

Operating instruction

Cutting data table

Balancing data table



Single cutter boring head EWB 2 - 32 / Balanceable / Order No. **112.306**

Operating instruction for single cutter boring head EWB 2 - 32 Order No. 112.306 / with integrated balancing system

The KAISER modular tooling and clamping systems are made by highly qualified expert craftsmen, using the most modern machinery available. During the course of manufacture, they are subjected to stringent and continuous methods of quality control. It is assumed the KAISER products will be used correctly and for the purposes for which they are intended and with due attention to the following advice, in order to achieve best possible results as regards swarf production capacity, accuracy, stability, safety and durability. The entire tool assembly must consist of original KAISER equipments.

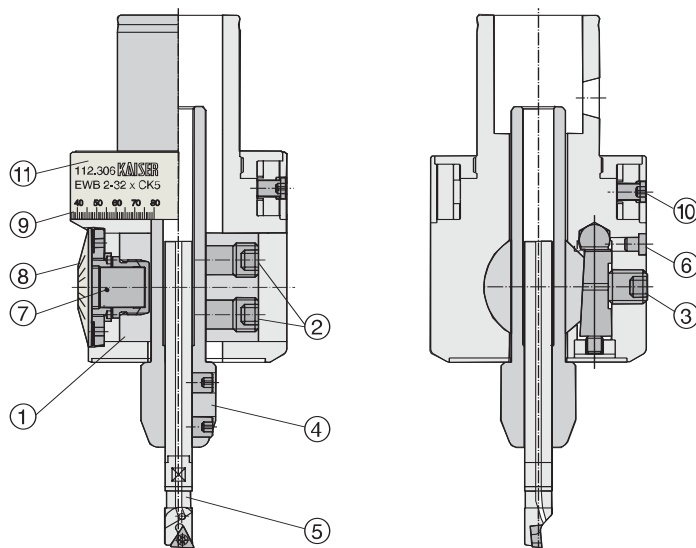
The correct setting of the boring heads is made in accordance with the operating instructions given below. All clamping and mounting screws must be properly tightened before start-up. Damaged screws must be replaced with original KAISER equipments. Incorrect or defective screws seriously reduce the work capacity and safety of the equipment.

For reasons of safety, the boring tools may only be used on machine tools having appropriate safety precautions against cuttings or parts which are thrown out. Depending on loading, all moving parts must be lubricated periodically, in normal use every 20 hours of operation.

Damaged tools must be returned for repair, in order to ensure their continuing precision and safety. This applies also after a collision, as examination may disclose internal damage, not visible without dismantling the unit. HEINZ KAISER rejects all liability, if resulting from improper use of its equipment. The scale division permits straightforward adjustment of the cut by less than 10 µm in the diameter. In addition, the boring head features an integrated balancing mechanism. The unbalance of the boring head is compensated for by a manually adjustable balancing ring.

Operating instruction

- Insert the cutting tool or tip holder (5), if necessary by using a reduction bush (4), into the tool hole of the carrier (1) at least as far as the two-clamping screws (2) are engaged.
- Align the cutting edge by the mark on the face of the boring head and tighten the two screws (2).
- Locate the carrier (1) in the desired position by rotating the set screw (7) with the clamping screw (3) released. The scale disc (8) enables the change in diameter to read off accurately.
(1 DIV = 0.01 mm in Ø)
- Tighten the clamping screw (3)



Balancing

- The following tables (pages 04 to 22) show how the balancing scale (9) can be set according to the tool combination and the boring diameter.
- Release the clamping screw (10).
- Set the balancing ring (11) to the table value (becoming greater from 0 upwards).
- Tighten the clamping screw (10).

Safety note

HEINZ KAISER AG can only guarantee faultless functioning and the safety of the tool if the following conditions are fulfilled:

- The largest possible indexable insert holder must always be used (the tool holder must stand as close to the centre as possible).
- The maximum cutting speeds stated in the tables may not be exceeded. They are dependent on the machining material, the boring diameter and the boring depth X. For each diameter range there is an appropriate page with cutting parameters and setting data for the balancing ring.
- Only accessories from the KAISER tool range may be used.

General Information

- HEINZ KAISER AG rejects all liability if tool component from third parties are used.
- Note that carrier travel is limited.
- Do NOT use force when adjusting.
- Periodic lubrication via the lube nipple (6) ensures high precision combined with long life. A light machine oil is recommended, e.g. Mobil Vactra Oil No. 2, BP Energol HLP-D32, Klueber Isoflex PDP 94.

Boring range: ø 2.0 mm - ø 32 mm

Cutting data:

On the following pages, tables of recommended cutting speeds and feeds are provided. The values in these tables are the result of practical experience and specific trials. These tables are for average conditions and give users general information about using KAISER boring tools efficiently. Depending on working conditions, modifications of cutting speeds and feeds are required. The user must carefully monitor chip form and chip breaking during machining, and gain experience with each particular job.

In the tables are following signs and units employed:

Sign explanation	sign	unit
Cutting speed	Vc	[m/min]
Stock allowance (on diameter)	A (ø)	[mm]
Feed rate	fn	[mm/revolution]
Insert - radius	R	[mm]
Surface finish (Ra max. 1.6µm for N7)	Ra	[µm]
Diameter	d	[mm]
Speed	n	[min ⁻¹]

For calculation of the speed set the values from the tables into the following form:

$$n = \frac{Vc \cdot 1000}{d \cdot \pi}$$

Balancing system:

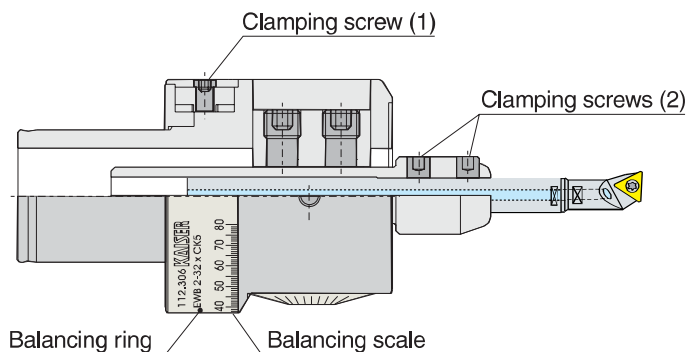
The EWB 2-32 boring head has an integrated balancing mechanism. The unbalance of the boring head is compensated for by a unique manually adjustable balancing ring.

For each diameter range there is an appropriate page with cutting parameters and setting data for the balancing ring. The setting data are only applicable to the relevant tool combination illustrated, the use of other components would cause increased unbalance. The setting data are dependent on the boring depth (long or short carbide bars), the machining diameter and the cutting radius of the insert.

The balancing ring is set as follows:

- Assemble tool combination appropriate to the diameter and the boring depth.
- Pre-set diameter.
- Obtain the setting for the balancing scale from the table.
- Release the clamping screw (1) on the balancing ring.
- Set the balancing ring to the table value.
- Important: always set from 0 becoming greater!
- Tighten the clamping screw (1).

When using reduction bushings care must be taken that the clamping screws (2) are always fitted in the cutting direction:



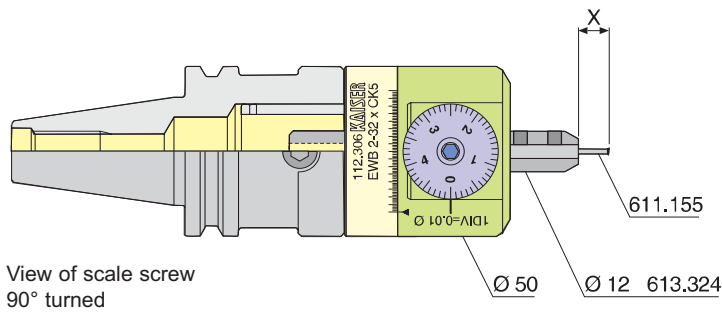
Example:

Boring diameter: ø 20.0
 Tool combination: 615.243 / 615.289
 Boring depth X: 80
 Material: aluminium alloy
 Insert from cutting parameter table
 655.383 R 0.4
 Setting balancing scale: **14**

Boring ø	Setting of the balancing scale							
	615.243/615.289				615.240/615.289			
	R 0.2	R 0.3	R 0.4	R 0.8	R 0.2	R 0.3	R 0.4	R 0.8
19.8	9	10	12	18	8	10	12	20
19.9	10	11	13	19	9	11	13	21
20.0	11	13	14	20	11	13	15	23

Safety note

The maximum speed is dependent on the boring depth X and the tool combination. Therefore in the tables the maximum cutting speed is always stated in dependency on the boring depth. The maximum permissible speed for the relevant tool combination is calculated from the cutting speed according to the table for the aluminium materials group and the diameter to be machined.



Material Group	Boring Depth X	Cutting data Ø 2.0 - 3.0						
		Boring cutter		Vc [m/min]	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]	
		Order No.	R		Stand.	Max	Ra 1.6	Max.
Low carbon steel St37-2 St52-3 1.5752	max. 9	611.155	0.1	100	0.20	0.40	0.04	0.08
Heat treatable steel Ck 45 1.2312 1.2343 1.2083	max. 9	611.155	0.1	80	0.20	0.40	0.04	0.08
Stainless-steel 1.4301 1.4435 1.2764 1.2767	max. 9	611.155	0.1	70	0.20	0.40	0.04	0.08
Cast Iron	max. 9	611.155	0.1	80	0.20	0.40	0.04	0.08
Aluminium Alloys	max. 9	611.155	0.1	125	0.20	0.40	0.04	0.08

Boring Ø	Setting of the balancing scale						
	613.324/611.155						
	R 0.1	R 0.2					
2.0	10	11					
2.1	11	12					
2.2	12	13					
2.3	13	14					
2.4	13	14					
2.5	14	15					
2.6	15	16					
2.7	15	16					
2.8	16	17					
2.9	17	18					
3.0	18	19					

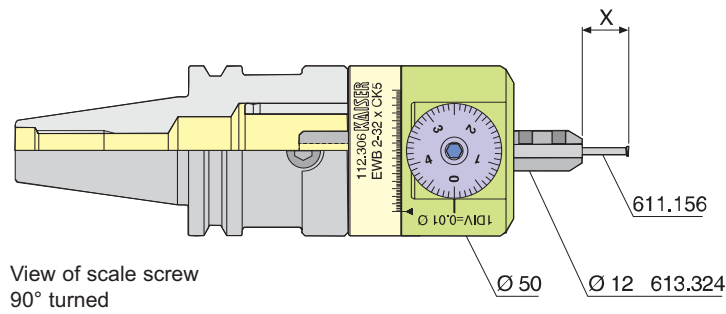
Note:

Using the combination of toolholder 611.155 and reduction bushing 613.324.
The use of other tool components causes increased unbalance.
Maximum values for material allowance and feed rate should not be combined.

All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.
Over Ø 3.0 use the next tool combination (611.156/613.324, see next page).

Wear safety goggles and use protective shields.



