



ELMA
Your Solution Partner

KNOBS

BEAUTIFUL, RUGGED AND FUNCTIONAL KNOBS FOR EVERY APPLICATION

MULTI ROTARY SWITCHES
CODED SWITCHES
ENCODER SWITCHES
SELECTOR SWITCHES
AUDIO SOLUTIONS
KNOBS

K1 METAL KNOBS

- › Robust solid aluminum design (RoHS compliant)
- › For D-shape and round shafts
- › Anodized surface, scratch resistant, electrically non conducting
- › Customized designs and colors on request

CLASSIC COLLET KNOBS

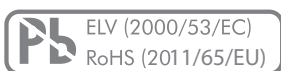
- › Precise quality knobs
- › Secure collet mounting
- › Wide variety
- › Lots of accessories
- › Customized colors on request

SOFT TOUCH COLLET KNOBS

- › Ergonomic „soft touch“ finish
- › Secure collet mounting

PUSH-ON KNOBS

- › „Soft touch“ or hard surface finish
- › Cost effective choice

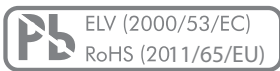


TYPE COMPARISON

FEATURES/ KNOB TYPE	K1 METAL KNOBS	CLASSIC COLLET KNOBS	SOFT TOUCH COLLET KNOBS	PUSH-ON KNOBS
Shaft mounting	Set screw tightening	Collet	Collet	Push-on
Diameter	18, 31.8, 39, 19, 27, 40.5, 44.4, 36 mm	9, 10, 14.5, 21, 28, 36 or 45 mm	15, 21 mm	15, 16 mm
Shaft style/diameter	Round or D-shape Ø 3, 4, 6 mm, 1/8" or 1/4"	Round; 2, 3, 4, 6 mm, 1/8" or 1/4"	Round; 4, 6 mm or 1/4"	D-shape; 6 mm
Surface	Glossy	Glossy or matt	Soft touch	Soft touch or plastic surface finish
Knob color	Natural aluminum or black	Gray or black	Black	Black
Knob Line	No	Yes/no	Yes/no	No
Cap color	-	Gray, black, red, blue, yellow, green	Black	Black
Alternative knob style	-	Wing or crank	-	-
Accessories	-	<ul style="list-style-type: none"> ■ Locking set ■ Anti-slip bracket ■ Slotted nut ■ Mounting aid 	-	-
Tool	Allen key 1.3 mm	Mounting tool for slotted nut	Mounting tool for slotted nut	-
SEE PAGE	4-5	6-16	17	18-19

MAIN FEATURES

- Robust solid aluminum design (RoHS compliant)
- For D-shape and round shafts
- Anodized surface, scratch resistant, electrically non-conducting
- Customized designs and colors on request



PRODUCT VARIETY

- Knob designs: Shape, Shaper, Dimple, Pure, Robot, Space, Cone, Medic
- Shaft diameter (standard): 6 mm
- Anodized surface
- Black or natural color

CONTENT OF STANDARD PACKAGING

- 20 pcs. for Shaper, Robot, Space, Dimple, Cone, Medic
- 40 pcs. for Shape or Pure
- 1 pc. allen key M2,5 x 4 mm per knob
- 1 pc. allen key 1,3 mm

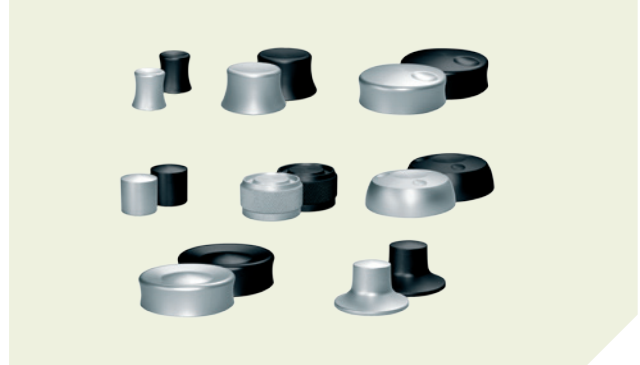


20 pcs. for Shaper, Robot, Space, Dimple, Cone, Medic



40 pcs. for Shape or Pure

K1 METAL KNOBS



POSSIBLE CUSTOMIZATIONS

- Knob-Design
- Shaft diameter 3 mm; 3.18 mm (1/8"); 4 mm; 6,35 mm (1/4")
- Colors:

red	
gold	
green	
light blue	
dark blue	


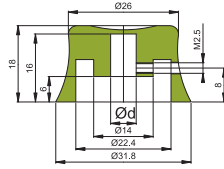

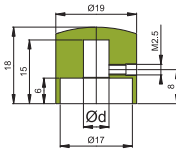
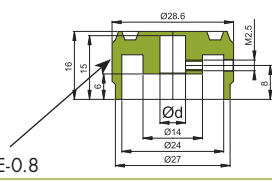
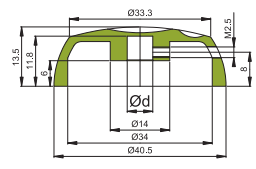
Additional colors available on request

SPARE PARTS

DESCRIPTION	QUANTITY	PART NUMBER
Allen key 1,3 mm	1 pc.	K1-HEXKEY
Allen key M2.5x4 mm	1 pc.	5404-32

ADDITIONAL INFORMATION

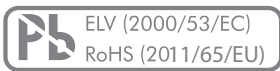
- Note: Tighten the setscrew carefully, max. torque 0,2 Nm

