

JYSK STANDARD

Fittings

Scope

This standard describes requirements for fittings used in JYSK furniture products.

Change-log

Section	Changes
All	Updated standard format and wording. Updated table numbers and references.
1.6	Indoor NSS now applicable regardless of coating type.
4.2.2	Updated size requirement.

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1 General fitting requirements

1.1 Durability

Fittings must be supplied in a condition that makes them durable throughout the expected lifetime of the product.

1.2 Strength and stability

Fittings must be of sufficient strength to any strength or stability requirements to the final product - Suppliers must ensure that fittings can pass all relevant requirements.

1.3 Burrs and sharp edges

Fittings must be free of burrs and sharp edges that may pose a risk for the end-user.

Note: Pointed ends on nails and screws are naturally omitted from above requirement.

1.4 Oiled and greased elements

Fittings must be free of oil and grease.

Note: Movable parts such as hinges or extension elements may, if necessary, be greased locally to ensure the correct function.

1.5 Production flaws and errors

JYSK does not accept distinct production errors on fittings as such errors can compromise the strength or function of the component as well as give the customer/end user a bad perception of the overall product quality.

Note:

Any distinct production error on a fitting component is considered a valid claim for the product even in cases where the component might fulfil its intended function. JYSK in some cases state known examples of specific errors for different types of fittings in the concerning paragraphs within this standard.

1.6 Corrosion resistance

The requirements of this paragraph apply to all fittings with metallic parts unless otherwise specified.

Fitting components made of steel must be fully coated in accordance with [Table 1](#) to increase their corrosion resistance and durability.

- Chromate converted zinc coatings for *indoor* must be chromate converted to either *blue* or *clear* unless the design of the product specifically requires another colour.

Note: Documentation of corrosion resistance of fittings towards JYSK is under normal conditions only required in case of specific quality problems.

Fitting components made of metal other than steel must pass testing according to the applicable (*indoor* or *outdoor*) *Neutral Salt Spray (NSS)* test method of [Table 1](#) with a requirement of a protection rating ≥ 8 (R_p according to **ISO 10289**).

Permitted coating		Test method	Requirement after testing
Indoor	Coating according to ISO 4042	6 Hours Neutral Salt Spray method (NSS) according to ISO 9227	No sign of red rust and Appearance rating ≥ 5 for white rust (R_A according to ISO 10289)
	Chromate converted zinc coating according to ISO 4042	72 Hours Neutral Salt Spray method (NSS) according to ISO 9227	No sign of red rust and Appearance rating ≥ 5 for white rust (R_A according to ISO 10289)
Outdoor	Chrome-, nickel-, copper- or brass-coating according to ISO 4042	48 hours Acetic Acid Salt Spray method (AASS) according to ISO 9227	Protection rating ≥ 8 (R_p according to ISO 10289)
	Hot dip galvanizing according to ISO 1461	Measurement of coating thickness according to relevant method of ISO 1461 .	Thickness $\geq 30 \mu m$

Table 1

2 Fasteners (Bolts and screws)

2.1 Screw drives

Only the following screw drives are permitted regarding the screw drive is permitted on the given screw-type (see [2.5](#)):


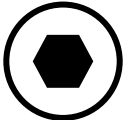

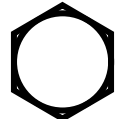
Screw drive:		Tool must be included:
<i>Pozidriv</i> According to ISO 4757 (type Z) Size: PZ2 (Note: PZ3 permitted if necessary)		No
<i>Hex socket</i> According to ISO 4759-1 Size: HEX3, HEX4, HEX5, HEX6 or HEX8		Yes (See 10)
<i>Torx</i> According to ISO 10664 Size: TX20 or TX25		Yes (See 11)
<i>External hex</i> Sizes according to ISO 272 Tolerances according to ISO 4759-1 - grade B/C		Yes (See 12)

Table 2 – Permitted screw drives

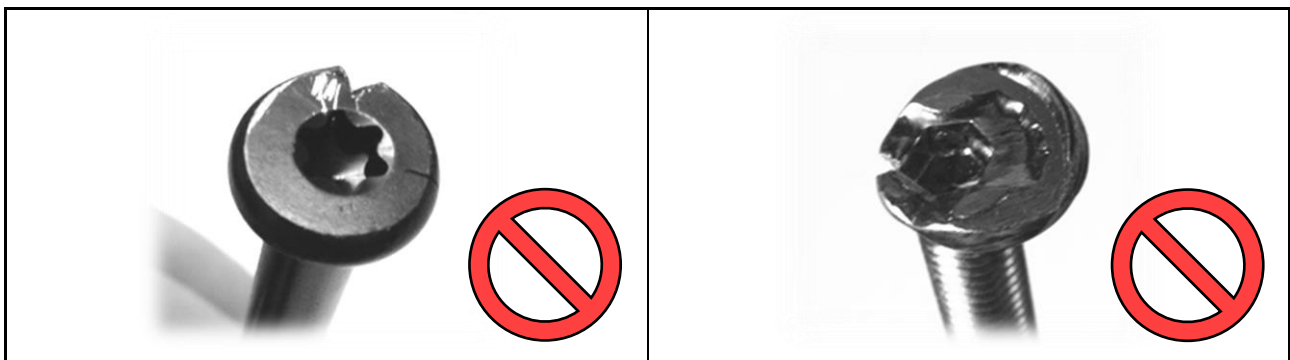
2.2 Base material

All bolts and screws must use steel (carbon, alloy or stainless) as base material.

Bolts and screws may be case hardened to fulfil mechanical requirements.

2.3 Examples of known flaws and errors

Fastener heads are critical areas on these components due to variances of the forming method – Suppliers must ensure that no faulty screwheads are supplied.



Illustrations: Examples unacceptable errors on fastener heads

2.4 Mechanical requirements

Suppliers must ensure that fasteners have the necessary mechanical strength to fulfil the intended function within the construction in accordance with the mechanical requirements stated in [Table 3](#).

Note: Failure to comply with above requirement is considered a valid claim for the whole product.

Mechanical requirement		Validation method
1	1.1 - The <i>proof load</i> of the fastener must exceed the maximum tensile load reasonably expected including all relevant safety factors. 1.2 - Fasteners in shear joints must likewise have sufficient <i>shear strength</i> to withstand reasonably expected shear forces including all relevant safety factors.	2.4.1
2	The minimum <i>breaking torque</i> must be sufficiently high to resist the torque required for installation.	2.4.2
3	The <i>head and screw drive</i> must be sufficiently strong to allow rupturing the fastener in either the threaded section or at the unthreaded shank when performing a torsional test.	2.4.3
4	Fasteners must be sufficiently <i>ductile</i> (i.e. not be brittle).	2.4.4

Table 3 – Mechanical requirements for fasteners

2.4.1 Validation of tensile and shear strength

The tensile and shear strength of fasteners is validated as part of the mechanical, safety and durability related tests that are carried out on finished products.

Fasteners must be selected according to good engineering/construction practices including any relevant safety factors.

2.4.2 Validation of breaking torque

Testing that a fastener has sufficient torsion strength is easiest done by simply fitting it in the furniture in an actual test assembly.

