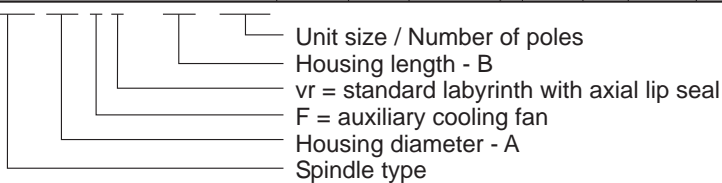


Spindle Style ¹⁾	Attachment			Dimensions [mm]								PG	Power ²⁾ [kW]	Max. Speed ³⁾ [rpm]					
	k	L	M	f	Z	b	SW	D	C	C _F	T			n _B ⁴⁾	n _{max} ⁵⁾				
TSEV 50 x 200 - 071/2 TSEV 50 x 250 - 071/2 TSEV 50 x 315 - 071/2	15,5	V 15		7	8	11,5	13	138	222	326	127	11	0,55	4800	10500 24000				
TSEV 60 x 200 - 080/2		20	M 12 x 1																
TSEV 60 x 250 - 080/2 TSEV 60 x 315 - 080/2 TSEV 60 x 355 - 080/2																			
TSEV 80 x 250 - 090/2 TSEV 80 x 315 - 090/2 TSEV 80 x 355 - 090/2	27,67	V 20		10	9	11,5	17	156	238,5	343,5	138,5	16	1,1	4800	8500 20000				
TSEV 80 x 400 - 090/2		35	M 16 x 1																
TSEV 80 x 500 - 090/2																			
TSEV 80 x 315 - 090/2 TSEV 80 x 355 - 090/2	27,67	V 27		12	12	14,5	24	176	282,5	386,5	151	16	2,2	4800	6500 15000 6500 12000				
TSEV 80 x 400 - 090/2		35	M 20 x 1																
TSEV 80 x 500 - 090/2																			
TSEV 100 x 315 - 112/2 TSEV 100 x 355 - 112/2 TSEV 100 x 400 - 112/2 TSEV 100 x 500 - 112/2 TSEV 100 x 630 - 112/2	38	V 38		12,5	15	17,5	32	218	312,5	406,5	169,5	16	4	4800	5500 10000				
TSEV 100 x 315 - 112/4 TSEV 100 x 355 - 112/4 TSEV 100 x 400 - 112/4 TSEV 100 x 500 - 112/4 TSEV 100 x 630 - 112/4		52,5	M 30 x 1																
TSEV 120 x 355 - 132/2 TSEV 120 x 400 - 132/2 TSEV 120 x 500 - 132/2 TSEV 120 x 800 - 132/2 TSEV 120 x 1000 - 132/2																65	M 36 x 1		
TSEV 120 x 355 - 132/4 TSEV 120 x 400 - 132/4 TSEV 120 x 500 - 132/4 TSEV 120 x 800 - 132/4 TSEV 120 x 1000 - 132/4																		65	M 36 x 1
TSEV 140 x 400 - 132/2 TSEV 140 x 500 - 132/2 TSEV 140 x 630 - 132/2 TSEV 140 x 800 - 132/2 TSEV 140 x 1000 - 132/2																			
TSEV 140 x 400 - 132/4 TSEV 140 x 500 - 132/4 TSEV 140 x 630 - 132/4 TSEV 140 x 800 - 132/4 TSEV 140 x 1000 - 132/4	75			M 40 x 1,5															
TSEV 160 x 400 - 160/4 TSEV 160 x 500 - 160/4		110	M 65 x 1,5																
TSEV 160 x 400 - 160/6 TSEV 160 x 500 - 160/6																			