		SHAFT DIAMETER $\varnothing d \begin{smallmatrix} +0,028 \\ +0,010 \end{smallmatrix}$ *stock type	PART NUMBER NATURAL / SILVER BLACK	
SHAPE 		3 mm	K1-SH-S30	K1-SH-B30
		3,18 mm (1/8")	K1-SH-S32	K1-SH-B32
		4 mm	K1-SH-S40	K1-SH-B40
		*6 mm	K1-SH-S60	K1-SH-B60
		6,35 mm (1/4")	K1-SH-S64	K1-SH-B64
SHAPER 		3 mm	K1-SR-S30	K1-SR-B30
		3,18 mm (1/8")	K1-SR-S32	K1-SR-B32
		4 mm	K1-SR-S40	K1-SR-B40
		*6 mm	K1-SR-S60	K1-SR-B60
		6,35 mm (1/4")	K1-SR-S64	K1-SR-B64
DIMPLE 		3 mm	K1-DM-S30	K1-DM-B30
		3,18 mm (1/8")	K1-DM-S32	K1-DM-B32
		4 mm	K1-DM-S40	K1-DM-B40
		*6 mm	K1-DM-S60	K1-DM-B60
		6,35 mm (1/4")	K1-DM-S64	K1-DM-B64
PURE 		3 mm	K1-PR-S30	K1-PR-B30
		3,18 mm (1/8")	K1-PR-S32	K1-PR-B32
		4 mm	K1-PR-S40	K1-PR-B40
		*6 mm	K1-PR-S60	K1-PR-B60
		6,35 mm (1/4")	K1-PR-S64	K1-PR-B64
ROBOT  <p>Cross knurl DIN81 RGE-0.8</p>		3 mm	K1-RB-S30	K1-RB-B30
		3,18 mm (1/8")	K1-RB-S32	K1-RB-B32
		4 mm	K1-RB-S40	K1-RB-B40
		*6 mm	K1-RB-S60	K1-RB-B60
		6,35 mm (1/4")	K1-RB-S64	K1-RB-B64
SPACE 		3 mm	K1-SC-S30	K1-SC-B30
		3,18 mm (1/8")	K1-SC-S32	K1-SC-B32
		4 mm	K1-SC-S40	K1-SC-B40
		*6 mm	K1-SC-S60	K1-SC-B60
		6,35 mm (1/4")	K1-SC-S64	K1-SC-B64
CONE 		3 mm	K1-CN-S30	K1-CN-B30
		3,18 mm (1/8")	K1-CN-S32	K1-CN-B32
		4 mm	K1-CN-S40	K1-CN-B40
		*6mm	K1-CN-S60	K1-CN-B60
		6,35 mm (1/4")	K1-CN-S64	K1-CN-B64
MEDIC 		3 mm	K1-MD-S30	K1-MD-B30
		3,18 mm (1/8")	K1-MD-S32	K1-MD-B32
		4 mm	K1-MD-S40	K1-MD-B40
		*6 mm	K1-MD-S60	K1-MD-B60
		6,35 mm (1/4")	K1-MD-S64	K1-MD-B64

Tolerances unless otherwise specified: DIN ISO 2768-m

MAIN FEATURES

- > Precise quality knobs
- > Secure collet mounting
- > Wide variety
- > Lots of accessories
- > Customized colors on request

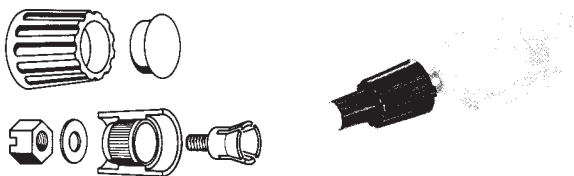


PRODUCT VARIETY

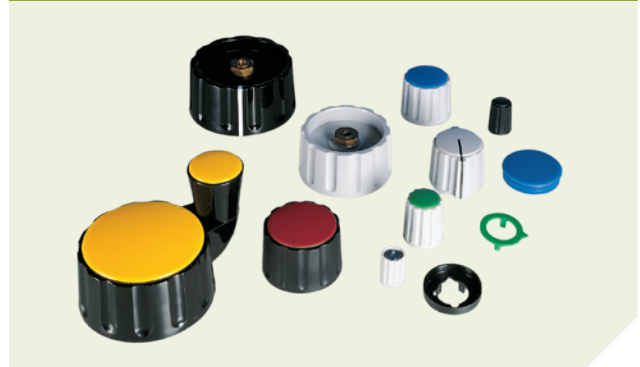
- Knob size 9 to 45 mm
- Shaft diameter: 2 mm to 1/4"
- Glossy or matt surface
- Knob color black or gray
- Various cap colors
- With or without line
- Various accessories

POSSIBLE CUSTOMIZATIONS

- Color
- Shaft diameter



CLASSIC COLLET KNOBS



INTRODUCTION

Elma classic collet knobs are available in 7 different diameters. Knobs with diameters of 10 to 28 mm are stocked in two versions; with and without wings. Both versions are available with a line as an option. The knobs are fixed onto the shafts by means of the proven collet tightening method.

The tightening elements for knobs with diameters of 10 mm and 14.5 mm are hidden from view by nut covers. For the larger knob types, concealment of these elements is ensured by the special Elma design.

Furthermore, two different switches can be operated by inserting one knob on top of the other (concentric style). Knobs with diameters of 14.5 to 36 mm are designed to enable the next smallest knob to fit onto it. When dual knobs are used, the larger of the two must be equipped with a collet with through-hole.

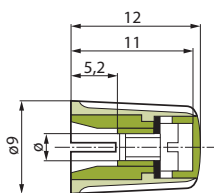
CLASSIC COLLET KNOBS OVERVIEW

Knob size vs. shaft diameter, wing and crank style

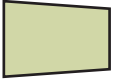
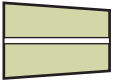
SHAFT Ø	KNOBS SIZE						
	Ø 9 mm	Ø 10 mm	Ø 14.5 mm	Ø 21 mm	Ø 28 mm	Ø 36 mm	Ø 45 mm
2 mm	x	x					
3 mm	x	x	x				
4 mm		x	x	x			
6 mm			x	x	x	x	x
1/8"	x	x	x				
1/4"			x	x	x	x	x
Wing knob		x	x	x	x		
Crank knob							x
SEE PAGE	117	118	119	120	121	122	123

KNOB SIZE: Ø 9 mm

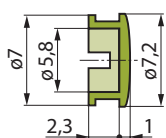
Tolerances unless otherwise specified DIN ISO 2768-1 (m)





KNOB

TYPE	FOR SHAFT Ø	GRAY		BLACK	
		MATT	GLOSSY	MATT	GLOSSY
Without line 	2	020-1015	020-1010	020-1025	020-1020
	3	020-1115	020-1110	020-1125	020-1120
	1/8"	020-1215	020-1210	020-1225	020-1220
With line 	2	021-1015	021-1010	021-1025	021-1020
	3	021-1115	021-1110	021-1125	021-1120
	1/8"	021-1215	021-1210	021-1225	021-1220

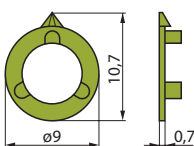
Packaging size: 100 pcs.



