

FEL90 SERIE



for Industrial, crane's and locking

- ➔ Heavy duty geared limit switch
- ➔ Up to 4 free programmable cams
- ➔ Different Encoder types
- ➔ Cable outputs and connector available
- ➔ Protection class IP64
- ➔ Protection against contact

Product description

Heavy geared Limit switch in round housing, with synchroflange easy to install in any application. 100% protected against contact and shaft construction from shaft to cam. Different ratio and number of switches available. The cover is sealed with an Sealing ring and easy to dismount with only two screws.

Application

This geared limit switch find the application in cranes, locking constructions. With the round design easy to build direct in series with a motor.

Technical specifications

Usable Gear Ratio	1:1 – 2500:1	(more on request)
Program channels	1-8	(more on request)
Mechanical life time	> 20 Mill.	
Switching frequency	5 Hz	
Contact chatter time	<4 ms	
Actuating speed	>10 µm/s	
Contact break	0,6 mm	
Contact pressure	0,2 N	
Temperature range	-40 °C +85 °C	
Hysteresis	depend of ratio	
Repeatability	depend of ratio	
Weight	ca. 1,5 Kg	
MTBF (IEC 60050)	ON/OFF 10 Mio cycles 200'000 hours	
Rotation speed	max. 1500 U/min	
Shaft load	radial 450N, axial 200N	
Protection	IP 66 EN 60 529	
Shock resistance	2500m/s ² , 6ms IEC 68-2-27	
Vibrations resistance	200 m/s ² , 10....2000 Hz IEC 68-2-6	
Humidity	40% rh	

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Micro switches types

Ordercode	Picture	Description
0		KS25B4 changeover contact for cable shoe 2.8x0.55mm silver contact
		switching current 4A 250 VAC / 1A 60VDC
1		KS26B4 changeover contact for cable shoe 2.8x0.55mm gold contact
		switching current 4A 250 VAC / 1A 60VDC

Cam types and adjustment

Type	Ordercode	Picture	Description
NK Cams	0		single cam
			adjustable with included PSN Key
			available with 20 ° / 60° / 90° / 180° opening angle
	Material: Grilon T300		
1		double cam	
		adjustable with included PSN Key	
		free programmable from 6° - 180°	
Material: Grilon T300			
NV Cams	2		single cam
			adjustable with included screwdriver
			available with 20 ° / 60° / 90° / 180° / opening angle
	Material: Grilon T300		
	On request		double cam
			adjustable with included screwdriver
free programmable from 6° - 180°			
Material: Grilon T300			

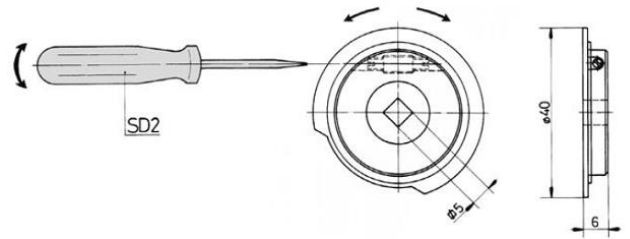
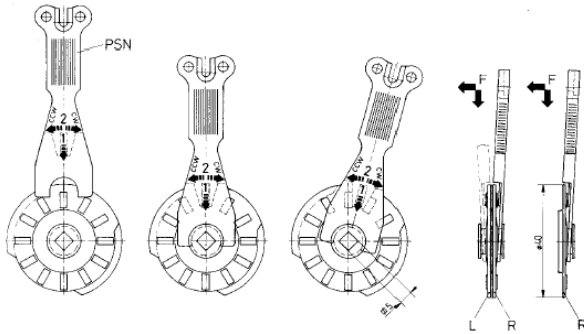
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Adjusting guideline of NV / NK cams