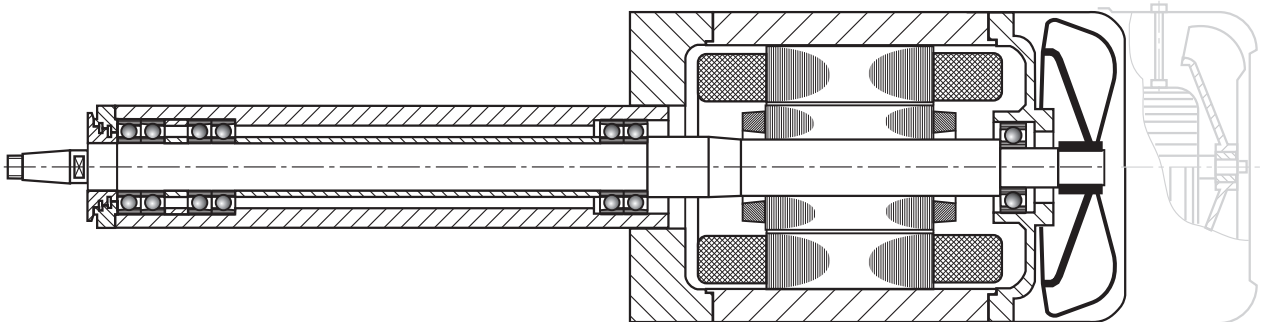


Max. speed for vr, see page 15.

Please state speed range and direction of rotation, see page 35, for information.

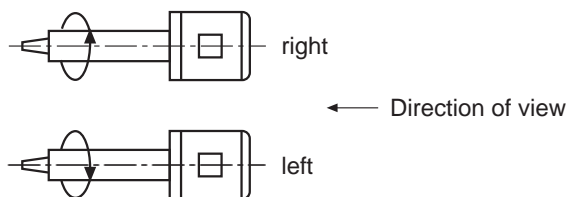
- 1) **Preference types** are in bold.
- 2) Power at 50 Hz.
- 3) Without tool.
Depending on tool design and weight the maximum operating speed may be reduced.
- 4) Max. speed for standard fan.
- 5) Speed for standard bearing application.
Marked = Speed for modified bearing application and if necessary a special motor.

1 mm = 0.03937 in.
1 kW = 1.34102 h.p.



Technical Characteristics

- Spindle powered by an AC induction motor, with IP 54-protection rating, including PTC 145 and KTY 80-134 for over-temperature monitoring
- Precision ball bearing, in a solid arrangement
- Permanent grease lubricated
- External grinding taper
- Capable of operating from direct AC power supply or converter compatible for variable speed operation
- Auxiliary motors, dependent on speed and output power requirements
- The direction of rotation either **R** (right hand) or **L** (left hand) is determined by viewing the spindle from the rear as shown



Ordering data

- Type designation _____ see chart on page 13
- Direction of rotation data _____
Option: From spindle diameter A = 50 deliverable for both direction of rotation types
- Maximum speed from _____ up to _____

Options

- Higher output power with lower decibel levels with an auxiliary cooling fan
- Automatic wheel balancing capabilities for 160 mm and larger, see page 29 / 31
Electronic control, see page 30

Accessories

- Flange
- Puller for flange TSEV
- Balancing quill for flange
- Tool for wheel change
- Storage and transport box
- Power cable

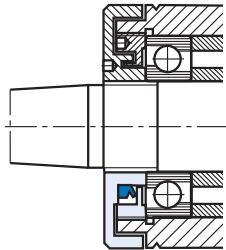
TSEV	Current [A] bei 230V/400V	Cable type
TSEV 50	2,25 / 1,3	SAK 18
TSEV 60	4,3 / 2,5	SAK 18
TSEV 80	7,5 / 4,3	SAK 18
TSEV 100, 2 poles	14 / 8,1	SAK 18
TSEV 100, 4 poles	14,9 / 8,6	SAK 18
TSEV 120, 2 poles	25,1 / 14,5	SAK 33
TSEV 120, 4 poles	26,8 / 15,4	SAK 33
TSEV 140, 2 poles	25,2 / 14,5	SAK 33
TSEV 140, 4 poles	26,8 / 15,4	SAK 33
TSEV 160, 4 poles	37,5 / 21,5	SAK 41
TSEV 160, 6 poles	39 / 22,5	SAK 41

