





In addition to excellent design on the outside, FSB cares about what's on the inside as well. Our solutions address the needs of modern residential and commercial buildings and regularly exceed the applicable standards. The FSB AGL® and FSB ASL® bearings and our new FSB adaptor system set new standards in functionality and durability. (Pictured: FSB 42 4212 sliding door handle, FSB 23 0802 door-knob, FSB 1075 lever handle)

Photo: Klemens Renner
Project: Haus Schulzendorf, Brandenburg
Architectural firm: transstruktura



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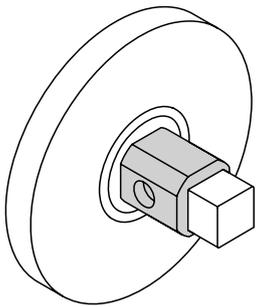
Bearing and adaptor technology

FSB bases at a glance

The FSB brand represents sophisticated engineering of the highest order. In tests and everyday use, our products again and again prove themselves to be far better than the standard. Our well-engineered bearing technology sets new benchmarks in terms of reliability, flexibility and ease of assembly.

This chapter presents what is the core of our sets, concealed inside the rose: the FSB AGL® and FSB ASL® bearings and our innovative adaptor system. All current door handle designs are compatible with the adaptor system and our bearings.

FSB adaptor



- Component (not a bearing) of the base, e. g. including FSB ASL® and FSB AGL®
- Makes it possible to configuring a fitting based on the kit-system line
- One female handle for all applications
- Products can be flexibly combined
- Turnably fixed adaptor
- Simplified, convenient installation

Note: fire safety variants of products are not available as individual parts and must always be ordered as a complete set.

The following products are available with the adaptor system as individual parts:

- Backplates with visible fixing
- Renovation backplate
- Cut backplates/roses with visible fixing
- Standard flush-fitted roses
- Glass door fittings (available with or without the FSB AGL®/ASL® rose)
- Security fittings
- In-line lever handles for narrow-stile doors
- Individual components for narrow-stile doors
- Plug-in handle for internal door (drilling possible on the side and from below)
- Window handles and plug-in handles for windows (can also be ordered as a complete package)

The FSB adaptor system is not a bearing, but rather a design detail that lends a previously unmatched degree of flexibility when handling sets or individual components: from ordering to installation, you benefit from the ability to combine components. The FSB AGL® and FSB ASL® bearings are both equipped with an adaptor.

Lever/lever sets (including those with cut roses/backplates or with roses/backplates with visible fixing), lever/knob sets, WC sets, glass door fittings, fittings for narrow-stile doors, security fittings, window handles, plug-in handles, etc. are all equipped with the adaptor – but not necessarily with the FSB AGL® or FSB ASL® bearing (and positive mechanism spring, for example).

Available individual parts can be found starting on page 318.

FSB ASL® bearing



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- For all types of buildings
- Turnably fixed bearing with adaptor
- Positive mechanism type A
- Certified under EN 1906 class 4
- Stainless steel-reinforced base
- M5 stainless steel fixing
- Operating angle up to 45°
- Non-handed; can be used on right-hand or left-hand doors
- 20 mm door thickness increments, door thickness can be adjusted
- Available as a set and also as individual parts
- Through-fixing or face fixing
- Quick installation
- Concealed handle bushing
- Fire resistance in accordance with EN 1634-1.

FSB AGL® bearing



72  FSB AGL®

- 76  Heavy-duty fitting FS (fire safety)
- 79  Heavy-duty fitting EN 179 (fire safety, emergency exits)

- For heavy doors with high traffic
- Turnably fixed compensating bearing with adaptor
- Compact design: interlocking spindle/female handle connection
- Positive mechanism type B
- 0° position
- Certified under EN 1906 class 4
- Fire resistance (76, 79) in accordance with DIN 18273 (FS variant) and EN 1634-1
- Solid stainless steel base with plastic cover
- Tolerance compensation
- Operating angle up to 35°
- DIN direction can be flexibly changed
- Available as a set
- Through-fixing
- Quick installation
- Concealed handle bushing

The following products are available with the FSB ASL® and FSB AGL® bearings as sets or – in the case of FSB ASL® – also available as individual parts for combination:

- Rose for lever/lever set
- Rose for WC set
- Rose for lever/knob set
- Short/long backplate for lever/lever set
- Short/long backplate for WC set
- Short/long backplate for lever/knob set
- Broad backplate

Bearing and adaptor technology

FSB adaptor system

The FSB adaptor system provides a level of flexibility that has never before been known when handling sets or individual parts: from ordering to installation, you benefit from the ability to combine components.