Material Group	Boring Depth X	Cutting data Ø 3.0 - 4.0						
		Boring cutter		Vc [m/min]	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]	
		Order No.	R		Stand.	Max	Ra 1.6	Max.
Low carbon steel St 37-2 St 52-3 1.5752	max. 14	611.156	0.1	100	0.20	0.40	0.04	0.08
Heat treatable steel Ck 45 1.2312 1.2343 1.2083	max. 14	611.156	0.1	80	0.20	0.40	0.04	0.08
Stainless-steel 1.4301 1.4435 1.2764 1.2767	max. 14	611.156	0.1	70	0.20	0.40	0.04	0.08
Cast Iron	max. 14	611.156	0.1	80	0.20	0.40	0.04	0.08
Aluminium Alloys	max. 14	611.156	0.1	180	0.20	0.40	0.04	0.08

Boring Ø	Setting of the balancing scale					
	613.324/611.156					
	R 0.1	R 0.2				
3.0	10	11				
3.1	11	12				
3.2	12	13				
3.3	12	13				
3.4	13	14				
3.5	14	15				
3.6	15	16				
3.7	15	16				
3.8	16	17				
3.9	17	18				
4.0	17	18				

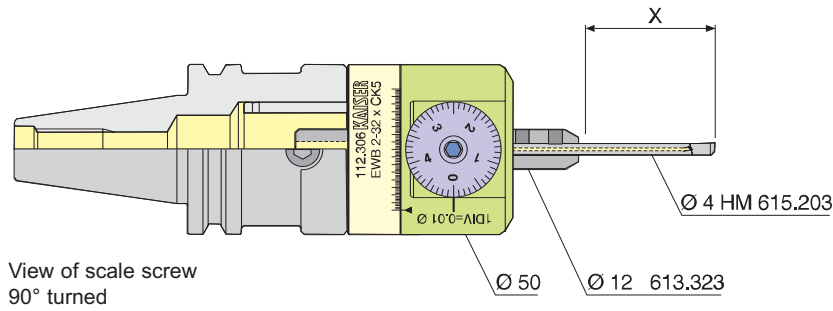
Note:

Using the combination of toolholder 611.156 and reduction bushing 613.324.
The use of other tool components causes increased unbalance.
Maximum values for material allowance and feed rate should not be combined.

All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.
Over Ø 4.0 use the next tool combination (615.203/613.323, see next page).

Wear safety goggles and use protective shields.



Material Group	Boring Depth X	Cutting data Ø 4.0 - 5.0						
		Boring cutter		Vc [m/min]	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]	
		Order No.	R		Stand.	Max	Ra 1.6	Max.
Low carbon steel St37.2 St52-3 1.5752	10	615.203	0.1	130	0.20	0.40	0.04	0.08
	20	615.203	0.1	100	0.20	0.40	0.04	0.08
	30	615.203	0.1	70	0.20	0.40	0.04	0.08
	40	615.203	0.1	35	0.20	0.40	0.04	0.08
Heat treatable steel Ck45 1.2312 1.2343 1.2083	10	615.203	0.1	130	0.20	0.40	0.04	0.08
	20	615.203	0.1	100	0.20	0.40	0.04	0.08
	30	615.203	0.1	70	0.20	0.40	0.04	0.08
	40	615.203	0.1	35	0.20	0.40	0.04	0.08
Stainless-steel 1.4301 1.4435 1.2764 1.2767	10	615.203	0.1	130	0.20	0.40	0.04	0.08
	20	615.203	0.1	100	0.20	0.40	0.04	0.08
	30	615.203	0.1	70	0.20	0.40	0.04	0.08
	40	615.203	0.1	35	0.20	0.40	0.04	0.08
Cast Iron	10	615.203	0.1	130	0.20	0.40	0.04	0.08
	20	615.203	0.1	100	0.20	0.40	0.04	0.08
	30	615.203	0.1	70	0.20	0.40	0.04	0.08
	40	615.203	0.1	35	0.20	0.40	0.04	0.08
Aluminium Alloys	10	615.203	0.1	250	0.20	0.40	0.04	0.08
	20	615.203	0.1	200	0.20	0.40	0.04	0.08
	30	615.203	0.1	120	0.20	0.40	0.04	0.08
	40	615.203	0.1	60	0.20	0.40	0.04	0.08

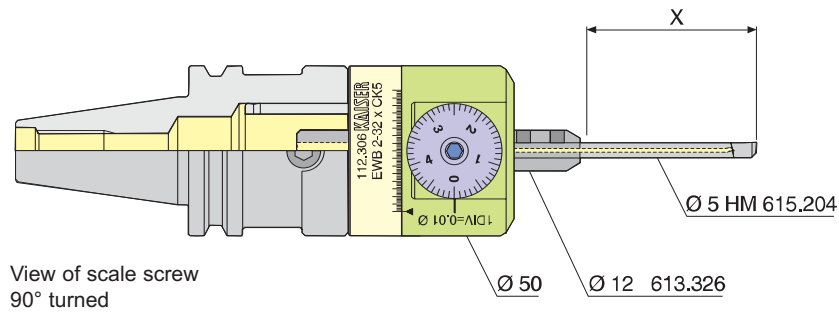
Boring Ø	Setting of the balancing scale						
	613.323/615.203						
	R 0.1	R 0.2					
4.0	10	11					
4.1	11	12					
4.2	12	13					
4.3	12	13					
4.4	13	14					
4.5	14	15					
4.6	15	16					
4.7	15	16					
4.8	16	17					
4.9	17	18					
5.0	17	18					

Note:

Using the combination of toolholder 615.203 and reduction bushing 613.323.
The use of other tool components causes increased unbalance.
Maximum values for material allowance and feed rate should not be combined.
All tools are designed with internal coolant.
All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.
Over Ø 5.0 use the next tool combination (615.204/613.326, see next page).

Wear safety goggles and use protective shields.



Material Group	Boring Depth X	Cutting data Ø 5.0 - 6.0						
		Boring cutter		Vc [m/min]	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]	
		Order No.	R		Stand.	Max	Ra 1.6	Max.
Low carbon steel St37-2 St52-3 1.5752	10	615.204	0.1	130	0.20	0.40	0.04	0.08
	20	615.204	0.1	100	0.20	0.40	0.04	0.08
	30	615.204	0.1	80	0.20	0.40	0.04	0.08
	40	615.204	0.1	65	0.20	0.30	0.04	0.08
	50	615.204	0.1	30	0.20	0.30	0.04	0.08
Heat treatable steel Ck45 1.2312 1.2343 1.2083	10	615.204	0.1	130	0.20	0.40	0.04	0.08
	20	615.204	0.1	100	0.20	0.40	0.04	0.08
	30	615.204	0.1	80	0.20	0.40	0.04	0.08
	40	615.204	0.1	65	0.20	0.30	0.04	0.08
	50	615.204	0.1	30	0.20	0.30	0.04	0.08
Stainless-steel 1.4301 1.4435 1.2764 1.2767	10	615.204	0.1	130	0.20	0.40	0.04	0.08
	20	615.204	0.1	100	0.20	0.40	0.04	0.08
	30	615.204	0.1	80	0.20	0.40	0.04	0.08
	40	615.204	0.1	65	0.20	0.30	0.04	0.08
	50	615.204	0.1	30	0.20	0.30	0.04	0.08
Cast Iron	10	615.204	0.1	130	0.20	0.40	0.04	0.08
	20	615.204	0.1	100	0.20	0.40	0.04	0.08
	30	615.204	0.1	80	0.20	0.40	0.04	0.08
	40	615.204	0.1	65	0.20	0.30	0.04	0.08
	50	615.204	0.1	30	0.20	0.30	0.04	0.08
Aluminium Alloys	10	615.204	0.1	250	0.20	0.40	0.04	0.08
	20	615.204	0.1	200	0.20	0.40	0.04	0.08
	30	615.204	0.1	150	0.20	0.40	0.04	0.08
	40	615.204	0.1	90	0.20	0.30	0.04	0.08
	50	615.204	0.1	50	0.20	0.30	0.04	0.08

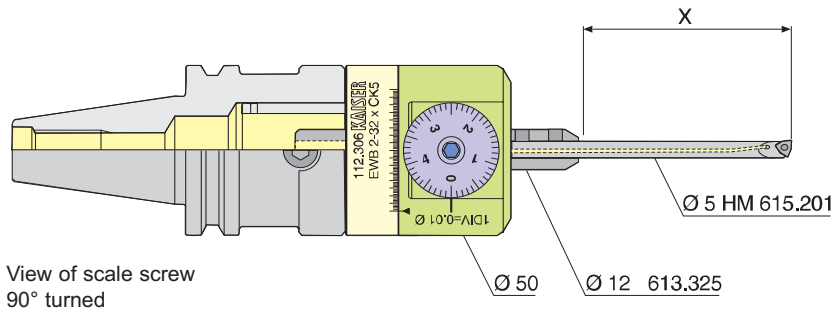
Boring Ø	Setting of the balancing scale					
	613.326/615.204					
	R 0.1	R 0.2				
5.0	10	11				
5.1	11	12				
5.2	12	13				
5.3	12	13				
5.4	13	14				
5.5	14	15				
5.6	15	16				
5.7	15	16				
5.8	16	17				
5.9	17	18				
6.0	18	19				

Note:

Using the combination of toolholder 615.204 and reduction bushing 613.326.
The use of other tool components causes increased unbalance.
Maximum values for material allowance and feed rate should not be combined.
All tools are designed with internal coolant.
All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.
Over Ø 6.0 use the next tool combination (615.201/613.325, see next page).

Wear safety goggles and use protective shields.



Material Group	Boring Depth X	Cutting data Ø 5.8 - 7.3							
		Inserts		Vc [m/min]	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]		
		Order No.	R		Stand.	Max	Ra 1.6	Max.	
Low carbon steel	10	655.603	0.2	130	0.20	0.60	0.06	0.10	
	20	655.603	0.2	100	0.20	0.60	0.06	0.10	
	30	655.603	0.2	90	0.20	0.50	0.06	0.09	
	St37-2	40	655.605	0.1	70	0.20	0.50	0.04	0.08
	St52-3	50	655.605	0.1	50	0.20	0.50	0.04	0.08
	1.5752	60	655.605	0.1	30	0.20	0.40	0.04	0.08
Heat treatable steel	10	655.603	0.2	130	0.20	0.60	0.06	0.09	
	20	655.603	0.2	100	0.20	0.60	0.06	0.09	
	30	655.603	0.2	90	0.20	0.50	0.06	0.08	
	Ck45	40	655.605	0.1	70	0.20	0.50	0.04	0.08
	1.2312	50	655.605	0.1	50	0.20	0.50	0.04	0.08
	1.2343 1.2083	60	655.605	0.1	30	0.20	0.40	0.04	0.08
Stainless-steel	10	655.603	0.2	130	0.20	0.50	0.06	0.08	
	20	655.603	0.2	100	0.20	0.50	0.06	0.08	
	30	655.603	0.2	90	0.20	0.50	0.06	0.08	
	1.4301	40	655.605	0.1	70	0.20	0.50	0.04	0.08
	1.4435	50	655.605	0.1	50	0.20	0.40	0.04	0.07
	1.2764 1.2767	60	655.605	0.1	30	0.20	0.40	0.04	0.07
Cast Iron	10	655.603	0.2	130	0.20	0.60	0.06	0.11	
	20	655.603	0.2	100	0.20	0.60	0.06	0.11	
	30	655.603	0.2	90	0.20	0.60	0.06	0.10	
	40	655.605	0.1	70	0.20	0.60	0.04	0.10	
	50	655.605	0.1	50	0.20	0.50	0.04	0.09	
	60	655.605	0.1	30	0.20	0.40	0.04	0.08	
Aluminium Alloys	10	655.603	0.2	250	0.20	0.70	0.06	0.12	
	20	655.603	0.2	200	0.20	0.70	0.06	0.12	
	30	655.603	0.2	150	0.20	0.70	0.06	0.11	
	40	655.604	0.1	120	0.20	0.70	0.04	0.10	
	50	655.604	0.1	85	0.20	0.60	0.04	0.10	
	60	655.604	0.1	50	0.20	0.50	0.04	0.09	

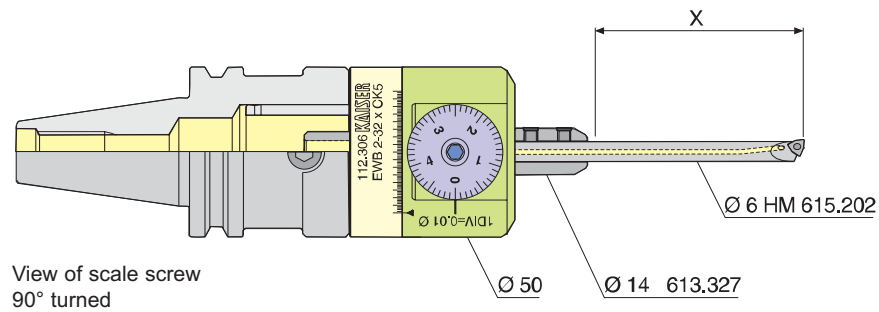
Boring Ø	Setting of the balancing scale						
	613.325/615.201						
	R 0.1	R 0.2					
5.8	10	11					
5.9	11	12					
6.0	12	13					
6.1	13	14					
6.2	13	14					
6.3	14	15					
6.4	15	16					
6.5	16	17					
6.6	16	17					
6.7	17	18					
6.8	18	19					
6.9	19	20					
7.0	19	20					
7.1	20	21					
7.2	21	22					
7.3	22	23					

Note:

Using the combination of toolholder 615.201 and reduction bushing 613.325.
The use of other tool components causes increased unbalance.
Maximum values for material allowance and feed rate should not be combined.
All tools are designed with internal coolant.
All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.
Over Ø 7.3 use the next tool combination (615.202/613.327, see next page).

