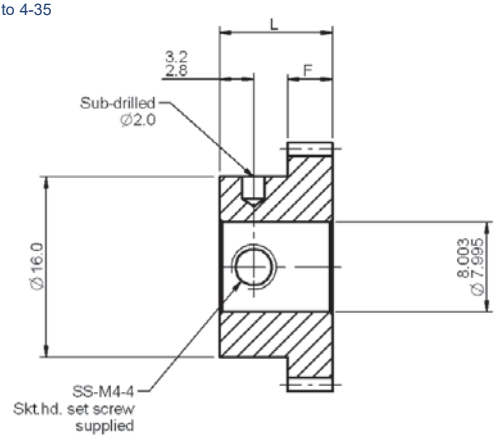
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Anti-backlash gears: page 4-13 to 4-35
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



When F=4, L=10
F=6, L=12

Part number selection table

Example Part No:- **P06S1B8** **F4A-** **75**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth	
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max
1.5	**P150S1B8**	**P150A1B8**	**F4A-** (4 mm) or **F6A-** (6 mm)	**16 †**	**72**
1.25	**P125S1B8**	**P125A1B8**		**17**	**86**
1.0	**P10S1B8**	**P10A1B8**		**20**	**109**
0.8	**P08S1B8**	**P08A1B8**		**24**	**136**
0.6	**P06S1B8**	**P06A1B8**		**30**	**183**
0.5	**P05S1B8**	**P05A1B8**		**35**	**220**
0.4	**P04S1B8**	**P04A1B8**		**43**	**275**
0.3	**P03S1B8**	**P03A1B8**		**56**	**368**
0.25	**P025S1B8**	**P025A1B8**		**66**	**442**
0.2	**P02S1B8**	**P02A1B8**		**82**	**553**

† Gears of 16 teeth will be modified - see page T4-8
# Alternative materials - replace **S1** in the part number with **B2** for brass, or **S8** for hardened stainless steel

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

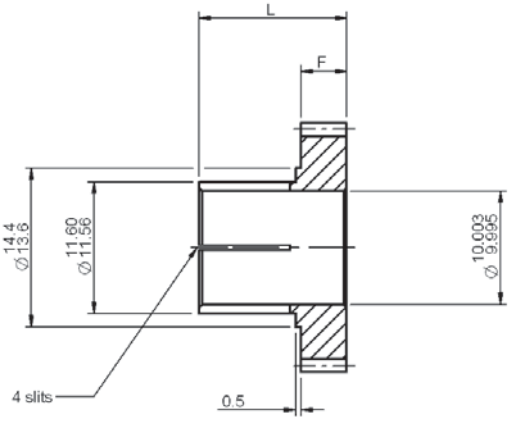
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°

Associated Products
Anti-backlash gears: page 4-7 to 4-34
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4

When F=4, L=13
F=6, L=15



Part number selection table

Example Part No:- **C06S1B10** **F4A-** **75**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth	
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max
1.5	**C150S1B10**	**C150A1B10**		**17**	**72**
1.25	**C125S1B10**	**C125A1B10**		**18**	**86**
1.0	**C10S1B10**	**C10A1B10**	**F4A-** (4 mm)	**20**	**109**
0.8	**C08S1B10**	**C08A1B10**		**23**	**136**
0.6	**C06S1B10**	**C06A1B10**	or	**27**	**183**
0.5	**C05S1B10**	**C05A1B10**		**30**	**220**
0.4	**C04S1B10**	**C04A1B10**	**F6A-** (6 mm)	**35**	**275**
0.3	**C03S1B10**	**C03A1B10**		**44**	**368**
0.25	**C025S1B10**	**C025A1B10**		**50**	**442**
0.2	**C02S1B10**	**C02A1B10**		**60**	**553**

Alternative materials - replace **S1** in the part number with **B2** for brass

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

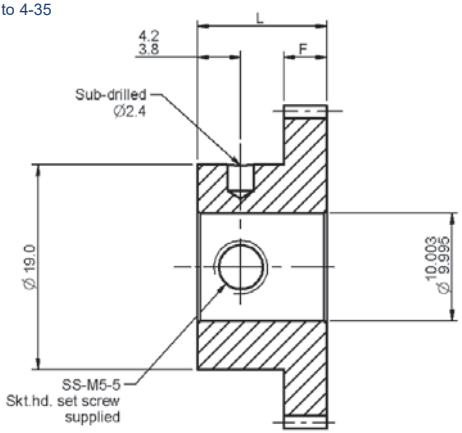
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Anti-backlash gears: page 4-13 to 4-35
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



When F=4, L=12
F=6, L=14

Part number selection table

Example Part No:- **P06S1B10** **F4A-** **75**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth	
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max
1.5	**P150S1B10**	**P150A1B10**	**F4A-** (4 mm) or **F6A-** (6 mm)	**17**	**72**
1.25	**P125S1B10**	**P125A1B10**		**19**	**86**
1.0	**P10S1B10**	**P10A1B10**		**22**	**109**
0.8	**P08S1B10**	**P08A1B10**		**27**	**136**
0.6	**P06S1B10**	**P06A1B10**		**34**	**183**
0.5	**P05S1B10**	**P05A1B10**		**40**	**220**
0.4	**P04S1B10**	**P04A1B10**		**50**	**275**
0.3	**P03S1B10**	**P03A1B10**		**65**	**368**
0.25	**P025S1B10**	**P025A1B10**		**77**	**442**
0.2	**P02S1B10**	**P02A1B10**		**95**	**553**

Alternative materials - replace **S1** in the part number with **B2** for brass, or **S8** for hardened stainless steel

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

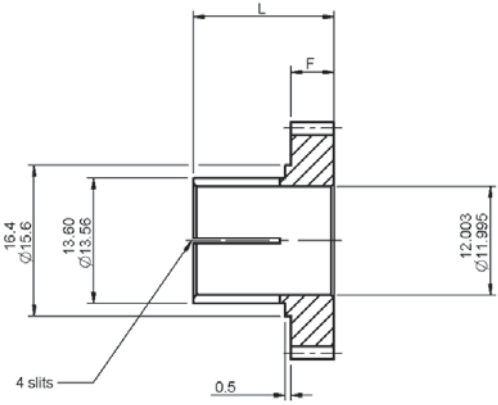
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°

Associated Products
Anti-backlash gears: page 4-7 to 4-34
Shafts: page 11-2
Bearings: page 12-1
Gear clamps: page 11-4

When F=6, L=15
F=10, L=19



Part number selection table

Example Part No:- **C06S1B12** **F6A-** **75**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth	
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max
1.5	**C150S1B12**	**C150A1B12**	**F6A-** (6mm) or **F10A-** (10 mm)	**18**	**72**
1.25	**C125S1B12**	**C125A1B12**		**20**	**86**
1.0	**C10S1B12**	**C10A1B12**		**22**	**109**
0.8	**C08S1B12**	**C08A1B12**		**25**	**136**
0.6	**C06S1B12**	**C06A1B12**		**30**	**183**
0.5	**C05S1B12**	**C05A1B12**		**34**	**220**
0.4	**C04S1B12**	**C04A1B12**		**40**	**275**
0.3	**C03S1B12**	**C03A1B12**		**50**	**368**
0.25	**C025S1B12**	**C025A1B12**		**58**	**442**
0.2	**C02S1B12**	**C02A1B12**		**70**	**553**

Alternative materials - replace **S1** in the part number with **B2** for brass

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

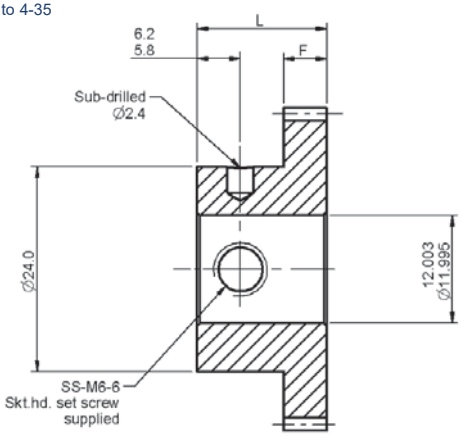
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Anti-backlash gears: page 4-13 to 4-35
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



When F=8, L=20
F=12, L=24

Part number selection table

Example Part No:- **P06S1B12** **F8A-** **75**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth	
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max
1.5	**P150S1B12**	**P150A1B12**	**F8A-** (8 mm) or **F12A-** (12 mm)	**19**	**72**
1.25	**P125S1B12**	**P125A1B12**		**22**	**86**
1.0	**P10S1B12**	**P10A1B12**		**26**	**109**
0.8	**P08S1B12**	**P08A1B12**		**32**	**136**
0.6	**P06S1B12**	**P06A1B12**		**41**	**183**
0.5	**P05S1B12**	**P05A1B12**		**48**	**220**
0.4	**P04S1B12**	**P04A1B12**		**59**	**275**
0.3	**P03S1B12**	**P03A1B12**		**77**	**368**
0.25	**P025S1B12**	**P025A1B12**		**92**	**442**
0.2	**P02S1B12**	**P02A1B12**		**113**	**553**

Alternative materials - replace **S1** in the part number with **B2** for brass, or **S8** for hardened stainless steel

Features and options

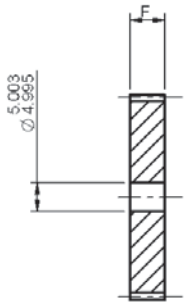
- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°

Associated Products
Anti-backlash gears: page 4-7 to 4-35
Shafts: page 11-2



Note
Delrin gear bore
Ø5.02/4.97

Part number selection table

Example Part No:- **F06S1B5** **F3A-** **75**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth	
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max
1.5	**F150S1B5**	**F150A1B5**	**F3A-** (3 mm) or **F6A-** (6 mm)	**14 †**	**72**
1.25	**F125S1B5**	**F125A1B5**		**14 †**	**86**
1.0	**F10S1B5**	**F10A1B5**		**15 †**	**109**
0.8	**F08S1B5**	**F08A1B5**		**17**	**136**
0.6	**F06S1B5**	**F06A1B5**		**19**	**183**
0.5	**F05S1B5**	**F05A1B5**		**20**	**220**
0.4	**F04S1B5**	**F04A1B5**		**23**	**275**
0.3	**F03S1B5**	**F03A1B5**		**27**	**368**
0.25	**F025S1B5**	**F025A1B5**		**30**	**442**
0.2	**F02S1B5**	**F02A1B5**		**35**	**553**

† Gears of 16 teeth or fewer will be modified - see page T4-8
# Alternative materials - replace **S1** in the part number with **B2** for brass, **D1** for Delrin or **S8** for hardened stainless steel

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

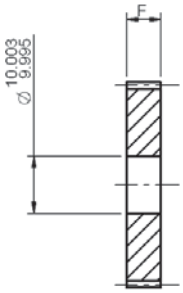
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Anti-backlash gears: page 4-7 to 4-35
Shafts: page 11-2

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Note
Delrin gear bore
Ø10.02/9.97

Part number selection table

Example Part No:- **F06S1B10** **F6A-** **75**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth	
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max
1.5	**F150S1B10**	**F150A1B10**		**17**	**72**
1.25	**F125S1B10**	**F125A1B10**		**18**	**86**
1.0	**F10S1B10**	**F10A1B10**	**F3A-** (3 mm)	**20**	**109**
0.8	**F08S1B10**	**F08A1B10**		**23**	**136**
0.6	**F06S1B10**	**F06A1B10**	or	**27**	**183**
0.5	**F05S1B10**	**F05A1B10**		**30**	**220**
0.4	**F04S1B10**	**F04A1B10**	**F6A-** (6 mm)	**35**	**275**
0.3	**F03S1B10**	**F03A1B10**		**44**	**368**
0.25	**F025S1B10**	**F025A1B10**		**50**	**442**
0.2	**F02S1B10**	**F02A1B10**		**60**	**553**

Alternative materials - replace **S1** in the part number with **B2** for brass, **D1** for Delrin or **S8** for hardened stainless steel

Features and options

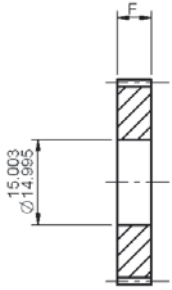
- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°

Associated Products
Anti-backlash gears: page 4-7 to 4-35



Note
Delrin gear bore
Ø15.02/14.97

Part number selection table

Example Part No:- **F06S1B15** **F3A-** **75**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth	
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max
1.5	**F150S1B15**	**F150A1B15**	**F3A-** (3 mm) or **F6A-** (6 mm)	**20**	**72**
1.25	**F125S1B15**	**F125A1B15**		**22**	**86**
1.0	**F10S1B15**	**F10A1B15**		**25**	**109**
0.8	**F08S1B15**	**F08A1B15**		**29**	**136**
0.6	**F06S1B15**	**F06A1B15**		**35**	**183**
0.5	**F05S1B15**	**F05A1B15**		**40**	**220**
0.4	**F04S1B15**	**F04A1B15**		**48**	**275**
0.3	**F03S1B15**	**F03A1B15**		**60**	**368**
0.25	**F025S1B15**	**F025A1B15**		**70**	**442**
0.2	**F02S1B15**	**F02A1B15**		**85**	**553**

Alternative materials - replace **S1** in the part number with **B2** for brass, **D1** for Delrin or **S8** for hardened stainless steel

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

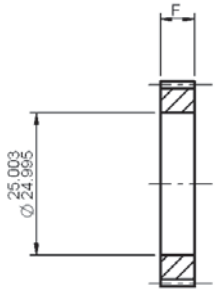
Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Anti-backlash gears: page 4-7 to 4-35

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°



Note
Delrin gear bore
Ø25.02/24.97

Part number selection table

Example Part No:- **F06S1B25** **F6A-** **75**

Standard Modules	Basic Part Number Standard Materials #		Face Width	Number of Teeth	
	Stainless Steel	Aluminium Alloy	Dim F	Min	Max
1.5	**F150S1B25**	**F150A1B25**		**27**	**72**
1.25	**F125S1B25**	**F125A1B25**		**30**	**86**
1.0	**F10S1B25**	**F10A1B25**	**F3A-** (3 mm)	**35**	**109**
0.8	**F08S1B25**	**F08A1B25**		**42**	**136**
0.6	**F06S1B25**	**F06A1B25**	or	**52**	**183**
0.5	**F05S1B25**	**F05A1B25**		**60**	**220**
0.4	**F04S1B25**	**F04A1B25**	**F6A-** (6 mm)	**73**	**275**
0.3	**F03S1B25**	**F03A1B25**		**94**	**368**
0.25	**F025S1B25**	**F025A1B25**		**110**	**442**
0.2	**F02S1B25**	**F02A1B25**		**135**	**553**

Alternative materials - replace **S1** in the part number with **B2** for brass, **D1** for Delrin or **S8** for hardened stainless steel

Features and options

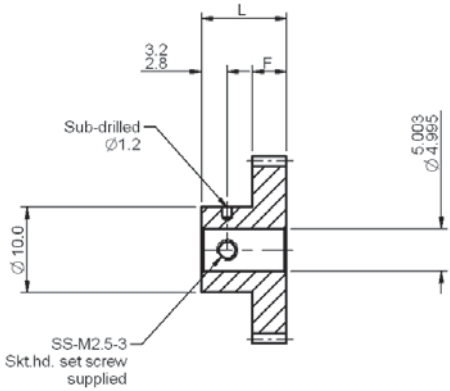
- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

All dimensions in mm
General tolerances ±0.13 mm
Material: Stainless steel 17-4 PH, hardened to 35-42 HRc
Pressure angle 20°

When F=2, L=8
F=4, L=10



Associated Products
Pin hub spur gears: page 4-37 to 4-51
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

Part number selection table

Example Part No:- **P06S8B5** **F2A-** **25**

Standard Modules	Basic Part Number	Face Width	Number of Teeth		
	Hardened Stainless Steel	Dim F	Min	Max F2A	Max F4A
1.5	**P150S8B5**		**14 †**	**21**	**72**
1.25	**P125S8B5**		**14 †**	**25**	**86**
1.0	**P10S8B5**		**15 †**	**32**	**109**
0.8	**P08S8B5**	**F2A-** (2 mm)	**17**	**41**	**136**
0.6	**P06S8B5**		**21**	**56**	**183**
0.5	**P05S8B5**	or	**24**	**67**	**220**
0.4	**P04S8B5**		**29**	**85**	**275**
0.3	**P03S8B5**	**F4A-** (4 mm)	**37**	**114**	**368**
0.25	**P025S8B5**		**43**	**137**	**442**
0.2	**P02S8B5**		**53**	**172**	**553**

† Gears of 16 teeth or fewer will be modified - see page T4-8

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Additional bore sizes 2 mm to 12 mm available
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

Technical support

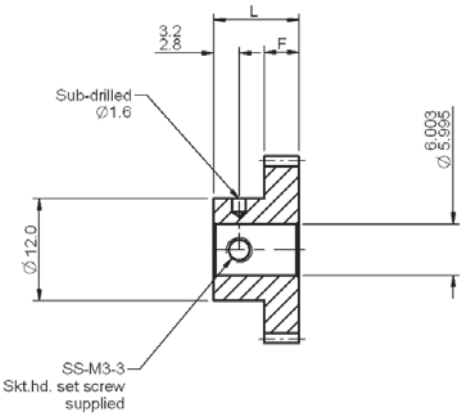
- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Pin hub spur gears: page 4-37 to 4-51
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Material: Stainless steel 17-4 PH, hardened to 35-42 HRc
Pressure angle 20°

When F=3, L=9
F=4, L=10
F=6, L=12



Part number selection table

Example Part No:- P06S8B6 F4A- 25

Standard Modules	Basic Part Number	Face Width	Number of Teeth	
	Hardened Stainless Steel	Dim F	Min	Max
1.5	P150S8B6	F3A- (3 mm)	14 †	72
1.25	P125S8B6		15 †	86
1.0	P10S8B6	or	16 †	109
0.8	P08S8B6		19	136
0.6	P06S8B6	F4A- (4 mm)	23	183
0.5	P05S8B6		27	220
0.4	P04S8B6	or	33	275
0.3	P03S8B6		43	368
0.25	P025S8B6	F6A- (6 mm)	50	442
0.2	P02S8B6		62	553