CAP

TYPE	SURFACE	GRAY	BLACK	RED	BLUE	YELLOW	GREEN
Without line 	Matt	040-1015	040-1025	040-1035	040-1045	040-1055	040-1065
	Glossy	040-1010	040-1020	040-1030	040-1040	040-1050	040-1060
With line 	Matt	040-1615	040-1625	040-1635	040-1645	040-1655	040-1665
	Glossy	040-1610	040-1620	040-1630	040-1640	040-1650	040-1660

Packaging size: 100 pcs.



POINTER

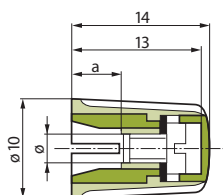
SURFACE	GRAY	BLACK	RED	BLUE	YELLOW	GREEN
Matt	041-1015	041-1025	041-1035	041-1045	041-1055	041-1065
Glossy	041-1010	041-1020	041-1030	041-1040	041-1050	041-1060

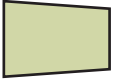
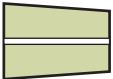
Packaging size: 100 pcs.

KNOB SIZE: Ø 10mm

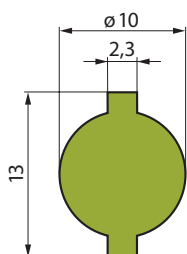
Tolerances unless otherwise specified DIN ISO 2768-1 (m)

KNOB

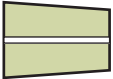


TYPE	α	FOR SHAFT Ø	GRAY		BLACK	
			MATT	GLOSSY	MATT	GLOSSY
Without line 	4.5	2	020-2015	020-2010	020-2025	020-2020
	5.2	3	020-2115	020-2110	020-2125	020-2120
	5.2	1/8"	020-2215	020-2210	020-2225	020-2220
	5.2	4	020-2315	020-2310	020-2325	020-2320
With line 	4.5	2	021-2015	021-2010	021-2025	021-2020
	5.2	3	021-2115	021-2110	021-2125	021-2120
	5.2	1/8"	021-2215	021-2210	021-2225	021-2220
	5.2	4	021-2315	021-2310	021-2325	021-2320

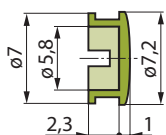
Packaging size: 100 pcs.





WING KNOB

TYPE	α	FOR SHAFT Ø	GRAY		BLACK	
			MATT	GLOSSY	MATT	GLOSSY
With line 	4.5	2	023-2015	023-2010	023-2025	023-2020
	5.2	3	023-2115	023-2110	023-2125	023-2120
	5.2	1/8"	023-2215	023-2210	023-2225	023-2220
	5.2	4	023-2315	023-2310	023-2325	023-2320

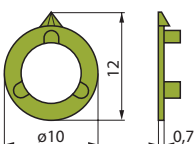
Packaging size: 100 pcs.



CAP

TYPE	SURFACE	GRAY	BLACK	RED	BLUE	YELLOW	GREEN
		Without line 	Matt	040-1015	040-1025	040-1035	040-1045
	Glossy	040-1010	040-1020	040-1030	040-1040	040-1050	040-1060
With line 	Matt	040-1615	040-1625	040-1635	040-1645	040-1655	040-1665
	Glossy	040-1610	040-1620	040-1630	040-1640	040-1650	040-1660

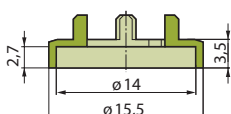
Packaging size: 100 pcs.





POINTER

SURFACE	GRAY	BLACK	RED	BLUE	YELLOW	GREEN
Matt	041-2015	041-2025	041-2035	041-2045	041-2055	041-2065
Glossy	041-2010	041-2020	041-2030	041-2040	041-2050	041-2060

Packaging size: 100 pcs.



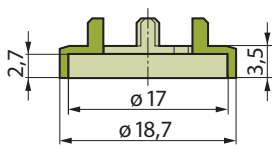
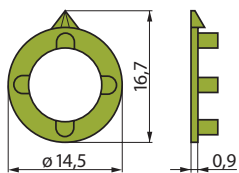
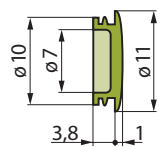
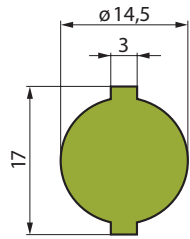
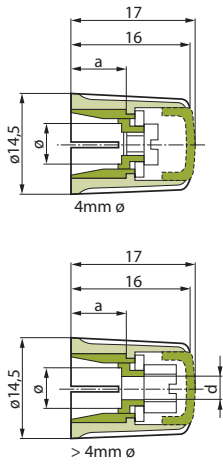
NUT COVER

TYPE	SURFACE	GRAY	BLACK
		Without line 	Matt
	Glossy	044-2010	044-2020
With line 	Matt	044-2115	044-2125
	Glossy	044-2110	044-2120

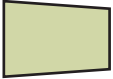
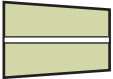
Packaging size: 100 pcs.