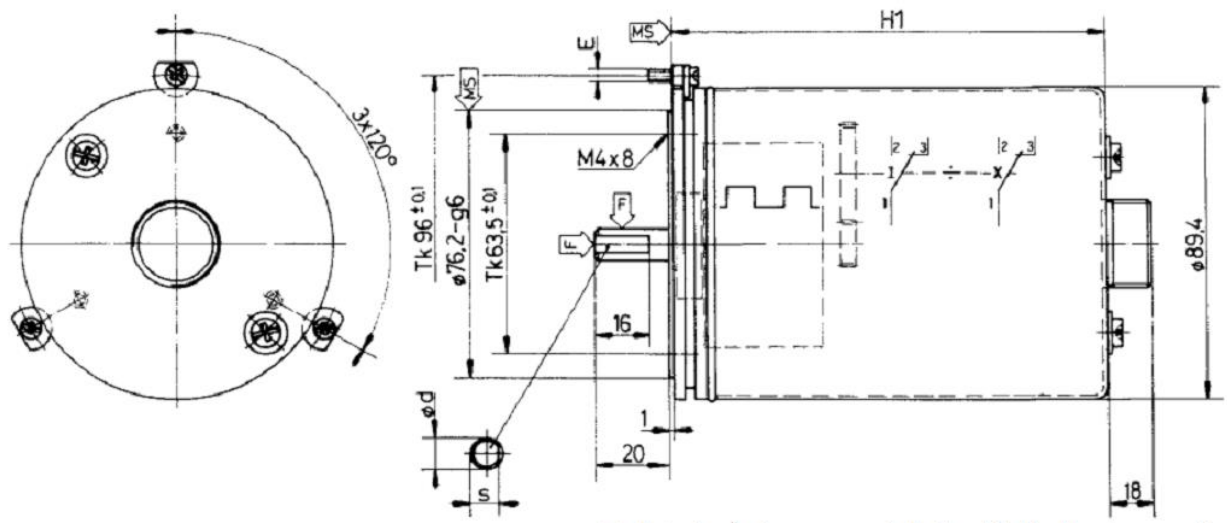
To adjust the NK Cam use the PSN key with levelling the cam and turn

To adjust the NV Cam use SD screwdriver and turn the small screw



Dimension in mm

$\varnothing d = 9-h8$ $s = 8,5$ $E = M3 (4-40 UNC)$ $F = \Rightarrow 40 N \Downarrow 80 N$ $MS = \text{Montagefläche / Mounting surface}$

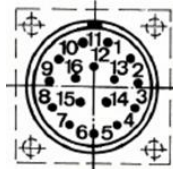


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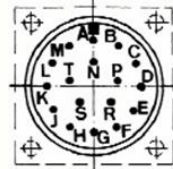


Wiring to Connector

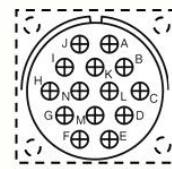
Connector Male,
view from face side



SFP16 (16 Pin)



MS3102 A20-29P (17 Pin)



MS3102 A20-27P (14 Pin)

Color	Encoder	Function	Pin Nr.	Pin Nr.
Brown	Power	+Vcc	1	A
White	Ground	0V	2	B
Green	Channel	A	3	C
Grey	Channel	B	4	D
Blue	Channel	M	5	E
Gelb	Channel	A'	6	F
Pink	Channel	B'	7	G
Red	Channel	M'	8	H
Shield	-	-	-	-

Color	Switch	Function	Pin Nr.	Pin Nr.
Black	1	COM (1) NC (2)	9	I
White		NO (3)	10	J
Black	2	COM (1) NC (2)	11	K
Brown		NO (3)	12	L
Black	3	COM (1) NC (2)	13	M
Green		NO (3)	14	N
Black	4	COM (1) NC (2)	15	-
Yellow		NO (3)	16	-

Connection with connector
Cable designation at
Cable section for switch

COM- NO (2.8x0.5mm)
DIN47100
0.334mm² / AWG22

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Order Code

		932	X.	X	X.	X	X	X
		RATIO						
0	1 : 1							
1	2 : 1							
2	4 : 1							
3	12,5 : 1							
4	25 : 1							
5	40 : 1							
6	100 : 1							
7	200 : 1							
8	750 : 1							
9	2500 : 1							
		MALE RECEPTACLE						
0	SD12 (12 Pin) DIN							
1	SD16 (16 Pin) DIN							
2	MS3102 A18-1P (10 Pin) MIL							
3	MS3102 A20-27P (14 Pin) MIL							
4	MS3102 A20-29P (17 Pin) MIL							
		NUMBER OF SWITCH						
0	2 switches							
1	3 switches							
2	4 switches							
		TYPE OF SWITCH						
0	KS25B4 changeover contact for cable shoe 2.8x0.55mm silver contact							
1	KS26B4 changeover contact for cable shoe 2.8x0.55mm gold contact							
		CAM						
0	single cam NK4101-180°							
1	double cam NK4201-180°							
2	single cam NV4101-180°							
3	double cam NV4201-180°							
		ENCODER						
0	RS422 (with inverting) 5V DC							
1	RS422 (with inverting) 5...30V DC							
2	RS422 (with inverting) 10...30V DC							
3	Push-pull (without inverting) 5...30V DC							
4	Push-pull (without inverting) 10...30V DC							
5	Push-pull (with inverting) 5...30V DC							
6	Push-pull (with inverting) 10...30V DC							



Questions ?

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