† Gears of 16 teeth or fewer will be modified - see page T4-8

Features and options

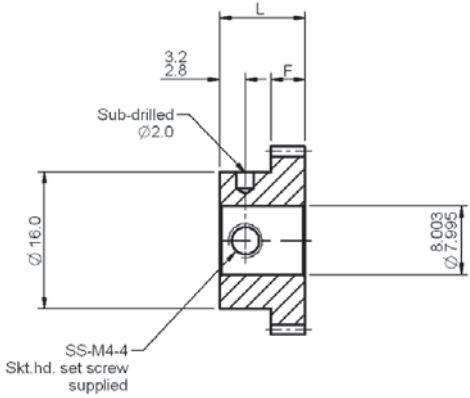
- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Additional bore sizes 2 mm to 12 mm available
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

All dimensions in mm
General tolerances ±0.13 mm
Material: Stainless steel 17-4 PH, hardened to 35-42 HRc
Pressure angle 20°

When F=4, L=10
F=6, L=12



Associated Products
Pin hub spur gears: page 4-37 to 4-51
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

Part number selection table

Example Part No:- **P06S8B8** **F4A-** **50**

Standard Modules	Basic Part Number	Face Width	Number of Teeth	
	Hardened Stainless Steel	Dim F	Min	Max
1.5	**P150S8B8**		**16 †**	**72**
1.25	**P125S8B8**		**17**	**86**
1.0	**P10S8B8**		**20**	**109**
0.8	**P08S8B8**	**F4A-** (4 mm)	**24**	**136**
0.6	**P06S8B8**		**30**	**183**
0.5	**P05S8B8**	or	**35**	**220**
0.4	**P04S8B8**		**43**	**275**
0.3	**P03S8B8**	**F6A-** (6 mm)	**56**	**368**
0.25	**P025S8B8**		**66**	**442**
0.2	**P02S8B8**		**82**	**553**

† Gears of 16 teeth or fewer will be modified - see page T4-8

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Additional bore sizes 2 mm to 12 mm available
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

Technical support

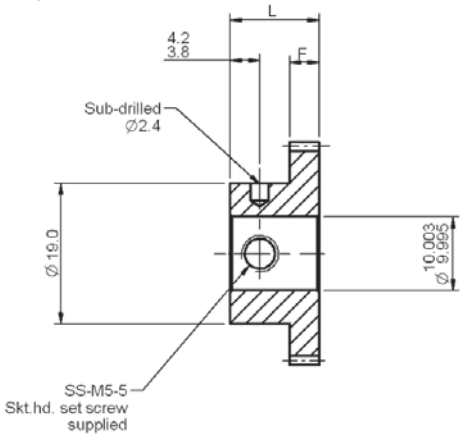
- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Pin hub spur gears: page 4-37 to 4-51
Shafts: page 11-2
Bearings: page 12-1
Pins: page 13-18

All dimensions in mm
General tolerances ±0.13 mm
Material: Stainless steel 17-4 PH, hardened to 35-42 HRc
Pressure angle 20°

When F=4, L=12
F=6, L=14



Part number selection table

Example Part No:- **P06S8B10** **F4A-** **65**

Standard Modules	Basic Part Number	Face Width	Number of Teeth	
	Hardened Stainless Steel	Dim F	Min	Max
1.5	**P150S8B10**		**17**	**72**
1.25	**P125S8B10**		**19**	**86**
1.0	**P10S8B10**		**22**	**109**
0.8	**P08S8B10**	**F4A-** (4 mm)	**27**	**136**
0.6	**P06S8B10**		**34**	**183**
0.5	**P05S8B10**	or	**40**	**220**
0.4	**P04S8B10**		**50**	**275**
0.3	**P03S8B10**	**F6A-** (6 mm)	**65**	**368**
0.25	**P025S8B10**		**77**	**442**
0.2	**P02S8B10**		**95**	**553**

Features and options

- Gear quality AQ10 as standard - see page T4-1
- Gear quality AQ9 for 1.5 mod
- Higher gear qualities available - see page T4-1
- Additional bore sizes 2 mm to 12 mm available
- Imperial gears available
- For all gear types and options - see page 4-6
- Product overview - see pages 4-2 to 4-6

Technical support

- Material specifications - see page T4-4
- Lubrication - see page T4-10
- Installation information - see page T4-9
- Treatment specifications - see page T4-4
- Technical information - see pages T4-1 to T4-18
- For modified or fully bespoke gear solutions, please contact us

Ground spur gears

Ground spur gears are ideal for high speed mechatronic applications where higher loads and accurate motion are required.

- Modules 0.5 to 1.0 available.
- Manufactured from chromium molybdenum steel, hardened to 49-55HRc.
- Standard gear quality: ISO 5
- Bore diameter, outside diameter and other surfaces are ground to provide location datums when additional machining is required. Additional machining of the bore is not recommended.
- Keyway features available - see page 4-69

Part number structure

SG 50 S 50 B - 10 08

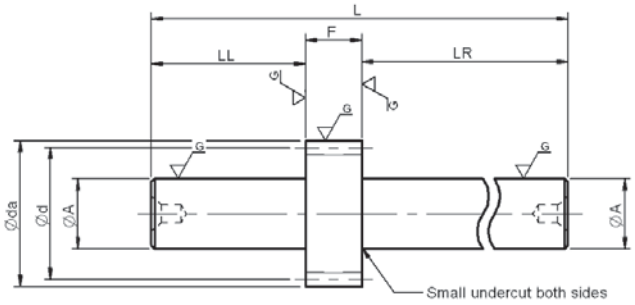
Gear Type	Module	Material	Number of Teeth	Shaft Type	Bores Types*	Face Width	Bore Diameter
Ground Spur Gear	0.5 50 0.8 80 1.0 1	Chromium Molybdenum Steel 49-55HRc	14 - 120	L = solid shaft on both sides B = Bore with hub on one side	- Ground bore without threaded hole + Ground bore with threaded hole and sub-drilled hole, set screw not supplied	8 10	05 5 06 6 08 8 10 10 12 12

* See bore type designator in part number, - or +

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Bearings: page 12-1

All dimensions in mm
Pressure angle 20°



Part number selection table

Part Number	Module	Number of Teeth	PCD Ød	OD Øda	Face Width F	Shaft Dia (h7) ØA	Shaft Length LL	Shaft Length LR	Overall Length L
SG50S20L-0806	0.5	20	10.0	11.0	8	6	22	50	80
SG50S22L-0808		22	11.0	12.0		8			
SG50S24L-0810		24	12.0	13.0		10			
SG50S25L-0810		25	12.5	13.5		10			
SG50S26L-0810		26	13.0	14.0		10			
SG80S15L-0806	0.8	15	12.0	13.6	8	6	22	60	90
SG80S16L-0806		16	12.8	14.4		6			
SG80S18L-0808		18	14.4	16.0		8			
SG80S20L-0810		20	16.0	17.6		10			
SG80S24L-0810		24	19.2	20.8		10			
SG80S25L-0810		25	20.0	21.6		10			
SG1S14L-1008	1.0	14	14.0	16.0	10	8	25	60	95
SG1S15L-1010		15	15.0	17.0		10			
SG1S16L-1010		16	16.0	18.0		10			
SG1S18L-1010		18	18.0	20.0		10			

Features

- Material: Chromium molybdenum steel (ISO 34CrMo4, 42CrMo4)
- Gear tooth treatment: Induction hardened to 49-55 HRc
- Gear quality: ISO 5
- Gear tooth surface finish 1.6

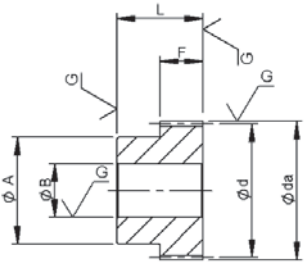
Technical support

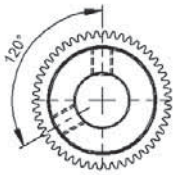
- For transmission capacity - see page T4-17
- Part number structure - see page 4-60
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop
- For modified or fully bespoke gears, please contact us

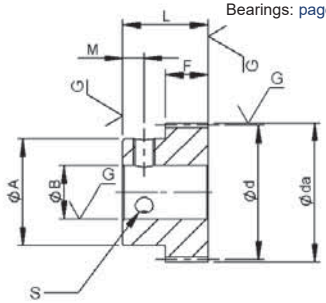
Ground Pin Hub Spur Gears

All dimensions in mm
Pressure angle 20°

Associated Products
Set screws: page 13-1
Shafts: page 11-2
Bearings: page 12-1







- in part number denotes no threaded hole

***** in part number denotes two threaded holes (set screws not supplied)

Part number selection table

Part Number	Number of Teeth	PCD Ød	OD Øda	Bore Dia (H7) ØB	Hub Dia ØA	Face Width F	Overall Length L	Set Screw S	Set Screw M
SG50S28B-0805	28	14.0	15.0	5	10			-	-
SG50S30B-0805	30	15.0	16.0	5	12			-	-
SG50S30B-0806	30	15.0	16.0	6	12			-	-
SG50S30B*0806	30	15.0	16.0	6	12			M3	4
SG50S32B-0805	32	16.0	17.0	5	12			-	-
SG50S32B-0806	32	16.0	17.0	6	12			-	-
SG50S35B-0805	35	17.5	18.5	5	14			-	-
SG50S36B-0806	36	18.0	19.0	6	16			-	-
SG50S36B-0808	36	18.0	19.0	8	16			-	-
SG50S40B-0806	40	20.0	21.0	6	16	8	16	-	-
SG50S40B-0808	40	20.0	21.0	8	16			-	-
SG50S40B*0808	40	20.0	21.0	8	16			M4	4
SG50S45B-0808	45	22.5	23.5	8	16			-	-
SG50S48B-0808	48	24.0	25.0	8	20			-	-
SG50S50B-0808	50	25.0	26.0	8	20			-	-
SG50S50B-0810	50	25.0	26.0	10	20			-	-
SG50S50B*0810	50	25.0	26.0	10	20			M4	4
SG50S54B-0808	54	27.0	28.0	8	20			-	-
SG50S55B-0808	55	27.5	28.5	8	20			-	-

Features

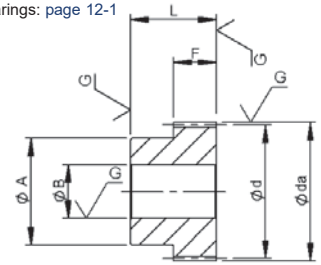
- Material: Chromium molybdenum steel (ISO 34CrMo4, 42CrMo4)
- Gear tooth treatment: Induction hardened to 49-55 HRc
- Gear quality: ISO 5
- Gear tooth surface finish 1.6
- Keyway features available - see page 4-69

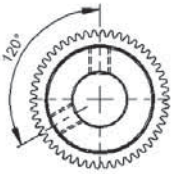
Technical support

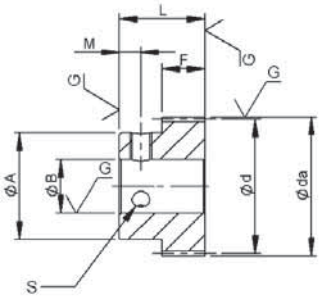
- For transmission capacity - see page T4-17
- Part number structure - see page 4-60
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop
- For modified or fully bespoke gears, please contact us

Associated Products
Set screws: page 13-1
Shafts: page 11-2
Bearings: page 12-1

All dimensions in mm
Pressure angle 20







- in part number denotes no threaded hole

* in part number denotes two threaded holes (set screws not supplied)

Part number selection table

Part Number	Number of Teeth	PCD Ød	OD Øda	Bore Dia (H7) ØB	Hub Dia ØA	Face Width F	Overall Length L	Set Screw S	Set Screw M
SG50S56B-0808	56	28.0	29.0	8	20			-	-
SG50S60B-0808	60	30.0	31.0	8	22			-	-
SG50S60B-0810	60	30.0	31.0	10	22			-	-
SG50S60B*0810	60	30.0	31.0	10	22			M4	4
SG50S64B-0808	64	32.0	33.0	8	22			-	-
SG50S70B-0808	70	35.0	36.0	8	22			-	-
SG50S72B-0808	72	36.0	37.0	8	25			-	-
SG50S75B-0808	75	37.5	38.5	8	25			-	-
SG50S80B-0808	80	40.0	41.0	8	25			-	-
SG50S80B-0810	80	40.0	41.0	10	25			-	-
SG50S80B-0812	80	40.0	41.0	12	25	8	16	-	-
SG50S80B*0812	80	40.0	41.0	12	25			M5	4
SG50S90B-0810	90	45.0	46.0	10	30			-	-
SG50S96B-0810	96	48.0	49.0	10	30			-	-
SG50S100B-0810	100	50.0	51.0	10	30			-	-
SG50S100B-0812	100	50.0	51.0	12	30			-	-
SG50S100B*0812	100	50.0	51.0	12	30			M5	4
SG50S108B-0810	108	54.0	55.0	10	35			-	-
SG50S112B-0810	112	56.0	57.0	10	35			-	-
SG50S120B-0810	120	60.0	61.0	10	35			-	-

Features

- Material: Chromium molybdenum steel (ISO 34CrMo4, 42CrMo4)
- Gear tooth treatment: Induction hardened to 49-55 HRc
- Gear quality: ISO 5
- Gear tooth surface finish 1.6
- Keyway features available - see page 4-69

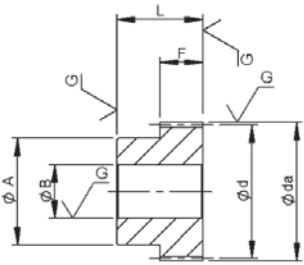
Technical support

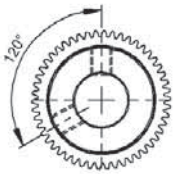
- For transmission capacity - see page T4-17
- Part number structure - see page 4-60
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop
- For modified or fully bespoke gears, please contact us

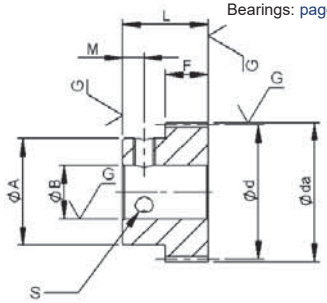
Ground Pin Hub Spur Gears

All dimensions in mm
Pressure angle 20°

Associated Products
Set screws: page 13-1
Shafts: page 11-2
Bearings: page 12-1







- in part number denotes no threaded hole

***** in part number denotes two threaded holes (set screws not supplied)

Part number selection table

Part Number	Number of Teeth	PCD Ød	OD Øda	Bore Dia (H7) ØB	Hub Dia ØA	Face Width F	Overall Length L	Set Screw S	Set Screw M
SG80S22B-0806	22	17.6	19.2	6	14			-	-
SG80S24B-0806	24	19.2	20.8	6	16			-	-
SG80S25B-0806	25	20.0	21.6	6	16			-	-
SG80S28B-0808	28	22.4	24.0	8	18			-	-
SG80S30B-0810	30	24.0	25.6	10	20			-	-
SG80S30B*0810	30	24.0	25.6	10	20			M4	5
SG80S32B-0810	32	25.6	27.2	10	20			-	-
SG80S35B-0810	35	28.0	29.6	10	20			-	-
SG80S36B-0810	36	28.8	30.4	10	20	8	18	-	-
SG80S40B-0810	40	32.0	33.6	10	25			-	-
SG80S40B*0812	40	32.0	33.6	12	25			M5	5
SG80S45B-0810	45	36.0	37.6	10	25			-	-
SG80S48B-0810	48	38.4	40.0	10	25			-	-
SG80S50B-0810	50	40.0	41.6	10	25			-	-
SG80S50B*0812	50	40.0	41.6	12	25			M5	5
SG80S54B-0810	54	43.2	44.8	10	25			-	-
SG80S55B-0810	55	44.0	45.6	10	25			-	-

Features

- Material: Chromium molybdenum steel (ISO 34CrMo4, 42CrMo4)
- Gear tooth treatment: Induction hardened to 49-55 HRc
- Gear quality: ISO 5
- Gear tooth surface finish 1.6
- Keyway features available - see page 4-69

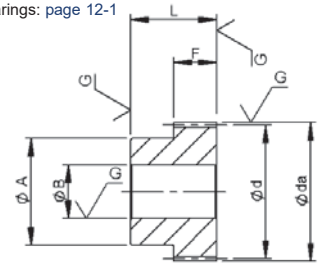
Technical support

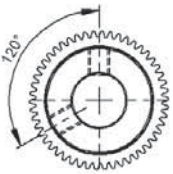
- For transmission capacity - see page T4-17
- Part number structure - see page 4-60
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop
- For modified or fully bespoke gears, please contact us

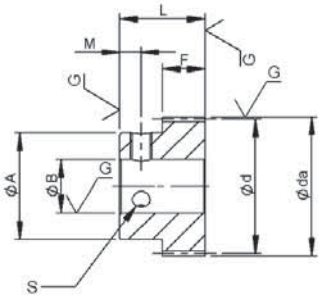
Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Set screws: page 13-1
Shafts: page 11-2
Bearings: page 12-1

All dimensions in mm
Pressure angle 20°







- in part number denotes no threaded hole

* in part number denotes two threaded holes (set screws not supplied)