Fasteners must not show signs of deformation due to applied torque during a test assembly.

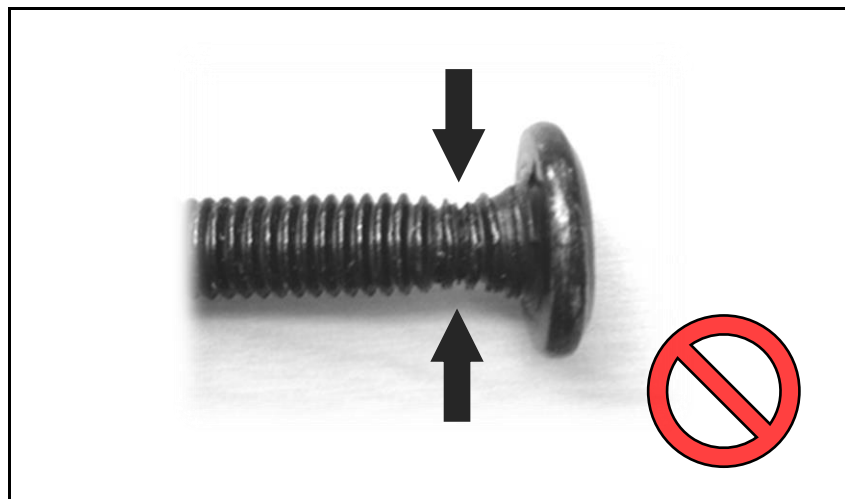


Illustration: An example of a ductile fastener exposed to a high torque – This fastener has started deforming (necking) and will eventually break if more torque is applied.

Besides the practical test JYSK also states minimum breaking torques depending on the fastener type and size.

Fasteners must be able to pass the both the *practical assembly test* and the *minimum breaking torque test*.

Note: Very short fasteners (with lengths less than three times the outer thread diameter) can sometimes not have their breaking torque tested due to the low number of threads. For these fasteners only the *practical assembly test* applies.

Minimum breaking torque of Tapping thread:

Fasteners with *tapping threads* must have a *minimum breaking torque* $\geq T$ when tested according to the torsional test method stated in **ISO 10666**.

Note: A simplified version of the test can be performed with a torsion wrench and a suitable clamping device.

The *minimum breaking torque* T is calculated with the following formula rounding values to one decimal:

$$T = 0,19 \cdot (\varnothing_{min})^{2,9}$$

Where:

- T is the breaking torque in Nm
- \varnothing_{min} is the minor diameter of the fastener in mm

Note: The *minor diameter* is the diameter of the smallest cross-sectional area along the center-axis.

Minor diameter (\varnothing_{min})	Minimum breaking torques (T)
2 mm	$\geq 1,4$ Nm
3 mm	$\geq 4,6$ Nm
4 mm	$\geq 10,6$ Nm
5 mm	$\geq 20,2$ Nm
Note: Informative only – Actual values must be calculated	

Table 4 - Examples of minimum required breaking torques (Tapping thread)

Minimum breaking torque of ISO-metric thread:

Fasteners with *ISO-metric threads* must have a *minimum breaking torque* according to [Table 5](#) when tested according to the torsional test method stated in **ISO 898-7**.

Note: A simplified version of the test can be performed with a torsion wrench and a suitable clamping device.

Thread:	Minimum breaking torque:
M4	≥ 2 Nm
M5	$\geq 4,4$ Nm
M6	$\geq 7,5$ Nm
M8	≥ 19 Nm
M8x1	≥ 21 Nm
M10	≥ 36 Nm
M10x1,25	≥ 41 Nm
M10x1	≥ 47 Nm
Note: Fine pitched thread (M8x1, M10x1,25 and M10x1) have higher breaking torques than corresponding coarse pitches due to the thread geometry.	

Table 5 - Minimum required breaking torques (ISO-metric thread)

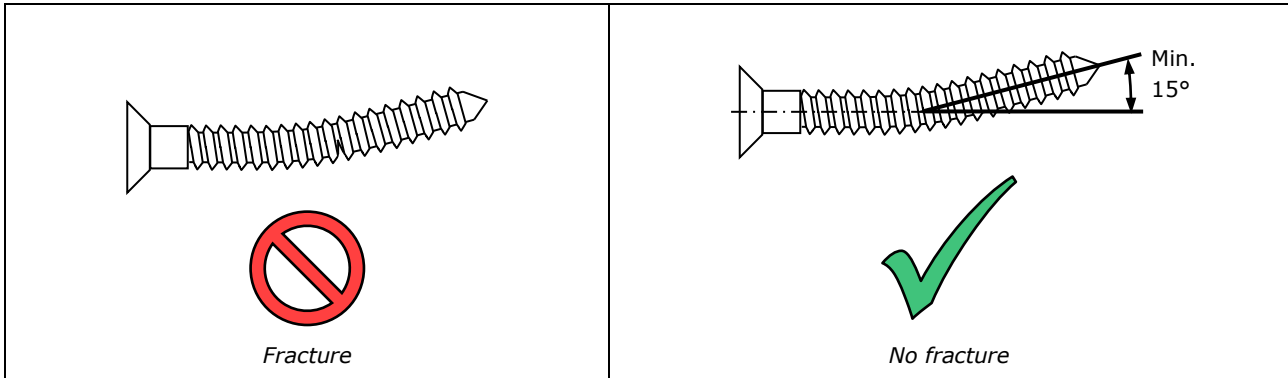
2.4.3 Validation of strength of head and screw drive

The fastener head and screw drive must allow the fastener to break in the intended area without showing significant deformation when tested according to the applicable *minimum breaking torque* test in [2.4.2](#).