- Thermistor amplifier

Sealing Options

Standard: Labyrinth seal

up to TSAV 100/
TSEV 100



Option: Axial lip seal

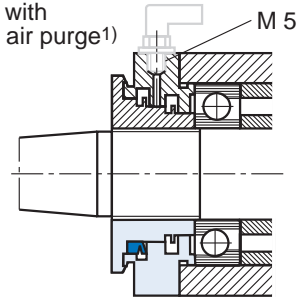
The mechanical labyrinth seal design protects bearing system against the ingress of contamination during operation. The seal can be enhanced by the addition of an air purge port.

Spindle operating plane must be advised at the time of an order.

Contact type seals are available, depend upon maximum speed (see table at right).

Standard: Labyrinth seal with connection for air purge¹⁾

from TSAV 120/
TSEV 120



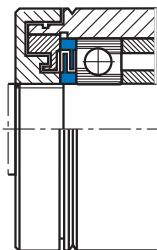
Option: Labyrinth seal with axial lip seal

Spindle Style	Speed limit (Sliding seal) [rpm]
TSAV 40	6300
TSAV 50/ TSEV 50	5000
TSAV 60/ TSAV 60	4100
TSAV 80/ TSEV 80	3100
TSAV 100/ TSEV 100	2400
TSAV 120/ TSEV 120	1700
TSAV 140/ TSEV 140	1600
TSAV 160/ TSEV 160	1300
TSAV 200	1000

¹⁾ Please note: The fitting is not part of the standard shipment.

Option

from TSA 50/
TSI 50/
TSP 50

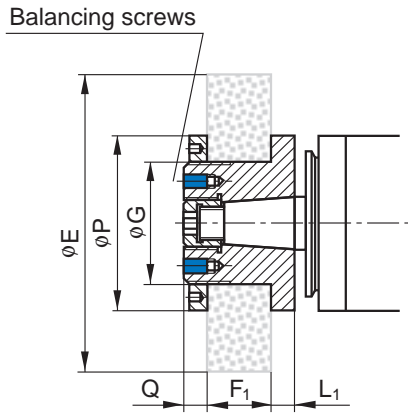


Sealing shields

Closely machined sealing shields can be incorporated into the TSA, TSI and TSP style spindles, to improve the sealing effects of the standard labyrinth seals.

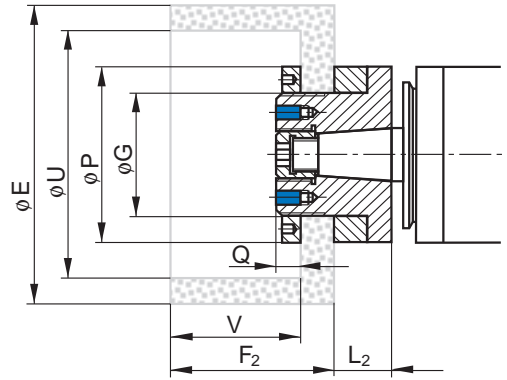
Radial stiffness will be slightly reduced.

