

# Neles Easyflow™ limit switches Series K

The Neles Easyflow K-series features versatile range of limit switches for quarter turn actuators and valve assemblies. With the K-series limit switches our customers receive reliable information of the limits of desired rotary travel set by the customer. Limit switch shaft is coupled directly to the actuator shaft with NAMUR (VDI/VDE 3845) adaptation. Actuator movement is transferred via the unit shaft to preset cams that actuate either inductive or mechanical switch elements. The switches are prewired to terminal strips for easy connection to an external monitoring system.



## Benefits

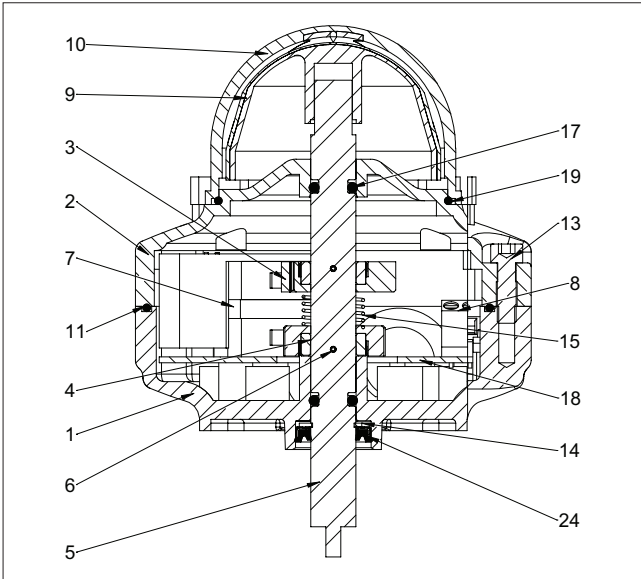
- The versatile K-series limit switches can be mounted on top of virtually any rotary actuator
- VDI/VDE 3845 mounting face
- K-series limit switch is very cost competitive solution for sensing the limits of rotary travel
- Its compact size makes it easy to fit even to tight spaces
- K-series limit switches are suitable even for the most harsh weather conditions with three different housing material options and IP67 ingress protection class as standard
- Switch elements can be chosen between mechanical, inductive and reed type switches
- SOV termination provided inside the limit switch box (with D, E, F, H, R and V switch elements)

## Features

- Two product series
  - KS = K-series, standard housing
  - KC = K-series compact housing
- KC = K-series compact housing
  - Epoxy powder coated, low copper die cast aluminum (LM6)
  - Stainless steel (CF8M, equivalent to AISI316)
  - Polycarbonate (LEXAN 3412R) (only for KC-series)
- Cable entry options
  - M20x1,5
  - ½”NPT
  - ¾”NPT (KS only)
- Choice of 9 switch element variants
  - Inductive
  - Mechanical
  - Reed type
- Large visual indicator
  - Inside a shatter proof polycarbonate dome
- VDI/VDE 3845 mounting face with NAMUR shaft
- Four different temperature ranges
  - General: -20 °C to +80 °C
  - Cold: -40 °C to +80 °C
  - High: -20 °C to +100 °C
- KS-series with two or four cable entries and KC-series with three cable entries
  - M20x1.5, ½”NPT, or ¾”NPT (Only with KS)
- Easily adjustable cams
- Cams color coded to ease up installation
- IP67 as standard
- Switch elements connected to terminals via PCB to ensure good short circuit protection