KNOB SIZE: Ø 14.5 mm

Tolerances unless otherwise specified DIN ISO 2768-1 (m)

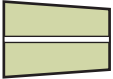


KNOB

TYPE	α	d	FOR SHAFT Ø	GRAY		BLACK	
				MATT	GLOSSY	MATT	GLOSSY
Without line 	5.2	-	3	020-3115	020-3110	020-3125	020-3120
	5.2	-	1/8"	020-3215	020-3210	020-3225	020-3220
	5.2	-	4	020-3315	020-3310	020-3325	020-3320
	7.0	3.2	6	020-3415	020-3410	020-3425	020-3420
With line 	7.0	3.2	1/4"	020-3515	020-3510	020-3525	020-3520
	5.2	-	3	021-3115	021-3110	021-3125	021-3120
	5.2	-	1/8"	021-3215	021-3210	021-3225	021-3220
	5.2	-	4	021-3315	021-3310	021-3325	021-3320
	7.0	3.2	6	021-3415	021-3410	021-3425	021-3420
	7.0	3.2	1/4"	021-3515	021-3510	021-3525	021-3520

Packaging size: 100 pcs.

WING KNOB

TYPE	α	d	FOR SHAFT Ø	GRAY		BLACK	
				MATT	GLOSSY	MATT	GLOSSY
With line 	5.2	-	3	023-3115	023-3110	023-3125	023-3120
	5.2	-	1/8"	023-3215	023-3210	023-3225	023-3220
	5.2	-	4	023-3315	023-3310	023-3325	023-3320
	7.0	3.2	6	023-3415	023-3410	023-3425	023-3420
	7.0	3.2	1/4"	023-3515	023-3510	023-3525	023-3520

Packaging size: 100 pcs.

CAP

TYPE	SURFACE	GRAY	BLACK	RED	BLUE	YELLOW	GREEN
		Without line 	Matt	040-3015	040-3025	040-3035	040-3045
With line 	Glossy	040-3010	040-3020	040-3030	040-3040	040-3050	040-3060
	Matt	040-3615	040-3625	040-3635	040-3645	040-3655	040-3665
	Glossy	040-3610	040-3620	040-3630	040-3640	040-3650	040-3660




Packaging size: 100 pcs.

POINTER

SURFACE	GRAY	BLACK	RED	BLUE	YELLOW	GREEN
Matt	041-3015	041-3025	041-3035	041-3045	041-3055	041-3065
Glossy	041-3010	041-3020	041-3030	041-3040	041-3050	041-3060

Packaging size: 100 pcs.

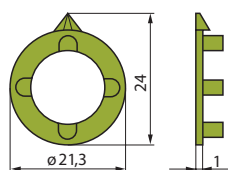
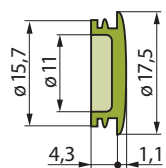
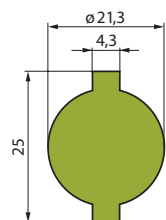
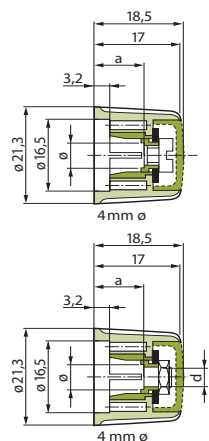
NUT COVER

TYPE	SURFACE	GRAY	BLACK	RED
		Without line 	Matt	044-3015
	Glossy	044-3010	044-3020	044-3030
	With line 	Matt	044-3115	044-3125
	Glossy	044-3110	044-3120	044-3130
	Only for wing knob 	Matt	044-3215	044-3225
	Glossy	044-3210	044-3220	044-3230

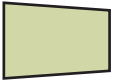
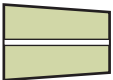
Packaging size: 100 pcs.

KNOB SIZE: Ø 21 mm

Tolerances unless otherwise specified DIN ISO 2768-1 (m)




KNOB

TYPE	a	d	FOR SHAFT Ø	GRAY		BLACK	
				MATT	GLOSSY	MATT	GLOSSY
Without line	8.3	-	4	020-4315	020-4310	020-4325	020-4320
	10	4.05	6	020-4415	020-4410	020-4425	020-4420
With line	8.3	-	4	021-4315	021-4310	021-4325	021-4320
	10	4.05	6	021-4415	021-4410	021-4425	021-4420
	10	3.2	1/4"	021-4515	021-4510	021-4525	021-4520



Packaging size: 100 pcs.

WING KNOB

TYPE	a	d	FOR SHAFT Ø	GRAY		BLACK	
				MATT	GLOSSY	MATT	GLOSSY
With line	8.3	-	4	023-4315	023-4310	023-4325	023-4320
	10	4.05	6	023-4415	023-4410	023-4425	023-4420
	10	3.2	1/4"	023-4515	023-4510	023-4525	023-4520

Packaging size: 100 pcs.

CAP

TYPE	SURFACE	GRAY	BLACK	RED	BLUE	YELLOW	GREEN
		Without line	Matt	040-4015	040-4025	040-4035	040-4045
	Glossy	040-4010	040-4020	040-4030	040-4040	040-4050	040-4060
With line	Matt	040-4615	040-4625	040-4635	040-4645	040-4655	040-4665
	Glossy	040-4610	040-4620	040-4630	040-4640	040-4650	040-4660

Packaging size: 100 pcs.

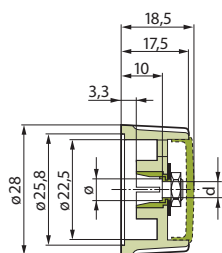
POINTER

SURFACE	GRAY	BLACK	RED	BLUE	YELLOW	GREEN
Matt	041-4015	041-4025	041-4035	041-4045	041-4055	041-4065
Glossy	041-4010	041-4020	041-4030	041-4040	041-4050	041-4060


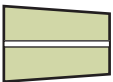
Packaging size: 100 pcs.

KNOB SIZE: Ø 28 mm

Tolerances unless otherwise specified DIN ISO 2768-1 (m)

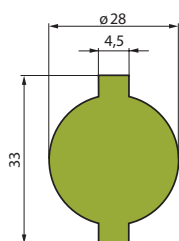


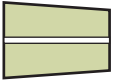
KNOB

TYPE	d	FOR SHAFT Ø	GRAY		BLACK	
			MATT	GLOSSY	MATT	GLOSSY
Without line 	4.05	6	020-5415	020-5410	020-5425	020-5420
	3.2	1/4"	020-5515	020-5510	020-5525	020-5520
With line 	4.05	6	021-5415	021-5410	021-5425	021-5420
	3.2	1/4"	021-5515	021-5510	021-5525	021-5520

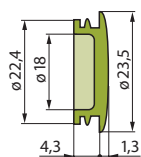
Packaging size: 100 pcs.