Product variants

- Lever/lever sets
- Flush-fitted sets
- Lever/knob sets
- WC sets
- Long backplates
- Short backplates
- Broad backplates
- Glass door fittings
- Narrow-stile door fittings
- Security fittings
- Window handles
- Plug-in handles

Turnably fixed adaptor

Transferring tensile and compressive forces to the entire surface of the base (with FSB ASL® and FSB AGL®) relieves strain on the lock and the fitting overall, extending the service life of the components and therefore representing a significant cost saving.

Flexible combinations

The FSB adaptor system is not a bearing, but rather a design detail that provides maximum flexibility when handling sets or individual components. Components can be combined with sets as needed or (re)-ordered as individual parts.

Simplified, convenient installation

The female handle can be inserted at any point in the construction phase because it is not permanently fixed to the base. The result is maximum flexibility and the ability to install a larger amount of fittings within the same amount of time. The simple installation means that complaints due to damage or installation errors are significantly reduced.

Diverse material selection

FSB offers a unique selection of different finishes and materials – based on aluminium, stainless steel and bronze – for the product variants specified here, which are equipped with the FSB adaptor.

One female handle for all applications

The ability to flexibly combine individual parts brings with it simplified warehouse logistics and supply to retailers, contractors and end customers. Individual parts can be stored without tying up too much capital. Responding to individual requirements is quick and easy, saving the customer time and money, for example, when implementing a special design request.

Suitable for both sides

The adaptor can be used on either side, making it suitable both for right-hand and left-hand sets alike (except FSB AGL®).

Bearing and adaptor technology

FSB ASL® for all types of building

FSB ASL® sets new benchmarks – and offers full flexibility for retail, warehousing and construction. A positive mechanism and variable door thickness only add to the value of this bearing.



Product variants

- Rose sets (round + angular, surface-mounted) with profile cylinder (PC), warded lock (WL) and Chubb round cylinder (CH-RC) keyways as well as for WCs
- Short and long backplate sets (oval + angular) with profile cylinder (PC), warded lock (WL) and Chubb round cylinder (CH-RC) keyways as well as for WCs
- All variants as lever/knob sets
- Full spindles for door thicknesses 39 to 58 mm
- Door thicknesses 29 to 98 mm also available; other thicknesses available upon request
- Spindle thicknesses 7, 8 and 8.5 mm
- Available in materials aluminium, stainless steel and bronze

Classification code

- Tested internally at FSB:
 - 1,000,000 operating cycles
- EN 1906 grade 4
- Spring-assisted

12  4 | 7 | - | B* | 1 | 5** | 0 | A

* testing in accordance with EN 1634-1
** aluminium and stainless steel only

Turnably fixed adaptor

Low-friction plain bearing bushings made of thermoplastic Grivory® construction material guarantee the maintenance-free function of the FSB ASL® sets over the long term with no wear and tear.

Delivered as a set

The FSB ASL® is delivered as a set with no pre-assembly required. The components of the sets are also supplied as individual parts if necessary.

Installed in a flash

The adaptor technology allows for extremely quick and easy installation, because the rose base is first screwed onto the door without covers and door handles, and also no longer has to be screwed 'past' the handle neck.

Design feature

The door handle conceals the guide ring.

Full spindle

The full spindle in thicknesses of 7, 8 and 8.5 mm covers door thicknesses from 39 to 58 mm all in one product. Door thicknesses from 29 to 98 mm are also possible (other thicknesses are available upon request).

Fire resistance

The FSB ASL® guarantees fire resistance in accordance with EN 1634-1.

Fastening

The set is fastened using either an M5 stainless steel through screw fixing with stabiliser lugs and steel threaded bushing or using four wood screws without stabiliser lugs.

Diverse material selection

FSB offers a unique selection of different finishes and materials for FSB ASL® – based on aluminium, stainless steel and bronze.