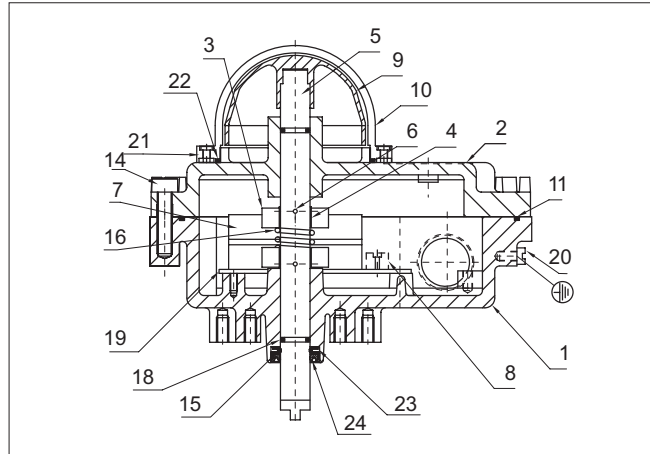
## Assembly drawing and main parts

### Series KC



S.NO.	DESCRIPTION	QTY.
1	HOUSING	1
2	COVER	1
3	CAM	2
4	CAM-LOCK 2	2
5	SHAFT	1
6	SPRING DOWEL	2
7	SWITCH ELEMENTS	2
8	TERMINAL BLOCK	4
9	INDICATOR	1
10	INDICATOR COVER	1
11	GASKET	1
13	NON FALLING SCREW	4
14	'E' TYPE CIRCLIP	1
15	SPRING	1
17	O-RING	2
18	PRINTED CIRCUIT BOARD	1
19	O-RING	1
24	CUP SEAL	1

### Series KS



S.NO.	DESCRIPTION	QTY.
1	HOUSING	1
2	COVER	1
3	CAM	2
4	CAM-LOCK	2
5	SHAFT	1
6	SPRING DOWEL	2
7	SWITCH ELEMENTS	2
8	CONNECTOR STRIP	1
9	INDICATOR	1
10	INDICATOR COVER	1
11	GASKET	1
14	NON FALLING SCREW	8
15	EXTERNAL CIRCLIP	1
16	SPRING	1
18	O-RING	2
19	PRINTED CIRCUIT BOARD	1
20	SCREW FOR EARTH CONN.	2
21	PHILIPS HEAD SCREW	4
22	O-RING	1
23	WASHER	1
24	CUP SEAL	1

## Operation principle

The K-series limit switches include from two to four inductive, mechanical or reed type switch elements. They are activated by cams that are directly driven by the actuator shaft through the limit switch shaft. Cams are set by the customer to the desired rotary travel limits. The switch elements are prewired to terminal strip

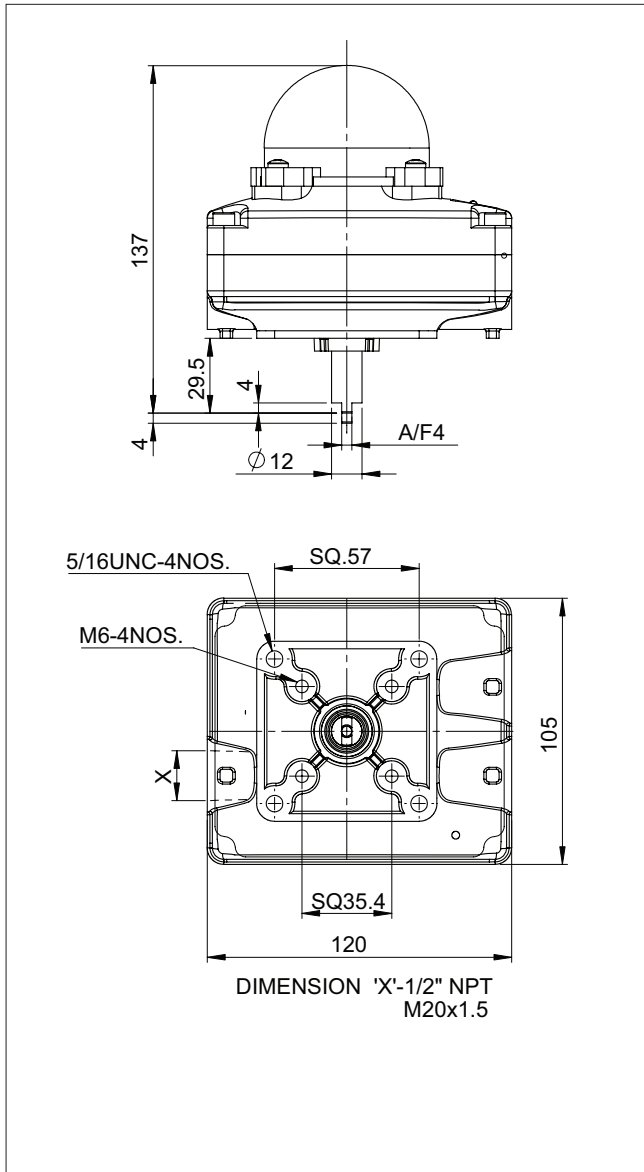
in the enclosure, permitting easy connection of switch output to external electrical monitoring system or indication devices. K-series limit switches also include a visual indicator on top of the enclosure cover that indicates 90° rotary travel between open and closed valve position.