WING KNOB



TYPE	d	FOR SHAFT Ø	GRAY		BLACK	
			MATT	GLOSSY	MATT	GLOSSY
With line 	4.05	6	023-5415	023-5410	023-5425	023-5420
	3.2	1/4"	023-5515	023-5510	023-5525	023-5520

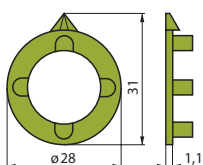
Packaging size: 100 pcs.



CAP

TYPE	SURFACE	GRAY	BLACK	RED	BLUE	YELLOW	GREEN
		Without line 	Matt	040-5015	040-5025	040-5035	040-5045
	Glossy	040-5010	040-5020	040-5030	040-5040	040-5050	040-5060
With line 	Matt	040-5615	040-5625	040-5635	040-5645	040-5655	040-5665
	Glossy	040-5610	040-5620	040-5630	040-5640	040-5650	040-5660

Packaging size: 100 pcs.



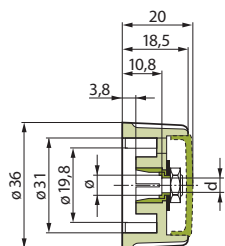
POINTER

SURFACE	GRAY	BLACK	RED	BLUE	YELLOW	GREEN
Matt	041-5015	041-5025	041-5035	041-5045	041-5055	041-5065
Glossy	041-5010	041-5020	041-5030	041-5040	041-5050	041-5060


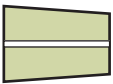
Packaging size: 100 pcs.

KNOB SIZE: Ø 36mm

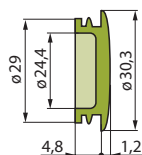
Tolerances unless otherwise specified DIN ISO 2768-1 (m)



KNOB

TYPE	d	FOR SHAFT Ø	GRAY		BLACK	
			MATT	GLOSSY	MATT	GLOSSY
Without line 	4.05	6	020-6415	020-6410	020-6425	020-6420
	3.2	1/4"	020-6515	020-6510	020-6525	020-6520
With line 	4.05	6	021-6415	021-6410	021-6425	021-6420
	3.2	1/4"	021-6515	021-6510	021-6525	021-6520

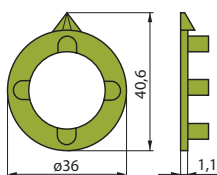
Packaging size: 50 pcs.



CAP

TYPE	SURFACE	GRAY	BLACK	RED
		Without line 	Matt	040-6015
	Glossy	040-6010	040-6020	040-6030
With line 	Matt	040-6615	040-6625	040-6635
	Glossy	040-6610	040-6620	040-6630

Packaging size: 100 pcs.



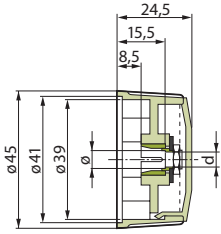
POINTER

SURFACE	GRAY	BLACK	RED
Matt	041-6015	041-6025	041-6035
Glossy	041-6010	041-6020	041-6030


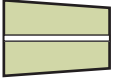
Packaging size: 100 pcs.

KNOB SIZE: Ø 45 mm

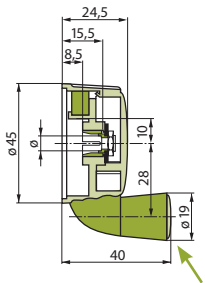
Tolerances unless otherwise specified DIN ISO 2768-1 (m)




KNOB

TYPE	d	FOR SHAFT Ø	GRAY GLOSSY	BLACK GLOSSY
Without line	4.05	6	020-7410	020-7420
	3.2	1/4"	020-7510	020-7520
With line	4.05	6	021-7410	021-7420
	3.2	1/4"	021-7510	021-7520

Packaging size: 50 pcs.

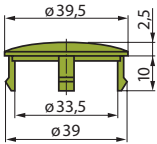


CRANK KNOB

TYPE	d	FOR SHAFT Ø	GRAY GLOSSY	BLACK GLOSSY
	4.05	6	020-8410	020-8420

Packaging size: 40 pcs.

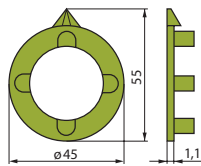
Use cap for 21 mm knobs



CAP

TYPE	SURFACE	GRAY	BLACK	RED
Without line	Glossy	040-8010	040-8020	040-8030
				

Packaging size: 100 pcs.



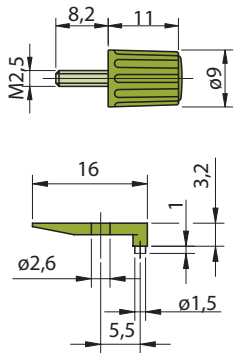
POINTER

SURFACE	GRAY	BLACK	RED
Glossy	041-7110	041-7120	041-7130

Packaging size: 100 pcs.

KNOB PROGRAM ACCESSORIES

Tolerances unless otherwise specified DIN ISO 2768-1 (m)

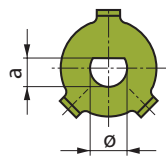


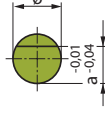
LOCKING SET

LOCKING SET, CONSISTING OF	GRAY	BLACK	Clear Transp.	Clear Transp. with Line
Screw with knob	026-2010	026-2020	-	-
Locking piece	-	-	026-2100	026-2200

ANTI-SLIP BRACKET

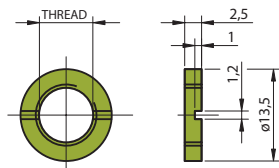
D-shape prevents slipping on shaft and incorrect knob mounting. For knobs Ø 21, 28, 36 mm.