Wear safety goggles and use protective shields.



Material Group	Boring Depth X	Cutting data Ø 7.3 - 8.1							
		Inserts		Vc [m/min]	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]		
		Order No.	R		Stand.	Max	Ra 1.6	Max.	
Low carbon steel	10	655.603	0.2	140	0.20	0.60	0.06	0.10	
	20	655.603	0.2	120	0.20	0.60	0.06	0.10	
	30	655.603	0.2	100	0.20	0.50	0.06	0.09	
	St37-2	40	655.603	0.2	85	0.20	0.50	0.04	0.08
	St52-3	50	655.605	0.1	65	0.20	0.50	0.04	0.08
1.5752	65	655.605	0.1	35	0.20	0.40	0.04	0.08	
Heat treatable steel	10	655.603	0.2	140	0.20	0.60	0.06	0.09	
	20	655.603	0.2	120	0.20	0.60	0.06	0.09	
	30	655.603	0.2	100	0.20	0.50	0.06	0.08	
	Ck45	40	655.603	0.2	85	0.20	0.50	0.04	0.08
	1.2312	50	655.605	0.1	65	0.20	0.50	0.04	0.08
1.2343	65	655.605	0.1	35	0.20	0.40	0.04	0.08	
1.2083									
Stainless-steel	10	655.603	0.2	140	0.20	0.50	0.06	0.08	
	20	655.603	0.2	120	0.20	0.50	0.06	0.08	
	30	655.603	0.2	100	0.20	0.50	0.06	0.08	
	1.4301	40	655.603	0.2	85	0.20	0.50	0.04	0.08
	1.4435	50	655.605	0.1	65	0.20	0.40	0.04	0.07
1.2764	65	655.605	0.1	35	0.20	0.40	0.04	0.07	
1.2767									
Cast Iron	10	655.603	0.2	140	0.20	0.60	0.06	0.11	
	20	655.603	0.2	120	0.20	0.60	0.06	0.11	
	30	655.603	0.2	100	0.20	0.60	0.06	0.10	
	40	655.603	0.2	85	0.20	0.60	0.04	0.10	
	50	655.605	0.1	65	0.20	0.50	0.04	1.09	
65	655.605	0.1	35	0.20	0.40	0.04	0.08		
Aluminium Alloys	10	655.603	0.2	320	0.20	0.70	0.06	0.12	
	20	655.603	0.2	250	0.20	0.70	0.06	0.12	
	30	655.603	0.2	170	0.20	0.70	0.06	0.11	
	40	655.603	0.2	140	0.20	0.70	0.04	0.10	
	50	655.603	0.2	100	0.20	0.60	0.04	0.10	
65	655.604	0.1	60	0.20	0.50	0.04	0.09		

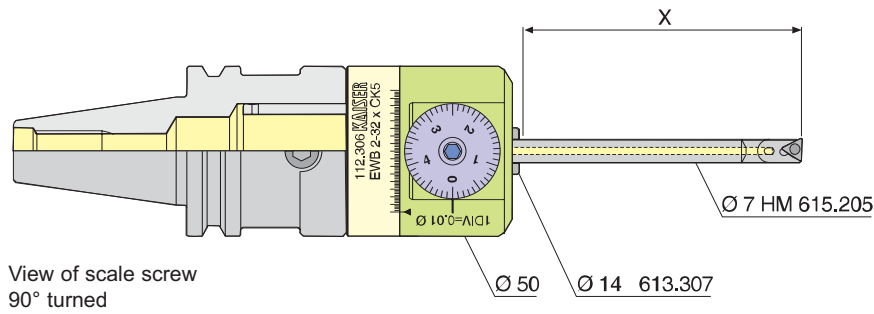
Boring Ø	Setting of the balancing scale					
	613.327/615.202					
	R 0.1	R 0.2				
7.3	10	11				
7.4	11	12				
7.5	12	13				
7.6	13	14				
7.7	13	15				
7.8	14	15				
7.9	15	16				
8.0	16	17				
8.1	17	18				

Note:

Using the combination of toolholder 615.202 and reduction bushing 613.327.
The use of other tool components causes increased unbalance.
Maximum values for material allowance and feed rate should not be combined.
All tools are designed with internal coolant.
All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.
Over Ø 8.1 use the next tool combination (615.205/613.307, see next page).

Wear safety goggles and use protective shields.



Material Group	Boring Depth X	Cutting data Ø 8.0 - 8.8						
		Inserts		Vc [m/min]	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]	
		Order No.	R		Stand.	Max	Ra 1.6	Max.
Low carbon steel St37-2 St52-3 1.5752	30	651.702	0.4	130	0.25	0.90	0.10	0.15
	40	651.802	0.2	110	0.20	0.80	0.06	0.12
	50	651.802	0.2	90	0.20	0.60	0.06	0.10
	60	651.835	0.2	70	0.20	0.50	0.06	0.09
	75	651.824	0.1	45	0.20	0.40	0.04	0.07
Heat treatable steel Ck45 1.2312 1.2343 1.2083	30	651.702	0.4	130	0.25	0.90	0.10	0.12
	40	651.802	0.2	110	0.20	0.80	0.06	0.11
	50	651.802	0.2	90	0.20	0.60	0.06	0.09
	60	651.835	0.2	70	0.20	0.60	0.06	0.08
	75	651.824	0.1	45	0.20	0.50	0.04	0.06
Stainless-steel 1.4301 1.4435 1.2764 1.2767	30	651.735	0.3	130	0.25	0.70	0.08	0.11
	40	651.735	0.3	110	0.25	0.60	0.08	0.11
	50	651.735	0.3	90	0.25	0.60	0.08	0.10
	60	651.824	0.1	70	0.20	0.40	0.04	0.07
	75	651.824	0.1	45	0.20	0.40	0.04	0.06
Cast Iron	30	651.735	0.3	130	0.25	1.00	0.08	0.14
	40	651.735	0.3	110	0.25	0.70	0.08	0.12
	50	651.735	0.3	90	0.20	0.50	0.08	0.10
	60	651.824	0.1	70	0.20	0.50	0.04	0.09
	75	651.824	0.1	45	0.20	0.50	0.04	0.07
Aluminium Alloys	30	651.735	0.3	380	0.25	1.00	0.08	0.16
	40	651.735	0.3	250	0.25	0.90	0.08	0.15
	50	651.735	0.3	150	0.25	0.80	0.08	0.12
	60	651.735	0.3	115	0.25	0.70	0.08	0.10
	75	651.824	0.1	70	0.20	0.50	0.04	0.08

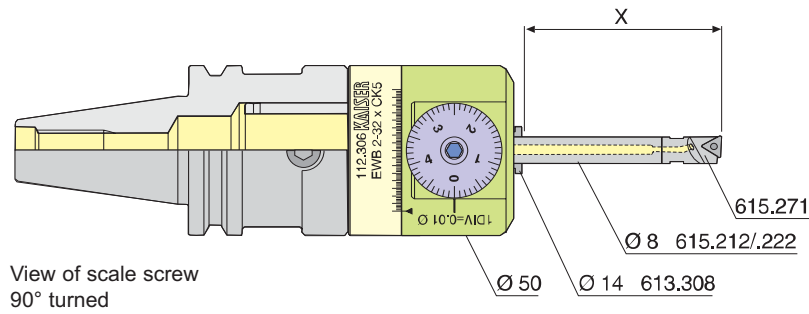
Boring Ø	Setting of the balancing scale							
	613.307/615.205							
	R 0.1	R 0.2	R 0.3	R 0.4				
8.0	9	10	11	12				
8.1	10	11	12	13				
8.2	11	12	13	14				
8.3	11	12	13	14				
8.4	12	13	14	15				
8.5	13	14	15	16				
8.6	14	15	16	17				
8.7	14	15	16	17				
8.8	15	16	17	18				

Note:

Using the combination of toolholder 615.205 and reduction bushing 613.307.
The use of other tool components causes increased unbalance.
Maximum values for material allowance and feed rate should not be combined.
All tools are designed with internal coolant.
All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.
Over Ø 8.8 use the next tool combination (615.212/.222/.271/613.308, see next page).

Wear safety goggles and use protective shields.



Material Group	Boring Depth X	Cutting data Ø 8.8 - 10.0							
		Inserts		Vc [m/min]	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]		
		Order No.	R		Stand.	Max	Ra 1.6	Max.	
Low carbon steel	30	651.702	0.4	150	0.25	0.90	0.10	0.15	
	40	651.802	0.2	110	0.20	0.80	0.06	0.12	
	50	651.802	0.2	90	0.20	0.60	0.06	0.10	
	St37-2	60	651.835	0.2	70	0.20	0.50	0.06	0.09
	St52-3 1.5752	75	651.824	0.1	45	0.20	0.40	0.04	0.07
Heat treatable steel	30	651.702	0.4	150	0.25	0.90	0.10	0.12	
	40	651.802	0.2	110	0.20	0.80	0.06	0.11	
	50	651.802	0.2	90	0.20	0.60	0.06	0.09	
	Ck45	60	651.835	0.2	70	0.20	0.60	0.06	0.08
	1.2312 1.2343 1.2083	75	651.824	0.1	45	0.20	0.50	0.04	0.06
Stainless-steel	30	651.735	0.3	150	0.25	0.70	0.08	0.11	
	40	651.735	0.3	110	0.25	0.60	0.08	0.11	
	50	651.735	0.3	90	0.25	0.60	0.08	0.10	
	1.4301 1.4435	60	651.824	0.1	70	0.20	0.40	0.04	0.07
	1.2764 1.2767	75	651.824	0.1	45	0.20	0.40	0.04	0.06
Cast Iron	30	651.735	0.3	150	0.25	1.00	0.08	0.14	
	40	651.735	0.3	110	0.25	0.70	0.08	0.12	
	50	651.735	0.3	90	0.20	0.50	0.08	0.10	
	60	651.824	0.1	70	0.20	0.50	0.04	0.09	
	75	651.824	0.1	45	0.20	0.50	0.04	0.07	
Aluminium Alloys	30	651.735	0.3	380	0.25	1.00	0.08	0.16	
	40	651.735	0.3	250	0.25	0.90	0.08	0.15	
	50	651.735	0.3	150	0.25	0.80	0.08	0.12	
	60	651.735	0.3	115	0.25	0.70	0.08	0.10	
	75	651.824	0.1	70	0.20	0.50	0.04	0.08	

Boring Ø	Setting of the balancing scale							
	613.308/615.212/615.271				613.308/615.222/615.271			
	R 0.1	R 0.2	R 0.3	R 0.4	R 0.1	R 0.2	R 0.3	R 0.4
8.8	8	9	10	11	8	9	10	11
8.9	9	10	11	12	8	10	11	12
9.0	9	10	11	12	9	10	11	12
9.1	10	11	12	13	10	11	12	13
9.2	11	12	13	14	11	12	13	14
9.3	12	13	14	15	12	13	14	15
9.4	12	13	14	15	12	13	14	15
9.5	13	14	15	16	13	14	15	16
9.6	14	15	16	17	14	15	16	17
9.7	14	15	16	17	15	16	17	18
9.8	15	16	17	18	15	16	17	18
9.9	16	17	18	19	16	17	18	19
10.0	17	18	18	19	17	18	19	20

Note:

Using the combination of toolholder 615.212 or 615.222 and 615.271 with reduction bushing 613.308.