Positive mechanism type A

The integrated positive mechanism conforms to standard EN 1906, type of operation A, and facilitates an angle of rotation of up to 45°. The built-in positive mechanism springs work to actively assist the lock follower springs. This interplay prevents even heavy door handles from sagging.

Suitable for both sides

The positive mechanism works in both directions, allowing the sets to be fitted for either right-hand or left-hand doors. This benefit applies to everything including lever/knob sets with symmetrical door handles – even these sets can be used universally on either side!

Adjustments to door thickness

Two female handles and one full spindle allow for on-site adjustments to be made for differing door thicknesses using the accompanying accessory bag.

Tensile strength

The combination of stainless-steel reinforcement and GFR plastic significantly enhances the tensile forces to which FSB ASL® sets can be subjected.

Cover rose/plate

The two-part roses and backplates are fastened precisely using tried-and-tested FSB clip technology.

WC sets and roses

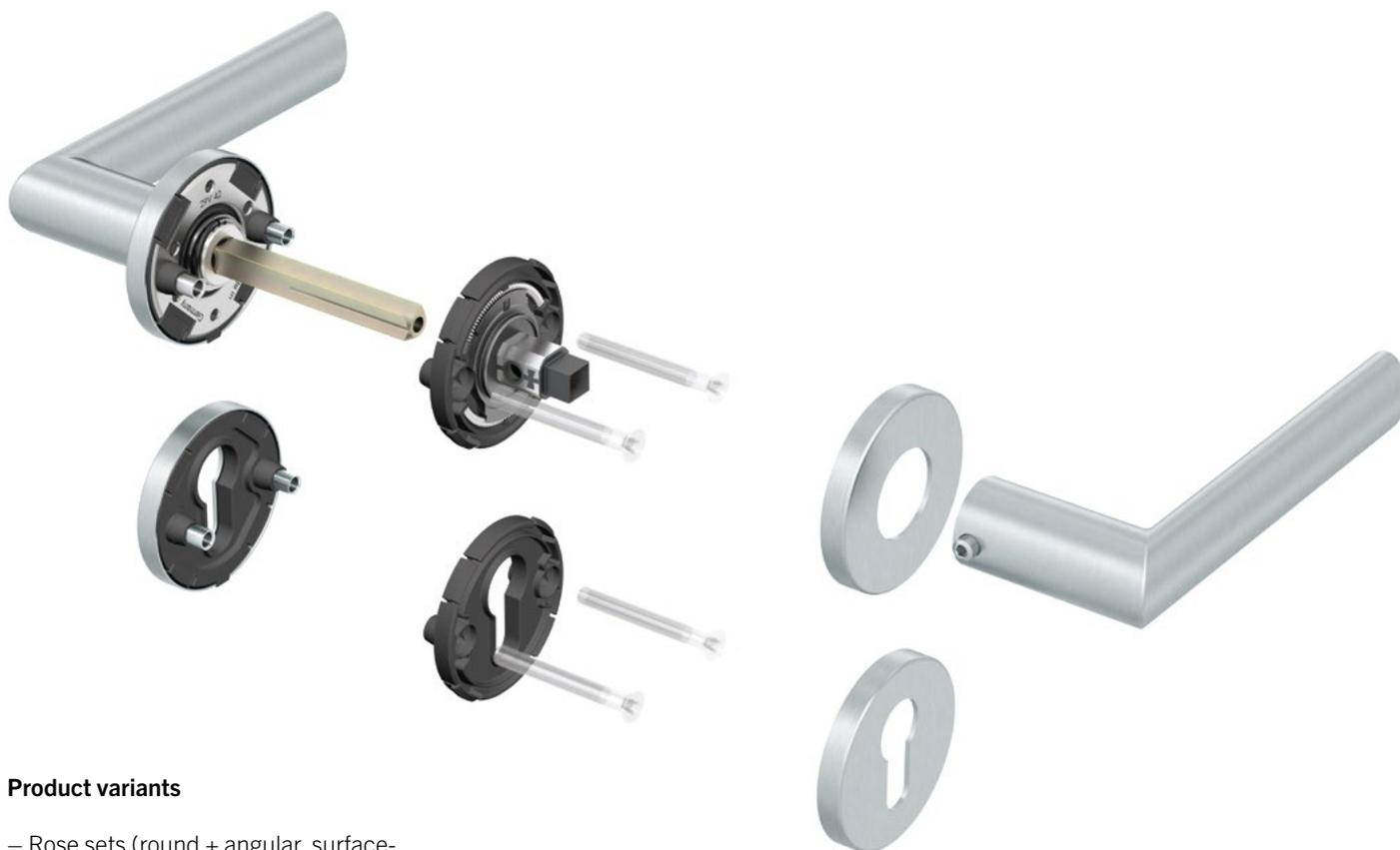
FSB WC rose sets are available with the FSB ASL® bearing both as a set and also as individual parts. Find your desired door handle model and the associated product code on page 76 ff. The unlocking device and indicator are supplied in the accompanying accessory bag (see page 348 ff.).



