



SPIETH Clamping Nuts Series AM

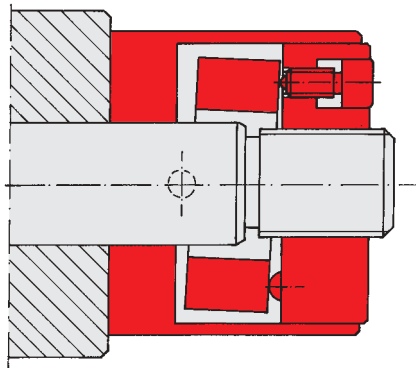


Works Standard SN 05.01

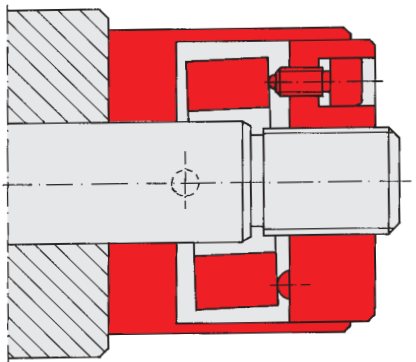
SPIETH Clamping Nuts Series AM

- High degree of efficiency, minimal tightening torque.
- Simple actuation.
- Application possible on high-speed spindles.
- Capable of withstanding dynamic loads.
- High degree of axial pre-tension safely achievable.
- Designed with only mechanical components.
- High durability.

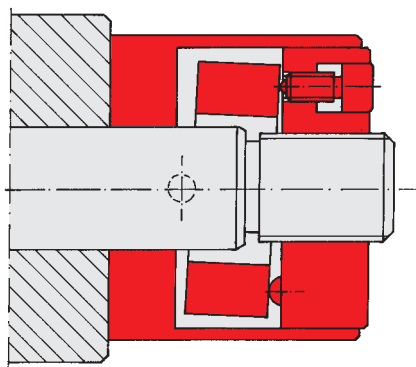
Functional principle:



Clamping nut screwed into place, slight contact of end face is sufficient.



Clamping screw actuated:
High axial forces have built up at the point of end face contact.



Clamping screw released:
Original slight contact of end face is restored.

The principle is shown in a simplified diagram with enlarged clamping path.



SPIETH clamping nut
Series AM



SPIETH clamping nut
Series AM...-GS

Fields of application:

Series AM clamping nuts are mechanical force transmitting elements for use in general mechanical engineering. They are of particular benefit for the execution of reliable connections involving high axial forces using low manual forces.

Designed to permit clamping and releasing sequences in quick succession without any trouble.

The clamping nut is suitable for use on rotating spindles.

Benefits:

During the clamping process (tightening the clamping screw), no movement takes place at the end face and at the main thread of the clamping nut. This precludes the possibility of friction loss, and so eliminates the cause for the poor efficiency of conventional nuts. Only the clamping screw with its relatively small movement thread and the ball-

bearing supports take some sliding movements. This results in high system efficiency. Combined with the double clamping force ratio this permits a reliable, user-friendly application of the clamping force. The complete mechanical structure of the clamping nut guarantees a long durability and a high insensitivity to the influences of temperature.

Execution:

All parts are made of steel. The thread ring, the tilting ring and the pressure ring are hardened and tempered.

The outside diameter, the borehole and the end face of the clamping nut are ground.

The modified clamping screw and the fixing screws are all cheese-head screws to ISO 4762.

The metric thread d_1 is produced according to tolerance class „fine“ (tolerance 5H, DIN 13 part 21....25).

The locating bore d_2 of the pressure ring is configured to tolerance H7.

Connecting Components:

The metric bolt thread must be produced to tolerance class „medium“ (tolerance class 6g, DIN 13, parts 21-25), for higher precision requirements (as for spinning Spindles) to tolerance class „fine“ (tolerance class 4h, DIN 13, parts 21-25).

If a high accuracy in centring the clamping nut is required, the diameter d_2 has to be manufactured to tolerance class h6.

Explanations:

For all clamping nuts, the maximum **clamping path of 2 mm** must be observed.

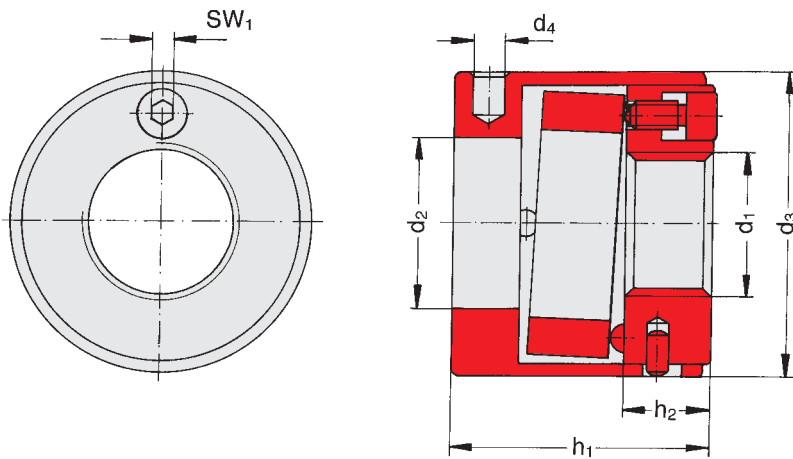
F: Max. effective clamping force with specified M_A .