Part number selection table

Part Number	Number of Teeth	PCD Ød	OD Øda	Bore Dia (H7) ØB	Hub Dia ØA	Face Width F	Overall Length L	Set Screw S	Set Screw M
SG80S56B-0810	56	44.8	46.4	10	25	8	18	-	-
SG80S60B-0810	60	48.0	49.6	10	25			-	-
SG80S60B*0812	60	48.0	49.6	12	25			M5	5
SG80S64B-0812	64	51.2	52.8	12	30			-	-
SG80S70B-0812	70	56.0	57.6	12	30			-	-
SG80S72B-0812	72	57.6	59.2	12	30			-	-
SG80S75B-0812	75	60.0	61.6	12	30			-	-
SG80S80B-0812	80	64.0	65.6	12	30			-	-
SG80S90B-0812	90	72.0	73.6	12	35			-	-
SG80S96B-0812	96	76.8	78.4	12	35			-	-
SG80S100B-0812	100	80.0	81.6	12	35			-	-
SG80S108B-0812	108	86.4	88.0	12	40			-	-
SG80S112B-0812	112	89.6	91.2	12	40			-	-
SG80S120B-0812	120	96.0	97.6	12	40			-	-

Features

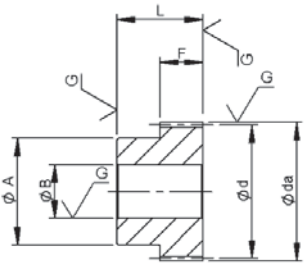
- Material: Chromium molybdenum steel (ISO 34CrMo4, 42CrMo4)
- Gear tooth treatment: Induction hardened to 49-55 HRc
- Gear quality: ISO 5
- Gear tooth surface finish 1.6
- Keyway features available - see page 4-69

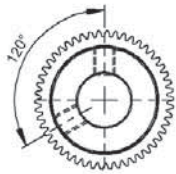
Technical support

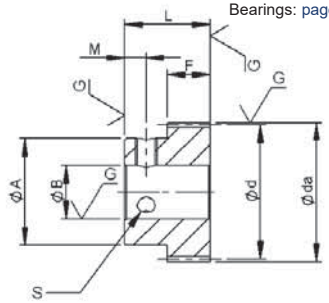
- For transmission capacity - see page T4-17
- Part number structure - see page 4-60
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop
- For modified or fully bespoke gears, please contact us

All dimensions in mm
Pressure angle 20°

Associated Products
Set screws: page 13-1
Shafts: page 11-2
Bearings: page 12-1







- in part number denotes no threaded hole

***** in part number denotes two threaded holes (set screws not supplied)

Part number selection table

Part Number	Number of Teeth	PCD Ød	OD Øda	Bore Dia (H7) ØB	Hub Dia ØA	Face Width F	Overall Length L	Set Screw S	Set Screw M
SG1S17B-1006	17	17.0	19.0	6	12			-	-
SG1S18B-1008	18	18.0	20.0	8	15			-	-
SG1S20B-1008	20	20.0	22.0	8	16			-	-
SG1S20B*1008	20	20.0	22.0	8	16			M4	5
SG1S20B*1010	20	20.0	22.0	10	16			M4	5
SG1S21B-1008	21	21.0	23.0	8	16			-	-
SG1S22B-1008	22	22.0	24.0	8	18			-	-
SG1S23B-1008	23	23.0	25.0	8	18			-	-
SG1S24B-1008	24	24.0	26.0	8	20	10	20	-	-
SG1S24B*1008	24	24.0	26.0	8	20			M4	5
SG1S24B*1010	24	24.0	26.0	10	20			M4	5
SG1S25B-1008	25	25.0	27.0	8	20			-	-
SG1S26B-1008	26	26.0	28.0	8	20			-	-
SG1S27B-1008	27	27.0	29.0	8	20			-	-
SG1S28B-1008	28	28.0	30.0	8	20			-	-
SG1S30B-1010	30	30.0	32.0	10	26			-	-
SG1S30B*1010	30	30.0	32.0	10	26			M4	5

Features

- Material: Chromium molybdenum steel (ISO 34CrMo4, 42CrMo4)
- Gear tooth treatment: Induction hardened to 49-55 HRc
- Gear quality: ISO 5
- Gear tooth surface finish 1.6
- Keyway features available - see page 4-69

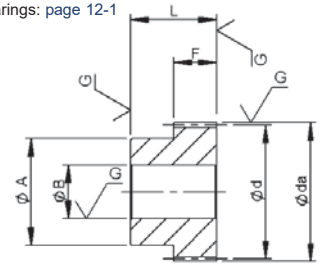
Technical support

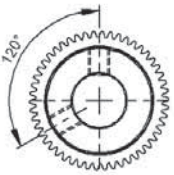
- For transmission capacity - see page T4-17
- Part number structure - see page 4-60
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop
- For modified or fully bespoke gears, please contact us

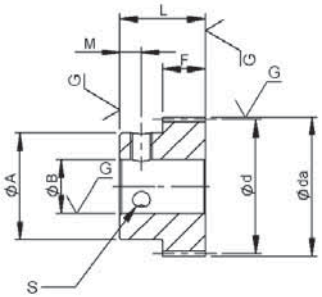
Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Set screws: page 13-1
Shafts: page 11-2
Bearings: page 12-1

All dimensions in mm
Pressure angle 20°







- in part number denotes no threaded hole

* in part number denotes two threaded holes (set screws not supplied)

Part number selection table

Part Number	Number of Teeth	PCD Ød	OD Øda	Bore Dia (H7) ØB	Hub Dia ØA	Face Width F	Overall Length L	Set Screw S	Set Screw M
SG1S30B*1012	30	30.0	32.0	12	26			M4	5
SG1S32B-1010	32	32.0	34.0	10	26			-	-
SG1S34B-1010	34	34.0	36.0	10	26			-	-
SG1S35B-1010	35	35.0	37.0	10	26			-	-
SG1S36B-1010	36	36.0	38.0	10	26			-	-
SG1S38B-1010	38	38.0	40.0	10	26			-	-
SG1S40B-1010	40	40.0	42.0	10	26	10	20	-	-
SG1S40B-1012	40	40.0	42.0	12	26			-	-
SG1S42B-1010	42	42.0	44.0	10	35			-	-
SG1S44B-1010	44	44.0	46.0	10	35			-	-
SG1S45B-1012	45	45.0	47.0	12	35			-	-
SG1S48B-1012	48	48.0	50.0	12	35			-	-
SG1S50B-1012	50	50.0	52.0	12	35			-	-

Features

- Material: Chromium molybdenum steel (ISO 34CrMo4, 42CrMo4)
- Gear tooth treatment: Induction hardened to 49-55 HRc
- Gear quality: ISO 5
- Gear tooth surface finish 1.6
- Keyway features available - see page 4-69

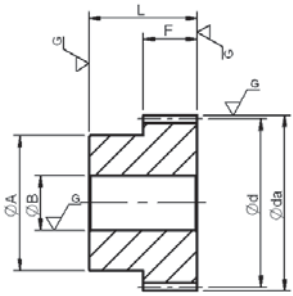
Technical support

- For transmission capacity - see page T4-17
- Part number structure - see page 4-60
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop
- For modified or fully bespoke gears, please contact us

Ground Pin Hub Spur Gears

All dimensions in mm
Pressure angle 20°

Associated Products
Set screws: page 13-1
Shafts: page 11-2
Bearings: page 12-1



- in part number denotes no threaded hole

Part number selection table

Part Number	Number of Teeth	PCD Ød	OD Øda	Bore Dia (H7) ØB	Hub Dia ØA	Face Width F	Overall Length L
SG1S52B-1012	52	52.0	54.0		35		
SG1S54B-1012	54	54.0	56.0		35		
SG1S55B-1012	55	55.0	57.0		35		
SG1S56B-1012	56	56.0	58.0		35		
SG1S60B-1012	60	60.0	62.0		40		
SG1S64B-1012	64	64.0	66.0	12	40	10	20
SG1S70B-1012	70	70.0	72.0		40		
SG1S72B-1012	72	72.0	74.0		45		
SG1S75B-1012	75	75.0	77.0		45		
SG1S80B-1012	80	80.0	82.0		45		
SG1S100B-1012	100	100.0	102.0		50		

Features

- Material: Chromium molybdenum steel (ISO 34CrMo4, 42CrMo4)
- Gear tooth treatment: Induction hardened to 49-55 HRc
- Gear quality: ISO 5
- Gear tooth surface finish 1.6
- Keyway features available - see page 4-69

Technical support

- For transmission capacity - see page T4-17
- Part number structure - see page 4-60
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop
- For modified or fully bespoke gears, please contact us

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Ground pin hub spur gears: page 4-62

All dimensions in mm

Tolerances for key

b x t	3 x 3	4 x 4
b Tolerance (h)	h9	h9
t Tolerance (h)	h9	h9

Keyway information

Bore Dia Ø	Keyway b_2 x t_2	Width		Depth	
		b_2	Tolerance Js 9	t_2	Tolerance
8	3 x 1.4	3	±0.0125	1.4	+0.1 -0
10					
12	4 x 1.8	4	±0.015	1.8	

Features

- The keyways above are available as options, add -K to the end of the part number
- Additional custom keyways are available, please contact us

Brass gears

Brass gears are ideal for lightly loaded applications, an economic balance of accuracy and load capacity against cost.

- Modules 0.3 to 0.75 available
- Manufactured from brass (ISO CuZn38Pb2, CuZn39Pb3)
- Standard gear quality: ISO 9 - 10

Part number structure

S 50 B 20 K + 02 03

Gear Type	Module	Material	Number of Teeth	Shaft Types	Bore Types	Face Width	Bore Diameter
Spur Gear	0.3 30 0.5 50 0.75 75	Brass	8 - 120	A - Hubless with bore B - Bore with hub on one side K - Pinion shaft	- Gear shaft + Gear shaft with bore and threaded hole, set screw not supplied	2 02 3 03 4 04 8 08 10 10	2 02 3 03 5 05 6 06 8 08 12 12 15 15

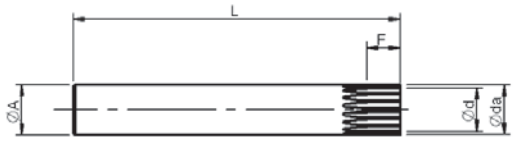
Additional brass gears are available in the precision gear range - see page 4-6

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Set screws: page 13-1
Shafts: page 11-2
Bearings: page 12-1

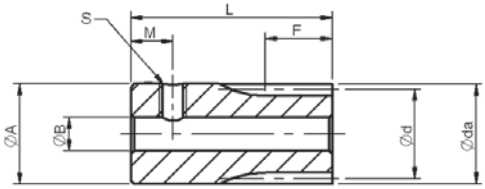
All dimensions in mm
Pressure angle 20°

Shaft Pinion



- in part number denotes shaft pinion type

Pinion



Part number selection table

set screw not supplied

Part Number	Module	Number of Teeth	PCD Ød	OD Øda	Bore Dia (H8) ØB	Hub Dia ØA	Face Width F	Overall Length L	Set Screw S	Set Screw M
S30B14K+0402	0.3	14	4.2	4.8	2	5.0	4	12	M1.6	2.5
S30B15K+0402		15	4.5	5.1		5.5		12	M1.6	2.5
S30B16K+0402		16	4.8	5.4		5.5		12	M1.6	2.5
S30B18K+0402		18	5.4	6.0		6.0		12	M2	2.5
S50B10K-1006	0.5	10	5.0	6.0	-	6.0	10	55	-	-
S50B12K-1007		12	6.0	7.0	-	7.0	10	55	-	-
S50B14K-1008		14	7.0	8.0	-	8.0	10	55	-	-
S50B15K+0803		15	7.5	8.5	3	9.0	8	18	M3	3.0
S50B16K+0803		16	8.0	9.0	3	9.0	8	18	M3	3.0
S50B18K+0803		18	9.0	10.0	3	10.0	8	18	M3	3.0
S50B20K+0803		20	10.0	11.0	3	11.0	8	18	M3	3.0
S75B10K-0809	0.75	10	7.5	9.0	-	9.0	8	55	-	-
S75B12K-0811		12	9.0	10.5	-	11.0		55	-	-
S75B14K+0805		14	10.5	12.0	5	12.0		20	M3	3.0
S75B15K+0805		15	11.25	12.75	5	12.75		20	M3	3.0
S75B16K+0805		16	12.0	13.5	5	13.5		20	M3	3.0
S75B18K+0805		18	13.5	15.0	5	15.0		20	M3	3.0
S75B20K+0805		20	15.0	16.5	5	16.5		20	M3	3.0

Features

- Material: Brass (ISO CuZn39Pb3)
- Gear quality: ISO 9 - 10
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop

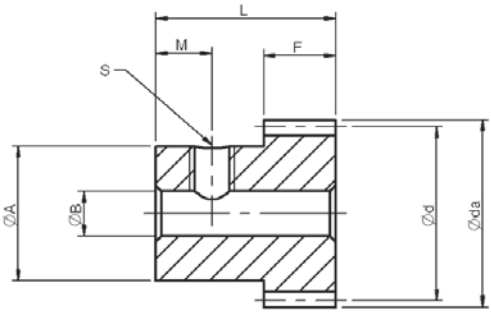
Technical support

- Allowable backlash - see page T4-17
- For modified or fully bespoke gears, please contact us
- Product overview - see page 4-70

Brass Pin Hub Spur Gears

All dimensions in mm
Pressure angle 20°

Associated Products
Set screws: page 13-1
Shafts: page 11-2
Bearings: page 12-1



Part number selection table

set screw not supplied

Part Number	Number of Teeth	PCD Ød	OD Øda	Bore Dia (H8) ØB	Hub Dia ØA	Face Width F	Overall Length L	Set Screw S	Set Screw M
S30B20B+0302	20	6.0	6.6	2	5	3.2		M1.6	2.5
S30B24B+0302	24	7.2	7.8	2	6	3.2		M2	2.5
S30B25B+0302	25	7.5	8.1	2	6	3.2		M2	2.5
S30B28B+0302	28	8.4	9.0	2	7	3.2		M2	2.5
S30B30B+0302	30	9.0	9.6	2	8	3.2		M2	2.5
S30B32B+0202	32	9.6	10.2	2	8	2.0	8	M2	3.0
S30B35B+0202	35	10.5	11.1	2	8	2.0		M2	3.0
S30B36B+0203	36	10.8	11.4	3	9	2.0		M3	3.0
S30B40B+0203	40	12.0	12.6	3	10	2.0		M3	3.0
S30B45B+0203	45	13.5	14.1	3	10	2.0		M3	3.0
S30B48B+0203	48	14.4	15.0	3	10	2.0		M3	3.0

Features

- Material: Brass (ISO CuZn39Pb3)
- Gear quality: ISO 9 - 10
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop

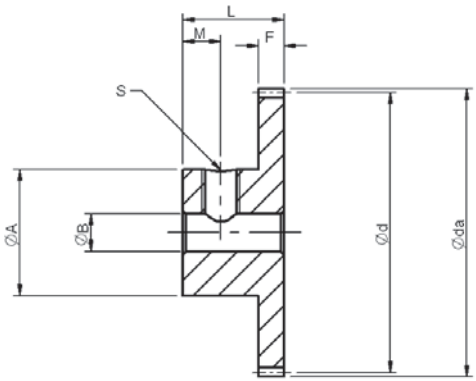
Technical support

- Allowable backlash - see page T4-17
- For modified or fully bespoke gears, please contact us
- Product overview - see page 4-70

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Set screws: page 13-1
Shafts: page 11-2
Bearings: page 12-1

All dimensions in mm
Pressure angle 20°



Part number selection table

set screw not supplied

Part Number	Number of Teeth	PCD Ød	OD Øda	Bore Dia (H8) ØB	Hub Dia ØA	Face Width F	Overall Length L	Set Screw S	Set Screw M
S30B50B+0203	50	15.0	15.6						
S30B56B+0203	56	16.8	17.4						
S30B60B+0203	60	18.0	18.6						
S30B64B+0203	64	19.2	19.8						
S30B66B+0203	66	19.8	20.4						
S30B70B+0203	70	21.0	21.6						
S30B72B+0203	72	21.6	22.2	3	10	2	8	M3	3
S30B75B+0203	75	22.5	23.1						
S30B80B+0203	80	24.0	24.6						
S30B90B+0203	90	27.0	27.6						
S30B96B+0203	96	28.8	29.4						
S30B100B+0203	100	30.0	30.6						
S30B108B+0203	108	32.4	33.0						

Features

- Material: Brass (ISO CuZn39Pb3)
- Gear quality: ISO 9 - 10
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop

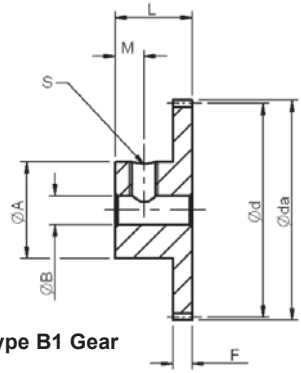
Technical support

- Allowable backlash - see page T4-17
- For modified or fully bespoke gears, please contact us
- Product overview - see page 4-70