Bearing and adaptor technology

FSB AGL® for heavy and FS heavy-duty doors and emergency-exit devices

The FSB AGL® has represented a category of unbeatable heavy-duty fittings for commercial properties for decades, impressing architects, contractors, builders, operators and investors alike with its high performance.



Product variants

- Rose sets (round + angular, surface-mounted) with profile cylinder (PC), warded lock (WL) and Chubb round cylinder (CH-RC) keyways as well as for WCs; also available flush-fitted, depending on the door handle model
- Short and long backplate sets (oval + angular) with profile cylinder (PC), warded lock (WL) and Chubb round cylinder (CH-RC) keyways as well as for WCs
- All variants as lever/knob sets
- Standard variant suitable for door thicknesses 39 to 48 mm
- Door thicknesses 29 to 98 mm also available; other thicknesses available upon request
- Spindle thicknesses 8, 8.5 and 9 mm
- Available in materials aluminium, stainless steel and bronze

Classification code

72  4 | 7 | - | 0 | 1 | 5* | 0 | B

76  4 | 7 | - | B | 1 | 5* | 0 | B

79  4 | 7 | - | B | 1 | 5* | 0 | B

* aluminium and stainless steel only

Heavy-duty version

The FSB AGL® is suitable for heavy doors with high traffic and emergency exit devices.

FSB AGL® compact fitting

The sets comprise two pre-assemblies: one fully assembled male-handle side (on the left in the figure) and an associated female handle side with a positive mechanism (on the right in the figure).

Turnably fixed compensating bearing with adaptor

The spring bearing made of tempered steel in GFR plastic and the guide neck bearing in Teflon-coated, low-friction plain bearing bushings ensure maintenance-free function over the long term with no wear and tear.

Tolerance compensation

The FSB AGL® compensates for installation and production tolerances in the door drill holes, lock/lock mortise and square spindle.

EN 1906

The FSB AGL® is assigned category of use grade 4 with more than one million tested operational cycles.

Snug fit

The interlocking spindle connection in the set transfers tensile forces to the opposite side of the door.

Full spindle with groove

The full spindle with groove has spindle thicknesses of 8, 8.5 and 9 mm, making it suitable for door thicknesses 39 mm and greater.

Design feature

The door handle conceals the guide ring.

Through-fixing

The roses are fixed through with M5 stainless steel screws.

Installed in a flash

The adaptor system makes effortless installation possible, without having to screw 'past' the door handle, since the female handle is separate from the base of the rose/backplate and is pushed onto the adaptor and secured with a grub screw only after the half-set has been screwed into place.

Fire resistance

The FSB AGL® guarantees fire resistance in accordance with DIN 18273 (FS variant) and EN 1634-1.

Diverse material selection

FSB offers a unique selection of different finishes and materials for FSB AGL® – based on aluminium, stainless steel and bronze.

Positive mechanism type B

A positive mechanism with a pre-loaded spring – as described in EN 1906 for type B operation, grade 4 category of use – permanently prevents the door handles on heavy, high-traffic doors from sagging and facilitates an angle of rotation of up to 35°.

0° position

FSB AGL® sets also feature a 0° stop built into the positive mechanism, which ensures the door handles are always perfectly horizontal when at rest. The positive mechanism offsets any effects of the lock spring right from the outset.

