Directions for Use

No.: 2520206

RTH BJ

reversible heads tapping

Manufacturer:

narex®

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Content:

1. Instructions and recommendations for safety application of tapping heads – RTH BJ

1. Use the basic model of RTH BJ for tapping of right-hand threads.

2. Check the clamping of the head on taper shank at any time. The taper Morse B-16 has to be put on sufficiently, the screw M 20 retightened by wrench.

3. Owing to the safety reasons, we do not recommend to hold the stop bar by hand or by another body part. The ´failure may cause the lock of the planetary gear-box and an injury with the rotating stop bar.

4. Use goggles on working with the head.

5. We do not recommend to tap in the blind hole up to the bottom when the tap thrusts on the bottom. This method of tapping is very unsuitable for threads M2 and M3 because the breakage of the tap may be imminent regardless of the safety clutch adjusting.

6. We recommend to adjust such value of driving torque only that is requisite for tapping.

7. **Pay attention to the chucking of taps in the collets RUBBER FLEX 22 BJ** – the both set screws (Pos. 12) shall be loosened. In other case, the chucking is imperfect and the tap is not aligned. The screws shall be tighten to the tap square slightly after retightening of the nut (Pos. 14).

8. We do not recommend to use these heads with spindle power feed.

9. We do not recommend to apply these heads on the NC- or CNC-machine tools.

10. The arresting device has to enable the stop bar to slide smoothly along its whole movement.

11. We recommend of RTH BJ to the tender the suitable and sufficient clamping of the workpiece, ensuring the aligning of the subdrilled hole and the machine spindle and the fixed position of the workpiece resisting to movements in all three directions and to its rotation.

2. Basic information about heads

RTH BJ - reversible tapping heads are designed only for right-hand thread

Models RTH 22 BJ
RTH 32 BJ
RTH 42 BJ

List of accessories:

RTH 22 BJ 1pc – single end wrench 20
1pc - single end wrench 12
1pc - hexagon key 2 CSN 230710
1pc - stop bar Ø 6 x 100 (length) mm

RTH 32 BJ 1pc - single ended wrench 26
1pc - single ended wrench 19
1pc - hexagon key 3 CSN 23 0710
1pc - stop bar Ø 10 x 120 (length) mm

RTH 42 BJ 2pc - single ended wrench 34
1pc - hexagon key 3 CSN 23 0710
1pc - hexagon key 5 CSN 23 0710
1pc - stop bar Ø 13 x 140 (length) mm

Following special accessories, not included in the basic set, can be delivered:

- taper shanks (Tab. No.3)
- collets RUBBER FLEX-BJ (Tab. No.2)

3. Operating data

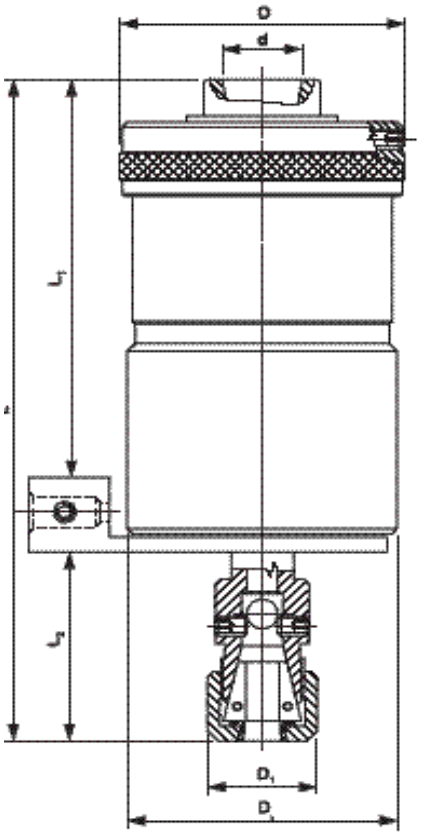
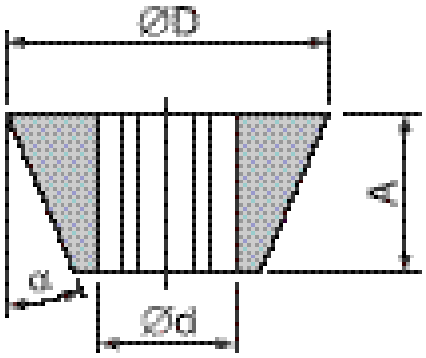