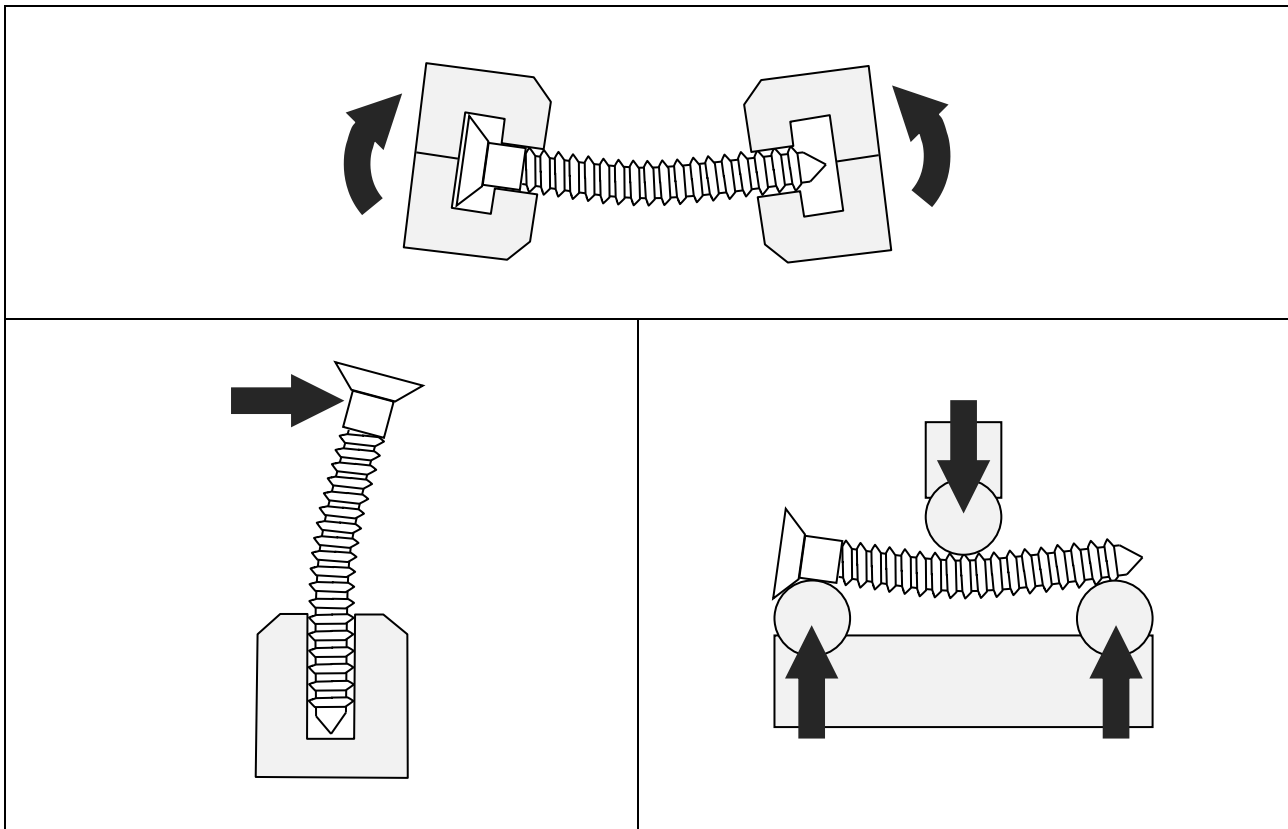
2.4.4 Validation of ductility/brittleness

Fasteners must be able to bend minimum 15° over a length of maximum of 40 mm without showing *fractural damage* in the bended area.

Note: Bending the fastener can be performed using any suitable method.



Illustrations: Minimum bend



Illustrations: Examples of different bending methods

2.5 Size and shape requirements

Unless otherwise specified the different size and shape of fasteners must be in accordance with [Table 6](#) and [Table 7](#).

Type of fastener:	Section:
Euro screws	2.5.1
Assembly screws (Confirmat screws)	2.5.2
Chipboard and wood screws	2.5.3
Screws and bolts with metric thread	2.5.4
Threaded pins and hanger bolts	2.5.5

Table 6 – Requirements per fastener type

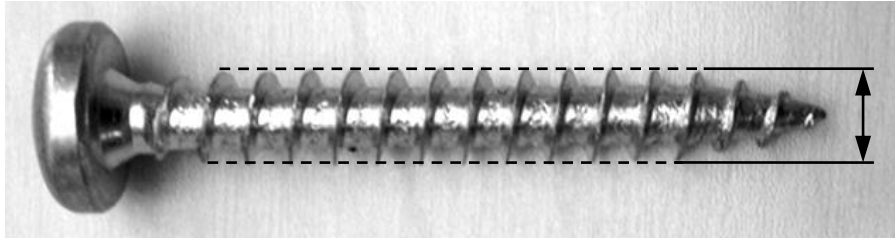
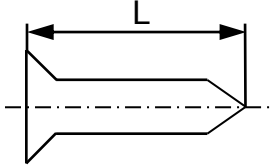
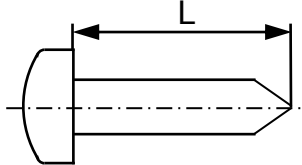
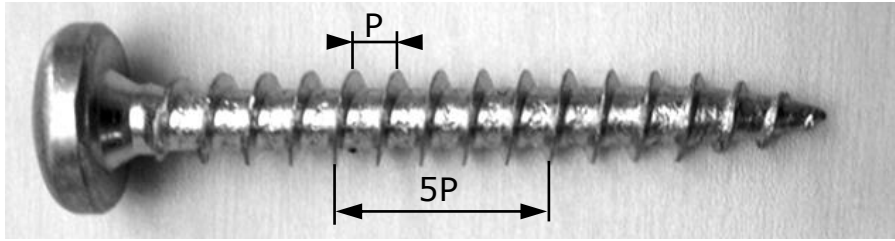
Major diameter	<p>The <i>major diameter</i> is the outer diameter of thread.</p> <ul style="list-style-type: none"> Specified major diameters are the <i>nominal dimensions</i>. Permitted minimum and maximum diameters are noted in brackets. 	
Length	<p>The <i>length</i> of fasteners (L) is measured according to the below stated principles.</p> <p>Note: Stated values are minimum and maximum permitted lengths.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Countersunk</p> </div> <div style="text-align: center;">  <p>Not countersunk</p> </div> </div>	
Thread pitch	<p>The thread pitch (P) is the distance from the crest of one thread to the next after one rotation (360°) around the center axis of the fastener.</p> <ul style="list-style-type: none"> Measurements must be made as an average over minimum 5 threads. On fasteners shorter than 5 threads measurements must be made over the maximum possible length. 	

Table 7 – Fastener size definitions

2.5.1 Euro screws

Euro screws must comply with [Table 8](#).


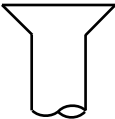
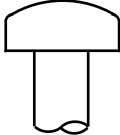
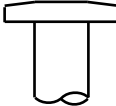
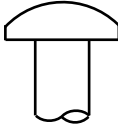
Definition and use	<p>Euro screw are relatively short blunt pointed screws with a coarse full or partial tapping thread. Euro screws are used for mounting of parts (e.g. hinges or runners) in predrilled holes in wood or wood based materials. Euro screws for mounting of plate parts may have a “neck” to lower the required clamping force.</p>  <p><i>Examples of euro screws</i></p>			
Major diameter	$\varnothing 4,5 - \varnothing 6,5$ mm $(\varnothing 4,4 - \varnothing 6,6\text{mm})$			
Length	8 - 32 mm			
Thread pitch	1,5 - 2 mm			
Head shape	 Countersunk	 Pan	 Flat	 Mushroom

Table 8 – Requirements for Euro screws

2.5.2 Assembly screws (Confirmat screws)

Assembly screws must comply with [Table 9](#).


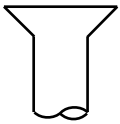
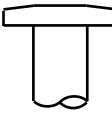
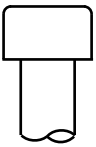
Definition and use	<p>Assembly screws are blunt pointed screws with a relatively coarse and always partial self-tapping thread. Assembly screws are used in predrilled holes for assembling furniture of wood or wood based materials.</p> 		
Major diameter	<p>Ø5 – Ø8 mm (Ø4,9 – Ø8,2 mm)</p>		
Length	<p>20 – 85 mm</p>		
Thread pitch	<p>2 – 3 mm</p>		
Head shapes	 Countersunk	 Flat	 Cylindrical
Screw drive according to 2.1	<p>Must be Hex socket</p>		

Table 9 – Requirements for assembly screws (Confirmat screws)

2.5.3 Chipboard and wood screws

Chipboard and wood screws must comply with [Table 10](#).