The use of other tool components causes increased unbalance.

Maximum values for material allowance and feed rate should not be combined.

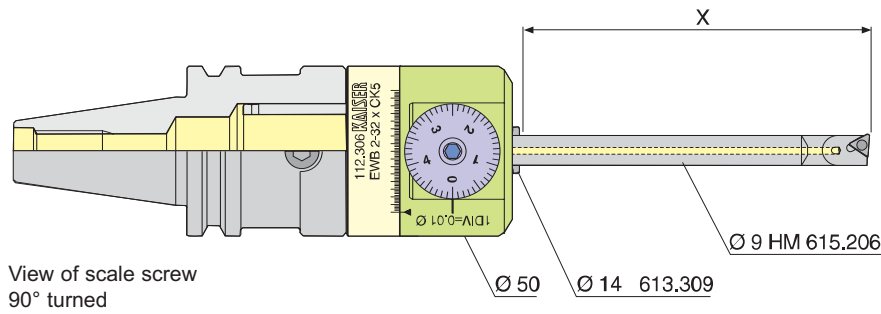
All tools are designed with internal coolant.

All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.

Over Ø 10.0 use the next tool combination (615.206/613.309, see next page).

Wear safety goggles and use protective shields.



Material Group	Boring Depth X	Cutting data Ø 10.0 - 11.8						
		Inserts		Vc [m/min]	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]	
		Order No.	R		Stand.	Max	Ra 1.6	Max.
Low carbon steel	40	651.702	0.4	130	0.25	0.90	0.10	0.15
	50	651.802	0.2	110	0.20	0.80	0.06	0.12
	60	651.802	0.2	90	0.20	0.60	0.06	0.10
	70	651.835	0.2	70	0.20	0.50	0.06	0.09
	85	651.824	0.1	45	0.20	0.40	0.04	0.07
1.5752	100	651.824	0.1	30	0.20	0.40	0.04	0.06
Heat treatable steel	40	651.702	0.4	150	0.25	0.90	0.10	0.12
	50	651.802	0.2	110	0.20	0.80	0.06	0.11
	60	651.802	0.2	90	0.20	0.60	0.06	0.09
	70	651.835	0.2	70	0.20	0.60	0.06	0.08
	85	651.824	0.1	45	0.20	0.50	0.04	0.06
1.2312	100	651.824	0.1	30	0.20	0.40	0.04	0.06
Stainless-steel	40	651.735	0.3	150	0.25	0.70	0.08	0.11
	50	651.735	0.3	110	0.25	0.60	0.08	0.11
	60	651.735	0.3	90	0.25	0.60	0.08	0.10
	70	651.824	0.1	70	0.20	0.40	0.04	0.07
	85	651.824	0.1	45	0.20	0.40	0.04	0.06
1.2764	100	651.824	0.1	30	0.20	0.40	0.04	0.06
Cast Iron	40	651.735	0.3	150	0.25	0.90	0.08	0.14
	50	651.735	0.3	110	0.25	0.80	0.08	0.12
	60	651.735	0.3	90	0.20	0.60	0.08	0.10
	70	651.824	0.1	70	0.20	0.60	0.04	0.09
	85	651.824	0.1	45	0.20	0.50	0.04	0.07
1.2767	100	651.824	0.1	30	0.20	0.50	0.04	0.06
Aluminium Alloys	40	651.735	0.3	380	0.25	0.90	0.08	0.16
	50	651.735	0.3	250	0.25	0.80	0.08	0.15
	60	651.735	0.3	150	0.25	0.80	0.08	0.12
	70	651.735	0.3	115	0.25	0.70	0.08	0.10
	85	651.824	0.1	70	0.20	0.50	0.04	0.08
1.2767	100	651.824	0.1	40	0.20	0.50	0.04	0.08

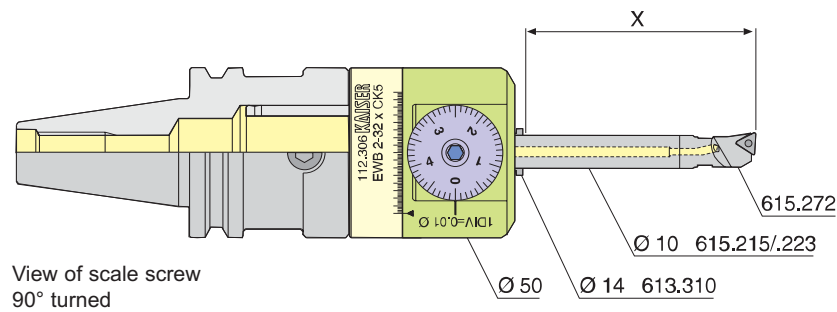
Boring Ø	Setting of the balancing scale			
	613.309/615.206			
	R 0.1	R 0.2	R 0.3	R 0.4
10.0	8	10	11	13
10.1	9	11	12	14
10.2	10	12	13	15
10.3	11	13	14	15
10.4	12	14	15	16
10.5	13	15	16	17
10.6	14	16	17	18
10.7	15	17	18	19
10.8	16	18	19	20
10.9	17	19	20	21
11.0	18	20	21	22
11.1	19	20	22	23
11.2	20	21	23	24
11.3	21	22	24	25
11.4	22	23	24	26
11.5	23	24	25	26
11.6	24	25	26	27
11.7	25	26	27	28
11.8	26	27	28	29

Note:

Using the combination of toolholder 615.206 with reduction bushing 613.309.
 The use of other tool components causes increased unbalance.
 Maximum values for material allowance and feed rate should not be combined.
 All tools are designed with internal coolant.
 All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.
 Over Ø 11.8 use the next tool combination (615.215/.223/.272/613.310, see next page).

Wear safety goggles and use protective shields.



Material Group	Boring Depth X	Cutting data Ø 11.8 - 13.8							
		Inserts		Vc [m/min]	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]		
		Order No.	R		Stand.	Max	Ra 1.6	Max.	
Low carbon steel	30	651.702	0.4	180	0.25	1.20	0.10	0.15	
	45	651.702	0.4	140	0.25	0.80	0.10	0.12	
	60	651.802	0.2	105	0.20	0.60	0.06	0.10	
	St37-2	75	651.835	0.2	65	0.20	0.60	0.06	0.09
	St52-3	90	651.824	0.1	35	0.20	0.50	0.04	0.07
Heat treatable steel	30	651.702	0.4	180	0.25	1.20	0.10	0.12	
	45	651.702	0.4	140	0.25	0.80	0.10	0.11	
	60	651.802	0.2	105	0.20	0.60	0.06	0.09	
	Ck45	75	651.835	0.2	65	0.20	0.60	0.06	0.07
	1.2312	90	651.824	0.1	35	0.20	0.50	0.04	0.06
1.4301 steel	30	651.735	0.3	180	0.25	0.70	0.08	0.10	
	45	651.735	0.3	140	0.25	0.60	0.08	0.10	
	60	651.735	0.3	105	0.25	0.50	0.08	0.10	
	1.4301	75	651.824	0.1	65	0.20	0.50	0.04	0.07
	1.4435	90	651.824	0.1	35	0.20	0.40	0.04	0.06
Cast Iron	30	651.735	0.3	180	0.25	1.10	0.08	0.14	
	45	651.735	0.3	140	0.25	0.90	0.08	0.14	
	60	651.735	0.3	105	0.25	0.80	0.08	0.12	
	75	651.735	0.3	65	0.25	0.70	0.08	0.10	
	90	651.824	0.1	35	0.20	0.60	0.04	0.08	
Aluminium Alloys	30	651.735	0.3	500	0.25	1.10	0.08	0.16	
	45	651.735	0.3	300	0.25	0.90	0.08	0.14	
	60	651.735	0.3	180	0.25	0.80	0.08	0.12	
	75	651.735	0.3	120	0.25	0.70	0.08	0.10	
	90	651.824	0.1	75	0.20	0.60	0.04	0.09	

Boring Ø	Setting of the balancing scale							
	613.310/615.215/615.272				613.310/615.223/615.272			
	R 0.1	R 0.2	R 0.3	R 0.4	R 0.1	R 0.2	R 0.3	R 0.4
11.8	10	11	12	13	10	11	12	13
11.9	11	12	13	14	10	12	13	14
12.0	11	13	14	15	11	13	14	15
12.1	12	14	15	16	12	14	15	16
12.2	13	14	16	17	13	15	16	17
12.3	14	15	16	17	14	16	17	18
12.4	15	16	17	18	15	17	18	19
12.5	16	17	18	19	16	17	19	20
12.6	17	18	19	20	17	18	20	21
12.7	17	19	20	21	18	19	20	22
12.8	18	19	20	21	19	20	21	23
12.9	19	20	21	22	20	21	22	23
13.0	20	21	22	23	21	22	23	24
13.1	21	22	23	24	22	23	24	25
13.2	21	23	24	25	22	24	25	26
13.3	22	23	24	25	23	25	26	27
13.4	23	24	25	26	24	25	27	28
13.5	24	25	26	27	25	26	27	29
13.6	25	26	27	28	26	27	28	29
13.7	25	26	27	28	27	28	29	30
13.8	25	26	27	28	27	28	29	30

Note:

Using the combination of toolholder 615.215 or 615.223 and 615.272 with reduction bushing 613.310.

The use of other tool components causes increased unbalance.

Maximum values for material allowance and feed rate should not be combined.

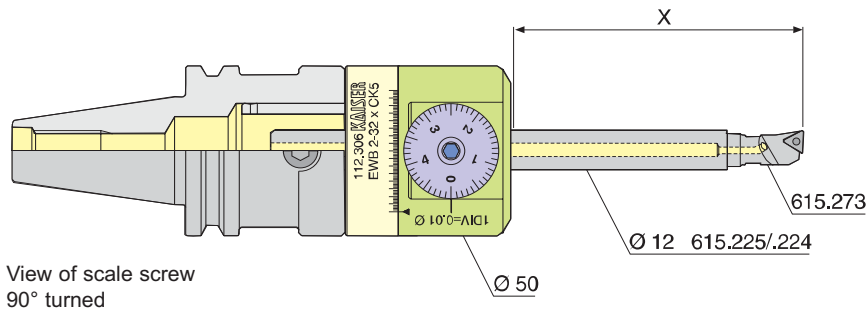
All tools are designed with internal coolant.

All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.

Over Ø 13.8 use the next tool combination (615.225/.224/.273, see next page).

Wear safety goggles and use protective shields.