DIN direction can be flexibly changed

The adaptor concept means that it is possible to change the DIN direction for FSB AGL® lever/knob and half-sets by replacing the base (applies to 8 mm and 8.5 mm spindle). Adaptors can be supplied loose.

WC sets and roses

FSB WC rose sets are available with the tried-and-tested FSB AGL® heavy-duty bearing as a set. They have a thumb turn on the inside and an emergency release on the outside. Emergency release key 34 3464 must be ordered separately. Find your desired door handle model and the associated product code on page 76 ff.



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Bearing and adaptor technology

Technical information

EN 1906 fittings

Our heavy-duty fittings come out on top, going far beyond the standard in all categories.

Standard EN 1906 defines the requirements and test methods for door handles and doorknobs. The practical value and

classification of fittings must be judged across the entire eight-digit grading system.

Certification under EN 1906 is only granted once all test criteria and the required results are met.

Perfection down to the last detail – our heavy-duty fittings pass with flying colours in each of the eight categories, also known as ‘digits’:

Classification code for FSB AGL® (8, 8.5 and 9 mm)

4	7	–	B*	1	5	0	B
Category of use Grades 1–4	Durability Grades 6/7 1.5 million operating cycles	Door mass	Fire resistance pursuant to EN 1906 Annex C	Safety Grades 0/1 3,000 N Tensile load	Corrosion resistance Grade 5 (aluminium and stainless steel)	Security Grades 0–4	Type of operation A/B/U

Classification code for FSB ASL® (7, 8 and 8.5 mm)

4	7	–	B**	1	5	0	A
Category of use Grades 1–4	Durability Grades 6/7	Door mass	Fire resistance pursuant to EN 1906 Annex C	Safety Grades 0/1	Corrosion resistance Grade 5 (aluminium and stainless steel)	Security Grades 0–4	Type of operation A/B/U

* for fire door levers pursuant to EN 1634-1 / EN 1906
** for fire door levers pursuant to EN 1634-1

Technical information

EN 1906 fittings

1. Category of use

Grade 1

Doors with medium frequency of use by people with a high incentive to exercise care and a small chance of misuse, e. g.. internal residential doors

Grade 2

Doors with medium frequency of use by people with some incentive to exercise care but where there is some chance of misuse, e. g.. internal office doors

Grade 3

Doors with high frequency of use by the public or others with low incentive to exercise care and with a high chance of misuse, e. g.. doors in public administrative buildings

Grade 4

Doors in public places with high frequency of use, which are subject to abuse or at risk of being damaged, e. g.. doors in public toilets or schools, etc.

The fittings are tested on the following aspects in order to allocate the different grades to them:

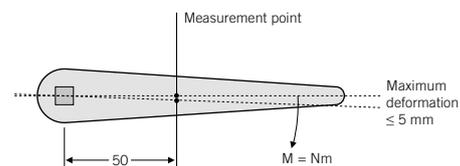
- Rotational torque strength of the square spindle
- Tensile load
- Free play in neutral position
- Free angular movement

FSB is always in a class of its own: the figures and graphs to the right show just how well our fittings perform against the EN 1906 grading scheme.

Rotational torque strength of the square spindle

The FSB spindle offers greater rotational torque strength with less deformation.

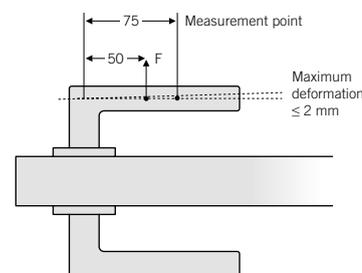
Grade 1	M = 20 Nm
Grade 2	M = 30 Nm
Grade 3	M = 40 Nm
Grade 4	M = 60 Nm
FSB	FSB ASL®/AGL® 3/8.5 mm M = 60 Nm
	FSB AGL® 9 mm M > 60 Nm



Tensile load

The compact design and durability of the connection elements guarantee the ability to withstand a higher tensile load.