Table No. 1

Code	Type	d	Working range [mm]	Collets "BJ"	Dimensions					Max. speed [min^{-1}]	Mk Max [Nm]	Shift A/T [mm]	Ratio of gear for reverse speed	m [kg]
					D/D	D1	L	L1	L2					
221311	RTH 22 BJ	B16	M2 ÷ M7	BJ 032 BJ 034	55/52	23	130	80	35	1500	15	3,8/13	1,6	1
221 328	RTH 32 BJ	B16	M5 ÷ M12	BJ 036 BJ 038	75/74	28	156	93	44	1000	30	4,5/14,5	1,75	2,2
221 335	RTH 42 BJ	M20	M8 ÷ M20	BJ 042 BJ 044	91/91	38	199	112	62	600	110	6,0/18	1,7	5,1

Collets RUBBER FLEX BJ



Taper shanks

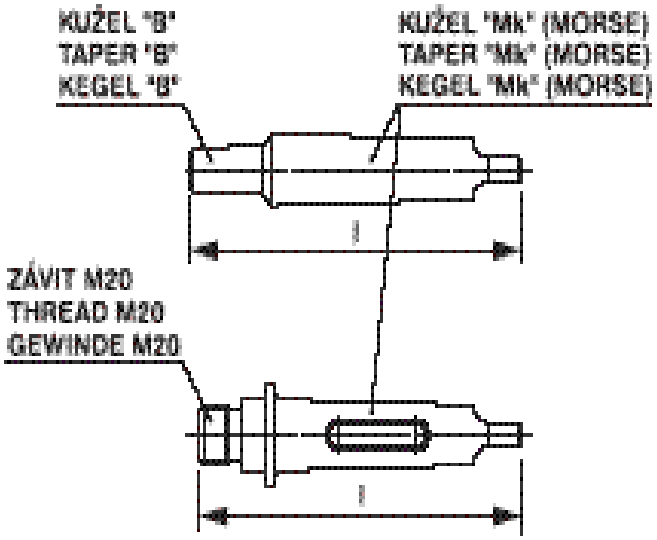


Table No. 2 Collets RUBBER FLEX BJ

Code	Type	Range d [mm]	Dimensions [mm]		
			D	A	α°
280 837	BJ 032	2,0 ÷ 4,5			
280 844	BJ 034	4,5 ÷ 6,3	14	11	20
280 851	BJ 036	3,0 ÷ 6,3			
280 868	BJ 038	5,0 ÷ 9,5	21	13	20
281 875	BJ 042	5,0 ÷ 9,5			
281 882	BJ 044	9,5 ÷ 14,0	27	15	20

Table No.3 Taper shank

Code	Type B x Mk M x Mk	l [mm]	kg
221 502	VK RTH B16 x Mk1	97	0,087
221 219	VK RTH B16 x Mk2	109	0,157
221 526	VK RTH B16 x Mk3	133	0,32
221 533	VK RTH M20 x Mk3	129	0,31
221 540	VK RTH M20 x Mk4	154	0,57

4. Application of tapping heads – RTH BJ

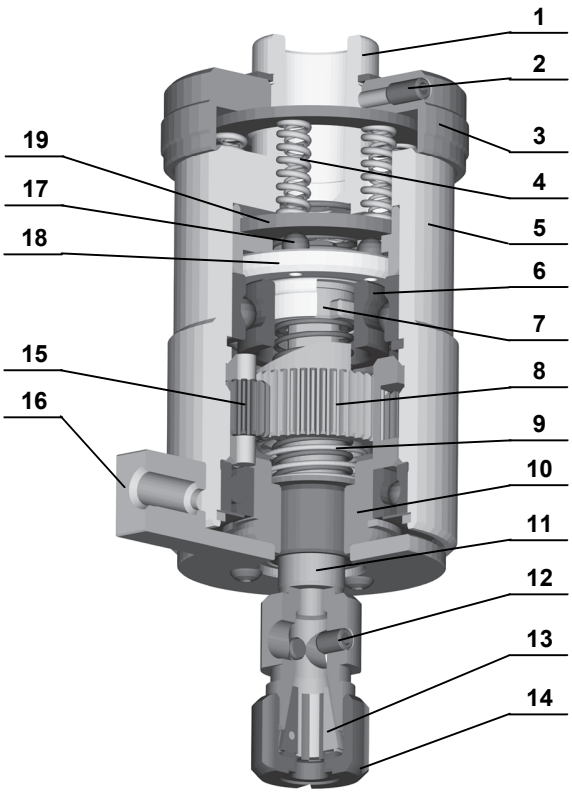
RTH BJ - Reversible tapping heads are designed for usual tapping of right-hand threads with pointed shape (M, W, UN, G) on bench, column or beam drills without using of spindle power feed. The heads always have to rotate by the work therefore they are unserviceable on lathes.