Material Group	Boring Depth X	Cutting data Ø 13.8 - 15.8							
		Inserts		Vc [m/min]	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]		
		Order No.	R		Stand.	Max	Ra 1.6	Max.	
Low carbon steel	40	651.702	0.4	230	0.25	1.20	0.10	0.16	
	50	651.702	0.4	200	0.25	0.90	0.10	0.18	
	60	651.802	0.2	175	0.20	0.80	0.06	0.12	
	70	651.802	0.2	155	0.20	0.70	0.06	0.12	
	St37-2	90	651.835	0.2	110	0.20	0.60	0.06	0.12
	St52-3	110	651.835	0.2	65	0.20	0.50	0.06	0.09
1.5752	130	651.824	0.1	25	0.20	0.40	0.04	0.08	
Heat treatable steel	40	651.702	0.4	230	0.25	1.20	0.10	0.16	
	50	651.702	0.4	200	0.25	0.90	0.10	0.16	
	60	651.802	0.2	175	0.20	0.80	0.06	0.10	
	Ck45	70	651.802	0.2	155	0.20	0.70	0.06	0.10
	1.2312	90	651.835	0.2	110	0.20	0.60	0.06	0.10
	1.2343	110	651.835	0.2	65	0.20	0.50	0.06	0.08
1.2083	130	651.824	0.1	25	0.20	0.40	0.04	0.07	
Stainless-steel	40	651.734	0.4	230	0.25	1.20	0.10	0.16	
	50	651.734	0.4	200	0.25	0.80	0.10	0.12	
	60	651.735	0.3	175	0.25	0.70	0.08	0.12	
	1.4301	70	651.735	0.3	155	0.25	0.60	0.08	0.10
	1.4435	90	651.824	0.1	110	0.20	0.40	0.04	0.06
	1.2764	110	651.824	0.1	65	0.20	0.40	0.04	0.06
1.2767	130	651.824	0.1	25	0.20	0.40	0.04	0.06	
Cast Iron	40	651.735	0.3	230	0.25	1.20	0.08	0.16	
	50	651.735	0.3	200	0.25	1.20	0.08	0.14	
	60	651.735	0.3	175	0.25	1.10	0.08	0.14	
	70	651.735	0.3	155	0.25	0.90	0.08	0.12	
	90	651.735	0.3	110	0.25	0.70	0.08	0.12	
	110	651.824	0.1	65	0.20	0.60	0.04	0.08	
130	651.824	0.1	25	0.20	0.50	0.04	0.08		
Aluminium Alloys	40	651.735	0.3	400	0.25	1.20	0.08	0.16	
	50	651.735	0.3	360	0.25	1.20	0.08	0.16	
	60	651.735	0.3	320	0.25	1.10	0.08	0.16	
	70	651.735	0.3	280	0.25	0.90	0.08	0.14	
	90	651.735	0.3	200	0.25	0.70	0.08	0.12	
	110	651.824	0.1	110	0.20	0.60	0.04	0.10	
130	651.824	0.1	35	0.20	0.50	0.04	0.09		

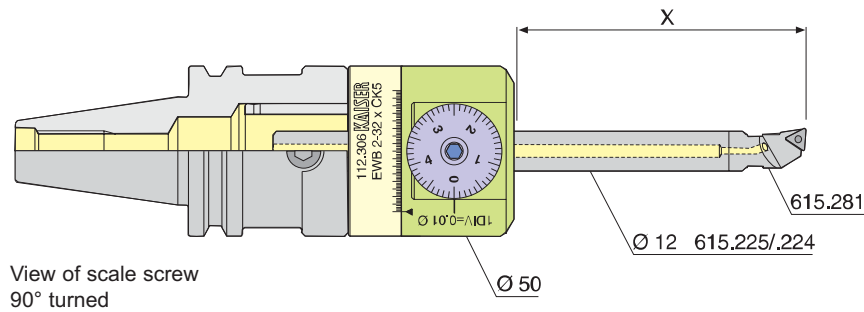
Boring Ø	Setting of the balancing scale							
	615.225/615.273				615.224/615.273			
	R 0.1	R 0.2	R 0.3	R 0.4	R 0.1	R 0.2	R 0.3	R 0.4
13.8	9	10	12	13	8	10	12	13
13.9	10	11	13	14	9	11	13	15
14.0	11	12	14	15	11	12	14	16
14.1	12	13	15	16	12	14	16	17
14.2	13	15	16	17	13	15	17	19
14.3	14	16	17	18	15	17	18	20
14.4	15	17	18	19	16	18	20	21
14.5	16	18	19	20	17	19	21	23
14.6	17	19	20	21	19	20	22	24
14.7	18	20	21	22	20	22	23	25
14.8	19	21	22	23	21	23	25	26
14.9	20	22	23	24	23	24	26	28
15.0	21	23	24	25	24	25	27	29
15.1	22	24	25	26	25	27	28	30
15.2	23	25	26	27	26	28	30	31
15.3	24	26	27	28	27	29	31	32
15.4	25	27	28	29	29	30	32	34
15.5	26	27	29	30	30	32	33	35
15.6	27	28	30	31	31	33	34	36
15.7	28	29	31	32	32	34	36	37
15.8	29	30	32	33	34	35	37	38

Note:

Using the combination of toolholder 615.225 or 615.224 with 615.273.
 The use of other tool components causes increased unbalance.
 Maximum values for material allowance and feed rate should not be combined.
 All tools are designed with internal coolant.
 All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.
 Over Ø 15.8 use the next tool combination (615.225/.224/.281, see next page).

Wear safety goggles and use protective shields.



Material Group	Boring Depth X	Cutting data Ø 15.8 - 17.8						
		Inserts		Vc [m/min]	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]	
		Order No.	R		Stand.	Max	Ra 1.6	Max.
Low carbon steel St37-2 St52-3 1.5752	50	655.332	0.8	230	0.25	1.00	0.14	0.25
	60	655.332	0.8	190	0.25	0.90	0.14	0.22
	80	655.322	0.4	140	0.25	0.70	0.10	0.18
	100	655.373	0.2	85	0.20	0.60	0.06	0.12
	135	655.373	0.2	25	0.20	0.40	0.06	0.10
Heat treatable steel Ck45 1.2312 1.2343 1.2083	50	655.332	0.8	230	0.25	1.00	0.14	0.22
	60	655.332	0.8	190	0.25	0.90	0.14	0.20
	80	655.322	0.4	140	0.25	0.70	0.10	0.16
	100	655.373	0.2	85	0.20	0.60	0.06	0.10
	130	655.373	0.2	25	0.20	0.40	0.06	0.09
Stainless-steel 1.4301 1.4435 1.2764 1.2767	50	655.393	0.8	230	0.25	0.80	0.14	0.20
	60	655.393	0.8	190	0.25	0.70	0.14	0.18
	80	655.383	0.4	140	0.25	0.50	0.10	0.14
	100	655.373	0.2	85	0.20	0.40	0.06	0.09
	130	655.373	0.2	25	0.20	0.30	0.06	0.08
Cast Iron	50	655.393	0.8	230	0.25	1.30	0.14	0.28
	60	655.393	0.8	190	0.25	1.00	0.14	0.25
	80	655.383	0.4	140	0.25	0.90	0.10	0.20
	100	655.373	0.2	85	0.20	0.80	0.06	0.12
	130	655.373	0.2	25	0.20	0.50	0.06	0.11
Aluminium Alloys	50	655.393	0.8	450	0.25	1.50	0.14	0.30
	60	655.393	0.8	380	0.25	1.00	0.14	0.25
	80	655.393	0.8	230	0.25	0.80	0.14	0.20
	100	655.383	0.4	140	0.20	0.70	0.06	0.12
	130	655.373	0.2	35	0.20	0.60	0.06	0.12

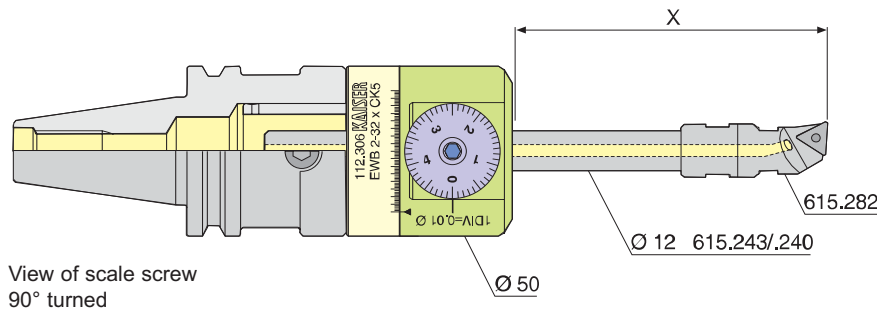
Boring Ø	Setting of the balancing scale							
	615.225/615.281				615.224/615.281			
	R 0.2	R 0.3	R 0.4	R 0.8	R 0.2	R 0.3	R 0.4	R 0.8
15.8	9	10	12	18	8	10	12	19
15.9	10	11	13	19	9	11	13	20
16.0	11	12	14	20	11	13	15	22
16.1	12	14	15	21	12	14	16	23
16.2	13	15	16	22	14	15	17	24
16.3	14	16	17	23	15	17	19	26
16.4	15	17	18	24	16	18	20	27
16.5	16	18	19	25	18	19	21	28
16.6	17	19	20	26	19	21	22	29
16.7	18	20	21	27	20	22	24	30
16.8	19	21	22	28	22	23	25	32
16.9	20	22	23	29	23	25	26	33
17.0	22	23	24	29	24	26	27	34
17.1	23	24	25	30	25	27	29	35
17.2	23	25	26	31	27	28	30	36
17.3	24	26	27	32	28	29	31	38
17.4	25	27	28	33	29	31	32	39
17.5	26	28	29	34	30	32	34	40
17.6	27	29	30	35	31	33	35	41
17.7	28	30	31	36	33	34	36	43
17.8	29	31	32	37	34	36	37	44

Note:

Using the combination of toolholder 615.225 or 615.224 with 615.281.
 The use of other tool components causes increased unbalance.
 Maximum values for material allowance and feed rate should not be combined.
 All tools are designed with internal coolant.
 All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.
 Over Ø 17.8 use the next tool combination (615.243/.240/.282, see next page).

Wear safety goggles and use protective shields.



Material Group	Boring Depth X	Cutting data Ø 17.8 - 19.8							
		Inserts		Vc [m/min]	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]		
		Order No.	R		Stand.	Max	Ra 1.6	Max.	
Low carbon steel	50	655.332	0.8	250	0.25	1.20	0.14	0.25	
	60	655.322	0.4	210	0.25	1.00	0.10	0.18	
	70	655.312	0.2	160	0.25	0.90	0.06	0.14	
	80	655.312	0.2	140	0.25	0.70	0.06	0.14	
	St37-2	90	655.373	0.2	110	0.20	0.70	0.06	0.12
	St52-3	110	655.373	0.2	65	0.20	0.60	0.06	0.10
1.5752	130	655.373	0.2	30	0.20	0.50	0.06	0.10	
Heat treatable steel	50	655.332	0.8	250	0.25	1.20	0.14	0.22	
	60	655.322	0.4	210	0.25	1.00	0.10	0.18	
	70	655.312	0.2	160	0.25	0.90	0.06	0.12	
	80	655.312	0.2	140	0.25	0.70	0.06	0.12	
	Ck45	90	655.373	0.2	110	0.20	0.70	0.06	0.09
	1.2312	110	655.373	0.2	65	0.20	0.60	0.06	0.09
1.2343	130	655.373	0.2	30	0.20	0.50	0.06	0.09	
1.2083									
Stainless-steel	50	655.393	0.8	250	0.25	1.00	0.14	0.20	
	60	655.383	0.4	210	0.25	0.90	0.10	0.15	
	70	655.383	0.4	160	0.25	0.70	0.10	0.15	
	80	655.373	0.2	140	0.20	0.60	0.06	0.09	
	1.4301	90	655.373	0.2	110	0.20	0.60	0.06	0.08
	1.4435	110	655.373	0.2	65	0.20	0.50	0.06	0.09
1.2764	130	655.373	0.2	30	0.20	0.40	0.06	0.08	
1.2767									
Cast Iron	50	655.393	0.8	250	0.25	1.50	0.14	0.20	
	60	655.383	0.4	210	0.25	1.20	0.10	0.15	
	70	655.383	0.4	160	0.25	1.10	0.10	0.15	
	80	655.373	0.2	140	0.20	0.90	0.06	0.09	
	90	655.373	0.2	110	0.20	0.80	0.06	0.08	
	110	655.373	0.2	65	0.20	0.70	0.06	0.09	
130	655.373	0.2	30	0.20	0.60	0.06	0.08		
Aluminium Alloys	50	655.393	0.8	500	0.25	1.40	0.14	0.30	
	60	655.393	0.8	420	0.25	1.20	0.14	0.30	
	70	655.393	0.8	340	0.25	1.00	0.14	0.25	
	80	655.383	0.4	250	0.25	0.90	0.10	0.18	
	90	655.383	0.4	180	0.25	0.80	0.10	0.18	
	110	655.373	0.2	110	0.20	0.70	0.06	0.12	
130	655.373	0.2	40	0.20	0.60	0.06	0.12		