M_A : Max. permissible torque for the clamping screw.

Should no torque wrench be available, the clamping screw can also be actuated using a screwdriver ISO 2936 with normal manual force.

In this case, however, there is a tendency for the clamping nuts in sizes $\geq AM 42 \times 2$ not to be fully utilized.

M_S : Tightening torque for fixing the thread (guideline value).

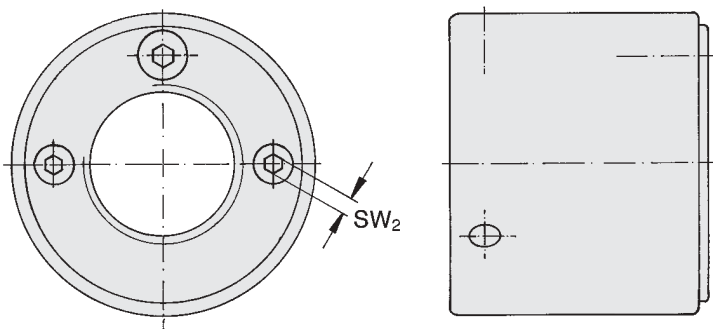


SPIETH Clamping nuts Series AM

Designation of a clamping nut
with thread M 30x1.5:
Clamping nut AM 30x1.5

Subject to changes.
Special versions:
On request, by sending an
explanatory sketch.

Code	Dimensions in mm						Effective clamping force F kN	Clamping screw	
	d ₁ ISO - 5H	d ₂ H7	d ₃	d ₄	h ₁	h ₂		Size across flats SW ₁ mm	M _A Nm
20 x 1.5	M 20 x 1.5	22	52	6.9	56	26	30	6	20
24 x 1.5	M 24 x 1.5	27	55	6.9	56	26	30	6	20
30 x 1.5	M 30 x 1.5	32	69	9.2	78	31	50	8	35
36 x 2	M 36 x 2	40	78	9.2	82	31	50	8	35
42 x 2	M 42 x 2	50	88	11.5	88	36	75	10	55
52 x 2	M 52 x 2	60	100	11.5	92	36	75	10	55
60 x 3	M 60 x 3	70	118	14	102	40	85	12	70
68 x 3	M 68 x 3	80	130	16.2	112	46	100	14	80
80 x 4	M 80 x 4	100	152	16.2	122	46	100	14	80



For missing dimensions, please refer to the drawing for clamping nut AM.

SPIETH Clamping nuts Series AM...-GS

Designation of a clamping nut
with thread M 30x1.5 and
thread fixation:
Clamping nut AM 30x1.5-GS

Code	Dimensions in mm						Effective clamp. force F kN	Clamping screw		Fixing screws	
	d ₁ ISO - 5H	d ₂ H7	d ₃	d ₄	h ₁	h ₂		Size across flats SW ₁ mm	M _A Nm	Size across flats SW ₂ mm	M _S Nm
20 x 1.5 - GS	M 20 x 1.5	22	52	6.9	56	26	30	6	20	5	8
24 x 1.5 - GS	M 24 x 1.5	27	55	6.9	56	26	30	6	20	5	8
30 x 1.5 - GS	M 30 x 1.5	32	69	9.2	78	31	50	8	35	6	15
36 x 2 - GS	M 36 x 2	40	78	9.2	82	31	50	8	35	6	15
42 x 2 - GS	M 42 x 2	50	88	11.5	88	36	75	10	55	6	15
52 x 2 - GS	M 52 x 2	60	100	11.5	92	36	75	10	55	6	15
60 x 3 - GS	M 60 x 3	70	118	14	102	40	85	12	70	8	20
68 x 3 - GS	M 68 x 3	80	130	16.2	112	46	100	14	80	10	30
80 x 4 - GS	M 80 x 4	100	152	16.2	122	46	100	14	80	10	30

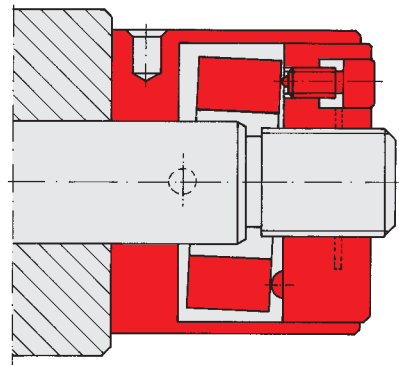
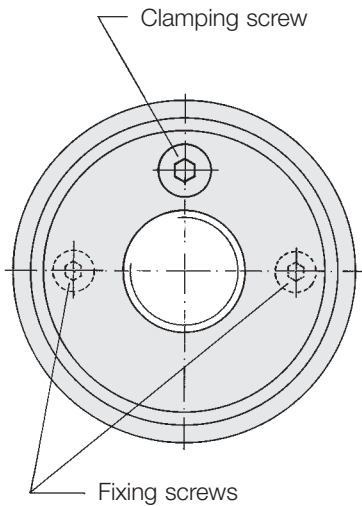