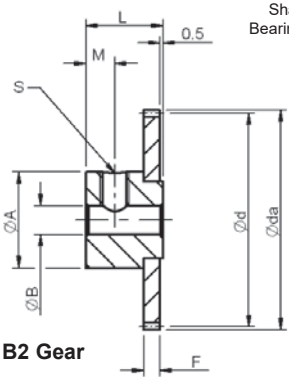
Brass Pin Hub Spur Gears

All dimensions in mm
Pressure angle 20°

Associated Products
Set screws: page 13-1
Shafts: page 11-2
Bearings: page 12-1



Type B1 Gear



Type B2 Gear

Part number selection table

set screw not supplied

Part Number	Number of Teeth	Type	PCD Ød	OD Øda	Bore Dia (H8) ØB	Hub Dia ØA	Face Width F	Overall Length L	Set Screw S	Set Screw M
S50B20B+0303	20	B1	10.0	11.0		8.2	3	8		
S50B24B+0303	24	B1	12.0	13.0		10.0	3	8		
S50B25B+0303	25	B1	12.5	13.5		10.0	3	8		
S50B26B+0303	26	B1	13.0	14.0		10.0	3	8		
S50B28B+0303	28	B1	14.0	15.0		10.0	3	8		
S50B30B+0303	30	B1	15.0	16.0		10.0	3	8		
S50B32B+0303	32	B1	16.0	17.0		10.0	3	8		
S50B35B+0303	35	B1	17.5	18.5		10.0	3	8		
S50B36B+0303	36	B1	18.0	19.0		10.0	3	8		
S50B40B+0203	40	B2	20.0	21.0	3	10.0	2	7.5	M3	2.5
S50B42B+0203	42	B2	21.0	22.0		10.0	2	7.5		
S50B45B+0203	45	B2	22.5	23.5		10.0	2	7.5		
S50B48B+0203	48	B2	24.0	25.0		10.0	2	7.5		
S50B50B+0203	50	B2	25.0	26.0		10.0	2	7.5		
S50B55B+0203	55	B2	27.5	28.5		10.0	2	7.5		
S50B56B+0203	56	B2	28.0	29.0		10.0	2	7.5		
S50B58B+0203	58	B2	29.0	30.0		10.0	2	7.5		
S50B60B+0203	60	B2	30.0	31.0		10.0	2	7.5		

Type B2 gears have riveted hub

Features

- Material: Brass (ISO CuZn38Pb2, CuZn39Pb3)
- Gear quality: ISO 9 - 10
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop

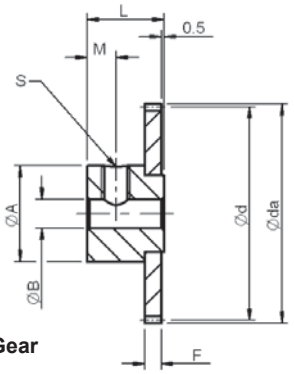
Technical support

- Allowable backlash - see page T4-17
- For modified or fully bespoke gears, please contact us
- Product overview - see page 4-70

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Set screws: page 13-1
Shafts: page 11-2
Bearings: page 12-1

All dimensions in mm
Pressure angle 20°



Type B2 Gear

Part number selection table

set screw not supplied

Part Number	Number of Teeth	Type	PCD Ød	OD Øda	Bore Dia (H8) ØB	Hub Dia ØA	Face Width F	Overall Length L	Set Screw S	Set Screw M
S50B62B+0203	62	B2	31.0	32.0		10.0		7.5		2.5
S50B64B+0203	64	B2	32.0	33.0		10.0		7.5		2.5
S50B65B+0203	65	B2	32.5	33.5		10.0		7.5		2.5
S50B68B+0203	68	B2	34.0	35.0		10.0		7.5		2.5
S50B70B+0203	70	B2	35.0	36.0		10.0		7.5		2.5
S50B72B+0203	72	B2	36.0	37.0		10.0		7.5		2.5
S50B75B+0203	75	B2	37.5	38.5		10.0		7.5		2.5
S50B80B+0203	80	B2	40.0	41.0	3	10.0	2	7.5	M3	2.5
S50B84B+0203	84	B2	42.0	43.0		10.0		7.5		2.5
S50B85B+0203	85	B2	42.5	43.5		10.0		7.5		2.5
S50B90B+0203	90	B2	45.0	46.0		10.0		7.5		2.5
S50B95B+0203	95	B2	47.5	48.5		10.0		7.5		2.5
S50B100B+0203	100	B2	50.0	51.0		15.0		9.5		3.5
S50B105B+0203	105	B2	52.5	53.5		15.0		9.5		3.5
S50B110B+0203	110	B2	55.0	56.0		15.0		9.5		3.5

Type B2 gears have riveted hub

Features

- Material: Brass (ISO CuZn38Pb2, CuZn39Pb3)
- Gear quality: ISO 9 - 10
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop

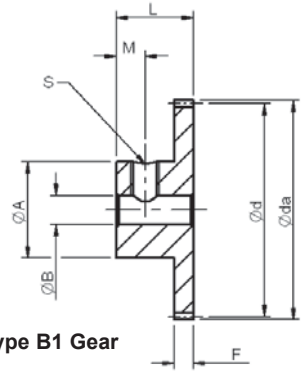
Technical support

- Allowable backlash - see page T4-17
- For modified or fully bespoke gears, please contact us
- Product overview - see page 4-70

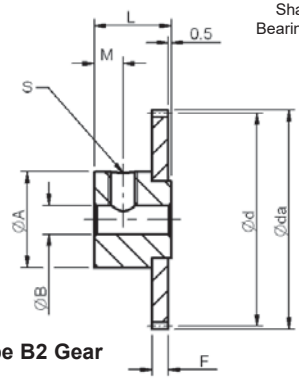
Brass Pin Hub Spur Gears

All dimensions in mm
Pressure angle 20°

Associated Products
Set screws: page 13-1
Shafts: page 11-2
Bearings: page 12-1



Type B1 Gear



Type B2 Gear

Part number selection table

set screw not supplied

Part Number	Number of Teeth	Type	PCD Ød	OD Øda	Bore Dia (H8) ØB	Hub Dia ØA	Face Width F	Overall Length L	Set Screw S	Set Screw M
S75B16B+0305	16	B1	12.0	13.5	5	10.0		10.0	M3	
S75B18B+0305	18	B1	13.5	15.0	5	11.0		10.0	M3	
S75B20B+0306	20	B1	15.0	16.5	6	12.0		10.0	M4	
S75B24B+0306	24	B1	18.0	19.5	6	14.0		10.0	M4	
S75B25B+0306	25	B1	18.75	20.25	6	14.0		10.0	M4	
S75B26B+0306	26	B1	19.5	21.0	6	14.0		10.0	M4	
S75B28B+0306	28	B1	21.0	22.5	6	14.0		10.0	M4	
S75B30B+0306	30	B1	22.5	24.0	6	15.0		10.0	M4	
S75B32B+0306	32	B1	24.0	25.5	6	15.0		10.0	M4	
S75B35B+0306	35	B1	26.25	27.75	6	18.0	3	10.0	M4	3.5
S75B36B+0306	36	B1	27.0	28.5	6	18.0		10.0	M4	
S75B40B+0306	40	B1	30.0	31.5	6	20.0		10.0	M4	
S75B42B+0306	42	B1	31.5	33.0	6	20.0		10.0	M4	
S75B45B+0306	45	B1	33.75	35.25	6	20.0		10.0	M4	
S75B48B+0306	48	B1	36.0	37.5	6	20.0		10.0	M4	
S75B50B+0306	50	B2	37.5	39.0	6	20.0		10.5	M4	
S75B55B+0306	55	B2	41.25	42.75	6	20.0		10.5	M4	
S75B56B+0306	56	B2	42.0	43.5	6	20.0		10.5	M4	
S75B58B+0306	58	B2	43.5	45.0	6	20.0		10.5	M4	

Type B2 gears have riveted hub

Features

- Material: Brass (ISO CuZn38Pb2, CuZn39Pb3)
- Gear quality: ISO 9 - 10
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop

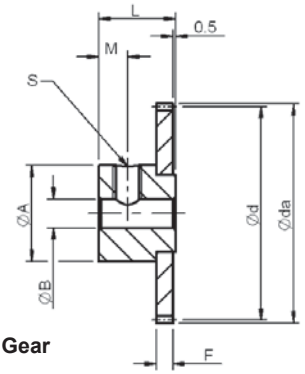
Technical support

- Allowable backlash - see page T4-17
- For modified or fully bespoke gears, please contact us
- Product overview - see page 4-70

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Set screws: page 13-1
Shafts: page 11-2
Bearings: page 12-1

All dimensions in mm
Pressure angle 20°



Type B2 Gear

Part number selection table

set screw not supplied

Part Number	Number of Teeth	Type	PCD Ød	OD Øda	Bore Dia (H8) ØB	Hub Dia ØA	Face Width F	Overall Length L	Set Screw S	Set Screw M
S75B60B+0306	60	B2	45.0	46.5						
S75B62B+0306	62	B2	46.5	48.0						
S75B64B+0306	64	B2	48.0	49.5						
S75B65B+0306	65	B2	48.75	50.25						
S75B66B+0306	66	B2	49.5	51.0						
S75B68B+0306	68	B2	51.0	52.5						
S75B70B+0306	70	B2	52.5	54.0						
S75B72B+0306	72	B2	54.0	55.5						
S75B75B+0306	75	B2	56.25	57.75						
S75B80B+0306	80	B2	60.0	61.5	6	20.0	3	10.5	M4	3.5
S75B85B+0306	85	B2	63.75	65.25						
S75B90B+0306	90	B2	67.5	69.0						
S75B95B+0306	95	B2	71.25	72.75						
S75B100B+0306	100	B2	75.0	76.5						
S75B105B+0306	105	B2	78.75	80.25						
S75B110B+0306	110	B2	82.5	84.0						
S75B115B+0306	115	B2	86.25	87.75						
S75B120B+0306	120	B2	90.0	91.5						

Type B2 gears have riveted hub

Features

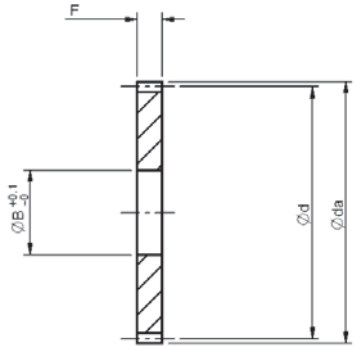
- Material: Brass (ISO CuZn38Pb2, CuZn39Pb3)
- Gear quality: ISO 9 - 10
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop

Technical support

- Allowable backlash - see page T4-17
- For modified or fully bespoke gears, please contact us
- Product overview - see page 4-70

All dimensions in mm
Pressure angle 20°

Associated Products
Gears: page 4-1
Shafts: page 11-2



Part number selection table

Part Number	Number of Teeth	PCD Ød	OD Øda	Face Width F	Bore Dia ØB
S50B40A-0208	40	20.0	21.0	2	8
S50B42A-0208	42	21.0	22.0		
S50B45A-0208	45	22.5	23.5		
S50B48A-0208	48	24.0	25.0		
S50B50A-0208	50	25.0	26.0		
S50B55A-0208	55	27.5	28.5		
S50B56A-0208	56	28.0	29.0		
S50B58A-0208	58	29.0	30.0		
S50B60A-0208	60	30.0	31.0		
S50B62A-0208	62	31.0	32.0		
S50B64A-0208	64	32.0	33.0		
S50B65A-0208	65	32.5	33.5		

Features

- Material: Brass (ISO CuZn38Pb2, CuZn39Pb3)
- Gear quality: ISO 9 - 10
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop

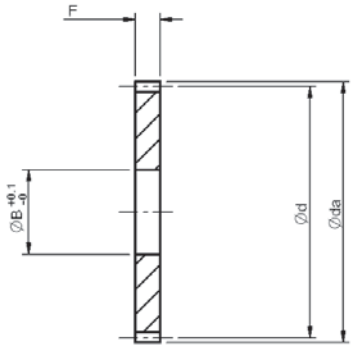
Technical support

- Allowable backlash - see page T4-17
- For modified or fully bespoke gears, please contact us
- Product overview - see page 4-70

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Gears: page 4-1
Shafts: page 11-2

All dimensions in mm
Pressure angle 20°



Part number selection table

Part Number	Number of Teeth	PCD Ød	OD Øda	Face Width F	Bore Dia ØB
S50B68A-0208	68	34.0	35.0		8
S50B70A-0208	70	35.0	36.0		8
S50B72A-0208	72	36.0	37.0		8
S50B75A-0208	75	37.5	38.5		8
S50B80A-0208	80	40.0	41.0		8
S50B84A-0208	84	42.0	43.0	2	8
S50B85A-0208	85	42.5	43.5		8
S50B90A-0208	90	45.0	46.0		8
S50B95A-0208	95	47.5	48.5		8
S50B100A-0212	100	50.0	51.0		12
S50B105A-0212	105	52.5	53.5		12
S50B110A-0212	110	55.0	56.0		12

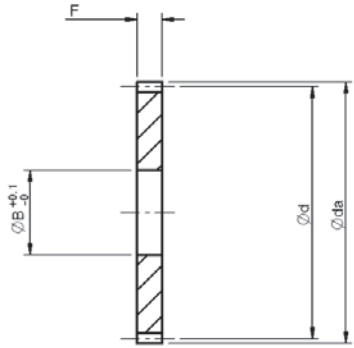
Features
- Material: Brass (ISO CuZn38Pb2, CuZn39Pb3)
- Gear quality: ISO 9 - 10
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop

Technical support
- Allowable backlash - see page T4-17
- For modified or fully bespoke gears, please contact us
- Product overview - see page 4-70

Brass Hubless Spur Gears

All dimensions in mm
Pressure angle 20°

Associated Products
Gears: page 4-1



Part number selection table

Part Number	Number of Teeth	PCD Ød	OD Øda	Face Width F	Bore Dia ØB
S75B50A-0315	50	37.5	39.0	3	15
S75B55A-0315	55	41.25	42.75		
S75B56A-0315	56	42.0	43.5		
S75B58A-0315	58	43.5	45.0		
S75B60A-0315	60	45.0	46.5		
S75B62A-0315	62	46.5	48.0		
S75B64A-0315	64	48.0	49.5		
S75B65A-0315	65	48.75	50.25		
S75B66A-0315	66	49.5	51.0		
S75B68A-0315	68	51.0	52.5		
S75B70A-0315	70	52.5	54.0		
S75B72A-0315	72	54.0	55.5		

Features

- Material: Brass (ISO CuZn38Pb2, CuZn39Pb3)
- Gear quality: ISO 9 - 10
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop

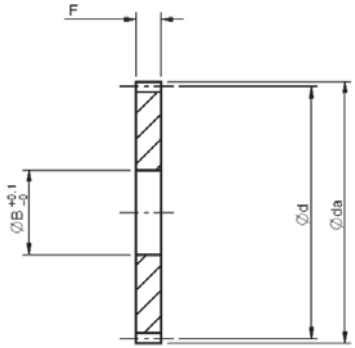
Technical support

- Allowable backlash - see page T4-17
- For modified or fully bespoke gears, please contact us
- Product overview - see page 4-70

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Gears: page 4-1

All dimensions in mm
Pressure angle 20°



Part number selection table

Part Number	Number of Teeth	PCD Ød	OD Øda	Face Width F	Bore Dia ØB
S75B75A-0315	75	56.25	57.75	3	15
S75B80A-0315	80	60.0	61.5		
S75B85A-0315	85	63.75	65.25		
S75B90A-0315	90	67.5	69.0		
S75B95A-0315	95	71.25	72.75		
S75B100A-0315	100	75.0	76.5		
S75B105A-0315	105	78.75	80.25		
S75B110A-0315	110	82.5	84.0		
S75B115A-0315	115	86.25	87.75		
S75B120A-0315	120	90.0	91.5		

Features

- Material: Brass (ISO CuZn38Pb2, CuZn39Pb3)
- Gear quality: ISO 9 - 10
- Small quantities of selected items available ex-stock, please visit our on-line store: www.reliance.co.uk/shop

Technical support

- Allowable backlash - see page T4-17
- For modified or fully bespoke gears, please contact us
- Product overview - see page 4-70

Section Contents

Worms, bevels and internal gears

Reliance offers a range of worms and wheels, bevel and internal gears that are designed to complement our spur gear range by offering additional motion options. As with the spur gears these gears are offered as precision grade in stainless steel and brass as a more economical alternative for less demanding applications.

Worms and wheels

Worm and wheel drives provide high ratio right angled motion in a small space. Both precision cut and precision cold rolled worms are available (refer to the features, options and technical information on the individual product pages). In general, for more accurate applications the precision cut worms will give the best results and for applications requiring a little more torque transmission precision rolled worms should be used.

Please note that this catalogue only shows a limited range of worms and wheels. Reliance has the ability to cut worms and wheels from 0.2 module up to 1 module; please contact us for requirements for special variants.

Bevel gears

Bevel gears are more efficient than worms and wheels for right angle drives, but they are typically used for lower ratio applications; if high ratios are required a spur gear reduction stage can be incorporated. Typically shaft angles of 90 degrees are used but other angles are possible – please contact us to discuss your application.

As with the worms and wheels, bevel gears are available in stainless steel and brass; the stainless steel option being higher precision than the brass option. It is important to note that with the bevel gears, where two gears are shown on the page the part number refers to the gear pair. Where only one gear is shown on the page the part number applies to individual gears only – for a pair, two gears must be ordered.

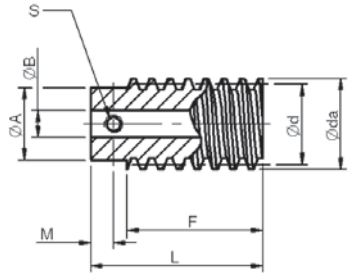
Internal gears

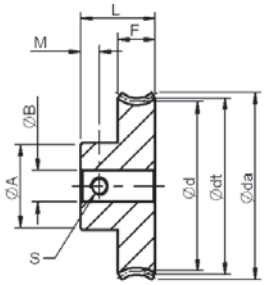
A small range of brass internal gears is offered for use with the brass gear range.