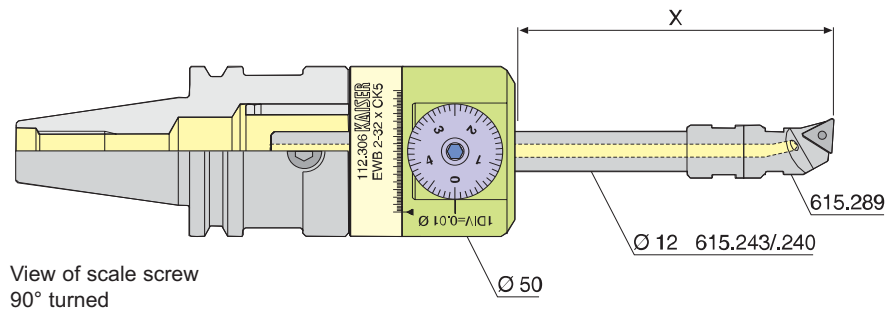
Boring Ø	Setting of the balancing scale							
	615.243/615.282				615.240/615.282			
	R 0.2	R 0.3	R 0.4	R 0.8	R 0.2	R 0.3	R 0.4	R 0.8
17.8	9	10	12	18	8	10	12	20
17.9	10	11	13	19	9	11	13	21
18.0	11	13	14	20	11	13	15	23
18.1	12	14	15	21	12	14	16	24
18.2	13	15	16	22	14	16	18	25
18.3	14	16	18	23	15	17	19	27
18.4	16	17	19	24	17	19	21	28
18.5	17	18	20	25	18	20	22	29
18.6	18	19	21	26	20	21	23	31
18.7	19	20	22	28	21	23	25	32
18.8	20	21	23	29	22	24	26	33
18.9	21	23	24	30	24	26	27	35
19.0	22	24	25	31	25	27	29	36
19.1	23	25	26	32	26	28	30	37
19.2	24	26	27	33	28	30	31	38
19.3	25	27	28	34	29	31	33	40
19.4	26	28	29	35	30	32	34	41
19.5	27	29	30	36	32	34	35	42
19.6	28	30	31	37	33	35	37	44
19.7	29	31	32	38	34	36	38	45
19.8	30	32	33	39	36	37	39	46

Note:

Using the combination of toolholder 615.243 or 615.240 with 615.282.
 The use of other tool components causes increased unbalance.
 Maximum values for material allowance and feed rate should not be combined.
 All tools are designed with internal coolant.
 All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.
 Over Ø 19.8 use the next tool combination (615.243/.240/.289, see next page).

Wear safety goggles and use protective shields.



Material Group	Boring Depth X	Cutting data Ø 19.8 - 21.8							
		Inserts		Vc [m/min]	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]		
		Order No.	R		Stand.	Max	Ra 1.6	Max.	
Low carbon steel	50	655.332	0.8	250	0.25	1.20	0.14	0.25	
	60	655.322	0.4	210	0.25	1.00	0.10	0.22	
	70	655.312	0.2	175	0.20	0.90	0.06	0.15	
	80	655.312	0.2	140	0.20	0.70	0.06	0.13	
	90	655.373	0.2	110	0.20	0.70	0.06	0.11	
St37-2	110	655.373	0.2	65	0.20	0.60	0.06	0.10	
	130	655.373	0.2	25	0.20	0.50	0.06	0.10	
	1.5752								
Heat treatable steel	50	655.332	0.8	250	0.25	1.20	0.14	0.25	
	60	655.322	0.4	210	0.25	1.00	0.10	0.20	
	70	655.312	0.2	175	0.20	0.90	0.06	0.12	
	80	655.312	0.2	140	0.20	0.70	0.06	0.12	
	90	655.373	0.2	110	0.20	0.70	0.06	0.10	
Ck45	110	655.373	0.2	65	0.20	0.60	0.06	0.10	
	130	655.373	0.2	25	0.20	0.50	0.06	0.10	
	1.2312								
	1.2343								
Stainless-steel	50	655.393	0.8	250	0.25	1.00	0.14	0.20	
	60	655.383	0.4	210	0.25	0.90	0.10	0.18	
	70	655.383	0.4	175	0.25	0.70	0.10	0.15	
	80	655.373	0.2	140	0.20	0.60	0.06	0.10	
	90	655.373	0.2	110	0.20	0.60	0.06	0.09	
1.4301	110	655.373	0.2	65	0.20	0.50	0.06	0.08	
	130	655.373	0.2	25	0.20	0.40	0.06	0.08	
	1.4435								
	1.2764								
Cast Iron	50	655.393	0.8	250	0.25	1.50	0.14	0.28	
	60	655.383	0.4	210	0.25	1.20	0.10	0.25	
	70	655.383	0.4	175	0.25	1.10	0.10	0.22	
	80	655.373	0.2	140	0.20	0.90	0.06	0.14	
	90	655.373	0.2	110	0.20	0.80	0.06	0.12	
110	110	655.373	0.2	65	0.20	0.70	0.06	0.11	
	130	655.373	0.2	25	0.20	0.60	0.06	0.11	
	Aluminium Alloys	50	655.393	0.8	550	0.25	1.40	0.14	0.30
		60	655.393	0.8	460	0.25	1.20	0.14	0.27
70		655.393	0.8	370	0.25	1.00	0.14	0.25	
80		655.383	0.4	280	0.25	0.90	0.10	0.20	
90		655.383	0.4	200	0.25	0.80	0.10	0.18	
110	110	655.373	0.2	110	0.20	0.70	0.06	0.12	
	130	655.373	0.2	40	0.20	0.60	0.06	0.10	

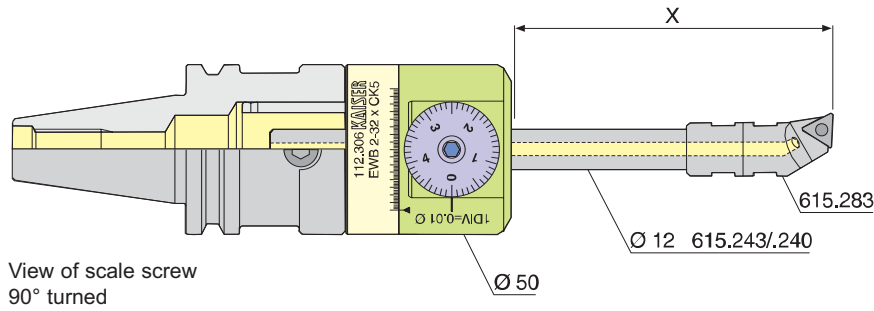
Boring Ø	Setting of the balancing scale							
	615.243/615.289				615.240/615.289			
	R 0.2	R 0.3	R 0.4	R 0.8	R 0.2	R 0.3	R 0.4	R 0.8
19.8	9	10	12	18	8	10	12	20
19.9	10	11	13	19	9	11	13	21
20.0	11	13	14	20	11	13	15	23
20.1	12	14	15	22	12	14	16	24
20.2	13	15	17	23	14	16	18	26
20.3	15	16	18	24	15	17	19	27
20.4	16	17	19	25	17	19	21	28
20.5	17	18	20	26	18	20	22	30
20.6	18	20	21	27	20	22	24	31
20.7	19	21	22	28	21	23	25	32
20.8	20	22	23	29	23	25	26	34
20.9	21	23	24	30	24	26	28	35
21.0	22	24	25	31	25	27	29	36
21.1	24	25	26	32	27	29	30	38
21.2	25	26	27	33	28	30	32	39
21.3	26	27	29	34	29	31	33	40
21.4	27	28	30	35	31	33	34	42
21.5	28	29	31	36	32	34	36	43
21.6	29	30	32	37	34	35	37	44
21.7	30	31	33	38	35	37	38	46
21.8	31	32	34	39	36	38	40	47

Note:

Using the combination of toolholder 615.243 or 615.240 with 615.289.
The use of other tool components causes increased unbalance.
Maximum values for material allowance and feed rate should not be combined.
All tools are designed with internal coolant.
All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.
Over Ø 21.8 use the next tool combination (615.243/.240/.283, see next page).

Wear safety goggles and use protective shields.



Material Group	Boring Depth X	Cutting data Ø 21.8 - 23.8							
		Inserts		Vc [m/min]	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]		
		Order No.	R		Stand.	Max	Ra 1.6	Max.	
Low carbon steel	50	655.332	0.8	265	0.25	1.20	0.14	0.25	
	60	655.322	0.4	220	0.25	1.00	0.10	0.22	
	70	655.312	0.2	175	0.20	0.90	0.06	0.15	
	80	655.312	0.2	140	0.20	0.70	0.06	0.13	
	St37-2	90	655.373	0.2	110	0.20	0.70	0.06	0.11
	St52-3	110	655.373	0.2	65	0.20	0.60	0.06	0.10
1.5752	130	655.373	0.2	25	0.20	0.50	0.06	0.10	
Heat treatable steel	50	655.332	0.8	265	0.25	1.20	0.14	0.22	
	60	655.322	0.4	220	0.25	1.00	0.10	0.20	
	70	655.312	0.2	175	0.20	0.90	0.06	0.13	
	80	655.312	0.2	140	0.20	0.70	0.06	0.11	
	Ck45	90	655.373	0.2	110	0.20	0.70	0.06	0.10
	1.2312	110	655.373	0.2	65	0.20	0.60	0.06	0.09
1.2343	130	655.373	0.2	25	0.20	0.50	0.06	0.09	
1.2083									
Stainless-steel	50	655.393	0.8	250	0.25	1.00	0.14	0.20	
	60	655.383	0.4	220	0.25	0.90	0.10	0.18	
	70	655.383	0.4	175	0.25	0.70	0.10	0.15	
	80	655.373	0.2	140	0.20	0.60	0.06	0.10	
	1.4301	90	655.373	0.2	110	0.20	0.60	0.06	0.09
	1.4435	110	655.373	0.2	65	0.20	0.50	0.06	0.08
1.2764	130	655.373	0.2	25	0.20	0.40	0.06	0.08	
1.2767									
Cast Iron	50	655.393	0.8	265	0.25	1.50	0.14	0.28	
	60	655.383	0.4	220	0.25	1.20	0.10	0.25	
	70	655.383	0.4	175	0.25	1.10	0.10	0.22	
	80	655.373	0.2	140	0.20	0.90	0.06	0.14	
	90	655.373	0.2	110	0.20	0.80	0.06	0.12	
	110	655.373	0.2	65	0.20	0.70	0.06	0.11	
130	655.373	0.2	25	0.20	0.60	0.06	0.11		
Aluminium Alloys	50	655.393	0.8	600	0.25	1.40	0.14	0.30	
	60	655.393	0.8	500	0.25	1.20	0.14	0.27	
	70	655.393	0.8	400	0.25	1.00	0.14	0.25	
	80	655.383	0.4	300	0.25	0.90	0.10	0.20	
	90	655.383	0.4	220	0.25	0.80	0.10	0.18	
	110	655.373	0.2	110	0.20	0.70	0.06	0.12	
130	655.373	0.2	40	0.20	0.60	0.06	0.10		