Fig. 1



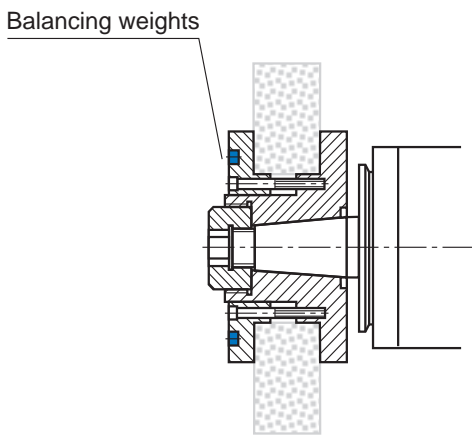
Flange style MS

Fig. 2



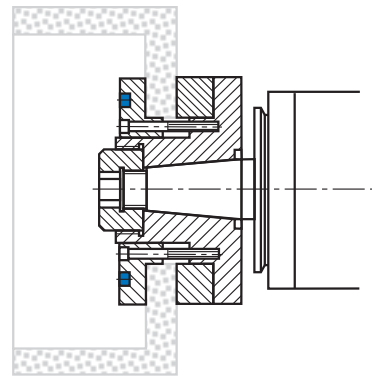
Flange style MS

Fig. 3



Flange style SN

Fig. 4

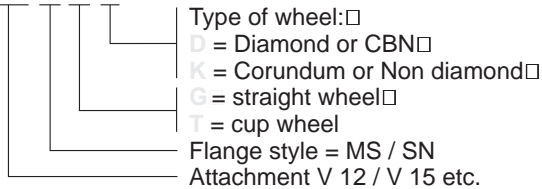


Flange style SN

Spindle Style □	Attachment	Fig.	Flange dimensions [mm]						Grinding wheel [mm]						Max. speed ²⁾ ($v_c = 35$ m/s) [rpm]
			P	Q	L ₁	L ₂	W	Z	E	G ¹⁾	Straight wheel F ₁ (Spannbereich)	Cup wheel F ₂	U	V	
TSAV 40	V 12	1+2	40	6	6	14	---	---	100	25	16 (11-16)	50	90	42	6600
		1	40	6	6	---	---	---	80	25	16 (11-16)	---	---	---	8300
TSAV 50/ TSEV 50	V 15	1+2	50	6	9	19	---	---	125	32	20 (14-20)	63	110	53	5300
		1	50	6	9	---	---	---	100	32	20 (14-20)	---	---	---	6600
TSAV 60/ TSEV 60	V 20	1+2	60	7	9	21	38	8	150	40	25 (17-25)	80	130	67	4400
		2	60	7	9	---	38	8	125	40	25 (17-25)	---	---	---	5300
TSAV 80/ TSEV 80	V 27	1+2	80	9	10	22	49	8	200	51	32 (21-32)	100	170	80	3300
		2	80	9	10	---	49	8	150	51	32 (21-32)	---	---	---	4400
TSAV 100/ TSEV 100	V 38	3+4	110	13	13	28	---	---	250	76	40 (20-40)	125	190	100	2600
		1+2	110	13,5	13	30	75	10,5	175	76	40 (30-40)	---	---	---	3800
TSAV 120/ TSEV 120	V 52	3+4	165	16	16	44	---	---	350	127	160 (25-60)	150	235	118	1900
		1	120	15	16	---	---	---	200	76	60 (45-60)	---	---	---	3300
TSAV 140/ TSEV 140	V 56	3+4	180	18	18	46	---	---	450	127	60 (32-60)	150	260	118	1400
		1	140	14	18	---	---	---	250	76	60 (46-60)	---	---	---	2600
TSAV 160/ TSEV 160	V 87	3+4	270	22	22	---	---	---	600	203	80 (40-80)	---	---	---	1100
TSAV 200	V 87	3+4	270	22	22	---	---	---	600	203	80 (40-80)	---	---	---	1100

Ordering Information: □

Flange V □ / □ / □ / □



Puller for flange V 12 / V 15 etc.

Balancing quill for flange V 12 / V 15 etc.

1) Wheel bore fits:

Corundum or Non diamond: G_{f7}

Diamond or CBN: G_{h4}

2) Wheel selection must be in accordance with the manufacturer's recommendation for maximum speed. Compliance with ANSI Safety Requirements B 7.1 must be adhered to.