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Set screws: page 13-11
Shafts: page 11-2
Bearings: page 12-1

All dimensions in mm
Pressure angle 20°





Part number selection tables

Worm

Set screw supplied

Part Number	Number of Starts	Thread Direction	PCD Ød	OD Øda	Bore Dia (H8) ØB	Hub Dia ØA	Face Width F	Overall Length L	Lead Angle	Set Screw S	M
W50SUR1+B	1	Right	9	10	3	7.6	13	18	3°11'	M2.5	2.5

Wormwheel

Set screw supplied

Part Number	Number of Teeth	Throat Dia Ødt	PCD Ød	Add Mod Coef x	OD Øda	Bore Dia (H8) ØB	Hub Dia ØA	Face Width F	Overall Length L	Set Screw S	M
G50B20+R1	20	11	10	-0.015	11.3	3	9	5	11	M3	3
G50B30+R1	30	16	15	-0.023	16.3	4	12		11	M3	3
G50B40+R1	40	21	20	-0.031	21.3	5	15		13	M4	4
G50B50+R1	50	26	25	-0.038	26.3	5	16		13	M4	4

Dimension x: Negative modification to allow for use of standard centres

Features

- Worm material: Stainless steel SUS304, precision cold rolled
- Wormwheel material: Brass CuZn39Pb3
- Single start worm, right hand thread

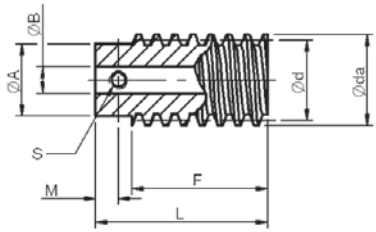
Technical support

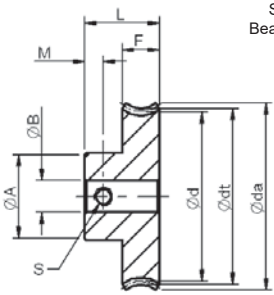
- Worm gear formulae - see page T4-19
- Backlash at nominal centres - see page T4-17
- For modified or fully bespoke worms and wheels, please contact us
- Product overview - see page 5-2

All dimensions in mm
Pressure angle 20°

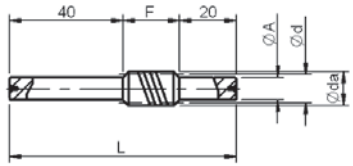
Associated Products
Set screws: page 13-11
Shafts: page 11-2
Bearings: page 12-1

Type B





Type L (Worm shaft)



Part number selection tables

Worm

Set screw not supplied

Part Number	Number of Starts	Thread Direction	PCD Ød	OD Øda	Bore Dia (H8) ØB	Hub Dia ØA	Face Width F	Overall Length L	Lead Angle	Set Screw S	M
W80SUR1+B	1	Right	10.4	12	5	10.3	14	26	4°24'	M3	3
W80SUR1-L					-	8.0(h9)	20	80		-	-

the dash (**-L**) in part number denotes worm shaft type

Wormwheel

Set screw supplied

Part Number	Number of Teeth	Throat Dia Ødt	PCD Ød	Add Mod Coef x	OD Øda	Bore Dia (H8) ØB	Hub Dia ØA	Face Width F	Overall Length L	Set Screw S	M
G80A20+R1	20	17.6	16	-0.029	18.1	5	12	6	12	M3	3
G80A30+R1	30	25.6	24	-0.044	26.1	5	16		12	M3	3
G80A40+R1	40	33.6	32	-0.059	34.1	6	18		14	M4	4
G80A50+R1	50	41.6	40	-0.074	42.1	6	20		14	M4	4

Dimension x: Negative modification to allow for use of standard centres

Features

- Worm material: Stainless steel SUS304, precision cold rolled
- Wormwheel material: Aluminium bronze casting JIS CAC702
- Single start worm, right hand thread
- Wormwheel suited to right hand, single thread worm

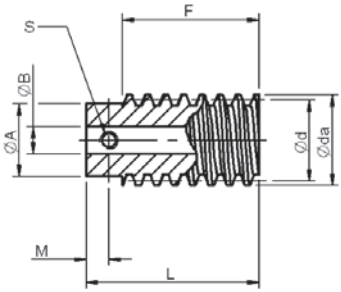
Technical support

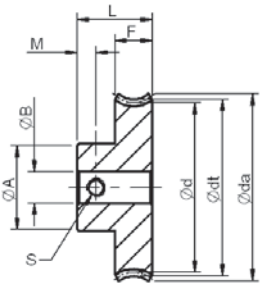
- Worm gear formulae - see page T4-19
- Backlash at nominal centres - see page T4-17
- For modified or fully bespoke worms and wheels, please contact us
- Product overview - see page 5-2

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Set screws: page 13-11
Shafts: page 11-2
Bearings: page 12-1

All dimensions in mm
Pressure angle 20°





Part number selection tables

Worm

Set screw not supplied

Part Number	Number of Starts	Thread Direction	PCD Ød	OD Øda	Bore Dia (H8) ØB	Hub Dia ØA	Face Width F	Overall Length L	Lead Angle	Set Screw S	M
W1SUR1+B	1	Right	16	18	6	15.85	15.5	32	3°35'	M4	3.5
W1SUR2+B	2						15.0		7°11'		

Wormwheel

Set screw supplied

Part Number	Number of Teeth	Throat Dia Ødt	PCD Ød	Add Mod Coef x	OD Øda	Bore Dia (H8) ØB	Hub Dia ØA	Face Width F	Overall Length L	Set Screw S	M
G1A20R1+6	20	22	20	-0.019	23.5	6	17	10	18	M5	4
G1A30R1+6	30	32	30	-0.029	33.5	6	22				
G1A40R1+8	40	42	40	-0.039	43.5	8	25				
G1A50R1+8	50	52	50	-0.048	53.5	8	30				
G1A20R2+6	20	22	20	-0.079	23.5	6	17				
G1A30R2+6	30	32	30	-0.118	33.5	6	22				
G1A40R2+8	40	42	40	-0.158	43.5	8	25				
G1A50R2+8	50	52	50	-0.197	53.5	8	30				

Dimension x: Negative modification to allow for use of standard centres

Features and options

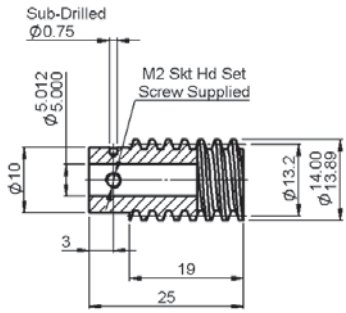
- Worm material: Stainless steel SUS304, precision cold rolled
- Wormwheel material: Aluminium bronze casting JIS CAC702
- Single **(R1)** and double **(R2)** start worm, right hand thread
- Left hand thread direction available, replace R with L in the part number

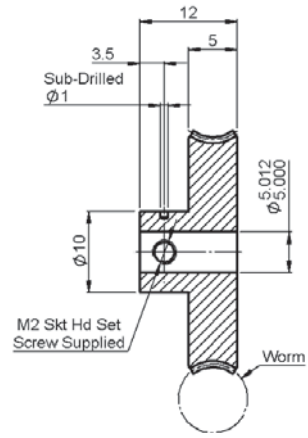
Technical support

- Worm gear formulae - see page T4-19
- Backlash at nominal centres - see page T4-17
- For modified or fully bespoke worms and wheels, please contact us
- Product overview - see page 5-2

All dimensions in mm
General tolerances ±0.13 mm

Associated Products
Set screws: page 13-11
Shafts: page 11-2
Bearings: page 12-1





Part number selection tables

Worm	
Lead Angle	1º 44'
Lead	1.257
P.A.	14.5º
Part Number	**WGS-5S**

Wormwheel	Dimensions	
Part Number	**Number of Teeth**	**Pitch Diameter**
Single Start		
WGB83-S40	40	16.00
WGB83-S50	50	20.00
WGB83-S60	60	24.00
WGB83-S70	70	28.00
WGB83-S80	80	32.00
WGB83-S90	90	36.00
WGB83-S100	100	40.00
WGB83-S110	110	44.00
WGB83-S120	120	48.00

Features and options

- Gear quality AQ10 - see page T4-1
- Worm material: Stainless steel (DIN 1.4305)
- Wormwheel material: Naval brass QQ-B-637
- Anti-backlash wormwheels available
- Alternative number of starts available

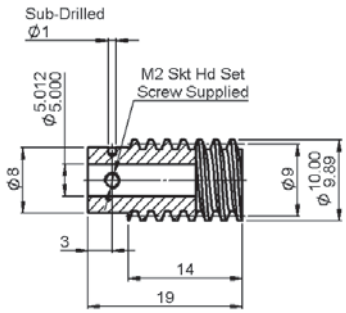
Technical support

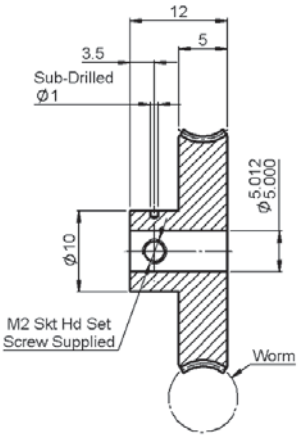
- Worm gear formulae - see page T4-19
- For modified or fully bespoke worms and wheels, please contact us
- Product overview - see page 5-2

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Set screws: page 13-11
Shafts: page 11-2
Bearings: page 12-1

All dimensions in mm
General tolerances ±0.13 mm





Part number selection tables

Worm	
Lead Angle	3º 10'
Lead	1.571
P.A.	14.5º
Part Number	**WFS-5S**

Wormwheel	Dimensions	
Part Number	**Number of Teeth**	**Pitch Diameter**
Single Start		
WFB83-S30	30	15.00
WFB83-S40	40	20.00
WFB83-S50	50	25.00
WFB83-S60	60	30.00
WFB83-S70	70	35.00
WFB83-S80	80	40.00
WFB83-S90	90	45.00
WFB83-S100	100	50.00
WFB83-S120	120	60.00

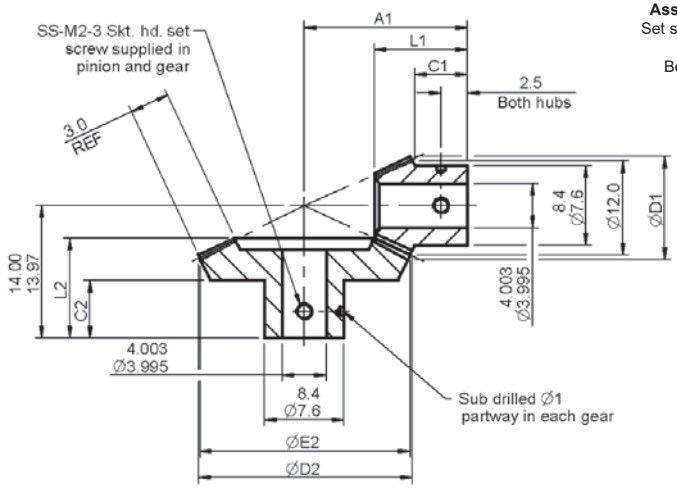
Features and options

- Gear quality AQ10 - see page T4-1
- Worm material: Stainless steel (DIN 1.4305)
- Wormwheel material: Naval brass QQ-B-637
- Anti-backlash wormwheels available
- Alternative number of starts available

Technical support

- Worm gear formulae - see page T4-19
- For modified or fully bespoke worms and wheels, please contact us
- Product overview - see page 5-2

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°
Material: Stainless steel 303



Associated Products
Set screws: page 13-11
Shafts: page 11-2
Bearings: page 12-1

Part number selection table

Gears supplied as a pair

Part Number (pair)	Ratio	Module	Number of Teeth		Max. TTCE (pair)	Max. TCE (pair)
			Pinion	Gear		
M04N-1S	1:1	0.4	30	30	0.025	0.050
M04N-2S	2:1		30	60		
M04N-3S	3:1		30	90		
M04N-4S	4:1		30	120		

Dimension table

Part Number (pair)	Overall Length ±0.15		Outside Dia +0.00 / -0.05		Pitch Dia	Hub Length ±0.25		Distance to Apex +0.00 / -0.03
	Pinion L1	Gear L2	Pinion ØD1	Gear ØD2	Gear ØE2	Pinion C1	Gear C2	Pinion A1
M04N-1S	10.28	10.28	12.56	12.56	12.0	6.00	6.00	14.00
M04N-2S	9.86	9.50	12.96	24.23	24.0	6.00	5.00	19.00
M04N-3S	9.00	9.13	13.07	36.15	36.0	5.33	5.00	24.00
M04N-4S	8.03	8.91	13.11	48.11	48.0	4.50	5.00	29.00

Features

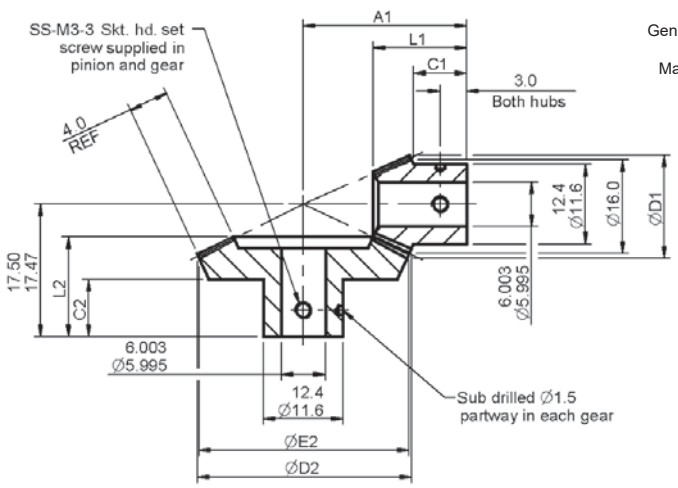
- Gleason system
- Precision bevel gears supplied as a pair

Technical support

- For modified or fully bespoke gears, please contact us
- Product overview - see page 5-2

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Set screws: page 13-11
Shafts: page 11-2
Bearings: page 12-1



All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°
Material: Stainless steel 303

Part number selection table

Gears supplied as a pair

Part Number (pair)	Ratio	Module	Number of Teeth		Max. TTCE (pair)	Max. TCE (pair)
			Pinion	Gear		
M05N-1S	1:1	0.5	32	32	0.025	0.050
M05N-2S	2:1		32	64		
M05N-3S	3:1		32	96		
M05N-4S	4:1		32	128		

Dimension table

Part Number (pair)	Overall Length ±0.15		Outside Dia +0.00 / -0.05		Pitch Dia	Hub Length ±0.25		Distance to Apex +0.00 / -0.03
	Pinion L1	Gear L2	Pinion ØD1	Gear ØD2	Gear ØE2	Pinion C1	Gear C2	Pinion A1
M05N-1S	12.52	12.52	16.71	16.71	16.0	7.50	7.50	17.50
M05N-2S	11.80	11.49	17.20	32.29	32.0	7.00	6.00	24.00
M05N-3S	9.98	10.98	17.34	48.19	48.0	5.30	6.00	30.00
M05N-4S	10.03	10.70	17.39	64.14	64.0	5.50	6.00	38.00

Features

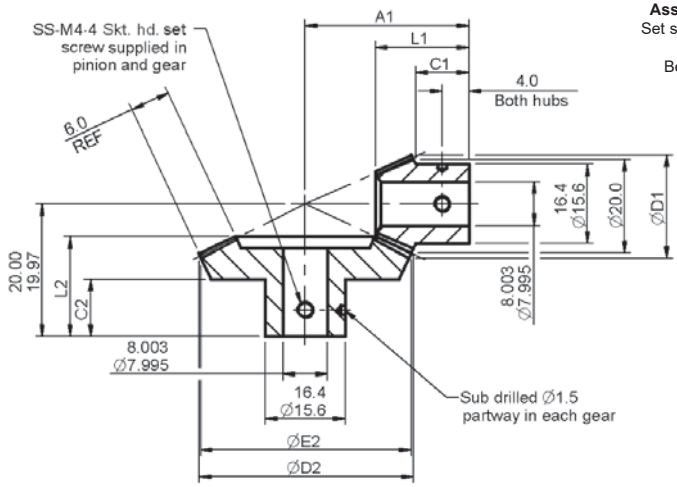
- Gleason system
- Precision bevel gears supplied as a pair

Technical support

- For modified or fully bespoke gears, please contact us
- Product overview - see page 5-2

Precision Bevel Gears

All dimensions in mm
General tolerances ±0.13 mm
Pressure angle 20°
Material: Stainless steel 303



Associated Products
Set screws: page 13-11
Shafts: page 11-2
Bearings: page 12-1

Part number selection table

Gears supplied as a pair

Part Number (pair)	Ratio	Module	Number of Teeth		Max. TTCE (pair)	Max. TCE (pair)
			Pinion	Gear		
M08N-1S	1:1	0.8	25	25	0.025	0.050
M08N-2S	2:1		25	50		

Dimension table

Part Number (pair)	Overall Length ±0.15		Outside Dia +0.00 / -0.05		Pitch Dia	Hub Lengths ±0.25		Distance to Apex +0.00 / -0.03
	Pinion L1	Gear L2	Pinion ØD1	Gear ØD2	Gear ØE2	Pinion C1	Gear C2	Pinion A1
M08N-1S	14.51	14.51	21.13	21.13	20.0	8.30	8.30	20.00
M08N-2S	15.70	13.00	21.93	40.47	40.0	9.00	7.50	30.00

Features

- Gleason system
- Precision bevel gears supplied as a pair

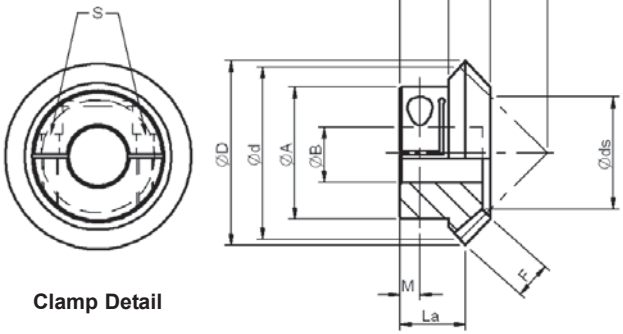
Technical support

- For modified or fully bespoke gears, please contact us
- Product overview - see page 5-2

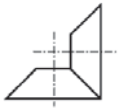
Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Set screws: page 13-11
Shafts: page 11-2
Bearings: page 12-1