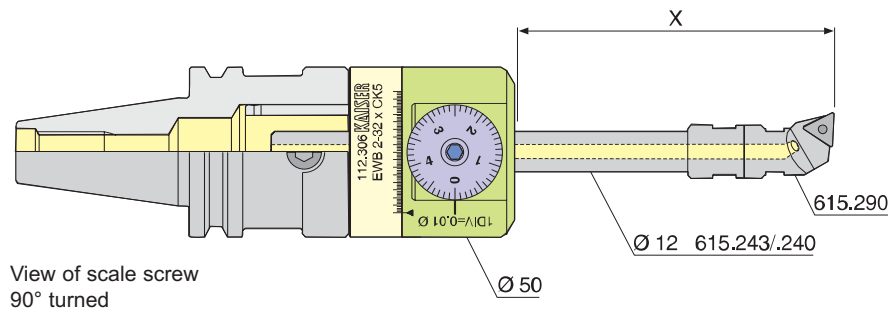
Boring Ø	Setting of the balancing scale							
	615.243/615.283				615.240/615.283			
	R 0.2	R 0.3	R 0.4	R 0.8	R 0.2	R 0.3	R 0.4	R 0.8
21.8	10	11	13	19	9	11	13	21
21.9	11	12	14	20	10	12	14	22
22.0	12	14	15	21	12	14	16	24
22.1	13	15	16	22	13	15	17	25
22.2	14	16	18	24	15	17	19	27
22.3	16	17	19	25	16	18	20	28
22.4	17	18	20	26	18	20	22	29
22.5	18	19	21	27	19	21	23	31
22.6	19	20	22	28	21	23	25	32
22.7	20	22	23	29	22	24	26	33
22.8	21	23	24	30	24	25	27	35
22.9	22	24	25	31	25	27	29	36
23.0	23	25	26	32	26	28	30	37
23.1	24	26	27	33	28	30	31	39
23.2	26	27	28	34	29	31	33	40
23.3	27	28	29	35	30	32	34	41
23.4	28	29	31	36	32	34	35	43
23.5	29	30	32	37	33	35	37	44
23.6	30	31	33	38	34	36	38	45
23.7	31	32	34	39	36	38	39	47
23.8	32	33	35	40	37	39	41	48

Note:

Using the combination of toolholder 615.243 or 615.240 with 615.283.
 The use of other tool components causes increased unbalance.
 Maximum values for material allowance and feed rate should not be combined.
 All tools are designed with internal coolant.
 All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.
 Over Ø 23.8 use the next tool combination (615.243/.240/.290, see next page).

Wear safety goggles and use protective shields.



Material Group	Boring Depth X	Cutting data Ø 23.8 - 24.8						
		Inserts		Vc [m/min]	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]	
		Order No.	R		Stand.	Max	Ra 1.6	Max.
Low carbon steel	50	655.332	0.8	275	0.25	1.20	0.14	0.25
	60	655.322	0.4	230	0.25	1.00	0.10	0.22
	70	655.312	0.2	180	0.20	0.90	0.06	0.15
	80	655.312	0.2	140	0.20	0.70	0.06	0.13
	90	655.373	0.2	110	0.20	0.70	0.06	0.11
	130	655.373	0.2	25	0.20	0.50	0.06	0.10
Heat treatable steel	50	655.332	0.8	275	0.25	1.20	0.14	0.22
	60	655.322	0.4	230	0.25	1.00	0.10	0.20
	70	655.312	0.2	180	0.20	0.90	0.06	0.13
	80	655.312	0.2	140	0.20	0.70	0.06	0.11
	90	655.373	0.2	110	0.20	0.70	0.06	0.10
	130	655.373	0.2	25	0.20	0.50	0.06	0.09
Stainless-steel	50	655.393	0.8	250	0.25	1.00	0.14	0.20
	60	655.383	0.4	230	0.25	0.90	0.10	0.18
	70	655.383	0.4	180	0.25	0.70	0.10	0.15
	80	655.373	0.2	140	0.20	0.60	0.06	0.10
	90	655.373	0.2	110	0.20	0.60	0.06	0.09
	130	655.373	0.2	25	0.20	0.40	0.06	0.08
Cast Iron	50	655.393	0.8	275	0.25	1.50	0.14	0.28
	60	655.383	0.4	230	0.25	1.20	0.10	0.25
	70	655.383	0.4	180	0.25	1.10	0.10	0.22
	80	655.373	0.2	140	0.20	0.90	0.06	0.14
	90	655.373	0.2	110	0.20	0.80	0.06	0.12
	130	655.373	0.2	25	0.20	0.60	0.06	0.11
Aluminium Alloys	50	655.393	0.8	600	0.25	1.40	0.14	0.30
	60	655.393	0.8	430	0.25	1.20	0.14	0.27
	70	655.393	0.8	350	0.25	1.00	0.14	0.25
	80	655.383	0.4	290	0.25	0.90	0.10	0.20
	90	655.383	0.4	215	0.25	0.80	0.10	0.18
	130	655.373	0.2	90	0.20	0.70	0.06	0.12

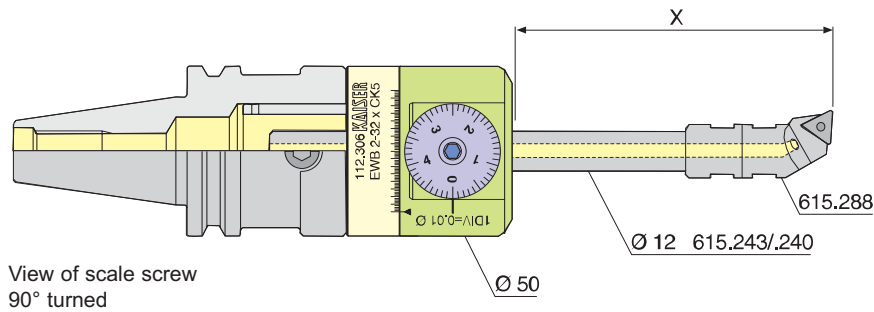
Boring Ø	Setting of the balancing scale							
	615.243/615.290				615.240/615.290			
	R 0.2	R 0.3	R 0.4	R 0.8	R 0.2	R 0.3	R 0.4	R 0.8
23.8	10	12	14	20	9	12	14	22
23.9	12	13	15	21	11	13	15	23
24.0	13	14	16	22	13	15	17	24
24.1	14	16	17	23	14	16	18	26
24.2	15	17	18	24	16	18	20	27
24.3	16	18	19	25	17	19	21	29
24.4	17	19	20	26	19	20	22	30
24.5	19	20	22	27	20	22	24	31
24.6	20	21	23	28	21	23	25	33
24.7	21	22	24	29	23	25	27	34
24.8	22	23	25	31	24	26	28	35

Note:

Using the combination of toolholder 615.243 or 615.240 with 615.290.
 The use of other tool components causes increased unbalance.
 Maximum values for material allowance and feed rate should not be combined.
 All tools are designed with internal coolant.
 All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.
 Over Ø 24.8 use the next tool combination (615.243/.240/.288, see next page).

Wear safety goggles and use protective shields.



Material Group	Boring Depth X	Cutting data Ø 24.8 - 25.8							
		Inserts		Vc [m/min]	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]		
		Order No.	R		Stand.	Max	Ra 1.6	Max.	
Low carbon steel	50	655.332	0.8	290	0.25	1.20	0.14	0.25	
	60	655.322	0.4	235	0.25	1.00	0.10	0.22	
	70	655.312	0.2	190	0.20	0.90	0.06	0.15	
	80	655.312	0.2	145	0.20	0.70	0.06	0.13	
	St37-2	90	655.373	0.2	110	0.20	0.70	0.06	0.11
	St52-3	110	655.373	0.2	65	0.20	0.60	0.06	0.10
1.5752	130	655.373	0.2	25	0.20	0.50	0.06	0.10	
Heat treatable steel	50	655.332	0.8	290	0.25	1.20	0.14	0.22	
	60	655.322	0.4	235	0.25	1.00	0.10	0.20	
	70	655.312	0.2	190	0.20	0.90	0.06	0.13	
	Ck45	80	655.312	0.2	145	0.20	0.70	0.06	0.11
	1.2312	90	655.373	0.2	110	0.20	0.70	0.06	0.10
	1.2343	110	655.373	0.2	65	0.20	0.60	0.06	0.09
1.2083	130	655.373	0.2	25	0.20	0.50	0.06	0.09	
Stainless-steel	50	655.393	0.8	250	0.25	1.00	0.14	0.20	
	60	655.383	0.4	235	0.25	0.90	0.10	0.18	
	70	655.383	0.4	190	0.25	0.70	0.10	0.15	
	1.4301	80	655.373	0.2	145	0.20	0.60	0.06	0.10
	1.4435	90	655.373	0.2	110	0.20	0.60	0.06	0.09
	1.2764	110	655.373	0.2	65	0.20	0.50	0.06	0.08
1.2767	130	655.373	0.2	25	0.20	0.40	0.06	0.08	
Cast Iron	50	655.393	0.8	290	0.25	1.50	0.14	0.28	
	60	655.383	0.4	235	0.25	1.20	0.10	0.25	
	70	655.383	0.4	190	0.25	1.10	0.10	0.22	
	80	655.373	0.2	145	0.20	0.90	0.06	0.14	
	90	655.373	0.2	110	0.20	0.80	0.06	0.12	
	110	655.373	0.2	65	0.20	0.70	0.06	0.11	
130	655.373	0.2	25	0.20	0.60	0.06	0.11		
Aluminium Alloys	50	655.393	0.8	600	0.25	1.40	0.14	0.30	
	60	655.393	0.8	460	0.25	1.20	0.14	0.27	
	70	655.393	0.8	390	0.25	1.00	0.14	0.25	
	80	655.383	0.4	300	0.25	0.90	0.10	0.20	
	90	655.383	0.4	215	0.25	0.80	0.10	0.18	
	110	655.373	0.2	90	0.20	0.70	0.06	0.12	
130	655.373	0.2	45	0.20	0.60	0.06	0.10		

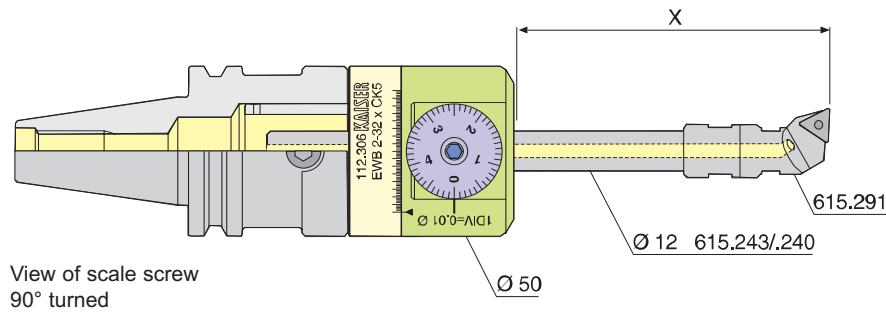
Boring Ø	Setting of the balancing scale							
	615.243/615.288				615.240/615.288			
	R 0.2	R 0.3	R 0.4	R 0.8	R 0.2	R 0.3	R 0.4	R 0.8
24.8	11	13	14	20	10	12	14	22
24.9	12	14	15	21	12	14	16	24
25.0	13	15	16	23	13	15	17	25
25.1	14	16	18	24	15	17	19	26
25.2	16	17	19	25	16	18	20	28
25.3	17	18	20	26	18	20	21	29
25.4	18	19	21	27	19	21	23	30
25.5	19	21	22	28	20	22	24	32
25.6	20	22	23	29	22	24	26	33
25.7	21	23	24	30	23	25	27	34
25.8	22	24	25	31	25	27	28	36
25.9	23	25	26	32	26	28	30	37
26.0	25	26	27	33	27	29	31	38
26.1	26	27	29	34	29	31	33	40
26.2	27	28	30	35	30	32	34	41
26.3	28	29	31	36	32	33	35	42
26.4	29	30	32	37	33	35	37	44
26.5	30	31	33	38	34	36	38	45
26.6	31	32	34	39	36	37	39	46
26.7	32	33	35	40	37	39	41	48
26.8	33	34	36	41	38	40	42	49

Note:

Using the combination of toolholder 615.243 or 615.240 with 615.288.
 The use of other tool components causes increased unbalance.
 Maximum values for material allowance and feed rate should not be combined.
 All tools are designed with internal coolant.
 All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.
 Over Ø 25.8 use the next tool combination (615.243/.240/.291, see next page).