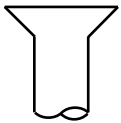
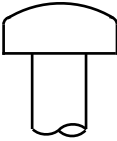
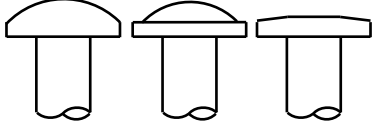
Definition and use	<p>Chipboard and wood screws cover coarse threaded fasteners ranging from small screws for mounting of fittings to bigger screws for assembly of wooden parts.</p> <ul style="list-style-type: none"> Depending on the intended function of the fastener it can be fully or partially threaded. Ends are most often pointed but may be blunt when used in predrilled holes. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Counter sunk chipboard screws</p> </div> <div style="text-align: center;">  <p>Pan headed chipboard screws</p> </div> </div>		
Major diameter	$\varnothing 3,0 - \varnothing 8 \text{ mm}$ $(\varnothing 2,9 - \varnothing 8,2 \text{ mm})$		
Lengths	12 – 85 mm		
Thread pitch	1,5 – 3 mm		
Head shapes	 <p>Counter-sunk</p>	 <p>Pan</p>	 <p>Mushroom / wafer / flat</p>

Table 10 – Requirements for chip and wood screws

2.5.4 Screws and bolts with metric thread

Screws and bolts with metric thread must comply with [Table 11](#).




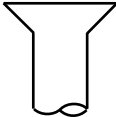
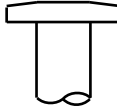
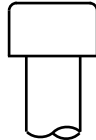
Definition and use	Blunt ended fasteners with metric thread used in metric threaded holes or with metric nuts. <ul style="list-style-type: none"> • Metric screw threads are produced with specific dimensions according to a standardised threading system. • Fasteners may be either fully or partially threaded depending on the intended use. 		
			
Permitted thread according to ISO 262 & ISO 965-2	M4 M5 M6 M8 M8 x 1 M10 M10 x 1 M10 x 1,25 Note: Fine thread is only permitted if it brings additional value to the product.		
Length according to ISO 888	10 - 120 mm Note: JYSK permits any thread length up to full threading and not just the ISO recommended lengths.		
Tolerances	Minimum acceptable level is according to ISO 4759-1 - Grade C		
Head shapes	 <i>Countersunk</i>	 <i>Flat</i>	 <i>Cylindrical</i>
Screw drive according to 2.1	Must not be Pozidriv Exception: Screws for mounting of handles on indoor furniture may be Pozidriv.		

Table 11 - Requirements for screws and bolts with metric thread

2.5.5 Threaded pins and hanger bolts

Threaded pins and hanger bolts must comply with [Table 12](#).




Definition and use		<p><i>Threaded pin</i>: ISO metric threaded fastener without a screw head.</p> <p><i>Hanger bolt</i>: Fastener without screw head with tapping thread on at least one end.</p> <p><i>Threaded pins</i> and <i>hanger bolts</i> must be made in one of the following configurations:</p> <ul style="list-style-type: none"> • With a flange between the two ends. • Without a flange between the two ends (fully threaded). • With an unthreaded shank between the two ends. <p><i>Hanger bolts</i> to be fitted by the customer must have a hex socket screw drive in the opposite end of the tapping thread. Note: Hanger bolts with two tapping ends logically excluded.</p>
		 <p>Threaded pins (ISO metric thread on both ends)</p>
		 <p>Hanger bolts</p>
		 <p>Hanger bolts (Tapping thread on both ends)</p>
Metric ends:	Permitted thread according to ISO 262 & ISO 965-2	<p>M6 M8 M8 x 1 M10 M10 x 1 M10 x 1,25</p> <p>Note: Fine thread is only permitted if it brings additional value to the product.</p>
Tapping ends:	Major diameter	<p>Ø6 – Ø10 mm (Ø5,9 – Ø10,2 mm)</p>
	Thread pitch	<p>2 – 3 mm</p>

Table 12 – Requirements for threaded pins and hanger bolts

3 Nuts

Nuts must comply with [Table 13](#).

Definition	<p>Nuts are hexagon shaped fittings with internal threading.</p> 				
Base material	Must be steel				
Finnish/coating	According to 1.6				
Mechanical strength	The proof load (typically ~95% of thread stripping load) of any nut must exceed the reasonably expected load on the component including all relevant safety factors.				
Thread	Internal ISO-metric thread according to ISO 724 & ISO 965-1				
Tolerances	Product grade C or higher according to ISO 4759-1 (When not otherwise specified)				
Dimensions	Nut/thread size	Width			Minimum height [mm]
		Across flats [mm] (h14 tolerance)		Across corners [mm]	
		Min.	Max. (=nominal)	Min.	
	M4	6,64	7,00	7,50	1,95
	M5	7,64	8,00	8,63	2,45
	M6	9,64	10,00	10,89	2,90
	M8	12,57	13,00	14,2	3,70
	M10	15,57	16,00	17,59	4,70
Permitted features Note: May be present simultaneously	 Lock nuts		 Flange (flat or serrated)		 Cap/dome

Table 13 – Requirements for nuts

4 Hinges (for Indoor furniture)

JYSK permits the use of two types of hinges:

- *Butterfly hinges* (see [4.1](#))
- *Concealed hinges* (see [4.2](#))

The choice of hinge type must comply with the following rules:

- Vertically pivoting indoor furniture doors must use *concealed hinges*.
- Butterfly hinges may be used as a vertically pivoting hinge on non-door elements.
- Horizontally pivoting hinges must be butterfly hinges.

4.1 Butterfly hinges

Butterfly hinges must comply with [Table 14](#).

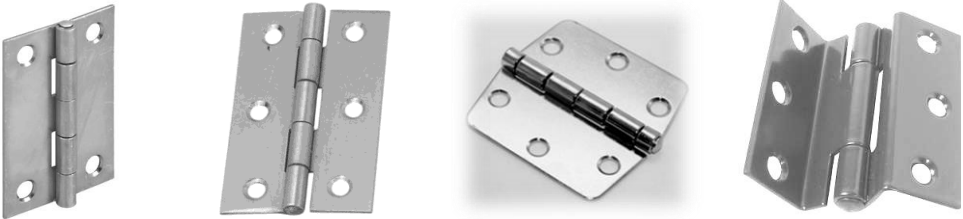
Definition and use	<p>Butterfly hinges are a simple yet strong type of hinge that is also known from building doors.</p> <div data-bbox="459 741 1426 958">  </div> <p>Examples of butterfly hinges</p>
Material	Steel
Coating	Suitable coating to withstand 3 AHT cycles according to ISO 6270-2 without showing corrosion or limiting the functionality of the hinge.
Plate thickness	≥ 1,2 mm
Holes	4 to 6 round countersunk holes (minimum 2 holes per wing)

Table 14 – Requirements for butterfly hinges

4.2 Concealed hinges

Concealed hinges (sometimes called cup-hinges or euro-style hinges) normally consist of two components.