All dimensions in mm
Pressure angle 20°
Material: Stainless steel SUS304



Clamp Detail



u=1

Gears supplied separately

Supplied with two clamp screws

Part number selection table

Part Number	Ratio u	Module	Number of Teeth	Face Width F	Set Screw S	M	Face Angle	Distance to Apex Ap
ML80SU20-1605	1:1	0.8	20	3.7	M2.5	3	49º3'	16.00
ML1SU20-2106		1.0	20	4.3	M3	4	49º3'	21.00
ML1SU30-2808		1.0	30	6.2	M4	5	47º42'	28.00
ML1.5SU20-3010		1.5	20	6.8	M4	5	49º3'	30.00

Dimension table

Part Number	Overall Length L	Outside Dia ØD	Pitch Dia Ød	Bore Dia (H8) ØB	Hub Dia ØA	Hub Length C	Tip Distance La	Øds
ML80SU20-1605	10.95	17.13	16	5	14.5	7.25	8.57	9.5
ML1SU20-2106	14.48	21.41	20	6	16.0	9.00	11.71	11.8
ML1SU30-2808	17.84	31.41	30	8	24.0	11.00	13.71	19.4
ML1.5SU20-3010	20.38	32.12	30	10	24.0	12.00	16.06	17.7

Features and options

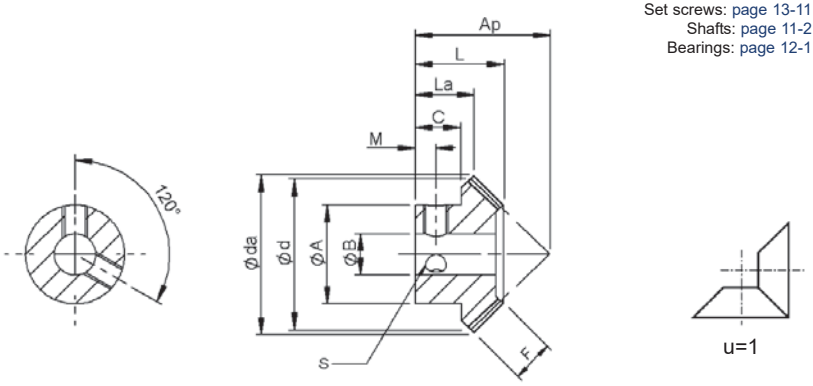
- Gear quality: ISO 8
- Recommended shaft tolerance h7 or better
- Recommended shaft surface finish 1.6Ra or better
- Small quantities of selected items available ex-stock, please visit our on-line store www.reliance.co.uk/shop

Technical support

- Mitre bevel gears are not supplied as a pair and need to be ordered separately
- For allowable backlash - see page T4-17
- Product overview - see page 5-2

All dimensions in mm
Pressure angle 20°
Material: Stainless steel SUS304

Associated Products
Set screws: page 13-11
Shafts: page 11-2
Bearings: page 12-1



Gears supplied separately
Set screw not supplied

Part number selection table

Part Number	Ratio u	Module	Number of Teeth	Face Width F	Set Screw S	M	Face Angle	Distance to Apex Ap
M80SU20*1605	1:1	0.8	20	3.7	M3	3.0	49º3'	16.00
M80SU25*1805		0.8	25	4.7	M3	3.0	48º51'	18.00
M80SU30*2006		0.8	30	5.6	M4	3.5	47º42'	20.00
M1SU20*2106		1.0	20	4.3	M4	4.5	49º3'	21.00
M1SU25*2306		1.0	25	5.3	M4	4.0	48º51'	23.00
M1SU30*2608		1.0	30	6.2	M5	4.5	47º42'	26.00

* in part number denotes two threaded holes

Dimension table

Part Number	Overall Length L	Outside Dia Øda	Pitch Dia Ød	Bore Dia (H8) ØB	Hub Dia ØA	Hub Length C	Tip Distance La
M80SU20*1605	11.00	17.13	16.0	5	12.0	6.00	8.57
M80SU25*1805	11.67	21.13	20.0	5	16.0	6.00	8.57
M80SU30*2006	12.34	25.13	24.0	6	18.0	6.00	8.57
M1SU20*2106	14.53	21.41	20.0	6	16.0	9.00	11.71
M1SU25*2306	14.70	26.41	25.0	6	20.0	8.00	11.21
M1SU30*2608	15.89	31.41	30.0	8	22.0	8.90	11.71

Features

- Gear quality: ISO 8
- Small quantities of selected items available ex-stock, please visit our on-line store www.reliance.co.uk/shop

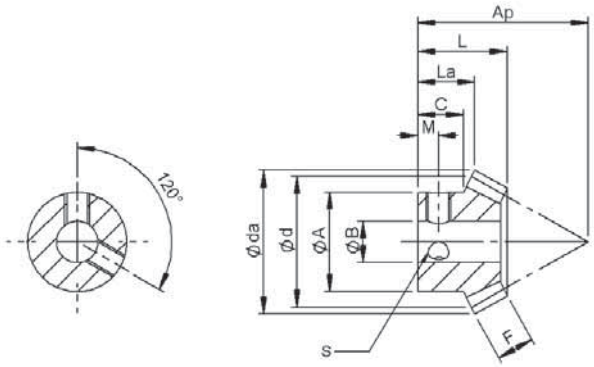
Technical support

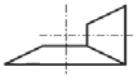
- Mitre bevel gears are not supplied as a pair and need to be ordered separately
- For allowable backlash - see page T4-17
- Product overview - see page 5-2

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Set screws: page 13-11
Shafts: page 11-2
Bearings: page 12-1

All dimensions in mm
Pressure angle 20°
Material: Stainless steel SUS304





Gears supplied separately
Set screws not supplied

Part number selection table

Part Number	Ratio u	Module	Number of Teeth	Face Width F	Set Screw S	Set Screw M	Face Angle	Distance to Apex Ap
B80SU20*5	2:1	0.8	20	4.5	M3	2.5	29º8'	22.50
B80SU40*6		0.8	40	4.5	M4	3.5	66º0'	16.46
B1SU20*6		1.0	20	5.7	M4	4.0	29º8'	29.60
B1SU40*8		1.0	40	5.7	M5	4.0	66º0'	21.80

* in part number denotes two threaded holes

Dimension table

Part Number	Overall Length L	Outside Dia Øda	Pitch Dia Ød	Bore Dia (H8) ØB	Hub Dia ØA	Hub Length C	Tip Distance La
B80SU20*5	10.79	17.43	16.0	5	12.0	5.5	6.86
B80SU40*6	11.01	32.72	32.0	6	20.0	6.0	9.18
B1SU20*6	15.03	21.79	20.0	6	16.0	8.6	10.05
B1SU40*8	15.02	40.89	40.0	8	25.0	8.0	12.69

Features

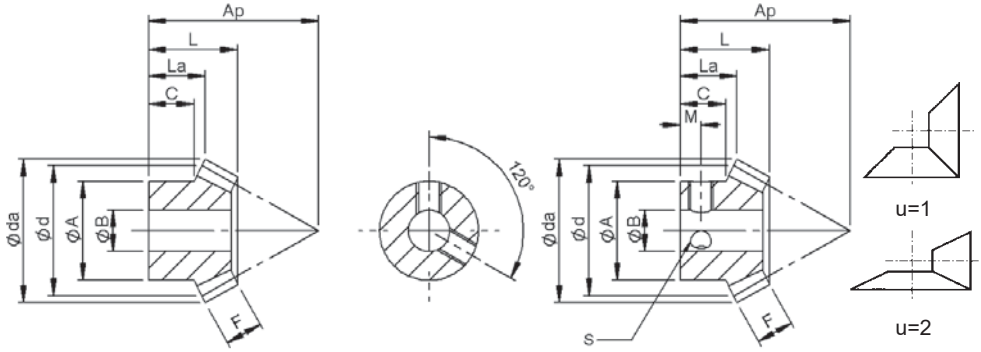
- Gear quality: ISO 8
- Small quantities of selected items available ex-stock, please visit our on-line store www.reliance.co.uk/shop

Technical support

- Mitre bevel gears are not supplied as a pair and need to be ordered separately
- For allowable backlash - see page T4-17
- Product overview - see page 5-2

All dimensions in mm
Pressure angle 20°
Material: Brass ISO CuZn39Pb3

Associated Products
Shafts: page 11-2
Bearings: page 12-1



Gears supplied separately
Set screw supplied

Part number selection table

Part Number	Ratio u	Module	Number of Teeth	Face Width F	Face Angle	Distance to Apex Ap
M50B20-1103	1:1	0.5	20	2.5	49º3'	11.00
B50B20	2:1	0.5	20	3.2	29º8'	15.52
B50B40	2:1	0.5	40	3.2	66º0'	10.56
M80B20-1605	1:1	0.8	20	3.7	49º3'	16.00
B80B20	2:1	0.8	20	4.5	29º8'	22.50
B80B40	2:1	0.8	40	4.5	66º0'	16.46
M1B20*2106	1:1	1.0	20	4.3	49º3'	21.00

* in part number denotes two threaded holes

Dimension table

Part Number	Overall Length L	Outside Dia Øda	Pitch Dia Ød	Bore Dia (H8) ØB	Hub Dia ØA	Hub Length C	Tip Distance La	Hole Detail S	Hole Detail M
M50B20-1103	8.00	10.71	10.0	3	8	5.0	6.35	-	-
B50B20	8.54	10.89	10.0	3	8	5.0	5.74	-	-
B50B40	7.31	20.45	20.0	4	12	4.0	6.01	-	-
M80B20-1605	11.00	17.13	16.0	5	12	6.0	8.57	-	-
B80B20	10.79	17.43	16.0	5	12	5.5	6.86	-	-
B80B40	11.01	32.72	32.0	6	20	6.0	9.18	-	-
M1B20*2106	14.53	21.41	20.0	6	16	9.0	11.71	M4	4.5

Features

- Gear quality: ISO 8
- Small quantities of selected items available ex-stock, please visit our on-line store www.reliance.co.uk/shop

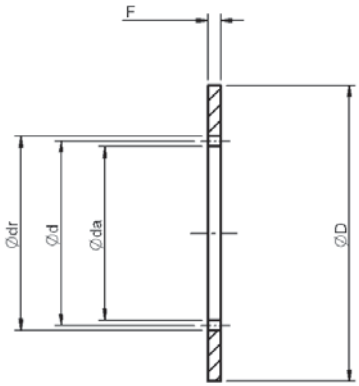
Technical support

- Bevel gears are not supplied as a pair and need to be ordered separately
- For allowable backlash - see page T4-17
- Product overview - see page 5-2

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Associated Products
Spur gears: from page 4-36

All dimensions in mm
Pressure angle 20°
Material: Brass ISO CuZn38Pb2, CuZn39Pb3



Part number selection table

Part Number	Module	Number of Teeth	PCD Ød	Gear O/D Øda	Root Dia Ødr	Face Width F	Ring O/D ØD
IS50B60A-0350		60	30.0	29.0	31.25		50
IS50B80A-0360		80	40.0	39.0	41.25		60
IS50B90A-0370	0.5	90	45.0	44.0	46.25	3	70
IS50B100A-0375		100	50.0	49.0	51.25		75
IS50B120A-0380		120	60.0	59.0	61.25		80

Features and options

- 0.8 module and 1.0 module available
- Designed to fit housings with bore tolerance H8
- 1.0 module also available in carbon steel ISO C45, please contact us
- Small quantities of selected items available ex-stock, please visit our on-line store www.reliance.co.uk/shop

GEAR MANUFACTURE

Reliance's precision instrumentation gears are manufactured using high accuracy gearcutting equipment. Standard gears are produced in stainless steel, hardened stainless steel, aluminium alloy and brass (wormwheels only). Alternative materials such as PEEK polymer or Delrin are available on request.

GEAR TOLERANCES

Gears are generally offered as Quality 10 (see the individual product pages). Higher qualities are available as shown in the table below. Most gears in the catalogue can be produced in these qualities to order.
Reliance standard tolerances are largely based on AGMA 390-03 backlash.

Reliance Standard Gear Qualities — Table values in 0.001mm (0.0001")

Quality Class	Modular Range	Total Composite Error	Tooth to Tooth Composite Error	Indicator Limits (Gauge zeroed at std. pitch rad.) Max	Indicator Limits Min	Gear Quality Code
AQ9	1.5mod	26 (10)	18 (7)	-18 (-7)	-69 (-27)	-
AQ10	0.8 to 0.5 mod	26 (10)	13 (5)	-18 (-7)	-61 (-24)	-
AQ11		18 (7)	10 (4)		-53 (-21)	C
AQ12		13 (5)	8 (3)		-48 (-19)	B
AQ14		7 (2.7)	3.6 (1.4)		-41 (-16)	A
AQ10	0.4 to 0.2 mod	26 (10)	13 (5)	-13 (-5)	-51 (-20)	-
AQ11		18 (7)	10 (4)		-43 (-17)	C
AQ12		13 (5)	8 (3)		-38 (-15)	B
AQ14		7 (2.7)	3.6 (1.4)		-33 (-13)	A

Values in the above table refer to measurements obtained by means of the dual flank tester.

To specify a gear, other than the standard quality, add the quality code to the gear part number.
Example of a quality 12 gear - **P05S1B10F6A-100 B**
Quality code

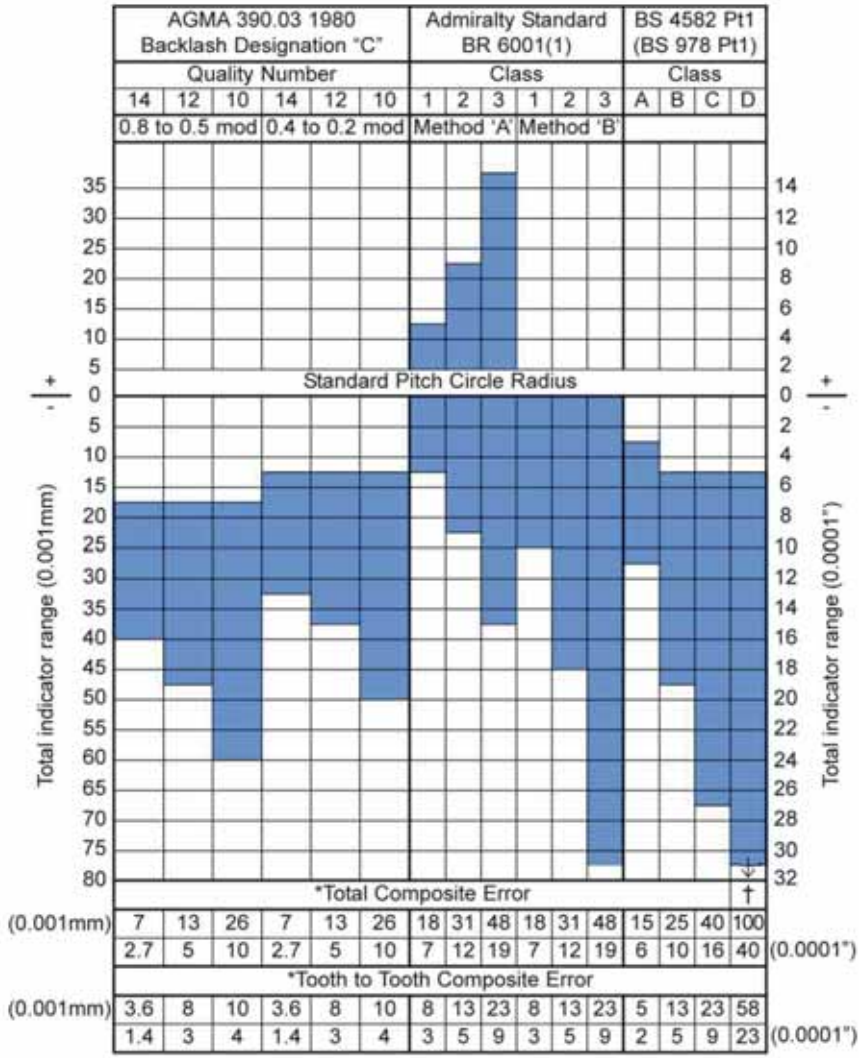
Comparison of National Gear Quality Standards

Reliance Quality Class	American AGMA 390.03 (1980)	British BS. 4582 (pt.1 : 1970)	German DIN. 867 & 3963	International ISO	Japan JIS	Admiralty BR.6001
AQ9	Q 9	Class C	Q 8	8	4	Class 3
AQ10	Q 10	Class B	Q 7	7	3	Class 2
AQ11	Q 11	Class A	Q 6	6	2	Class 1
AQ12	Q 12	Class A	Q 5	5	1	†
AQ14	Q 14	†	Q 3	3	0	†

† Reliance quality higher than any equivalent in this specification.
Table applies to gears up to 50 mm diameter.

RELIANCE GEAR STANDARDS FOR FINE PITCH GEARS

The table below is a comparison between Reliance (AGMA) and equivalent UK specifications:



*AGMA values quoted are for over 20T up to 50 mm (2") diameter. Admiralty and B.S. tooth to tooth errors are for over 30T.
† Minimum indicator level 0.006" or 0.15 mm.

For numbers of teeth outside the range consult the relevant specification.

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

STANDARD MODULES AND CIRCULAR PITCHES - METRIC

Reliance's precision instrumentation spur gears are available as standard in the following modules and circular pitches, being those most commonly used in the design and manufacture of gear control mechanisms and instruments:

Module 0.2, 0.25, 0.3, 0.4, 0.5, 0.6, 0.8, 1.0, 1.25, 1.5
Circular pitch 1, 2, 2.5, 3

Pressure Angle and Rack Form

Except where stated otherwise, gears in this catalogue are cut to 20º pressure angle involute form teeth. Reliance standard gears will mesh satisfactorily with gears of the same module cut to the following standards:

(i) BS 4582 (1970) Part 1, Figure 1.

(ii) DIN 867 and 58412.

(iii) AGMA 207.06 (Assuming the pitch is cut to an equivalent module).

The gears will not mesh satisfactorily with gears cut to DIN 58400 unless the outside diameter of the latter is reduced to PCD + (2 x module).