Fig. 1

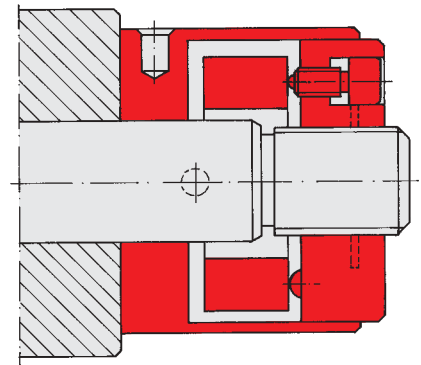


Fig. 2

Application:

Ensure that the clamping screw is in the correct starting position. The untightened screw head has to be even with the body of the housing before the clamping sequence begins. Otherwise it is not possible to utilize the full clamping path of 2 mm.

Clamping:

1. Screw the clamping nut manually until the end face has contact (Fig. 1) (Tighten fixing screws, for Type **AM...-GS** only).

2. Actuate the clamping screw, observing the max. tightening torque. Should no torque wrench be available, the clamping screw can also be actuated using a screwdriver ISO 2936 with normal manual force. In this case however, there is a tendency for the clamping nuts in sizes \geq AM 42 x 2 not to be fully utilized.

The full clamping force of the nut is now effective! (Fig. 2).

Releasing:

1. Turn the clamping screw back to the starting position (Fig. 1) (release fixing screws, for Type **AM...-GS** only).

2. Unscrew the clamping nut manually.

In exceptional circumstances, for example due to heavy soiling, it may be difficult to unscrew the clamping nut. In this case, utilize the radial boreholes around the outside diameter to insert a guide pin.

Assembly examples

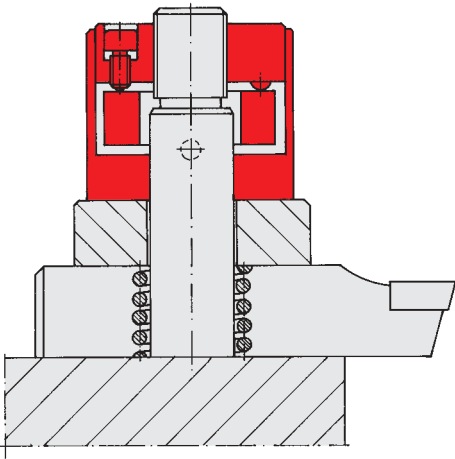


Fig. 3:
Typical arrangement of the clamping
nut on a tool fixture.

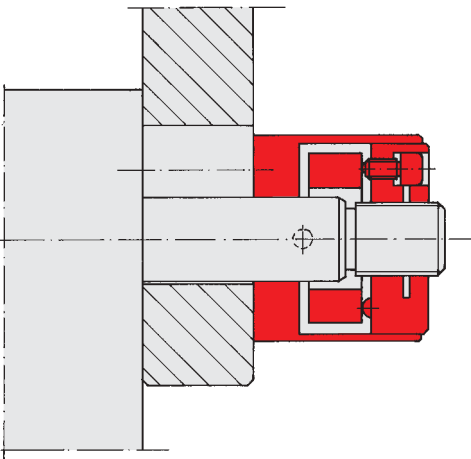


Fig. 4:
The machine component must be
clamped here when in the operati-
onal status, but permit traversing for
periodic set-up work.
The clamping nut with thread fixation
used here offers the advantage that
its position remains fixed even when
the nut is released.

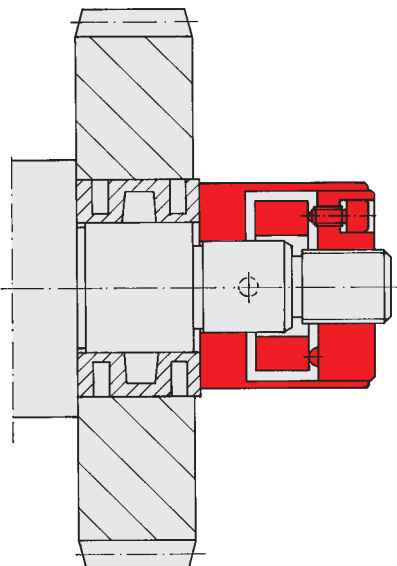


Fig. 5:
Gear fixture with a clamping sleeve
tensioned by a clamping nut.
The gear has to be changed or
its peripheral position altered periodi-
cally. This can be conveniently and
safely achieved using the clamping
nut.

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