ANTI-SLIP BRACKET CORRESPONDING TO D-SHAFT	FOR SHAFT Ø	a	L	PART NUMBER
	4 mm	3.50 mm	7 mm	048-2000
	6 mm	4.60 mm	9 mm	048-2300
	6 mm	5.00 mm	9 mm	048-2100
	1/4"	5.08 mm	9 mm	048-2200

SLOTTED NUT (BRASS)

Starting with the knobs Ø 14.5 mm, stators can be mounted directly underneath the slotted nut of the central mounting bushing of the switch.

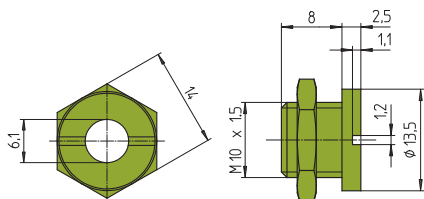


THREAD	M6 X 0.75	M7 X 0.75	M8 X 0.75	M10 X 0.75	3/8" - 32 UNEF
Slotted nut	046-1000	046-1500	046-2000	046-3000	046-4000

MOUNTING AID

Stators for knobs Ø 14.5 mm or larger can be mounted directly to the bushing on the front panel in cases where the switch does not have a central mounting.

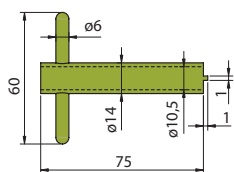
Mounting aid with through-hole Ø 6 mm	047-3000
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MOUNTING TOOL

Tool for tightening of our slotted nuts and threaded bushings.

Mounting tool	048-1000
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MATERIAL DATA

METAL PARTS

Brass is used for the collets, sleeves and nuts. The surface of screw and washer is protected against corrosion.

KNOBS AND ACCESSORIES

All mouldings of the collet knob range are manufactured of polyamide.
This material is resistant to amyl alcohol, petroleum, freon, caustic potash, 50% caustic soda, at temperatures of +20°C.

Operating temperature range: -40° to +70°C
Flammability: UL94-HB

FASTENING AND OPERATING TORQUE

KNOB Ø	COLLET Ø									
	2 mm		3 mm, 1/8"		4 mm		6 mm		1/4"	
	a	b	a	b	a	b	a	b	a	b
	Ncm	Ncm	Ncm	Ncm	Ncm	Ncm	Ncm	Ncm	Ncm	Ncm
9 mm	50	25	50	25						
10 mm			80	40	80	60				
14.5 mm			100	50	100	80	120	140	120	140
21 to 45 mm					100	80	160	140	120	140

a = Max. admissible fastening torque for screws resp. nuts.

b = Operating torque for stainless steel shafts with a tolerance of +0/-0,018mm for max. tightening torque.

TYPE KEY



STYLE, LINE

- 0** Knob without line
- 1** Knob with line
- 2** Wing knob without line
- 3** Wing knob with line

SURFACE

- 0** Glossy
- 5** Matt

COLOR

- 1** Gray
- 2** Black

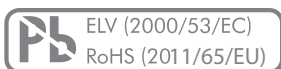
KNOB SIZE	COLLET Ø							COLLET WITH THROUGH DRILLING Ø			
	2	3	4	5	6	1/8"	1/4"	4	6	1/8"	1/4"
9 mm	10	11				12					
10 mm	20	20	23			22					
14.5 mm	30	31	33	36	34	32	35			3G	
21 mm	40	41	43	46	44	42	45	4E	4F	4G	4H
28 mm		51	53	56	54		55	5E	5F	5G	5H
36 mm			63	66	64		65	6E	6F		6H
45 mm					74		75		7F		7H

Explanation:

	Standard version
	Optional
	Not possible

MAIN FEATURES

- > Ergonomic „soft touch“ finish
- > Secure collet mounting



PRODUCT VARIETY

- 15 or 21 mm knob size
- 4, 6 mm or 1/4" shaft diameter
- With or without line



SOFT TOUCH COLLET KNOBS; K60 SERIES



21 mm DIAMETER BLACK

SHAFT DIAMETER	PART NUMBER WITHOUT LINE	PART NUMBER WHITE LINE
4 mm	K60-S210-004	K60-S211-004
6 mm	K60-S210-006	K60-S211-006
1/4"	K60-S210-250	K60-S211-250
Base Ø:	21.5 mm	Packaging size: 100 pcs.
Height (incl. cap):	17.7 mm	
Shaft depth:	10 mm	
Carrier material	Talc filled polypropylene	
Soft-touch finish	Thermoplastic elastomer	
Operating temperature:	-30° to +50°C	



15 mm DIAMETER BLACK

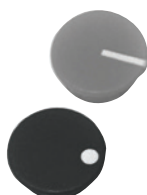
SHAFT DIAMETER	PART NUMBER WITHOUT LINE	PART NUMBER WHITE LINE
4 mm	K60-S150-004	K60-S151-004
6 mm	K60-S150-006	K60-S151-006
1/4"	K60-S150-250	K60-S151-250
Base Ø:	15.5 mm	Packaging size: 100 pcs.
Height (incl. cap):	14.3 mm	
Shaft depth:	7 mm	
Carrier material	Talc filled polypropylene	
Soft-touch finish	Thermoplastic elastomer	
Operating temperature:	-30° to +50°C	



FIXING TOOL

For collet knobs Ø 15 mm	K51-1000-00
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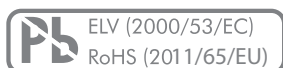
CAPS



KNOB DIAMETER, COLOR	WITHOUT LINE	PART NUMBER WHITE LINE	PART NUMBER WHITE SPOT
15 mm black	K51-C150-01	K51-C151-01	K51-C152-01
15 mm gray	K51-C150-02	K51-C151-02	K51-C152-02
21 mm black	K51-C210-01	K51-C211-01	K51-C212-01
21 mm gray	K51-C210-02	K51-C211-02	K51-C212-02
Red, blue, yellow or green colors on request			Packaging size: 100 pcs.
Material:		Nylon 6	
Operating temperature:		-30° to +50°C	

MAIN FEATURES

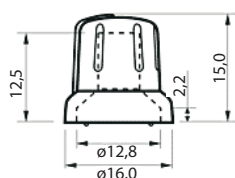
- > „Soft touch” or hard surface finish
- > Cost effective choice



PRODUCT VARIETY

- „Soft touch” or hard finish
- Soft touch knobs with white or blue line
- With or without compression ring
- Gray or black caps with or without line or spot

PUSH-ON KNOBS WITH LINE; K65 & K66 SERIES



6 mm shaft Ø
4.5 mm flat size

SOFT, BLACK; K65 SERIES

DEGREE POINTER TO D-SHAFT	PART NUMBER WHITE LINE	PART NUMBER BLUE LINE
0°	K65-DRNP12000-03	K65-DRNP12000-05
90°	K65-DRNP12090-03	K65-DRNP12090-05
180°	K65-DRNP12180-03	K65-DRNP12180-05
270°	K65-DRNP12270-03	K65-DRNP12270-05

Line colors red, yellow, green on request

Packaging size: 100 pcs.