In limited case, it is possible to apply these heads for tapping of threads with another shape than pointed or for fluteless taps for thread forming, but it is necessary to realize the service test for verification of the correct working and reliability at higher load.

5. Facilities of application

- it is not necessary to reverse the rotation of machine spindle
- higher reverse speed (cca 1,7 x)
- higher produktivity

6. Description and working of heads



Key
1 – SPINDLE TAPER
2 – LOCKING SCREW
3 – CLUTCH SLEEVE
4 – CLUTCH SPRING
5 – BODY
6 – BEARING
7 – CHANGING CLUTCH
8 – GEAR FOR REVERSE SPEED
9 – SPRINGING OF THE CHUCK
10 – GUIDE
11 – CHUCK
12 – SET SCREW
13 – COLLET RUBBER FLEX BJ
14 – COLLET NUT
15 – GEAR
16 – STOP BAR HOLDER
17 – CLUTCH BALL
18 – SAFETY CLUTCH
19 – THRUST RING
20 – SCREW
21 – SNAP RING

Fig. No. 1 Model RTH 22BJ

The sectional drawing of the head RTH 22 BJ is represented on the figure No. 1. The body (Pos. 5) constitutes the base of the head. The safety clutch controlled by clutch sleeve (Pos.3) is located in top part of the body. The clutch springs (Pos. 4) are pressed down by screwing-in of the clutch sleeve and the thrust increases on the thrust ring (Pos. 19). On passing over the critical torque, the clutch ball (Pos. 17) pushes the thrust ring away and jumps over in the near-by position. The thrust shall be adjusted, so that the head taps smoothly, without slipping and screws out the tap from the tapped hole.

ATTENTION! – during reverse is not skidding clutch in function.

Mechanism of the changing clutch (Pos. 7), carried by the chuck (Pos. 11) is located in the central part. In state of rest, the chuck is put in the head and the changing clutch (Pos. 7) engages with the safety clutch (Pos. 18).

This position is called „**WORKING** – tapping“ and its springing softens the hard impact of the tap on the workpiece. If the chuck is moved out from the head by value „A“, mentioned in Tab. No. 4, the teeth of both clutches are thrown out and the chuck isn´t carried any more because it just finds in the rest position „**NEUTRAL**“. The further movement of the chuck by value „N = width of the neutral position“ brings the changing clutch (Pos. 7) into engagement with the driving tooth of the gear for reverse speed (Pos. 8). The smooth clutch throwing even at maximum permissible speed of rotation is secured by springing of the gear position.

The central gear for reverse speed (Pos. 8) is driven by 3 planetary gears simultaneously. The planetary transmission, generating the higher reverse speed, needs for its action arresting (Pos. 10) of the guide by means of the stop bar, put in the stop bar holder (Pos. 16) and locked by locking screw. Now, the head continues to rotate in the same sense but the chuck rotates in the reverse sense. The chuck will rotate in this sense so long as the changing clutch (Pos. 7) reaches again the „**NEUTRAL** Position“ by putting in the head by value „B“.

Taper shanks MORSE are removable. The models RTH 22 BJ and RTH 32 BJ are equipped with the ground hollow taper MORSE B16 in the spindle taper (Pos. 1) for mounting of the taper shanks. The disassembly should be carried out by means of the special wedge not included in the basic accessories. The model RTH 42 BJ is equipped with thread M20 for clamping of the taper shank.

7. Instructions for application

7.1. Chucking of taps

The chucked tap is illustrated on the figure No. 2. The collet (Pos. 13) shall be selected according to the shank diameter – see the Table No. 2. The collet centres and clamps at once, the couple of set screws (Pos. 12) secures the tap against turning in the collet.