The first component is the hinge arm which is fitted on the furniture door and the second is the mounting plate on which the hinge arm is attached.

Concealed hinges exist in many variants as both dimensions and additional features vary.



Examples of concealed hinges

4.2.1 Opening angle

Minimum opening angles must comply with [Table 15](#).

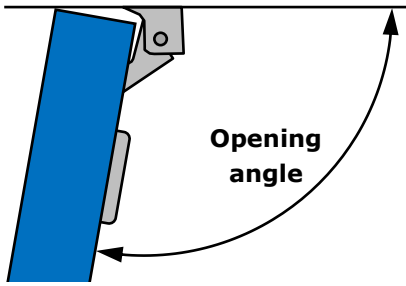



	Door positioning	Cup size	
		Ø35 mm	(Ø26 mm)
	 <i>Full overlay</i>	≥110°	≥94°
	 <i>Half overlay</i>	≥110°	≥94°
	 <i>Inset</i>	≥94°	≥94°

Table 15 - Minimum opening angle dependent on cup diameter and door positioning

4.2.2 Cup dimension of hinge

Concealed hinges must have a cup diameter of 35 mm.

Note: Concealed hinges with a cup diameter of 26 mm is permitted only if approved by [JYSK C&Q](#).

4.2.3 Mounting plates

Mounting plates for concealed hinges must comply with [Table 16](#).

Holes for fastening	Must have 2 holes for fastening. Note: Mounting plates with 4 holes are not permitted.
Centre distance between fastening holes	Must be 32 mm.
Mounting method	Must come with pre-mounted <i>euro screws</i> according to 2.5.1

Table 16 – Requirements for mounting plates

4.2.4 Adjustability

Concealed hinges must:

- Have minimum adjustability in accordance with [Table 17](#).
- Allow adjustment doors in all three orientations to sit neatly on the finished product.

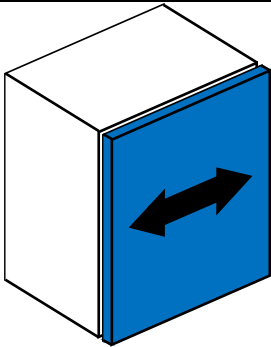
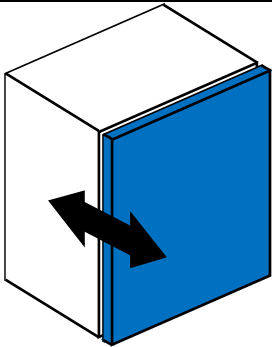
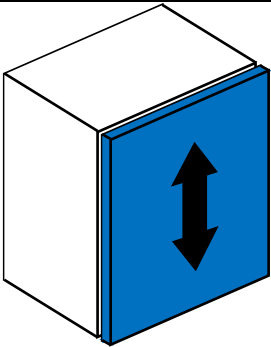
	Overlay (+ = away from hinge)	Depth (+ = outwards)	Height (+ = upwards)
Direction			
Total	≥ 3 mm	≥ 3 mm	≥ 4 mm
+	≥ 2 mm	≥ 2 mm	≥ 2 mm
-	≥ 0,5 mm	≥ 0,5 mm	≥ 2 mm

Table 17 - Minimum requirements for adjustment distances

4.2.5 Soft-close

A *soft-close* feature may be integrated in concealed hinges.

The following requirements must be met to categorize a feature as *soft-close*:

- The dampening mechanism takes action at latest 5 cm from fully closed (measured at the free end of the door).
- The dampening mechanism is able to stop the door from being slammed.
- If the door is left unattended inside the *active working area*, the soft-close mechanism must close the door fully in a smooth slow-flowing motion.

4.2.6 Strength and durability

Concealed hinges must be able to pass all tests of **EN 15570** when tested according to 'level 2'

Note: Specific requirements stated in *column 2 of annex B* of the standard.

JYSK accepts either of the two following types of documentation for showing compliance with the stated requirements:

- 1) Test carried out on the actual JYSK-product in which the hinges are included.

or

- 2) Manufacturer-/type-test of the hinge *provided that*:

- a. The test is performed with the same or fewer hinges than on the product supplied to JYSK.

and

The dimensions of the test-door is the same or larger than on the product supplied to JYSK.

and

The weight of the test-door is the same or heavier than on the product supplied to JYSK.

or

- b. Necessary product information according to **EN 15570 - annex A** is supplied from the manufacturer of the hinge

and

The product supplied to JYSK complies with the product information supplied for the hinge.

Notes:

In ambiguous cases a failed test performed on actual products (1st type) is by default weighted higher than a passed manufacturer/type tests (2nd type).

Additional requirements for hinges exist in relation to testing the safety of finished furniture products - These requirements must naturally be fulfilled concurrently with the hinge specific requirements of this paragraph.

4.2.7 Strength and durability of screw drives on concealed hinges

Adjustment of concealed hinges is in most cases performed by operating screw drives of fasteners or on mechanisms integrated in the hinge itself.

- Screw drives for adjustment of hinges supplied to JYSK must be suitable for a slotted screwdriver and/or a Pozidriv cross recess.
- Screw drives must be sufficiently strong to allow adjustments and re-adjustments of doors without deteriorating.
- The correct screw drive to use must be specified in the assembly instruction of the product with instructions for adjusting the hinge.

5 Extension elements for drawers

5.1 Guide rails

Guide rails must comply with [Table 18](#).



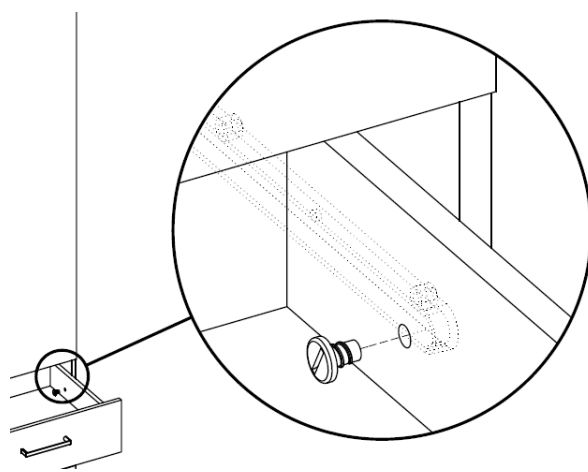
Definition and use	Guide rails are plastic rails used for drawers with 17 mm grooves usually on smaller furniture.	
	  <p>Examples of guide rails</p>	
Strength & durability according to 5.4	No requirement	
Material	Polyethylene (PE)	
Wall thickness	Minimum 1,75 mm	
Height	16 ⁰ _{-0,3} mm	
Travel length	200 - 450 mm The length of the rail must allow a travel length of the drawer of minimum ¾ of the drawer depth.	
Width	8-10 mm	
Mounting method	Countersunk screws or press-in	
Ends	Must be rounded (not necessarily completely round like the examples)	
Drawer stop	Must be included	

Table 18 – Requirements for guide rails

5.2 Roller slides

Roller slides must comply with [Table 19](#).