DIN 58400 tooth proportions are:

Addendum	1.1 x Module
Dedendum	1.5 x Module for pitch 0.1 to 0.6 Module

Metric Tooth Proportions (Dimensions in mm)

Module	Circular Pitch	Addendum	Dedendum	Working Depth	Whole Depth	Equivalent Inch Diametral Pitch
1.5	4.712	1.5	1.875	3.0	3.375	16.933
1.25	3.927	1.25	1.563	2.5	2.8125	20.320
1.0	3.142	1.0	1.400	2.0	2.4	25.400
0.8	2.513	0.8	1.120	1.6	1.92	31.750
0.6	1.885	0.6	0.840	1.2	1.44	42.333
0.5	1.571	0.5	0.700	1.0	1.2	50.800
0.4	1.257	0.4	0.560	0.8	0.96	63.500
0.3	0.942	0.3	0.420	0.6	0.72	84.667
0.25	0.785	0.25	0.350	0.5	0.6	101.600
0.2	0.628	0.2	0.280	0.4	0.48	127.000
0.318	1.0	0.318	0.446	0.637	0.764	79.796
0.637	2.0	0.637	0.891	1.273	1.528	39.898
0.796	2.5	0.796	1.114	1.592	1.910	31.919
0.955	3.0	0.955	1.337	1.910	2.292	26.599

The above list is by no means exhaustive. Please enquire if you require a special module as Reliance holds a large stock of non-standard cutters.

MATERIALS AND SPECIFICATIONS

Reliance's precision instrumentation gears are manufactured from the materials listed below. We reserve the right to change the actual material to an equivalent specification without notice depending on availability.

Reliance Precision Gear Materials

Material	Specification		Used on	Material Code
Stainless steel	303S31 (303S21) or 303S42 (303S42) or 302S31 (302S25) or 303 to MIL QQ-S-764	BS 970	Pin hub gears Clamp hub gears Hubless gears Worms Gear clamp & hubs	S1
Stainless steel	316S31 (316S16)	BS 970	Rack pinions	S2
Stainless steel (hardened)	17-4PH1025 Hardened to 34-42 HRc		Hardened pin hub gears	S8
Aluminium alloy	L168 or HE 15-TF or 2024-T4 to MIL QQ-A-225/6	BS 1474	Pin hub gears Clamp hub gears Hubless gears Gear clamp & hubs	A1
Phosphor bronze	PB 102	BS 2874	Worm wheels	B1
Brass	CZ121	BS 2874	Spur gears	B2
Brass (Naval)	Alloy 464 to MIL QQ-B-637		Worm wheels	B3
Acetal	Delrin 150		Hubless gears	D1

Finishes

Stainless steel, bronze and brass gears remain in their natural condition. Passivation to DEF STAN 03-2, process M can be carried out if required. Aluminium components are anodised to specification DEF STAN 03-24 (chromic acid process) or DEF STAN 03-25 (sulphuric acid process). Gear teeth are not normally anodised.

Anti-backlash Gears

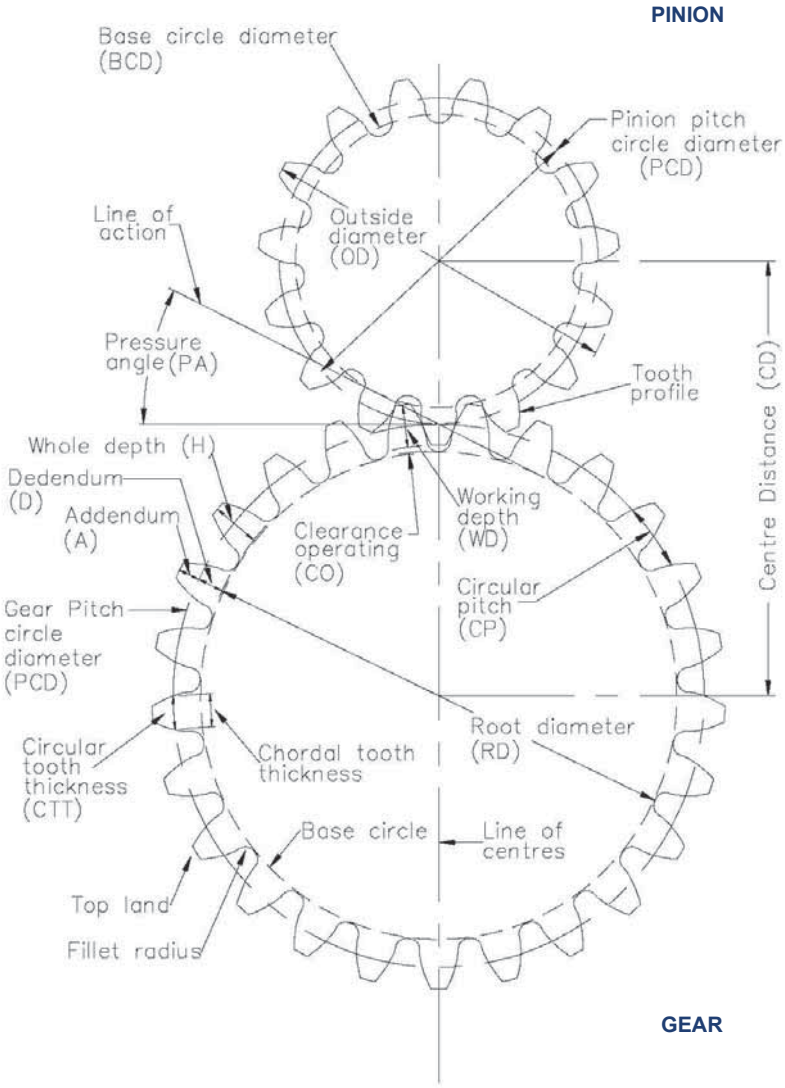
Materials and finishes of standard anti-backlash gear components.

Where possible circlips, anti-backlash springs, shims and set screws will be stainless steel. However, some smaller pinions may have beryllium copper or zinc plated carbon steel circlips as standard.

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

SPUR GEAR GEOMETRY

A basic description of gear tooth terms is shown below. General formulae to enable correct understanding of spur gear geometry is shown opposite.



TERMINOLOGY FOR METRIC SPUR GEARS

TERM	DEFINITION	FORMULAE
Addendum (A)	The radial distance between the pitch circle and the outside diameter.	A=M
Addendum modification (K)	A method of modifying low tooth number gears to avoid undercutting and altering gear size to allow use of non standard centres.	See page T4-8
Backlash (B)	The circumferential clearance between mating gear teeth.	See page T4-15
Base circle diameter (BCD)	The diameter of the base cylinder from which the involute is generated.	BCD = N·Mcos PA
Base pitch (BP)	The pitch along the base circle or line of action.	BP = π Mcos PA
Basic rack	The straight sided rack shape from which teeth are generated.	See BS 4582.
Centre distance (CD)	Distance between the axes of rotation of mating spur gears.	CD = $\frac{PCD_{pinion}}{2}+\frac{PCD_{gear}}{2}$
Circular pitch (CP)	The distance along the pitch circle between corresponding points on adjacent teeth.	CP = π M
Circular tooth thickness (CTT)	The distance between opposite faces on the same tooth measured at the pitch circle diameter.	CTT = $\frac{\pi M}{2}$
Clearance operating (CO)	The amount by which the dedendum in a given gear exceeds the addendum of the mating gear.	CO = D - A
Dedendum (D)	The radial distance between the pitch circle and the root diameter.	D = 1.4M (BS4582) = 1.25M (BS436)
Diametral pitch (DP)	The size of the tooth expressed in teeth per inch of pitch diameter.	
Face width	The width of the tooth in an axial plane.	
Fillet radius	The radius of the fillet curve at the base of the gear tooth.	
Length of action	The distance on an involute line of action through which the point of contact moves during the action of the tooth profiles.	

Indicator limits	The size band of manufacture for the gear measured radially from the PCD.	
Module (M)	The size of the tooth expressed in mm of pitch diameter.	
Number of teeth (N)	Number of teeth on the gear.	
Outside diameter (OD)	The diameter over the tops of the teeth.	OD = PCD + (2M)
Pitch circle diameter (PCD)	An imaginary circle whose diameter is formed by meshing gears so that the circles actually touch each other, as if gears were driven purely by the friction of the circles.	PCD = (N+2K)·M Note: for unmodified gears K=0
Pressure angle (PA)	The angle between a line tangential to the pitch circles and a line perpendicular to the tooth profiles at the point of contact. (Equal to the side angle of the basic rack for standard gears).	Standard = 20º
Root diameter (RD)	The diameter of the base of the teeth.	RD = OD - (2H)
Total composite error (TCE)	The total error in the gear measured by the dual flank gear test. TTCE and pitch line runout are included.	
Tooth to tooth composite error (TTCE)	The change in error of each tooth on the gear measured by the dual flank tester.	
Undercut	The loss of profile in the vicinity of the involute start at the base circle due to tool cutter action generating gears with low tooth numbers. (N_{min} = minimum teeth for no undercut)	$N_{min} = \frac{2}{Sin^2 PA}$
Whole depth (H)	The total depth of a tooth space.	H = A + D
Working depth (WD)	The depth of engagement between mating gear teeth.	WD = 2A

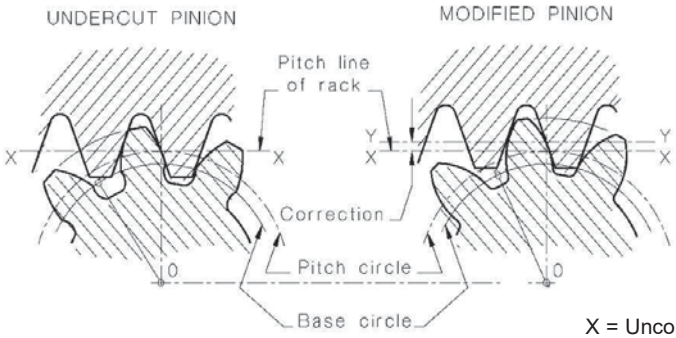
Note: for imperial gears to BS 978 Part 1, Equivalent Module = $\frac{25.4}{DP}$

GEARS WITH SMALL NUMBER OF TEETH

Unless otherwise requested, all gears in this catalogue having 16 teeth or fewer will be enlarged by applying addendum modification in accordance with BS4582 Part 1 (metric) as shown in the table below. These gears are indicated (†) against the appropriate tooth numbers on the product pages.

A small amount of backlash will be introduced between corrected pinions and mating gears when the modification sum is other than zero and the nominal centre distance is adjusted only by an amount equal to the modification sum.

For minimum backlash it will be necessary to either reduce the centre distance further, or to apply a secondary correction to the pinion or wheel. See the above B.S specification for details.



X = Uncorrected PCD
Y = Corrected PCD

Data for Addendum Modified Gears of Unit Module and Unit DP			
No. of Teeth	**Addendum Modification**	**Enlarged PCD**	**Enlarged OD (PCD+2)**
10	0.4151	10.8302	12.8302
11	0.3566	11.7132	13.7132
12	0.2982	12.5964	14.5964
13	0.2397	13.4794	15.4794
14	0.1812	14.3624	16.3624
15	0.1227	15.2454	17.2454
16	0.0642	16.1284	18.1284

Example (Module)

Find P.C.D. and O.D. of enlarged gear having 13 teeth, 0.6 module

P.C.D. =13.4794 (from table) x 0.6 module	=8.088 mm
(Standard P.C.D. would be 13 x 0.6	=7.800 mm)

Similarly,

O.D. =15.4794 (from table) x 0.6 module	= 9.288 mm
(Standard O.D. would be 7.8 + (2 x 0.6)	= 9.00 mm)

Note:

For Imperial (diametral pitch) gears, divide the PCD or OD value in the table by the diametral pitch. The answer will be in inches.

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

ENGINEERING DATA

For instrumentation Reliance normally recommend stainless steel pinions mating with aluminium alloy gears. Generally the pinion is subjected to most wear since it experiences a higher number of stress cycles than the wheel. This combination of materials tends to balance the wear between the pinion and the gear.

1. Gear Materials

Stainless steel

The 300 series stainless steels are used for gears when maximum corrosion resistance is required. They are 'true' stainless steels containing 18% chromium and 8% nickel.

Gears made from 303 stainless steel are essentially nonmagnetic and cannot be hardened by heat treatment. They are recommended for low torque applications as their mechanical properties and resistance are low.

Hardened stainless steel

17-4PH is a precipitation hardening stainless steel that offers a remarkable combination of high strength and hardness. Its high chromium content (15-17.5%) makes it an excellent material for arduous environments.

Aluminium alloy

Gears made from aluminium alloy are widely used in measuring applications. Its light weight offers reduced inertia. The inertia of an aluminium alloy gear is approximately 35% that of a steel gear. In particular, aluminium alloy L168 offers excellent corrosion resistance when anodised, moderately good mechanical properties and good stability.

Phosphor bronze

As a gear material phosphor bronze has a fine grain and good resistance to tooth sliding wear hence its use as a worm wheel material.

2. Installation

Gears in this catalogue are designed to be a slide fit on the shafts. The gears are available with four fixing methods: standard clamp, pins, set screws and Reli-a-Grip™ clamp.

Traditional clamp hub style gears have a gear hub with a relatively thin wall partially split. The clamp is a close fit on the hub and is compressed when the clamp screw is tightened. Clamping gears onto the shaft offers extremely easy assembly with the best assembled accuracy. However, as the fastening depends upon friction it can only be used in low torque applications.

Pin type gears are supplied as standard with a set screw and a sub-drilled hole. The set screw should be used to position the gear on the shaft during the drilling and pinning operation and can be removed once the gear is secure.

The sub-drilled hole provides a lead in for the drilling operation. It is recommended that drilling and pinning is completed outside the gearbox and the gear is thoroughly cleaned afterwards.

In less critical applications the set screw may be used to retain the gear on the shaft. To avoid damaging the shaft and to make removal of the gear easier the set screw should seat on a small flat, or dimple on the shaft.

3. Lubrication

All gears should be lubricated, but there are variations in degree.

Highly loaded precision gears should be in enclosed assemblies with complete lubrication to obtain the best possible hydrodynamic film. The system can be splash, spray or force fed, depending on the application. Moderately loaded precision gears, such as fractional horsepower systems, should be enclosed with oil or grease lubrication which can be spread by splash or dip lubrication.

Lightly loaded gears in instrumentation systems only need to have a marginal boundary lubrication as provided by periodically wiped on oils or grease. In many instances a light coat of Rocol MT LM or similar molybdenum disulphide grease will suffice for the life of the system. Anti-backlash gears should not be directly lubricated except via a very light application on the mating pinion.

Negligibly loaded fine instrument gears only need a brushed on film of light oil as a simple means of reducing friction.

4. Speed

The maximum pitch line velocity for stainless steel meshing with aluminium alloy with boundary lubrication is approximately 5,300 mm/sec (for a pair of meshing actuation gears correctly lubricated, this rises to approximately 8,000 mm/sec). This represents 5,000 rpm on measurement gears of 20 mm diameter (and 7,500 rpm on actuation gears of 20 mm diameter).

For speeds in excess of this and other material combinations please consult Reliance technical sales.

5. Gear Loading

The gears in this catalogue can be used for both feedback and actuation systems. The loads and material selection will depend on the application. In general a feedback system is designed to maintain accuracy and an actuation system is designed to transmit power.

5.1. Actuation Gears

The following analysis is intended to give a guide to the load capacity of a pair of spur gears. To simplify the calculations, a number of assumptions have been made. It must be noted that in many applications this will give a conservative estimate of the gear capacity, therefore, in critical applications an exact analysis must be completed.
Please consult the relevant gear standards or Reliance Technical Sales.

The analysis is based on AGMA 2001-B88 and assumes the following:

1. The gears are simply supported in rolling element bearings.
2. Pinion revolutions $>10^7$.
3. Gears are grease lubricated.
4. Reliability of 1 failure in 100 is acceptable.
5. Gear material is 17-4PH hardened.

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

The basic load capacity (F_b) of a pair of spur gears is defined as the maximum tangential force at which they can operate indefinitely.

F_b has two values: one calculated from tooth root strength (F_{bs}), and one for tooth flank pitting (F_{bw}). The useful or transmitted load capacity, F_t, is usually less than F_b due to transient or dynamic loads generated within the mechanism.

For tooth root strength	$F_{ts} = F_{bs}/K_a$	K_a & C_a = Application factors
For tooth flank pitting (wear)	$F_{tw} = F_{bw}/C_a$	

Both calculations should be made and the lower value used.

The application factors K_a and C_a make allowance for any externally applied loads in excess of the nominal tangential force F_b and they are most accurately determined by direct measurement. In determining application factors, consideration should be given to the fact that many prime movers develop momentary peak torques appreciably greater than those determined by the nominal ratings of either the prime mover or the driven equipment. There are many possible sources of overload which should be considered including system vibrations, acceleration torques, overspeeds, variations in system operation and changes in process load. Impact loads due to reversing across backlash can be significant in servo systems.

As a general guide application factors for a motor gear system range from 1.0 for uniform loads up to 1.75 where heavy shock loads are anticipated.

For strength $F_{bs} = 177.7 \times J \times F \times M \times K_v$ [N]

For wear $F_{bw} = 14.64 \times N \times I \times F \times M \times K_v$ [N]

F_b = Basic load capacity (F_{bs} & F_{bw})
N = Number of teeth
J = Geometry factor, strength
I = Geometry factor, wear
F = Face width of smallest gear
M = Module
K_v = Dynamic factor

(i) Number of teeth
This is the number of teeth in the gear being analysed.

(ii) Geometry factors, I and J
These factors take account of the effect of tooth proportions on stress. The bending strength geometry factor, (J) takes account of the shape of the tooth. The wear resistance geometry factor, (I) takes account of the radii of curvature of the contacting tooth profiles. Please see the graphs on page T4-13.