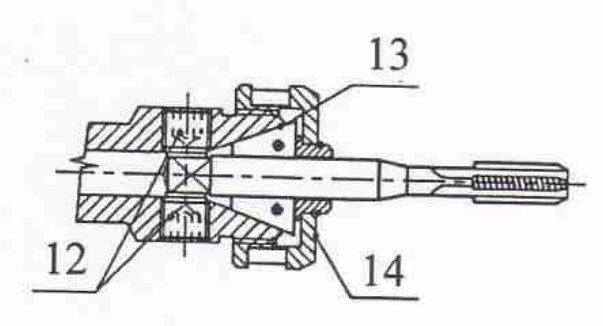


Fig. No. 2a

Chucking method for model **RTH 22 BJ**:

1. Insert the tap in the collet, tighten slightly and adjust the tap as illustrated in the figure.
2. Loosen the set screws (Pos. 12)
3. Retighten the collet nut (Pos. 14)
4. Tighten the set screws (Pos. 12) slightly and uniformly to the square

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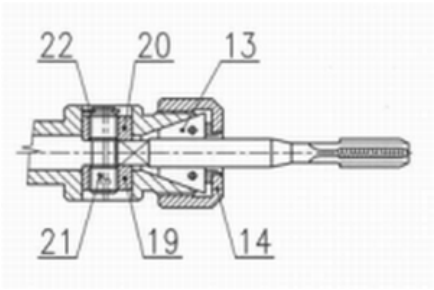

Fig. No. 2b

Chucking method for models **RTH 32 BJ, RTH 42 BJ**:

1. Insert the tap in the collet, tighten slightly and adjust the tap as illustrated in the figure.
2. By scre turning (Pos. 21) retighnten both jaws Pos. 19 and Pos. 20 on driven
3. Retighten the collet nut (Pos. 14)

WARNING!

If both set screws are not loosened sufficiently, the disalignment of the tap and the insufficient chucking may be imminent as well.

During colelt nut tightening is necessary to retain the chuck against turning (Pos.11)

7.2. Adjusting of the safety clutch

The correct working of the head shall be secured by adjusting of the safety clutch according to the thread size, worked material, used tap and its cutting features. The safety clutch has to secure the continuous transmission of torque from machine spindle to tap for tapping and slipping by sudden increase of the torque simultaneously.

Adjusting method

1. The safety clutch shall be adjusted by turning of the clutch sleeve (Pos. 3) after loosening of the locking screw (Pos. 2).

2. Adjusting of torque moment
   The most reliable method of torque adjusting is real tapping with a little thrust –the safety clutch slips subsequently. The thrust shall be increased successively so far as the clutch works reliably within the whole working cycle. The locking screw (Pos. 2) shall be tighte after final adjusting. Marked numbers 1,2,3, and 4 on the body ander the sleeve are for orientation during sleeve screwing. They do not indicate torque moment size either cutting thread size.

3. Table No. 5 of recommended torques for tapping specifies values for orientation only. This values may be adjusted be means of the torque-wrench with folowing tuning in accordance with the point 2.

7.3. Adjusting of the arresting device

Such parts of the machine tool, securing smooth sliding of the stop bar within the whole stroke of the machine spindle, may be used as a rest. It is also possible to install various retaining aids conforming to the condition of smooth sliding. (Illustration on Fig. No. 4).

Rule: the shorter stop bar, resp. the shorter distance between the rest and spindle axis is, the smaller load of the bearing of guide (Pos. 10) occurs. This fact has a positive effect upon the working life of this bearing and running of the head.

7.4. Adjusting of the stop dog of the drilling spindle

For correct working of this head, it is necessary to give proper attention to the stop dog. The stop dog has to be rigid and reliable. The correct adjusting is very important for tapping of blind holes. The tap shall not run on the bottom because the slipping of the safety clutch would ensue.

The head have to stop the working run in the „NEUTRAL POSITION“

Positions of the chuck

I. the chuck is quite moved in, the changing clutch is in full mesh – the head taps the thread

II. the chuck is just moved out in the „NEUTRAL POSITION“, the head rotates but the chuck with tap stands still.

III. the chuck is in the „NEUTRAL POSITION“ just before the starting point of the reverse movement

IV. the chucks is quite moved out and the tap is screwed out from the finished thread

Adjusting of the stop dog (Fig. No. 3 and 4.)