## Technical specification

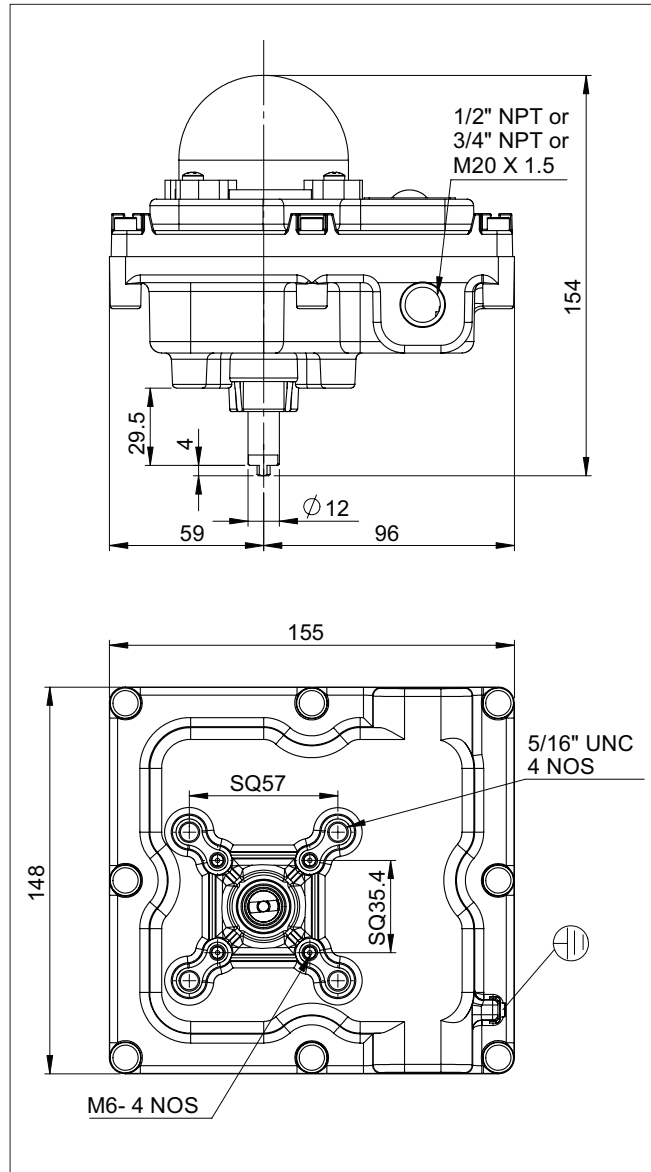
<b>Ambient temperature:</b>		<b>D1:</b>	Inductive proximity switch, P+F NJ2-V3-N 2-wire type, Namur NC
General:	-20 ... +80 °C / -4 ... +176 °F	Supply voltage:	5 - 25 V DC, nominal 8 V DC (Ri = approx. 1 kOhm)
Cold:	-40 ... +80 °C / -40 ... +176 °F	Output current:	> 3 mA
High:	-20 ... +100 °C / -4 ... +212 °F	Active face free:	< 1 mA
	(Not applicable with polycarbonate body)	Active face covered:	< 1 mA
<b>Protection class:</b>	IP67	Nominal sensing range:	2 mm
<b>Body:</b>		<b>D2 :</b>	Inductive proximity switch, P+F NBB3-V3-Z4 2-wire type, NO
KS series:	Epoxy powder coated, low copper die cast aluminum (LM6) / stainless steel (CF8M)	Supply voltage:	5 - 60 V DC
KC series:	Epoxy powder coated, low copper die cast aluminum (LM6) / stainless steel (CF8M) / polycarbonate (LEXAN 3412R)	Operating current:	4 - 100 mA
<b>Pointer cover:</b>	Shatter proof polycarbonate (INFINO SC-1220UR)	Off-state current:	0,4 - 0,55 mA
<b>Internal parts:</b>		Nominal sensing range:	3 mm
Shaft:	AISI304 / AISI316 (SS body)	<b>F1:</b>	Inductive proximity switch, P+F SJ3.5-N 2-wire type, Namur NC
Cams:	ABS	Supply voltage:	5 - 25 V DC, nominal 8 V DC (Ri = approx. 1 kOhm)
PCB:	Grade FR4	Output current:	> 3 mA
Fasteners:	AISI304	Active face free:	> 3 mA
<b>Sealing:</b>	Nitrile rubber (NBR) (General temp range) Fluoro Silicon (Cold temp range) Viton (High temp range)	Active face covered:	< 1 mA
<b>Conduit entry:</b>		Slot width:	3,5 mm
KS series:	2 x M20 or 2 x 1/2 NPT or 2 x 3/4 NPT	<b>F2:</b>	Inductive proximity switch, P+F SJ3.5-SN 2-wire type, Namur NC
