

Limit switch

- 24 operating head types

Fastening system

Earth screw

RAL7035
polyester
coating

Cable entry

Stainless steel screws

YFC Series Limit switch

YFC Series explosion-proof limit switches feature an actuator linked mechanically to the contacts. The series includes both position switches and switches for safety applications. They are available in ten basic versions, depending on the type of actuator used, or sixty versions, if snap-action or slow-action contacts are considered.

Thanks to the combination of various types of actuators, bodies and contacts, YFC limit switches are ideal for a wide range of applications and for seamless system operation.

Being corrosion- and vibration-resistant, their mechanical and electrical components are able to withstand the extreme mechanical and thermal stresses they are continuously subjected to. Designed for installation in potentially explosive atmospheres, in the presence of combustible gases (hydrogen and acetylene), vapour, mist and powders, zones 1 and 21, 2 and 22, they are also used in watertight industrial and civil applications.

Cortem Group applies a tamper-evident holographic security label to its products, complete with a unique authentication numeric code, to combat the illegal sale of imitations and counterfeits, as well as guarantee the authenticity of its products. Failure to observe international standards creates serious risks for the environment and, above all, for the personnel who work with the systems on a daily basis.



Sectors of application:



Petroleum refineries



Chemical and petrochemical facilities



Onshore facilities



Offshore facilities



Petroleum loading/unloading pontoons



Agribusiness facilities



Fuel storage facilities



100% produced by Cortem

EMPTY ENCLOSURE CERTIFICATION DATA

Classification:

Group II

Category 2GD

Installation: EN 60079-14

zone 1 - zone 2 (Gas)

zone 21 - zone 22 (Dust)

Marking:

CE 0722 Ex II 2 GD Ex d IIC T6 Ex d tD A21 T85°C IP66/67

Certificate:

ATEX SIRA 07 ATEX 1316

IEC Ex IECEx SIR 07.0104

TR CU AVAILABLE

For all IEC Ex and TR CU certification data, download the certificate from www.cortemgroup.com

Standard:

CENELEC EN 60079-0: 2006, EN 60079-1: 2004, EN 61241-0: 2006, EN 61241-1: 2004 and European Directive 2014/34/EU.
IEC 60079-0: 2004, IEC 60079-1: 2003, IEC 61241-0: 2004, IEC 61241-1: 2004
RoHS Directive 2002/95/EC.

Temperature class:

85°C (T6)

Ambient Temp.:

-20°C +55°C

Degree of protection:

IP66/67



ATEX Certificate



IECEx Certificate



Use and maintenance instructions



MECHANICAL FEATURES

Body:	Low copper content aluminium alloy, complete with wall fastening lugs
Gaskets:	Acid, hydrocarbon and high temperature resistant silicone positioned between the body and the cover
Certification label:	Adhesive affixed to external surface
Screws:	Stainless steel
Earth screw:	Internal and external stainless steel
Coating:	Polyester RAL 7035 (Light grey)
Entry points:	One entry point ISO M20x1.5
Mounting positions:	All positions
Consistency (measured following a million operations):	0.05 mm (at the point of closure)
Minimum control speed:	0.06 m/s slow action 0.001 m/s snap action

Corrosion Resistance:

The STANDARD of the aluminium alloy used by Cortem has passed the tests required by standards EN60068-2-30 (hot-humid cycles) and EN60068-2-11 (salt fog test)