X = Z + V – A (without using of the setting gauge)

Z – length of thread [mm]
V – chamfer length
X – rated length

A – declutching stroke of the changing clutch in „WORKING POSITION“
N – width of the zero position „NEUTRAL“
B – declutching stroke of the changing clutch in „REVERSE RUN“

Tabel No. 4

Type	A [mm]
RTH 22 BJ	3,8
RTH 32 BJ	4,5
RTH 42 BJ	6,0

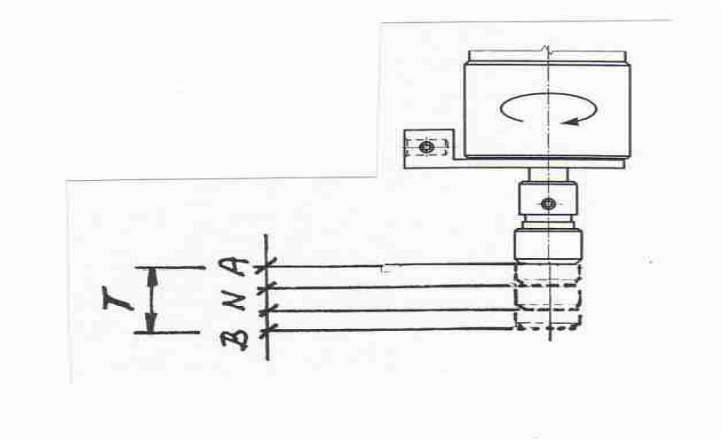

Fig. No. 3

Setting method:

- Place the setting gauge on the hole and thrust the tap upon the gauge
- Specify the value X = Z + V
- Set the dog nut to the value X

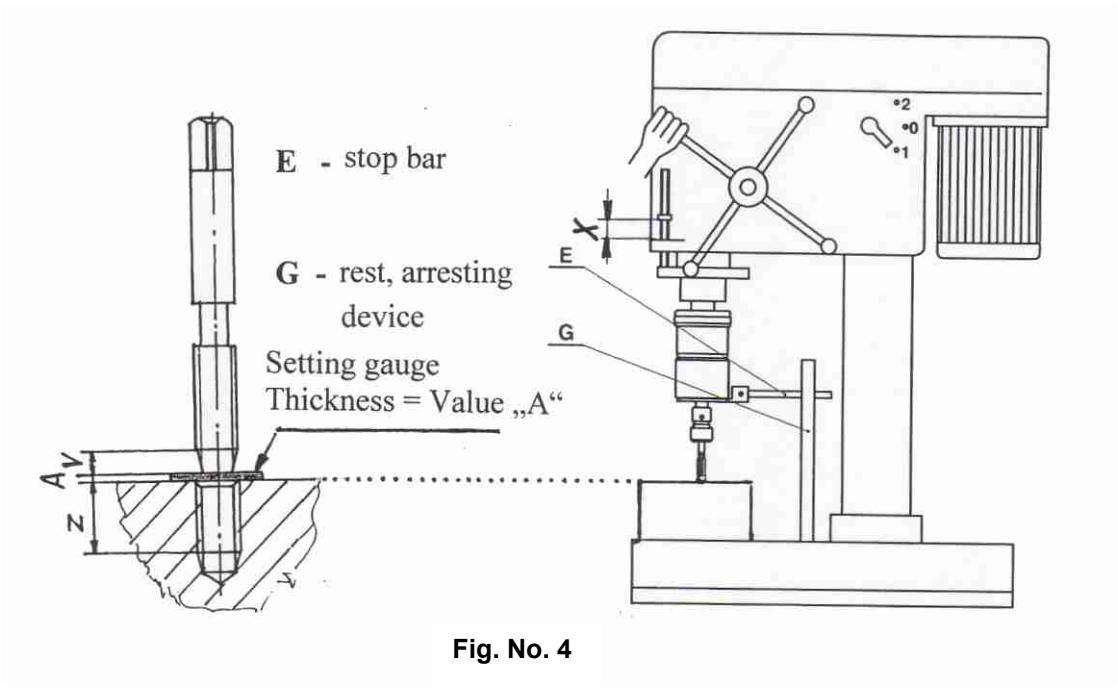

Fig. No. 4

WARNING!

The workpiece has to be clamped reliably in order not to rise by tapping or by back running. This makes possible to keep the correct aligning of the subdrilled hole compared with the spindle axis.