TSAV / TSEV 50 - 80:

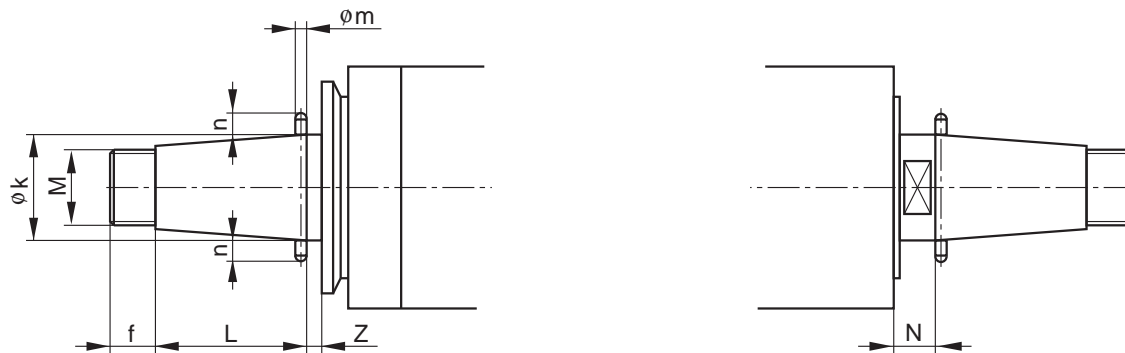
- Flange style MS (Fig. 1, 2):
Option: anti-rotation slot

From TSAV / TSEV 100:

- Flange style SN (Fig. 3, 4):
Standard: anti-rotation slot

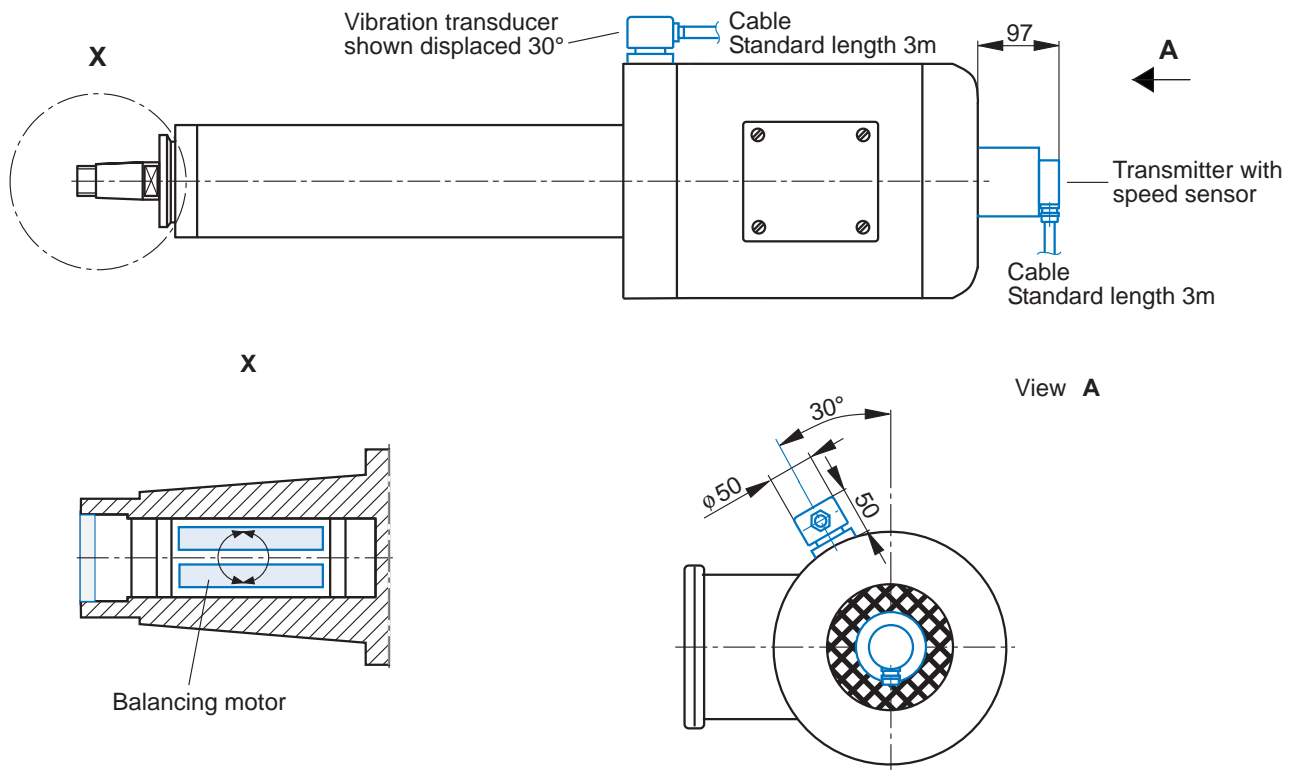
Please state direction of rotation, see page 35, for information.