Carrier material	Talc filled polypropylene
Soft-touch finish	Thermoplastic elastomer
Operating temperature:	-30° to +50°C

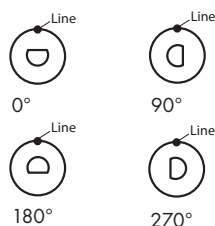
HARD, BLACK; K66 SERIES

DEGREE POINTER TO D-SHAFT	PART NUMBER WHITE LINE	PART NUMBER BLUE LINE
0°	K66-DRNP12000-03	K66-DRNP12000-05
90°	K66-DRNP12090-03	K66-DRNP12090-05
180°	K66-DRNP12180-03	K66-DRNP12180-05
270°	K66-DRNP12270-03	K66-DRNP12270-05

Line colors red, yellow, green on request

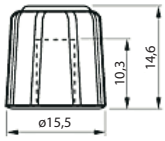
Packaging size: 100 pcs.

Material:	Talc filled polypropylene
Operating temperature:	-30° to +50°C



PUSH-ON KNOBS; K55 SERIES

Tolerances unless otherwise specified DIN ISO 2768-1 (m)



6 mm shaft Ø
4.5 mm flat size

K55 SERIES	PART NUMBER WITH COMPRESSION RING	PART NUMBER WITHOUT COMPRESSION RING
Hard, black	K55-DC150-006	K55-DR150-006

Packaging size: 100 pcs.

Material:	Nylon 6
Operating temperature:	-30° to +50°C

CAPS



COLOR	PART NUMBER WITHOUT LINE	PART NUMBER WHITE LINE	PART NUMBER WHITE DOT
15 mm black	K51-C150-01	K51-C151-01	K51-C152-01
15 mm gray	K51-C150-02	K51-C151-02	K51-C152-02

Packaging size: 100 pcs.

Cap colors red, blue, yellow, green on request	
Material:	Nylon 6
Operating temperature:	-30° to +50°C

A photograph of two scientists in white lab coats. A woman with brown hair and bangs is leaning over a man's shoulder, pointing at a computer screen. The man is sitting at a desk, looking at the screen. He is wearing a white lab coat over a light blue shirt and a dark tie. The woman is also wearing a white lab coat and has a name tag. The background is a blurred laboratory setting with blue and white tones.

TALK TO OUR EXPERTS

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GENERAL SWITCH TERMS

POSITION

A position is a mechanical detent of a switch actuation.

DETENT

A detent is a positioning device to mechanically stop the rotation of a switch. This can be achieved for instance with a spring-operated ball and an opponent chamfer.

POLE

A pole is capable of conducting a single electrical signal. Each layer is equivalent to one pole (1 layer = 1 pole). The number of poles indicates the number of electrical signals/circuits which are controlled by the switch.

WAFER, DECK OR LAYER

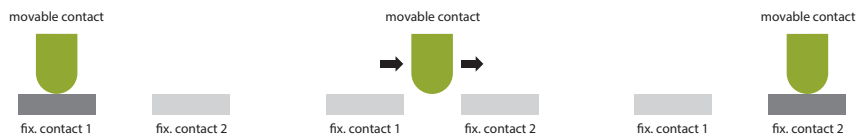
Here, a wafer is a construction of a fixed and a movable disk. One wafer consists of the necessary contacts for one pole.

INDEXING ANGLE

An indexing angle is the number of degrees between each consecutive position. For example: 12 positions of a total of 360 degrees results in a 30 degrees indexing angle.

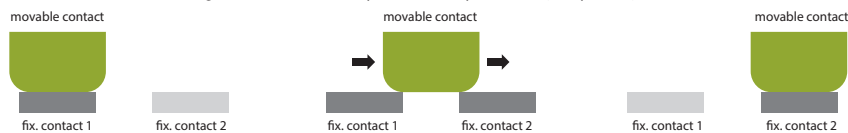
NON-SHORTING CONTACTS "BREAK BEFORE MAKE"

A non-shortening contact is also known as "break-before-make" and describes the switching action of a pole when switching to the next position. The switch will momentarily be interrupted while it changes for instance from position 1 to position 2 (see picture)



SHORTING CONTACTS "MAKE BEFORE BREAK"

A shortening contact is also known as "make-before-break" and describes the switching action of a pole when switching to the next position. The switch will momentarily short two contacts while it changes for instance from position 1 to position 2 (see picture).



CYCLE

A cycle is one rotation through all positions and back to the start position. The rotational life of coded or selector switches are usually specified by cycles.

REVOLUTION

A revolution is a 360 degree rotation through all positions. The rotational life of encoded switches is usually specified by revolutions.

BENEFITS OF GOLD-PLATED CONTACTS

Gold-plated contacts should be used for longer rotational life, in corrosive environment or in case the switch will not be actuated for a long period of time.