Wear safety goggles and use protective shields.



Material Group	Boring Depth X	Cutting data Ø 25.8 - 27.8						
		Inserts		Vc	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]	
		Order No.	R	[m/min]	Stand.	Max	Ra 1.6	Max.
Low carbon steel	50	655.332	0.8	295	0.25	1.20	0.14	0.25
	60	655.322	0.4	245	0.25	1.00	0.10	0.22
	70	655.312	0.2	195	0.20	0.90	0.06	0.15
	80	655.312	0.2	145	0.20	0.70	0.06	0.13
	90	655.373	0.2	110	0.20	0.70	0.06	0.11
St37-2	110	655.373	0.2	65	0.20	0.60	0.06	0.10
	130	655.373	0.2	25	0.20	0.50	0.06	0.10
	50	655.332	0.8	295	0.25	1.20	0.14	0.22
Heat treatable steel	60	655.322	0.4	245	0.25	1.00	0.10	0.20
	70	655.312	0.2	195	0.20	0.90	0.06	0.13
	80	655.312	0.2	145	0.20	0.70	0.06	0.11
	90	655.373	0.2	110	0.20	0.70	0.06	0.10
	110	655.373	0.2	65	0.20	0.60	0.06	0.09
Ck45	130	655.373	0.2	25	0.20	0.50	0.06	0.09
	50	655.383	0.4	250	0.25	1.00	0.14	0.20
	60	655.383	0.4	245	0.25	0.90	0.10	0.18
Stainless-steel	70	655.383	0.4	195	0.25	0.70	0.10	0.15
	80	655.373	0.2	145	0.20	0.60	0.06	0.10
	90	655.373	0.2	110	0.20	0.60	0.06	0.09
	110	655.373	0.2	65	0.20	0.50	0.06	0.08
	130	655.373	0.2	25	0.20	0.40	0.06	0.08
1.4301	50	655.393	0.8	295	0.25	1.50	0.14	0.28
	60	655.383	0.4	245	0.25	1.20	0.10	0.25
	70	655.383	0.4	195	0.25	1.10	0.10	0.22
	80	655.373	0.2	145	0.20	0.90	0.06	0.14
	90	655.373	0.2	110	0.20	0.80	0.06	0.12
1.4435	110	655.373	0.2	65	0.20	0.70	0.06	0.11
	130	655.373	0.2	25	0.20	0.60	0.06	0.11
	50	655.393	0.8	600	0.25	1.40	0.14	0.30
Aluminium Alloys	60	655.393	0.8	475	0.25	1.20	0.14	0.27
	70	655.393	0.8	400	0.25	1.00	0.14	0.25
	80	655.383	0.4	310	0.25	0.90	0.14	0.20
	90	655.383	0.4	215	0.25	0.80	0.10	0.18
	110	655.373	0.2	90	0.20	0.70	0.06	0.12
130	655.373	0.2	45	0.20	0.60	0.06	0.10	

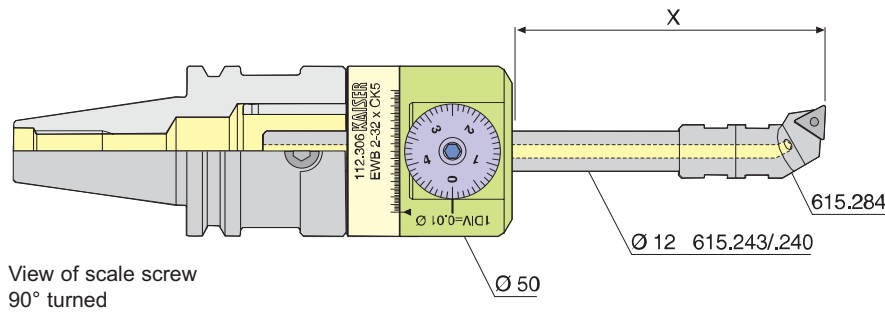
Boring Ø	Setting of the balancing scale							
	615.243/615.291				615.240/615.291			
	R 0.2	R 0.3	R 0.4	R 0.8	R 0.2	R 0.3	R 0.4	R 0.8
25.8	11	13	15	21	10	12	15	22
25.9	12	14	16	22	12	14	16	24
26.0	14	15	17	23	13	15	17	25
26.1	15	16	18	24	15	17	19	27
26.2	16	18	19	25	16	18	20	28
26.3	17	19	20	26	18	20	22	29
26.4	18	20	21	27	19	21	23	31
26.5	19	21	22	28	21	23	25	32
26.6	21	22	23	29	22	24	26	33
26.7	22	23	25	30	24	26	27	35
26.8	23	24	26	31	25	27	29	36
26.9	24	25	27	32	26	28	30	37
27.0	25	26	28	33	28	30	31	39
27.1	26	27	29	34	29	31	33	40
27.2	27	28	30	35	30	32	34	41
27.3	28	29	31	37	32	34	35	43
27.4	29	31	32	38	33	35	37	44
27.5	30	32	33	39	35	36	38	45
27.6	31	33	34	40	36	38	39	47
27.7	32	34	35	41	37	39	41	48
27.8	33	35	36	42	39	40	42	49

Note:

Using the combination of toolholder 615.243 or 615.240 with 615.291.
 The use of other tool components causes increased unbalance.
 Maximum values for material allowance and feed rate should not be combined.
 All tools are designed with internal coolant.
 All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.
 Over Ø 27.8 use the next tool combination (615.243/.240/.284, see next page).

Wear safety goggles and use protective shields.



Material Group	Boring Depth X	Cutting data Ø 27.8 - 32							
		Inserts		Vc [m/min]	Mat'l Allw. (Ø) [mm]		Feed [mm/Rev.]		
		Order No.	R		Stand.	Max	Ra 1.6	Max.	
Low carbon steel	50	655.332	0.8	310	0.25	1.20	0.14	0.25	
	60	655.322	0.4	255	0.25	1.00	0.10	0.22	
	70	655.312	0.2	205	0.20	0.90	0.06	0.15	
	80	655.312	0.2	150	0.20	0.70	0.06	0.13	
	St37-2	90	655.373	0.2	110	0.20	0.70	0.06	0.11
	St52-3	110	655.373	0.2	65	0.20	0.60	0.06	0.10
1.5752	130	655.373	0.2	25	0.20	0.50	0.06	0.10	
Heat treatable steel	50	655.332	0.8	310	0.25	1.20	0.14	0.22	
	60	655.322	0.4	255	0.25	1.00	0.10	0.20	
	70	655.312	0.2	205	0.20	0.90	0.06	0.13	
	80	655.312	0.2	150	0.20	0.70	0.06	0.11	
	Ck45	90	655.373	0.2	110	0.20	0.70	0.06	0.10
	1.2312	110	655.373	0.2	65	0.20	0.60	0.06	0.09
1.2343	130	655.373	0.2	25	0.20	0.50	0.06	0.09	
1.2083									
Stainless-steel	50	655.393	0.8	250	0.25	1.00	0.14	0.20	
	60	655.383	0.4	250	0.25	0.90	0.10	0.18	
	70	655.383	0.4	205	0.25	0.70	0.10	0.15	
	80	655.373	0.2	150	0.20	0.60	0.06	0.10	
	1.4301	90	655.373	0.2	110	0.20	0.60	0.06	0.09
	1.4435	110	655.373	0.2	65	0.20	0.50	0.06	0.08
1.2764	130	655.373	0.2	25	0.20	0.40	0.06	0.08	
1.2767									
Cast Iron	50	655.393	0.8	310	0.25	1.50	0.14	0.28	
	60	655.383	0.4	255	0.25	1.20	0.10	0.25	
	70	655.383	0.4	205	0.25	1.10	0.10	0.22	
	80	655.373	0.2	150	0.20	0.90	0.06	0.14	
	90	655.373	0.2	110	0.20	0.80	0.06	0.12	
	110	655.373	0.2	65	0.20	0.70	0.06	0.11	
130	655.373	0.2	25	0.20	0.60	0.06	0.11		
Aluminium Alloys	50	655.393	0.8	600	0.25	1.40	0.14	0.30	
	60	655.393	0.8	500	0.25	1.20	0.14	0.27	
	70	655.393	0.8	415	0.25	1.00	0.14	0.25	
	80	655.383	0.4	315	0.25	0.90	0.10	0.20	
	90	655.383	0.4	215	0.25	0.80	0.10	0.18	
	110	655.373	0.2	90	0.20	0.70	0.06	0.12	
130	655.373	0.2	45	0.20	0.60	0.06	0.10		

Boring Ø	Setting of the balancing scale							
	615.243/615.284				615.240/615.284			
	R 0.2	R 0.3	R 0.4	R 0.8	R 0.2	R 0.3	R 0.4	R 0.8
27.8	12	13	15	21	11	13	15	23
27.9	13	14	16	22	12	14	16	24
28.0	14	16	17	23	14	16	18	25
28.1	15	17	18	24	15	17	19	27
28.2	16	18	19	25	17	19	21	28
28.3	17	19	20	26	18	20	22	30
28.4	19	20	22	27	20	22	23	31
28.5	20	21	23	28	21	23	25	32
28.6	21	22	24	30	22	24	26	34
28.7	22	23	25	31	24	26	28	35
28.8	23	24	26	32	25	27	29	36
28.9	24	26	27	33	27	29	30	38
29.0	25	27	28	34	28	30	32	39
29.1	26	28	29	35	29	31	33	40
29.2	27	29	30	36	31	33	34	42
29.3	28	30	31	37	32	34	36	43
29.4	29	31	32	38	33	35	37	44
29.5	30	32	33	39	35	37	38	46
29.6	31	33	34	40	36	38	40	47
29.7	33	34	35	41	37	39	41	48
29.8	34	35	36	42	39	41	42	50
29.9	35	36	37	43	40	42	44	51
30.0	36	37	38	44	41	43	45	52
30.1	37	38	39	45	43	45	46	54
30.2	38	39	41	46	44	46	48	55
30.3	39	40	42	47	45	47	49	57
30.4	40	41	43	48	47	49	50	58
30.5	41	42	44	49	48	50	52	59
30.6	42	43	45	50	50	51	53	61
30.7	43	44	46	51	51	53	55	62
30.8	44	45	47	52	52	54	56	64
30.9	45	46	48	53	54	55	57	65
31.0	46	47	49	55	55	57	59	67
31.1	47	48	50	56	56	58	60	68
31.2	48	49	51	57	58	60	62	70
31.3	49	51	52	58	59	61	63	72
31.4	50	52	53	59	61	63	65	73
31.5	51	53	54	60	62	64	66	75
31.6	52	54	55	61	64	66	68	77
31.7	53	55	56	62	65	67	69	78
31.8	54	56	57	63	67	69	71	80
31.9	55	57	58	65	68	70	73	
32.0	57	58	60	66	70	72	74	

Note:

Using the combination of toolholder 615.243 or 615.240 with 615.284.
 The use of other tool components causes increased unbalance.
 Maximum values for material allowance and feed rate should not be combined.
 All tools are designed with internal coolant.
 All values without guarantee!

Safety reference: The cutting speed and the calculated rpm should not exceed max. values.
 Wear safety goggles and use protective shields.