1 mm = 0.03937 in.
1 m = 1.09361 yd.



Spindle Style	Attachment	Attachment dimensions [mm]			Dimensions [mm]				
		k	L	M	f	m	n	Z	N
TSAV 40	V 12	12,83	15	M 10 x 1	7				
TSAV 50	V 15	15,5	20	M 12 x 1	7	3	3	3	8
TSAV 60	V 20	20	25	M 16 x 1	10	3	3	3	9
TSAV 80	V 27	27,67	35	M 20 x 1	12	4	3	4	12
TSAV 100	V 38	38	52,5	M 30 x 1	12,5	5	4	4	15
TSAV 120	V 52	52	65	M 36 x 1	17,5	6	5	5	18
TSAV 140	V 56	56	75	M 40 x 1,5	17,5	6	5	5	18
TSAV 160	V 87	87	110	M 65 x 1,5	20	8	6	6	21
TSAV 200	V 87	87	110	M 65 x 1,5	20	8	6	6	24
TSEV 50	V 15	15,5	20	M 12 x 1	7	3	3	8	
TSEV 60	V 20	20	25	M 16 x 1	10	3	3	9	
TSEV 80	V 27	27,67	35	M 20 x 1	12	4	3	12	
TSEV 100	V 38	38	52,5	M 30 x 1	12,5	5	4	15	
TSEV 120	V 52	52	65	M 36 x 1	17,5	6	5	18	
TSEV 140	V 52	56	75	M 40 x 1,5	17,5	6	5	18	
TSEV 160	V 87	87	110	M 65 x 1,5	20	8	6	24	

1 mm = 0.03937 in.



Electromechanical balancing system TSEV-Spindles with Housing diameter 160 mm

TSEV 160 x 400 - ...
TSEV 160 x 500 - ...