ELMA SWITCH TERMS

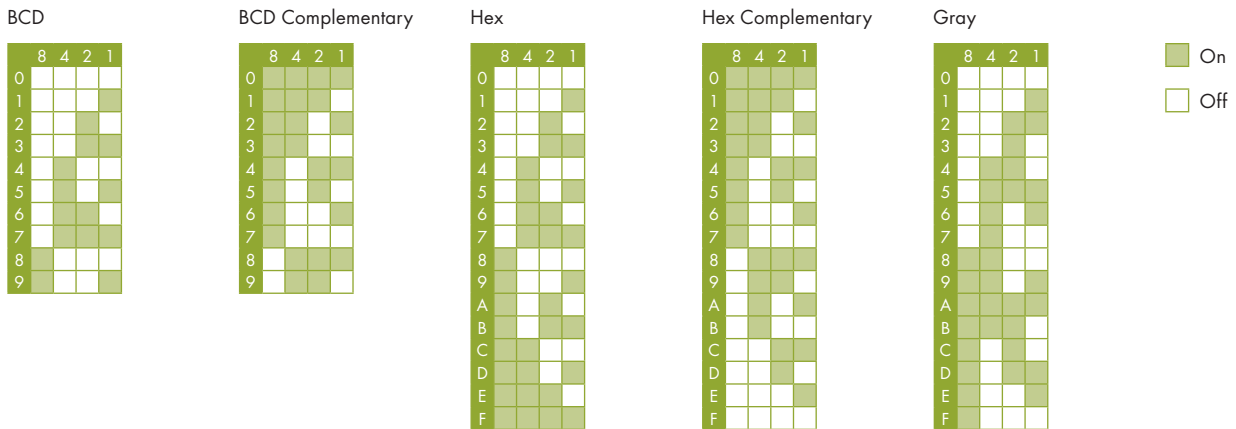
MULTI ROTARY SWITCH

Multi rotary switches contain different switch functions in the same switch body. Switch functions can be the following: Selector switch, coded switch, encoder, potentiometer in combination with a push-button function.

MECHANICAL CODED SWITCHES (BCD, HEX, GRAY)

A mechanical coded switch usually works with 4 bits (bit values 1,2,4,8). A common contact (C) shorts the circuit. With 4 bits it is possible to achieve 10 to 16 switch positions (depending on the used code, see picture below) with only 5 connection pins. It is a cost effective way to realize a rotary switch. Coded switches need a microcontroller with corresponding software.

CODE TABLES



MECHANICAL ENCODER SWITCH

A mechanical encoded switch usually works with an incremental 2 bit (2 signals/contacts A, B) system. Both signals A and B are connected to common contact (C). With this contact system it is possible to achieve 8 to 16 PPR (pulses per revolution) with only 3 contacts and one of the incremental disc (see picture).

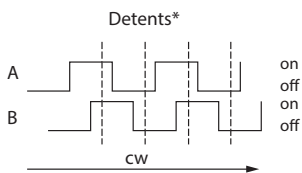
8 PPR incremental disc



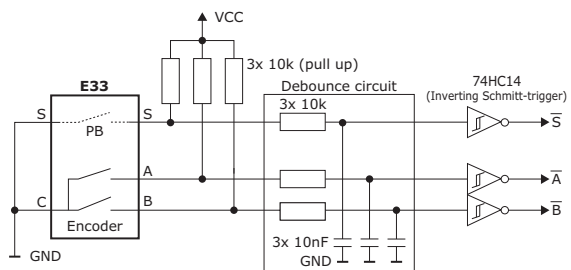
16 PPR incremental disc



Encoders are a simple technique to develop a very cost effective rotary switch. The following pictures show a signal flow chart and an example of an electric diagram.



* Timing diagram shows 32 detents / 16 PPR or 16 detents / 8 PPR.



ELMA SWITCH TERMS

SELECTOR SWITCHES

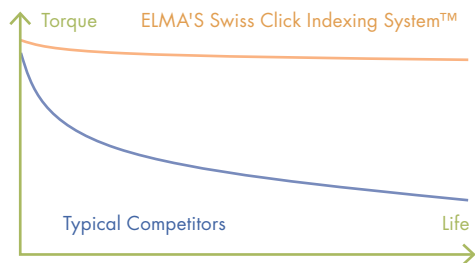
A selector switch has an array of terminals, arranged in a circle around the rotor, each of which serves as a contact for the "slider" through which any one of a number of different electrical circuits can be connected to the common contact (C) pin. Most of our selector switches are user configurable in relation to the number of positions, from 2 up to 24. Selector switches can also be used at higher voltages / current.

CONCENTRIC FUNCTION

A concentric rotary switch has two shafts (inner and outer) and logically two switching-functions packed in just one switch.

SWISS CLICK INDEXING SYSTEM™

The "Swiss click indexing system" is an Elma label, containing switches with a special indexing to ensure nearly consistent torque over life (see picture below). Switches with that feature are specially marked in the catalogue.





Headquartered in Wetzikon, Switzerland, Elma Electronic AG is a leader in servicing the worldwide electronic industry with precision coded switches, encoders and selector switches as well as electronic packaging solutions.

Founded in 1960, our core competence is the design and manufacturing of switches for the most demanding applications. Elma's world-renowned quality, reliability and cost effectiveness have always been the hallmark of our products and services.

We have the ability to respond rapidly, with superior solutions to our various customers' technical and logistical requirements in Aerospace, Defense, Communications, Security, Medical, Transportation, Research & Science and Industrial Automation.

We utilize local R&D, production and marketing capabilities in Switzerland, US, Germany, UK, France, Israel, China and Romania and we maintain a worldwide network of distribution partners in more than 22 countries.

Elma's Six Sigma quality level is reached through continuing improvement and adaptation of our methods, processes and procedures to meet the demand of our customers' ever changing requirements.

WHY CHOOSE ELMA?

Product Quality

The world leaders in their respective industries who set the standards for their markets choose Elma products for their designs.

Customization

Our proven business model is to perfectly adapt our products to the customers' exact requirements.

Global Resources

Our local presence on five continents ensures a close relation in the discourse of engineering, customization and marketing service.

Track Record

Our long term relationships with industry leading customers have solidified our understanding of the varied requirements of each marketplace.

QUALITY ASSURANCE

- ISO 9001:2008**
- ISO 14001:2004**
- ROHS, REACH**
- Environment**

- Quality Management
- Environment Management
- Declaration of Conformity
- Certificate of the Swiss Private Sector Energy Agency
- Conflict Minerals Avoidance Policy
- Counterfeit Materials Avoidance Policy

Certificates

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