7.5. Tapping

Before tapping, it is necessary to check the meeting of all mentioned requirements.upnutí hlavy

- clamping of the head
- chucking of the tap
- clamping of the workpiece
- speed and sense of rotation
- arresting device
- - adjusting of the stop dog

If all requirments are met, it is possible to start the tapping. At first, the safety clutch has to be adjusted according to 7.2.

The tender of the drill should follow the feed of the cutting-in tap with the machine spindle but he shall not push on the tap by axial force. If the axial feed stops on the dog, the head works a short while still untill the changing clutch reaches up to the „NEUTRAL“ position. The head continues to rotate, but the tap stands still. The reverse speed of the head is thrown-on by light back feed of the spindle and the tap is screwed out. This rotation is faster and return spring of the control lever should be sufficient for the back feed of the spindle usually.
For tapping, it is necessary to apply a suitable lubricant recommended by the manufacturer of taps.

8. Service troubles and their removing

8.1. Breaking of taps

- adjust the safety clutch
- do not feed the tap up to the bottom, especially with small thread diameters, apply the method with stop dog on the machine spindle
- apply suitable types of taps with sufficient chip flow

8.2. Mean diameter of the finished thread is greater, it is possible to screw-in the NOT GO screw plug gauge

- check the quality of the tap (apply the new one)
- check the chucking of the tap (check alignment of the tap owing to the set screws)
- check the alignment of subdrilled hole axis and spindle axis
- compare the diameter of subdrilled hole with the recommended values
- apply another lubricant

8.3. The head throws the reverse speed too early

- the axial movement of the spindle is faster by higher speeds. The feed of the tap shall conform with the spindle feed at any time. Every hesitation of the tender necessitates the repeated throwing of the changing clutch and its greater wear.

8.4. The head throws the reverse speed difficult

- it is possible by wear of gears in the planetary transmission only. This faillure has to be
  repaired by manufacturer only.

9. Maintenance and storing

- head must be stored with sleeve of safety skidding clutch in clarified and tinned stage in dry and unaggresive surrounding
- Once a week turn head (wtih shank down) – oil the shaft of the chuck (Pos. 11)
- Once a 2 years oil by fet AK2 cog wheels of planetary gear-case

Method:

Shift-out the chuck in the position „REVERSE RUN“ and oil the exposed ground part of the shaft. Spread the oil over the sliding surface by several reciprocating movements of the chuck.

Once a year – grease the internal mechanism of the head

Method:

Unscrew three screws (Pos. 20) and demount the stop bar holder (Pos. 16). Take apart the snap ring (Pos. 21) and pull out the internal mechanism from the body (Pos. 5). Clean the gear by degreasing agent.

WARNING!

Protect the covered ball bearing against penetrating of the degreasing agent in the grease filling! Grease the gears and shaft by lubricant grease AK 2, LV 2-3 or **B**LASOLUBE 301. Insert the mechanism in the body and follow the reverse order of disassembly. Store this clean and conserved device in dry and unaggressive environment.

10. Guarantee and guarantee conditions

1. Term of garantee: The manufacturer provides the guarantee for this product and its trouble-free service within 12 month from the day of selling to the first direct user, no longer than 18 month from delivery to the dealer.

2. The guarantee is not provided for parts having the shorter working life specified in standards or being replaced periodically. The manufacturer does not warrant for the damage done by sender, for defects done by the incompetent tender, by unsuitable storing, by overloading or wasteful handling.

3. The manufacturer reimburses the transport expenses to the place of guarantee repair and back after his agreement with the mode of transport only. In case of reclamation, it is needful to send or submit the invoice unconditionally. The repair cannot be admitted without this invoice as guarantee repair and it has to be reimbursed.

4. The guarantee is admitted if:
   a) the device was used according to the instruction for use and all ecommendations for maintenance and operation were observed.
   b) the device was not modified by the user or by the third person without agreement of the manufacturer.

5. The guarantee repairs are realized within 30 days since receiving from the sender.

6. The manufacturer realizes all repairs after validity of guarantee as well.

7. The other affairs are solved according to the commercial

Tabel No. 5

Orientation rates of torque moments (Mk) for thread cutting for middle firm steel and sharp tap

Thread size	Torque Mk [Nm]
M2	0,3
M2,5	0,4
M3	0,6
M3,5	1,0
M4	1,6
M5	2,5
M6	5,0
M8	10,0
M10	18,0
M12	25,0
M14	45,0
M16	50,0
M18	80,0
M20	90,0