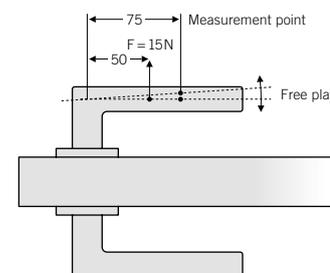
Grade 1	F = 300 N
Grade 2	F = 500 N
Grade 3	F = 800 N
Grade 4	F = 1,000 N
FSB	FSB ASL® F = 2,500 N
	FSB AGL® F = 2,500 N



Free play in neutral position

FSB bearing technology ensures a secure hold and does not allow sets to wobble, with a guide bearing depth of 7 mm and handle guide diameter of 18 mm.

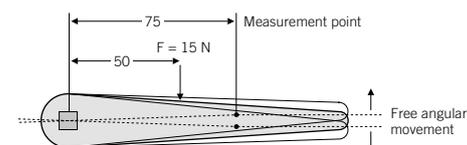
Grade 1	10 mm
Grade 2	10 mm
Grade 3	6 mm
Grade 4	6 mm
FSB	FSB ASL® < 1 mm
	FSB AGL® < 0.5 mm



Free angular movement

Thanks to no-play tensioning, the FSB spindle prevents door handles from wobbling.

Grade 1	10 mm
Grade 2	10 mm
Grade 3	5 mm
Grade 4	5 mm
FSB	FSB ASL® < 1 mm
	FSB AGL® < 0.5 mm



Technical information

EN 1906 fittings

2. Durability

FSB sets far exceed the requirements set for the fatigue test. The force and motion conditions likely to be experienced in the field are recreated on a test rig and simulated in a fatigue test.

Grade 6	100,000 operational cycles for medium use
Grade 7	200,000 operational cycles for high use
FSB	FSB ASL® tested for 200,000 cycles (1,000,000 cycles internally at FSB)
	FSB AGL® tested for 1,500,000 operational cycles

3. Door mass

No requirement. This digit describes the door weight.

4. Fire resistance

FSB has conducted fire tests in accordance with EN 1634-1 with different door manufacturers. In these tests, the entire door element is tested, including the fittings.

We also refer to DIN 18273 in this regard, which stipulates that fire safety fittings must bear the Ü mark to indicate fitness for purpose.

5. Safety

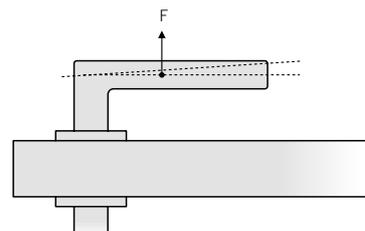
There's safe, there's even safer – and then there's FSB. We exceed standard requirements with our spindle connection, turnably fixed bearing and the solid quick-installation system. This digit shows the degree of safety: grade 1 indicates that the fittings meet the required strength values even under extreme loads (e. g., elements which are grasped).

Grade 0 = normal use
Grade 1 = safety application

To be assigned grade 1 here, fittings must be able to withstand loads of 1,500 N or 2,500 N depending on the category of use.

Grade 1 – 4 category of use
(first digit of the classification code)

Grade 1	F = 1,500 N
Grade 2	F = 1,500 N
Grade 3	F = 2,500 N
Grade 4	F = 2,500 N
FSB	FSB ASL® F = 2,500 N
	FSB AGL® F > 3,000 N



6. Corrosion resistance

This digit describes the defined corrosion resistance. FSB ASL®, FSB AGL® and fire safety sets made of aluminium and stainless steel meet the requirements of grade 5 set out in EN 1906, which is verified with a 480-hour salt spray test.

Grade 0 = no defined corrosion resistance
Grade 1 = mild resistance
Grade 2 = moderate resistance
Grade 3 = high resistance
Grade 4 = very high resistance
Grade 5 = extra high resistance

7. Security

Where 'burglary-resistant fittings' are concerned, FSB offers a special range of fittings for security grades 2 and 4 in many different designs. Naturally our security fittings also meet the other requirements of this standard.

Grade 0 = no burglary resistance
Grade 1 = mild resistance
Grade 2 = moderate resistance
Grade 3 = high resistance
Grade 4 = extra high resistance

8. Type of operation

FSB AGL® and FSB AGL® FS heavy-duty fittings are equipped with a type B positive mechanism and an integrated and defined 0° stop. FSB ASL® fittings have a type A positive mechanism.

A = spring-assisted
B = spring-loaded
U = unsprung