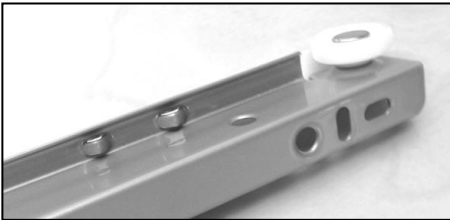
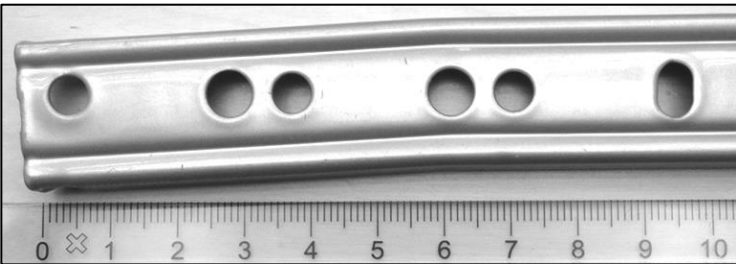
Definition and use	<p>Simple extension elements consisting of two metal rails with nylon wheels.</p>  <p>Example of roller slides</p>
Strength & durability according to 5.4	<p>≥ Level 1</p>
Materials	<p>Rails: Epoxy or powder coated steel Rollers: Polyamide</p>
Mounting position	<p>Bottom mounted</p>
Steel thickness	<p>Minimum 0,9 mm including coating</p>
Installation length	<p>250 - 600 mm The length of roller slides must allow a travel length of the drawer of minimum $\frac{3}{4}$ of the drawer depth Note: Roller slides <350 mm excepted.</p>
Sideways stability	<p>At least one rail pair per drawer must contain a sideways guide rail on the outer rail</p>
Drawer stop	<p>Must have double safety stop</p> 
Self close / detent	<p>Slope length minimum 50 mm Slope angle minimum 2,5°</p> 

Table 19 – Requirements for roller slides

5.3 Concealed slides

Concealed slides must comply with [Table 20](#).



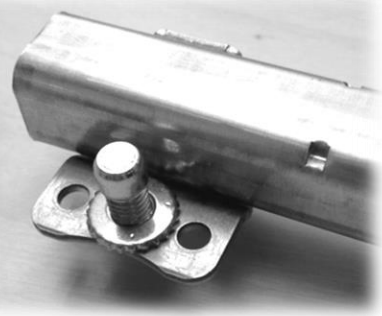
Definition and use	<p>Concealed slides are smoothly running slides using ball bearings. The main feature of these extension elements is that the slides are mounted in a hidden position under the drawer giving a clean looking design of the finished product.</p>	
		
	 <p><i>Mounting pin (back)</i></p>	 <p><i>Adjustable mounting pin (front)</i></p>
Strength & durability according to 5.4	≥ Level 2	
Member material	Zinc coated steel	
Ball bearing material	Steel	
Installation length	200 – 600 mm	
Height adjustability	Minimum 3 mm	
Lift lock mechanism	Must be included to secure that the drawer cannot be accidentally lifted off	
Detent	A hold-in detent feature must be integrated in the extension element to secure the drawer will remain in closed position and not open too easily without manual operation.	
Soft close	Integrated soft close must comply with 5.6	

Table 20 – Requirements for concealed slides

5.4 Strength and durability

Extension elements for drawers must be able to pass all applicable tests of **EN 15338 + A1:2010** according to the level specified by JYSK.

Note: Specific test requirements for the different levels are stated in **EN 15338 + A1:2010 - Annex C**.

JYSK accepts either of the following types of documentation for showing compliance with the stated requirements:

- 1) Test carried out on the actual JYSK-product in which the extension elements are included.

or

- 2) Manufacturer-/type-test of the extension elements

provided that:

- a. The test is performed with the same mounting method as on the product supplied to JYSK (Most likely only relevant for ball bearing slides).

and

The test is performed with a test drawer with an equal or bigger distance between outer surfaces than on the product supplied to JYSK.

and

The test is performed with a test drawer with an equal or bigger height of front than on the product supplied to JYSK.

and

The test is performed with an equal or higher loading capacity of the drawer than on the product supplied to JYSK.

or

- b. Necessary product information according to **EN 15338 + A1:2010 - annex A** is supplied from the manufacturer of the extension element.

and

The furniture product supplied to JYSK complies with the product information supplied for the extension element.

Notes:

In ambiguous cases a failed test performed on actual products (1st type) is by default weighted higher than a passed manufacturer-/type-tests (2nd type).

Additional requirements for extension elements exist in relation to testing the safety of finished furniture products - These requirements must naturally be fulfilled concurrently with the hinge specific requirements of this paragraph.

5.5 Operation resistance and noise

Extension elements for drawers (except guide rails) must operate sufficiently efficient to allow smooth and effortless operation of the drawer after assembly.

Smooth and effortless operation is characterised as follows by JYSK:

- The drawer only requires a light pull/push force to open or close
Note: Increased operating resistance related to opening/closing mechanisms is allowed.
- The opening/closing friction is approximately equal throughout the whole travel length of the drawer (Active working areas of opening and/or closing mechanisms not included).
- Opening and closing the drawer does not create unexpected noises that may potentially bring nuisance to customers.

Failure to meet any of above characteristics is considered a valid claim.

5.6 Soft-close

Soft-close features of extension elements must comply with [Table 21](#).

Function	The dampening mechanism must be able to stop the drawer from being slammed and closes the drawer fully in a smooth slow-flowing motion.
Active working area (Length)	Minimum 30 mm on the extension element Minimum 25 mm from on product (measured from fully closed)

Table 21 – Requirements for soft-close

5.7 Push-to-open

On *Gold*-products push-to-open features must be integrated in the extension element itself and not supplied as an individual component.

Note: Push-to-open features are permitted on products of all categories (*Basic*, *Plus* and *Gold*).

Stroke length and *activation gap* on integrated push-to-open features must comply with the requirements stated for separate components in chapter [6](#).

6 Push-to-open components

Push-to-open components must comply with [Table 22](#).