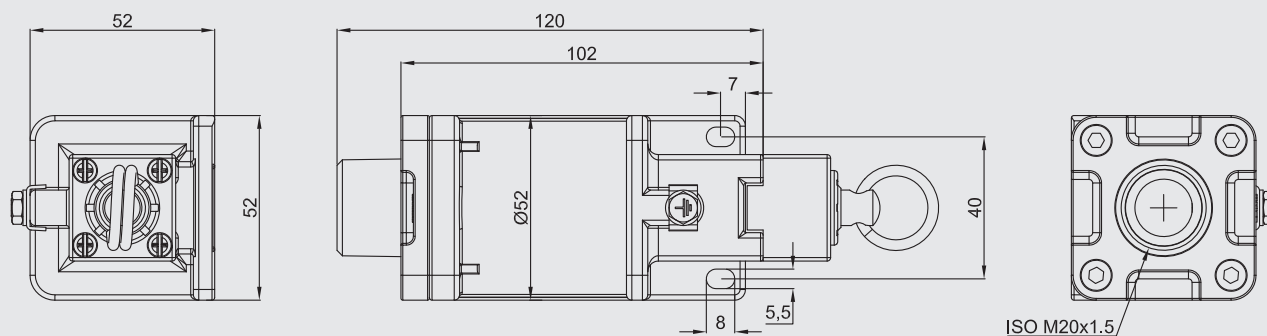
ELECTRICAL FEATURES

Rated voltage:	max. 500 Vac, 250 Vdc
Rated frequency:	max. 50/60 Hz
Rated current:	24 Vac - 50/60 Hz: 10 A 120 Vac - 50/60 Hz: 6 A 230 Vac - 50/60 Hz: 3.1 A 240 Vac - 50/60 Hz: 3.1 A 400 Vac - 50/60 Hz: 1.8 A 24 Vdc: 2.8 A 125 Vdc: 0.55 A 250 Vdc: 0.27 A
Connecting cable cross-section:	0.75 ... 2.5 mm ²

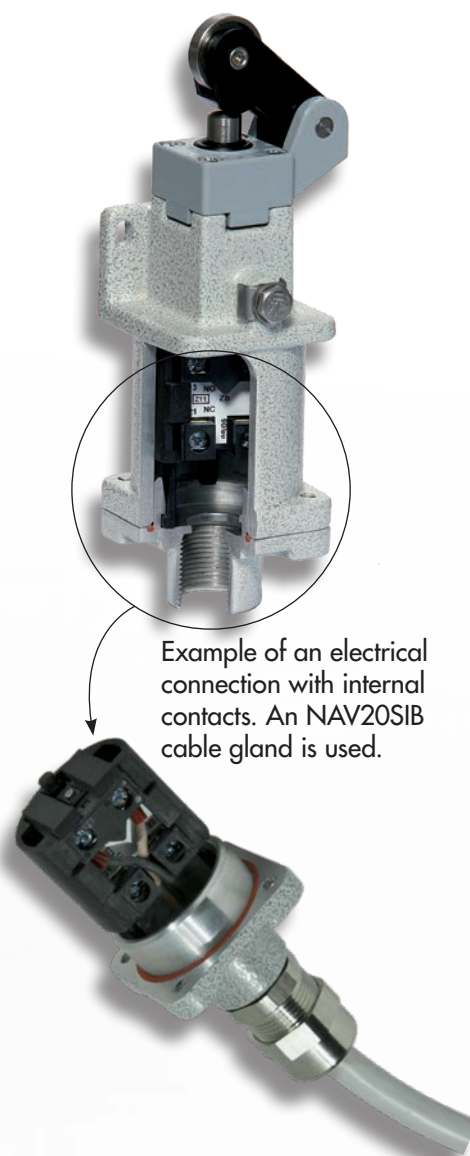
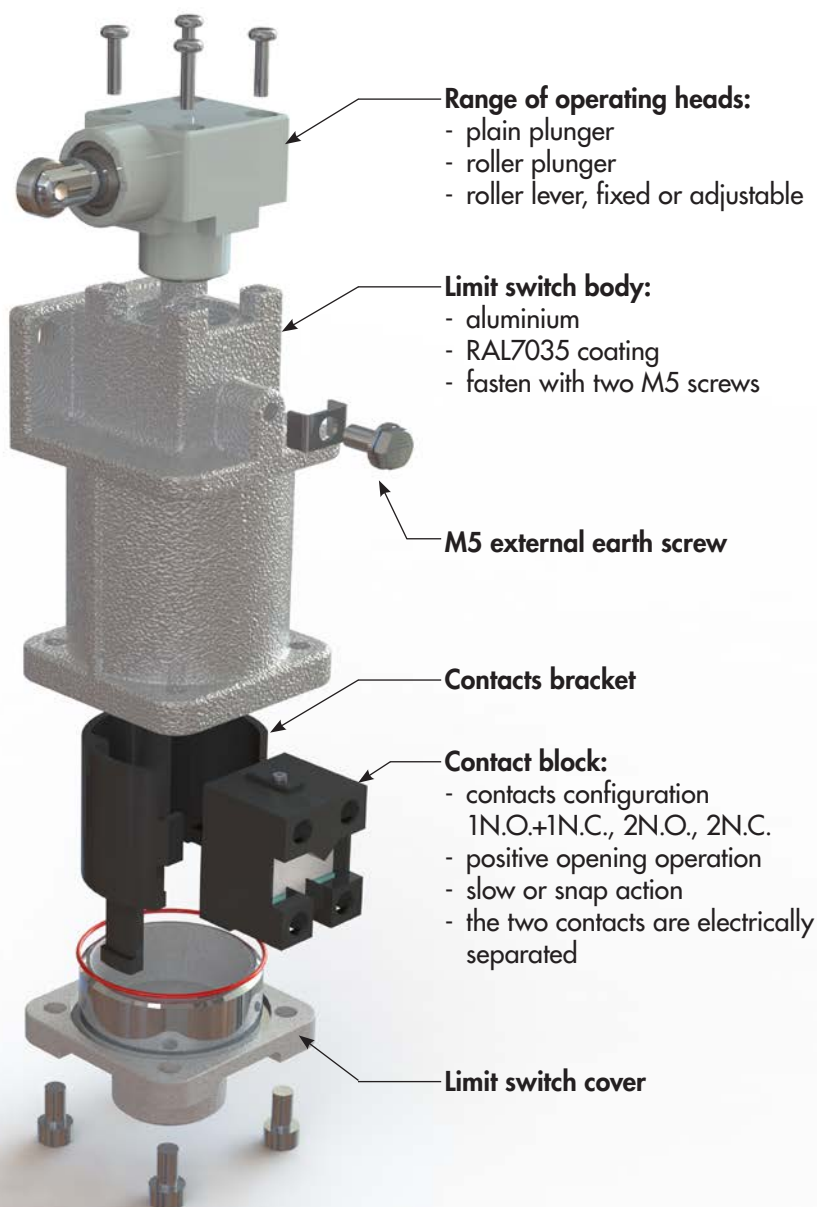
ACCESSORIES UPON REQUEST / SPECIAL REQUESTS