KC series:	3 x M20 or 3 x 1/2 NPT	Supply voltage:	5 - 25 V DC, nominal 8 V DC (Ri = approx. 1 kOhm)
<b>Weight:</b>		Output current:	> 3 mA
KS series:	Die cast aluminum 1.7 kg / 3.8 lbs, stainless steel 4.5 kg / 9.9 lbs	Active face free:	> 3 mA
KC series:	Die cast aluminum 0.7 kg / 1.6 lbs, stainless steel 2.5 kg / 5.5 lbs, polycarbonate 0.6 kg / 1.3 lbs	Active face covered:	< 1 mA
<b>Switches:</b>		Slot width:	3,5 mm
A1:	Inductive proximity switch, P+F NJ2-12GM-N 2-wire type, Namur NC	<b>R1:</b>	Reed proximity switch, Neles R1 220 V AC/DC
Supply voltage:	5 - 25 V DC, nominal 8 V DC (Ri = approx. 1 kOhm)	Supply voltage:	220 V AC/DC
Output current:	> 3 mA	Output current:	2000 mA
Active face free:	> 3 mA	Operating current:	0 mA
Active face covered:	< 1 mA	Off-state current:	0 mA
Nominal sensing range:	2 mm	<b>V1:</b>	Mechanical micro switch, Honeywell V15S05-CZ100A05-01, SPDT type
A3:	Inductive proximity switch, P+F NBN4-12GM40-Z0 2-wire type, NO	Electrical values:	5 A @ 125/250 VAC, 100 mA @ 48 VDC or 125/250 VAC
Supply voltage:	5 - 60 V DC	<b>W1:</b>	Mechanical micro switch, Honeywell V15S05-CZ100A05-01, DPDT type
Operating current:	2 - 100 mA	Electrical values:	5 A @ 125/250 VAC, 100 mA @ 48 VDC or 125/250 VAC
Off-state current:	0 - 0,5 mA	<b>V2:</b>	Mechanical micro switch Honeywell V7-1C17E9-201 SPDT
Nominal sensing range:	4 mm	Electrical values:	15 A, 125 OR 250 VAC, 500 mA, 125 VDC, 250 mA, 250 VDC (NO/ NC)
		<b>W2:</b>	Mechanical micro switch Honeywell V7-1C17E9-201 DPDT
			15 A, 125 OR 250 VAC, 500 mA, 125 VDC, 250 mA, 250 VDC (NO/ NC)