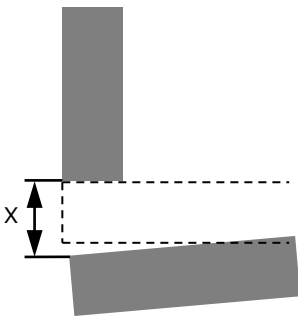
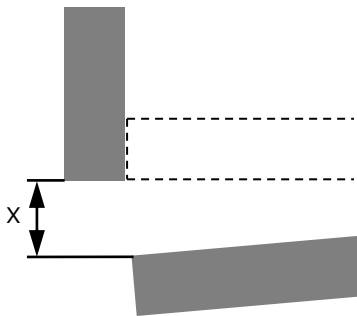
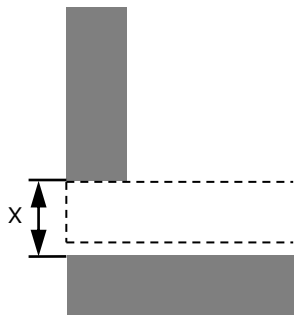
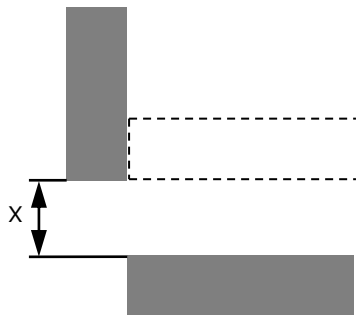
Definition and use	<div>Push-to-open components allows handle-less opening of furniture doors and drawers in which the feature is not integrated in the hinge or extension element.</div> <div><div></div><div></div><div><div>Closed position</div><div>Open position</div></div></div>		
Stroke length (X)	Must open the door to give a 'finger gap' of 12 to 16 mm		
	Hinged door	<div></div> <div>Overlay</div>	<div></div> <div>Inset</div>
	Drawer	<div></div> <div>Overlay</div>	<div></div> <div>Inset</div>
	Activation gap	<div>≤2,5 mm</div> <div>(applies both to the fitting and on the finished product)</div>	
Adjustment (in/out)	<div>≥5 mm</div>		
Hold-in	<div>May be <i>with</i> or <i>without</i> magnetic lock</div> <div>(Must be agreed with CAM)</div>		

Table 22 – Requirements for Push-to-open components

7 Connectors

7.1 Connecting dowels

Connecting dowels must comply with [Table 23](#).




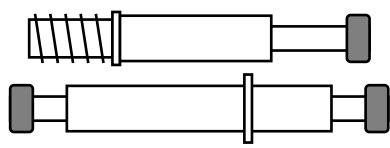

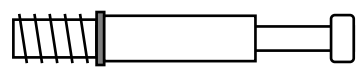

				Connecting dowels are fittings used with eccentric cases to assemble furniture.					
Definition and use									
				Threaded		Double		Articulated	
Head size						Ø5,9 - Ø6,7 mm Tolerance: ±0,2 mm			
Minimum diameter						≥Ø3,15 mm Tolerance: ±0,1 mm			
(Threaded only)		Minimum diameter of contact surface				≥Ø6,4 mm Tolerance: ±0,3 mm			
		Screw drive				1) Suitable for PZ2 screw driver. 2) Sufficiently strong for correct installation of the dowel without deformation that may affect the function.			
		Thread	Tapping	Major diameter		Ø6 - Ø6,5 mm			Measured according to 2.5
				Threaded section length		≥7,5 mm Tolerance: ±0,5 mm			
				Thread pitch		1,5 - 2,5 mm Tolerance: ±0,2 mm Minimum 3 full threads			
		Metric		Permitted thread according to ISO 262 & ISO 965-2		M4 M6 M8			
Suitability of combination				Must be suitable for use with the supplied <i>eccentric case</i> (according to 7.2)					

Table 23 – Requirements for connecting dowels

7.2 Eccentric cases

Eccentric cases must comply with [Table 24](#).


Definition and use	<p>Eccentric cases (sometimes known as minifix- or connector-houses) are fittings used with connecting dowels to assemble furniture.</p>  <p style="text-align: center;">Examples of eccentric cases</p>
Material and casting	<p>Zamak or steel No burrs larger than 0,2 mm</p>
Diameter	<p>Ø14,9 to Ø 14,95 mm (Suitable for mounting in Ø15 mm hole)</p>
Height	<p>10 – 24 mm</p>
Mechanical strength	<p>The eccentric case must be sufficiently strong to allow correct installation with the advised screwdriver without deformation that may affect the function of the component.</p>
Screw drive	<p>Flat screw drive ≥ 6 mm wide and $\geq 2,5$ mm deep (Suitable for 6x1,5 mm flat blade screw driver)</p> <p>The recommended dimensions of screwdriver must be stated in the assembly instruction.</p> <p>Note: Additional screw drive types may be present on the eccentric case - But use of the flat screw drive must be the method advised in the assembly instruction of the product.</p>
Suitability of combination	<p>Must be suitable for use with the supplied <i>connection dowel</i> (according to 7.1)</p>

Table 24 – Requirements for eccentric cases

8 Nails

Nails must comply with [Table 25](#).



Length	20 to 25 mm Tolerance $\pm 0,75$ mm within same product	
Shank	Minimum $\varnothing 1,4$ mm The shank must be barbed or else wise shaped (i.e. not smooth) to secure necessary holding power.	
	 <i>Barbed</i>	 <i>Smooth</i>
Head (form)	Flathead	
Head (Size)	Head diameter must be minimum 1 mm wider than shank and minimum $\varnothing 3$ mm	
Hardness	Nails must be heat treated to be sufficiently hard to not bend during use. The nail must however not be brittle and must be able to take a bend of minimum 90° without breaking.	

Table 25 – Requirements for nails

9 Wooden dowels

Wooden dowels must comply with [Table 26](#).


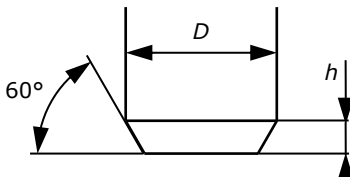
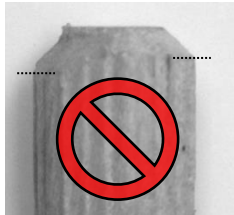
Definition and use	Wooden dowels are critical components as they are often part of the load-bearing construction. Note: Dowels produced according to DIN 68150-1 fulfil stated requirements.								
	<div></div> <p>Examples of wooden dowels (Form A)</p>								
Form and grooves	According to DIN 68150-1 - form A or C								
Permitted sizes [mm] Sizes and tolerances are specified at 8% moisture content.			Nominal lengths (L) Tolerance: ±1 mm						
			25	30	35	40	45	50	60
	Nominal Diameters (D) Tolerance: ±0,2mm	Ø5	x	x	x	-	-	-	-
		Ø6	x	x	x	x	-	-	-
		Ø8	x	x	x	x	x	x	-
Ø10		-	x	x	x	x	x	x	
Chamfer				$h = \frac{D}{5} \pm 1$ ($h \geq 1$ mm)			<div><p>Sloppy chamfer</p></div>		
	Dowels must be chamfered neatly in both ends.								
Quality	Dowels must consist of healthy, knot-free and dry material. Cracks are absolutely prohibited.								
Wood species	Ash, beech, birch, oak and robinia.								
Moisture content	Maximum 10% at delivery.								

Table 26 – Requirements for wooden dowels

10 Hex keys

Hex keys must comply with [Table 27](#).