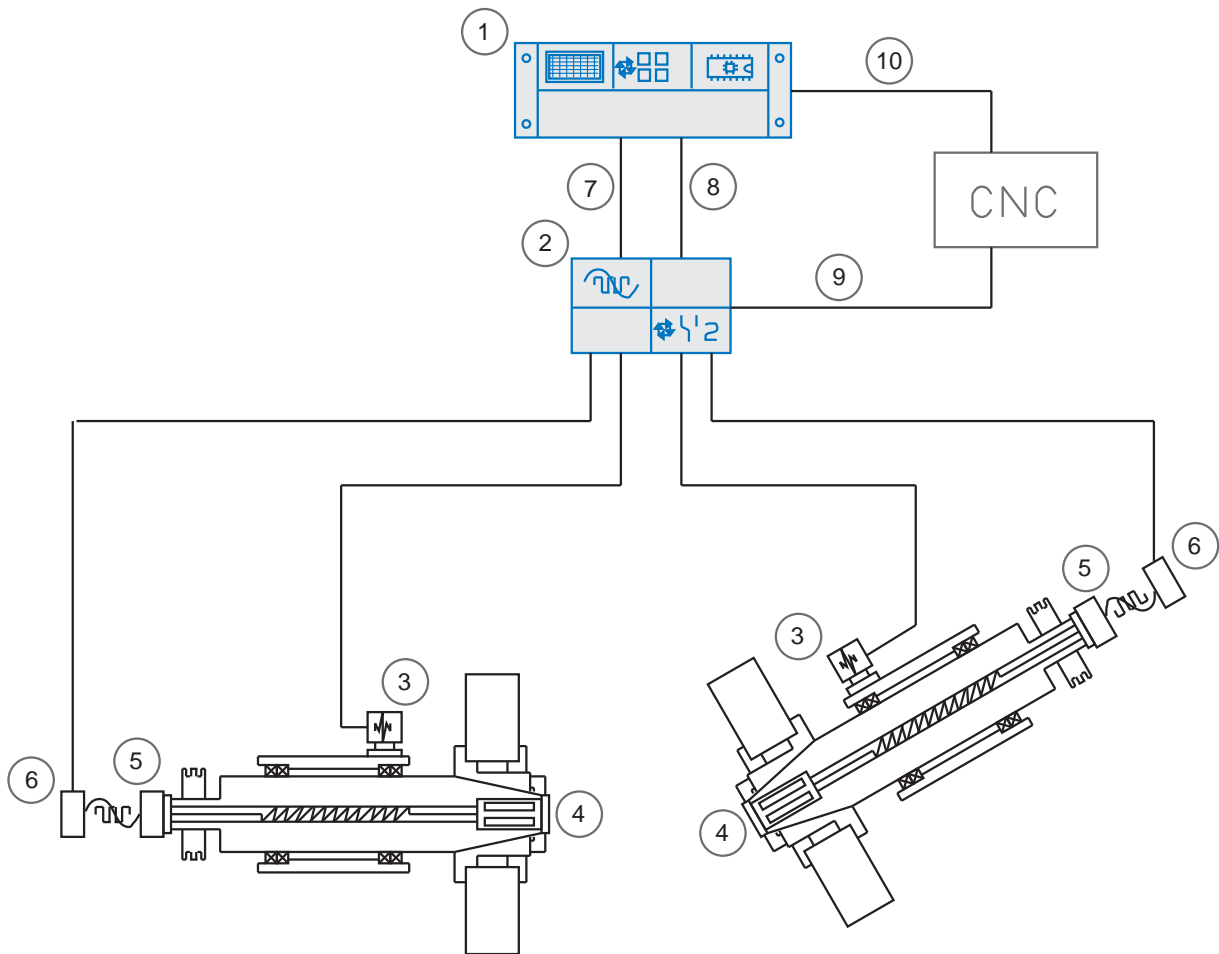
consisting of:

- Balancing motor
- Vibration transducer
- Transmitter with speed sensor

Options: • Extension cable for vibration transducer
• Extension cable for balancing motor

Electronic control, see page 30

Automatic Balancing System



- ① Electronic control
- ② Multiplexer is required for multi spindle machines

Included in the delivery of the spindle:

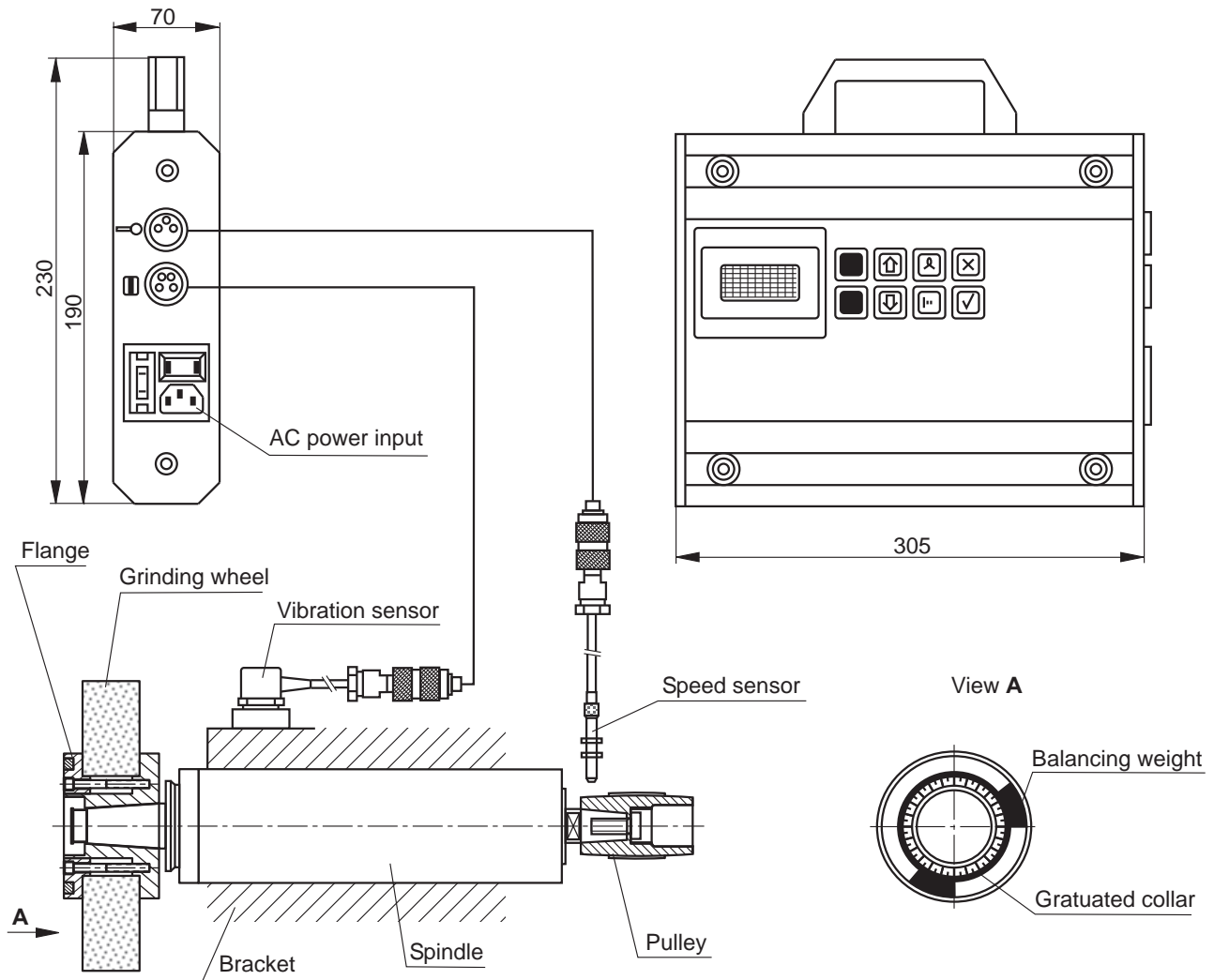
- ③ Vibration transducer with 3m cable
Option: Extension cable
- ④ Internal balancing sensor
- ⑤ Receiver
- ⑥ Transmitter with integrated speed sensor
3m cable
Option: Extension cable

Accessories:

- ⑦ Extension cable
- ⑧ Extension cable
- ⑨ Extension cable

Please state length when ordering.

Portable Unit For Manual Balancing



Every rotating part incorporates a degree of unbalance, which causes sinuous vibration during rotation.

To reduce the effect of unbalancing forces, the unbalancing mass of all rotating parts has to be limited. Shafts and all rotating components of GMN high precision spindles are always balanced. As a result of higher cutting speeds this process is also required for tools. For large spindles automatic balancing systems are available. We recommend the portable balancing system for smaller spindles.

Process

- The vibration transducer with a magnetic base is attached to either the spindle housing or mounting bracket
- Speed sensor must be positioned to read the speed of the spindle
- Portable unit automatically:
 - Records the spindle speed
 - Records vibration levels
 - Indicates the amount and position of unbalance
 - Calculates and indicates the corrected results
- To fix the balancing weight
- Control and if necessary correction