## Dimensional drawings, mm

Series KC



Series KS



## Neles Easyflow™ K-series limit switches type code

<b>1. sign</b>								<b>PRODUCT GROUP</b>
KC								Compact enclosure, weather proof
KS								Standard enclosure, Ex d capable
<b>2. sign</b>	<b>Note</b>							<b>QUANTITY OF SWITCHES</b>
2								2 switches
3	Not applicable with 1. sign KC Not applicable with 9. sign EN, CN							3 switches
4	Not applicable with 1. sign EN, CN Not applicable with 9. sign EN, CN							4 switches
<b>3. sign</b>	<b>INDUCTIVE PROXIMITY SWITCHES</b>							<b>SWITCH TYPE</b>
	<b>Manufacturer</b>	<b>Model</b>					<b>Note</b>	
A1	P&F	NJ2-12GM-N					Cylindrical	
A3	P&F	NBN4-12GM40-Z0					Cylindrical	
D1	P&F	NJ2-V3-N					Flat	
D2	P&F	NBB3-V3-Z4					Flat	
F1	P&F	SJ3.5-N					Slot	
F2	P&F	SJ3.5-SN					Slot	
W4	P&F	NJ2-V3-N					Flat limit switch having total 4 sensors with 2 open and 2 close combination only	
							8V DC, 3mA, NC	
							10-60V DC, 100mA, NO	
							8 VDC, >3 mA ; <1 mA (NC)	
							8 VDC, >3 mA ; <1 mA (NC)	
							8VDC 3 mA, NC	
	<b>REED TYPE PROXIMITY SWITCHES</b>							
	<b>Manufacturer</b>	<b>Model</b>					<b>Note</b>	
R1	Neles	R1					SPDT, Not applicable with 1. sign KC Only applicable with 7. sign G and C	
							<b>Electrical values</b>	
							2 A, 400 VAC/VDC	
	<b>MECHANICAL MICRO SWITCHES</b>							
	<b>Manufacturer</b>	<b>Model</b>					<b>Note</b>	
V1	Honeywell	V15S05-CZ100A05-01					SPDT	
V2	Honeywell	V7-1C17E9-201					SPDT	
W1	Honeywell	V15S05-CZ100A05-01					DPDT Not applicable with 1. sign KC Only applicable with 2. sign 2"	
W2	Honeywell	V7-1C17E9-201					DPDT Not applicable with 1. sign KC only applicable with 2. sign 2	
							<b>Electrical values</b>	
							5 A, 125 OR 250 VAC, 100 mA, 48 VDC (NO/NC), 30 mA, 250 VDC (NO/NC)"	
							15 A, 125 OR 250 VAC, 500 mA, 125 VDC, 250 mA	
							250 VDC (NO/ NC)	
							5 A, 125 OR 250 VAC, 100 mA, 48 VDC (NO/NC), 30 mA, 250 VDC (NO/NC)"	
							15 A, 125 OR 250 VAC, 500 mA, 125 VDC, 250 mA, 250 VDC (NO/ NC)	
<b>4. sign</b>	<b>Note</b>							<b>ENCLOSURE MATERIAL</b>
A								Diecast aluminum (LM6)
S								Stainless steel CF8M (AISI 316 / CF8M)
P	Only with 1. sign KC							Polycarbonate (LEXAN 3412R)
<b>5. sign</b>	<b>Note</b>							<b>QUANTITY OF CONDUIT ENTRIES</b>
2	Only with 1. sign KS							2 entries
3	Only with 1. sign KC							3 entries
4	Only with 1. sign KS							4 entries
<b>6. sign</b>	<b>Note</b>							<b>CABLE ENTRY</b>
M								M20x1.5
N								1/2NPT
L	Only with 1. sign KS							3/4NPT
<b>7. sign</b>	<b>Note</b>							<b>TEMPERATURE RANGE</b>
G								General (-20 - +80 °C)
C	Only with 3. signs F2, R1, V2 and W2							Cold temperature (-40 - +80 °C)
H	Not applicable with 9. sign EN, CN Not applicable with 4. sign P Only applicable with 3. signs A1, D1, F1, F2 and R1 With aluminum indicator, no polycarbonate dome Only to temperature class T4							High temperature (-20 - +100 °C)
<b>8. sign</b>	<b>Note</b>							<b>VISUAL INDICATOR</b>
R								Red and yellow
G								Red and green
<b>9. sign</b>	<b>Note</b>							<b>APPROVALS</b>
NN								No approvals
EN	Only with 1. sign KS							ATEX / IECEx Ex d
CN	Only with 1. sign KS							PESO
CC	Only with 1 sign KS							CCC
KS	2	A1	A	2	M	G	R	NN





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