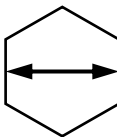
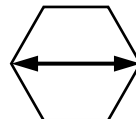
	<p>Hex keys may be L or Z shaped. Shanks may be hexagonal or round.</p> <p>A ball point end is permitted on the long end on L shaped hex keys.</p> <p>The supplier must ensure that the supplied key allows trouble free and easy mounting of all fasteners on the product in which the key is included.</p> <ul style="list-style-type: none">• At least one side of the key must be short/long enough to reach all fasteners on the product.• At least one side of the key must be long enough to give sufficient moment arm for effortless fastener installation.				
Form/ Shape					
	L and Z shape		Round shank		Ball point end
Cross- section dimensions	Hex key ends must be produced to the specified dimensions to secure correct fit with fasteners.				
	Key size				
		Width across flats [mm]		Width across corners [mm]	
		Max.	Min.	Max.	Min.
	HEX3	3,00	2,95	3,39	3,31
	HEX4	4,00	3,94	4,53	4,44
	HEX5	5,00	4,94	5,67	5,58
	HEX6	6,00	5,94	6,81	6,71
HEX8	8,00	7,94	9,09	8,97	
Hardness	<p>Hex keys must have a hardness of 52±5 HRC according to ISO 6508-1.</p> <p>Note: In most cases a hardening process is needed to reach the required hardness.</p> <p>Applied hardening process(es) must not cause the key to become brittle (this is tested in the proof torque test).</p>				
Proof torque	<p>1) Hex keys must have sufficient torsional strength to mount all fasteners of the corresponding key size on the product it is supplied with. The requirement applies to both ends of the key.</p> <p>2) Hex keys must have the specified minimum proof torque when tested according to ISO 2936.</p> <p>Note: Ball point ends are omitted from the second requirement.</p>				
	Key size	Minimum proof torque	Engagement		
			[mm]	Tolerance	
	HEX3	≥6,5 Nm	3,5	+1 0 mm	
	HEX4	≥15 Nm	5		
	HEX5	≥30 Nm	6		
	HEX6	≥50 Nm	8		
	HEX8	≥110 Nm	10		

Table 27 – Requirements for hex keys

11 Torx keys

Torx keys must comply with [Table 28](#).


Form/ Shape	<p>Torx keys may be L or Z shaped. Shanks must be round.</p> <p>The supplier must ensure that the supplied key allows trouble free and easy mounting of all Torx fasteners on the product in which the key is included.</p> <ul style="list-style-type: none"> At least one side of the key must be short or long enough to reach all fasteners on the product. At least one side of the key must be long enough to give sufficient moment arm for effortless fastener installation. 		
			
Cross-section diameter	Key size	Diameter [mm]	
		Max.	Min.
	TX20	Ø4,7	Ø4,45
	TX25	Ø5,2	Ø4,95
Hardness	<p>Torx keys must have a hardness of 52±5 HRC according to ISO 6508-1.</p> <p>Note: In most cases a hardening process is needed to reach the required hardness.</p> <p>Applied hardening process(es) must not cause the key to become brittle (this is tested in the proof torque test).</p>		
Proof torque	<p>1) Torx keys must have sufficient torsional strength to mount all Torx fasteners of the specific size on the product it is supplied with. The requirement applies to both ends of the key.</p> <p>2) Torx keys must have the specified minimum proof torque when tested according to the principles stated in ISO 2936 using a suitable Torx gage.</p>		
	Key size	Minimum proof torque	Engagement
			[mm] Tolerance
	TX20	≥10 Nm	3 +1 mm
	TX25	≥15,5 Nm	3,5 0

Table 28 – Requirements for torx keys

12 Spanners

Spanners are tools used for fastening hexagon shaped fasteners such as nuts (see [3](#)).

The supplier must ensure that the spanner(s) supplied allows trouble free and easy mounting of all hexagonal fasteners on the product.

The type of spanner to be delivered with a given product must be agreed upon with [CAM](#).

12.1 Open- and ring-spanners

Open- and ring-spanners must comply with [Table 29](#).







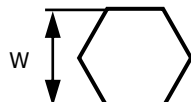

Definition and use	Spanner with handle enabling end-users torque to tighten hexagonal fasteners.			
	 <i>Open-spanner</i>	 <i>Ring-spanner</i>		
Material	Steel (must be corrosion resistant according to 1.6 – indoor requirements)			
Mechanical strength	<p>Spanners must have sufficient mechanical strength to tighten all hexagonal fasteners of corresponding size on the product in which it is included without showing deformation that may affect the function.</p> <p>Notes:</p> <p>The mechanical requirement applies to ends and handle.</p> <p>The most important parameters related to the mechanical strength are:</p> <ul style="list-style-type: none">• Thickness of the tool (JYSK states minimum requirement)• Fit with nut (JYSK specifies tolerance requirement)• Hardness of the steel			
Permitted shapes	<p>These spanners may:</p> <ul style="list-style-type: none">• be single-, double- or combination-ended (Ends may be open- or ring-ended)• contain a double bend to offset the end and the handle.• be cut, punched or forged.			
	Open spanner jaws must be long enough to grip over the whole flat sides.			
	Ring spanners may be hexagonal or bi-hexagonal.	 Hex	 Bi-hex	
Dimensions & tolerances	Nut size	Width across flats [mm]		Thickness [mm]
		 W	 W	
		Min (=Nominal)	Max	
	M4 (7 mm)	7,00	7,20	≥2
	M5 (8 mm)	8,00	8,20	≥2
	M6 (10 mm)	10,00	10,25	≥2
	M8 (13 mm)	13,00	13,30	≥2,4
	M10 (16 mm)	16,00	16,35	≥3

Table 29 – Requirements for Open- and ring-spanners

12.2 Tube-spanners

Tube-spanners must comply with [Table 30](#).

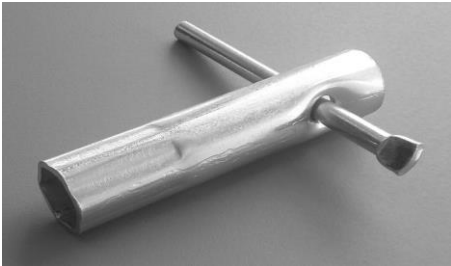



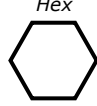

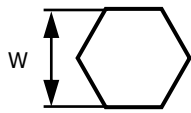
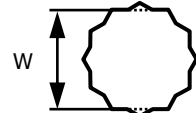




Examples				
Material	Steel (must be corrosion resistant according to 1.6 – Indoor requirements)			
Mechanical strength	Spanners must have sufficient mechanical strength to tighten all the intended hexagonal fasteners without showing deformation that may affect the function. Note: The mechanical requirement applies to engaging ends and handle.			
Design	Hole for handle diameter		Must be 0,5 ~ 1 mm larger than handle	
	Handle		May be flattened in one or both ends	
	Tube shape		Round 	Hex 
	Engagement shape		Hex 	Bi-hex 
Dimensions & Tolerances [mm]	Measurement		Dimension	Tolerance
	Thickness	Tube wall	≥1	±0,1
		Handle	≥4	±0,1
	Length	Tube	45 ~ 90	±1
		Handle	65 ~ 85	±1
	Width across flats (at engagement)			
		Nut size	Min (=Nominal)	Max
		M6 (10 mm)	10,00	10,50
		M8 (13 mm)	13,00	14,00
		M10 (16 mm)	16,00	17,00
Known errors	 Sharp edge	 Incomplete punching	 Obvious punching error	 Bent/sharp edge on handle

Table 30 – Requirements for tube-spanners