(iii) Face width, F
This is the face width of the smallest gear in mm. (Face width in contact).

(iv) Module, M
This is the gear module expressed as shown on the respective gear pages.

(v) Dynamic factor, Kv
This accounts for internally generated gear tooth loads which are induced by the non-conjugate meshing action of the gear teeth.

$$K_v = \left(\frac{84}{84 + \sqrt{200V_t}} \right)^{0.4}$$

For quality 10 gears only
V_t = Pitch line velocity (m/s)

Example calculation to find the theoretical load capacity of a 5:1 pass of 17-4PH spur gears as follows:

Pinion - P06S8B6F4A-25
Gear - P06S8B8F6A-125

Pinion speed is 500 rpm.

(i) Number of teeth from part number = 25

(ii) Geometry factors from graph

J = 0.37
I = 0.118

(iii) Smallest gear face width from part number

F = 4

(iv) Gear module from part number

M = 0.6

(v) Dynamic factor from equation

$$K_v = \left(\frac{84}{84 + \sqrt{200V_t}} \right)^{0.4} = \left(\frac{84}{84 + \sqrt{200 \times 0.393}} \right)^{0.4} = 0.96$$

$$\text{where : } V_t = \frac{\text{rpm} \times \pi \times N \times M}{60000} \left[\text{m/s}\right]$$

F_{bs} = 177.7 x 0.37 x 4 x 0.6 x 0.96 = 151.5 N

F_{bw} = 14.64 x 25 x 0.118 x 4 x 0.6 x 0.96 = 99.5 N

For alternative materials the above values need to be modified as shown below:

Gear Material Modification Factors

Material	Specification	Strength	Wear
Hardened stainless steel	17-4PH	1.00	1.00
Stainless steel	303S31	0.43	0.15
Stainless steel	316S31	0.47	0.20
Aluminium alloy	L168	0.37	0.10
Brass	CZ121	0.35	0.13

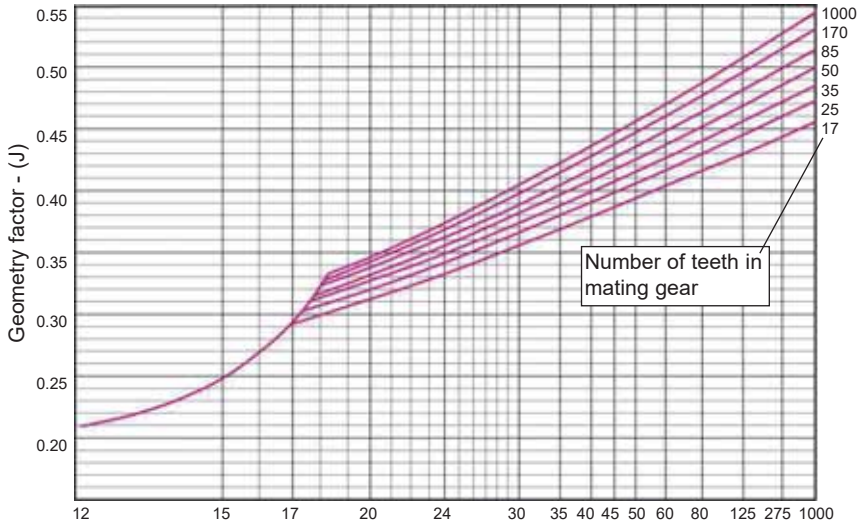
Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Example:
If the gears in the example on the previous page were made from 303S31

Fbs = 151.5 x 0.43 = 65.1 N
Fbw = 99.5 x 0.15 = 14.9 N

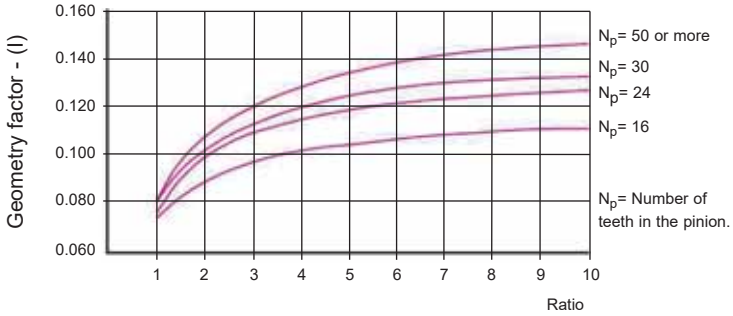
The application factors should be applied after the reduction for material.

Geometry factor, Strength (J), 20º spur



Number of teeth in gear for which geometry factor is desired

Geometry factor, Wear (I), 20º spur



5.2. Instrumentation and Feedback Systems

Gears and components designed for the precise transmission of angular position generally work at the low torque levels normally associated with servo components such as synchros, resolvers, optical encoders etc. Tooth loads of 1.2 N per mm face width should result in an adequate accurate life. Higher loads will tend to increase deflections of gear teeth, shafts, bearings etc, resulting in significant values of lost motion and a decrease in life.

Example: To find the maximum advisable torque on a gear 40 mm diameter x 3 mm face width.

Torque = force x radius = 1.2 x 3 x 0.04/2 = 0.072 Nm (10 oz.in.)

5.3. Anti-backlash Gear Spring Tension

In order for anti-backlash gears to function as anti-backlash devices, it is necessary to ensure that the spring tension will provide sufficient torque to overcome the friction and acceleration torque in the system, ie the spring torque must be capable of driving/accelerating the gear train and any associated components.

The spring tension capability of anti-backlash gears listed in this catalogue will adequately cope with the low torques normally encountered.

As a general guide, torque settings on anti-backlash gears of 1.059 to 1.765Ncm (1.5 to 2.5 oz.in.) will suffice in most applications. Ideally the spring torque should be set to the minimum at which the anti-backlash gear performs satisfactorily, thus avoiding unnecessary high preload on the gear teeth and premature wear.

6. Lost Motion and Backlash Control

The following section deals with lost motion, which we know to be one of the basic problems in designing fine pitch gear trains. The accepted definition of lost motion is the amount by which the output shaft may be turned without turning the input shaft.

It may be thought that lost motion is a function of the gear cutting operation alone, but, in fact the teeth of the gears may contribute very little to the overall lost motion value. A complete understanding of all the elements which induce lost motion is essential in order to achieve a well designed gear train. The following factors must be individually considered for their own contribution to overall lost motion in the gear train:

(a) Nominal centre distance.
(b) Centre distance tolerance.
(c) Size and tolerance of mating gears.
(d) Total composite error of gears.
(e) Fits between bores, shafts and bearings.
(f) Bearing accuracy (class).
(g) Radial play of bearings.
(h) Shaft straightness and alignment.
(i) Fits between electrical and/or mechanical component spigot diameters, and housing bores.
(j) Eccentricity and radial play of electrical and/or mechanical component shafts.
(k) Torsional elasticity.
(l) Differential expansion.

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

Each of the previous, except nominal centre distance, tend to induce a change in centre distance which will push together or pull apart the mating gears. This push-pull action produces two backlash values, minimum at the point of the tightest mesh, and maximum at the point of loosest mesh.

(a) Calculation of Nominal Centre Distance

Nominal centre distance can be considered as the starting point in the calculation of overall backlash values. Nominal centre distance is calculated by taking half the sum of the (theoretical) pitch diameters of the mating gears.

$$\text{i.e.} \qquad CD = \frac{PCD_1 + PCD_2}{2}$$

(b) Centre Distance Tolerance

Centre distance tolerance is an extremely important area for consideration. Any increase in centre distance in excess of the nominal value will increase the backlash. A decrease in nominal centre distance will decrease the backlash. In this case caution must be exercised to avoid interference between mating gears as a result of this decrease.

The relationship between centre distance change to backlash for 20º PA spur gear is given by:

$B = 2 \operatorname{Tan} \phi \cdot \Delta C$ where B = Circumferential backlash, ϕ = Pressure angle (Tan 20º = 0.36397), ΔC = Distance between theoretical nominal and actual centre distance

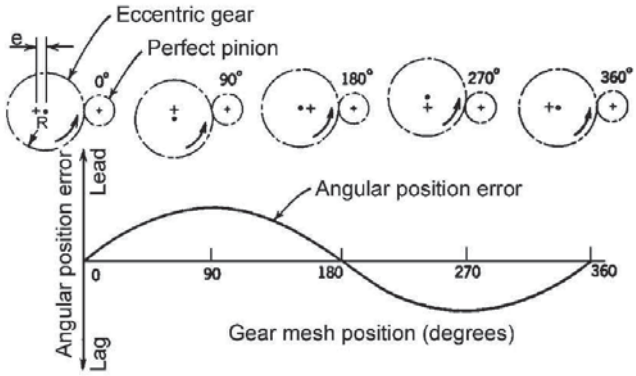
Note: Maximum Angular Backlash (minutes of arc) = $\frac{\text{Maximum Circumferential Backlash} \times 57.3 \times 60}{\text{Pitch Circle Radius}}$

7. Gear Error

The error function of a gear is approximately sinusoidal and for practical considerations can be assumed to be so. The first derivative of the time displacement curve yields the velocity function, therefore, the output velocity variable will also be an approximate sinusoid but the maximum velocity error will be displaced 90º from the maximum position error.

In summation, pitch circle runout will cause a sinusoidal error which is revealed as an output transmission error when meshed with a mating gear. The magnitude is given by the following example:

In the example on page T4-16, if the small pinion were not a perfect gear its error would be seen superimposed on the large gear error cycling at pinion frequency.



Angular position error $E_A = \frac{e}{R}\sin\theta$ Linear position error $E_L = e\sin\theta$

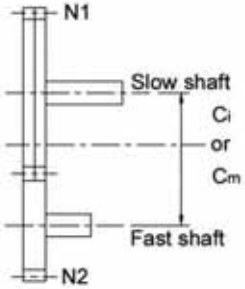
8. Transmission Accuracy of Gear Trains

The following section is based on work carried out by Reliance Gear Company (now known as Reliance Precision Limited) to provide some guidance in the design of accurate data transmission gearing.

The transmission error referred to by equations 1 and 2 below represent the maximum statistical point to point error during a forward and reverse cycle of a single pass of quality 14 anti-backlash gearing assembled in a data transmission gearbox.

For quality 10 or 12 gearing add 50% or 30% respectively to the error calculated for quality 14 gearing.

For average transmission error substitute the numbers 3.25 and 83 in the equations for the numbers 4.4 and 112 respectively.



$$\Sigma_1 = \left(1+\frac{N_2}{N_1}\right)\cdot\left(\frac{112}{C_m}\text{ or }\frac{4.4}{C_i}\right) \text{ ------(1)}$$

$$\Sigma_2 = \left(1+\frac{N_1}{N_2}\right)\cdot\left(\frac{112}{C_m}\text{ or }\frac{4.4}{C_i}\right) \text{ ------(2)}$$

C_m and C_i = Centre distance in mm and inches respectively.
N_2 and N_1 = Number of teeth in pinion and wheel respectively.
Σ_1 and Σ_2 = Maximum statistical transmission error in minutes of arc measured at the slow and fast shafts respectively.

Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

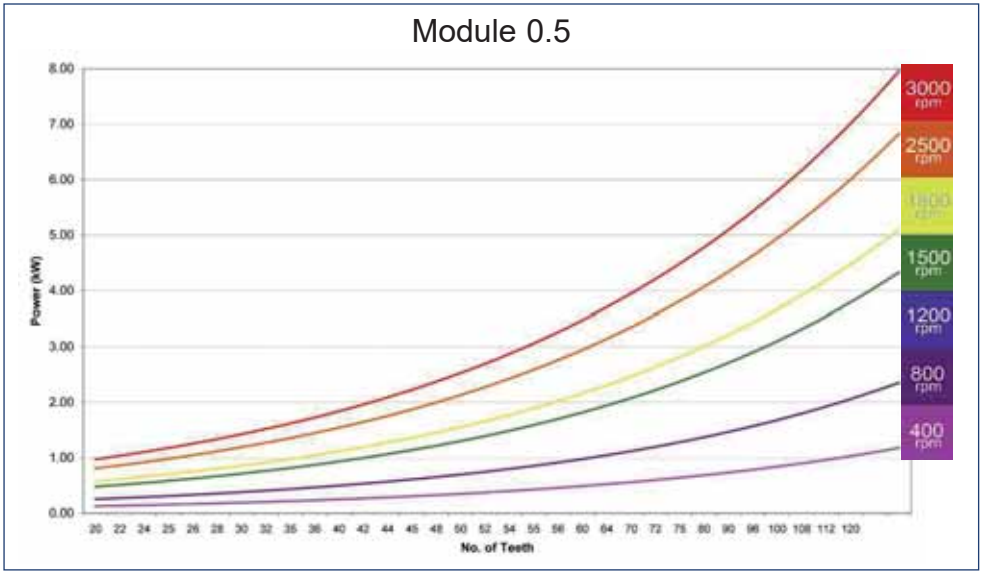
BACKLASH FOR STANDARD GEARS

The table below refers to the allowable backlash within the range of Spur, Bevel, and Worm gear pairs with a designated centre distance. The allowable backlash is necessary to absorb the deviations of noise and oscillation in order to maintain smooth operation.

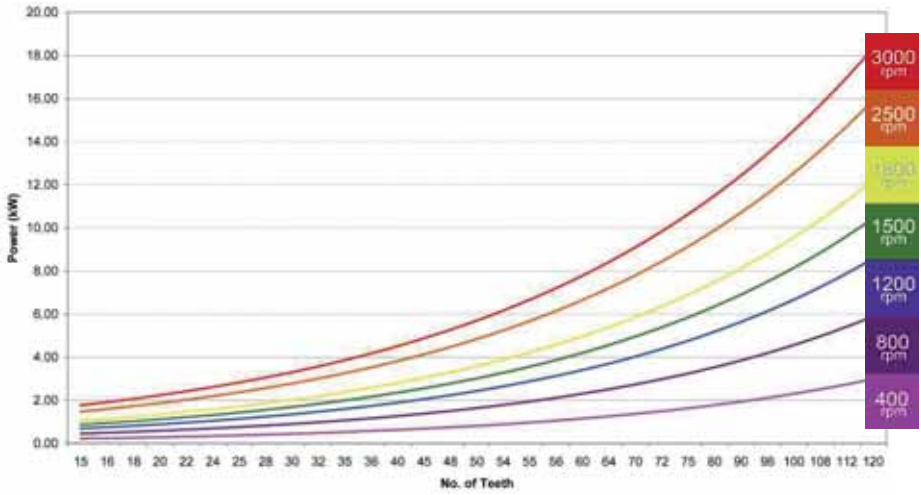
Gear Type	Condition	Module (m)	Backlash (mm)
Spur Gear	Brass/ Ground	< 0.9	0.02 - 0.06
	Brass	0.9 to 0.75	0.04 x m - 0.10 x m
	Ground	0.9 to 1.0	0.04 x m - 0.08 x m
Bevel Gear pair	Stainless steel or Brass	< 0.9	0.02 - 0.08
		0.9 to 1.5	0.05 - 0.12
Worm Gear pair Centres < 50 mm	Worm - Stainless steel Worm wheel - Brass	≤ 1.0	0.08 - 0.20

Note. These figures apply to the standard gear range only.
To convert Circumferential Backlash to Angular Backlash see page T4-15

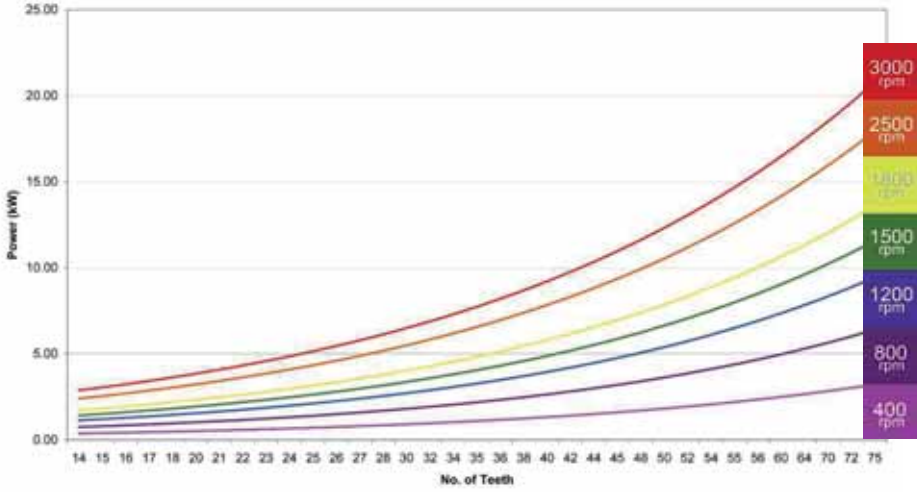
TYPICAL GROUND GEARS ALLOWABLE TRANSMISSION CAPACITY



Module 0.8



Module 1.0



Contact us for product information, design support and custom solutions
sales@reliance.co.uk +44 (0) 1484 601002 www.reliance.co.uk

WORMS AND WHEELS FORMULAE

Ratio (R) $= \dfrac{\text{No. of teeth on wormwheel (T)}}{\text{No. of starts on worm (t)}}$

Centre Distance (CD) $= \dfrac{\text{PCD worm}}{2} + \dfrac{\text{PCD wheel}}{2}$

Lead (L) = The axial distance by which a thread advances in one revolution $= \pi \times t \times m$

Where $m_{(\text{metric})}$ = Axial module

$m_{(\text{imperial})} = \dfrac{1}{DP}$

Actual outside diameter of worm $OD_w = PCD + (2 \times m)$

Typical outside diameter of wormwheel $OD_{ww} = PCD + (3 \times m)$

Contents

Reliance Precision Limited

Rowley Mills, Penistone Road, Lepton
Huddersfield, HD8 0LE, England

+44 (0) 1484 601002
www.reliance.co.uk
sales@reliance.co.uk

RG36 Issue A2