Cable gland

DIMENSIONAL DRAWING



Dimensions in mm



TERMINOLOGY

Positive opening operation



A control switch, with one or more break-contact elements, has a positive opening operation when the switch actuator (C) ensures the full opening of the contacts. For the part of travel that separates the contacts, there must be a positive zone with no resilient elements (e.g.: springs) between the moving contacts and the point where the actuator force is applied. The positive opening operation does not deal with N.O. contacts.

Control switches with positive opening operation may be provided with snap-action or slow-action contact elements. To use several contacts on the same control switch with positive opening operation, they must be electrically separated from each other; if not, only one contact may be used.

Snap action

Snap action contacts are characterised by a release position that is distinct from the operating position. The opening (or closure) of snap-action contacts is independent of the switch actuator speed and contributes to regular electric performance, even for slow switch actuator speeds.

Slow action

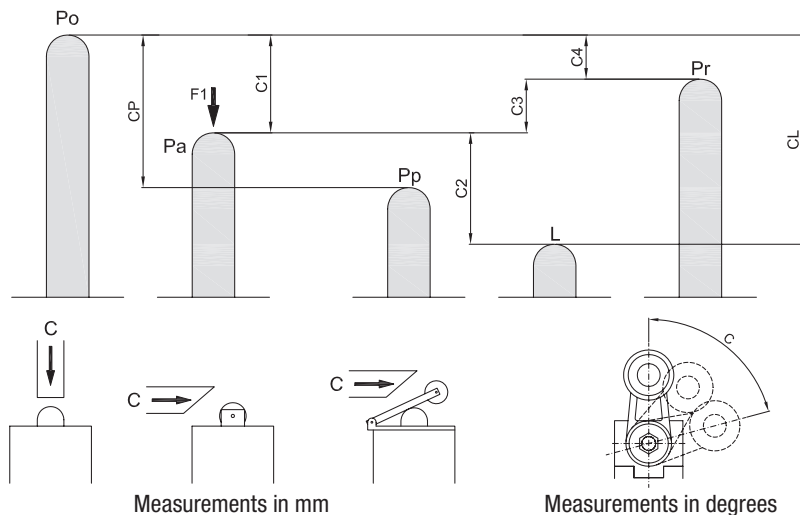
Slow-action contacts have a release position that is the same as the operating position. The switch actuator speed directly conditions the travel speed of contacts.

Minimum actuation force / torque

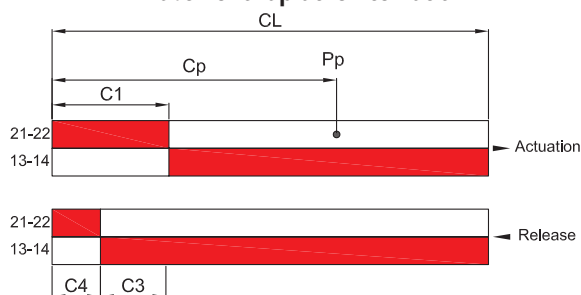
The minimum amount of force/torque that is to be applied to the switch actuator to produce a change in contact position.

Minimum force/torque to achieve positive opening operation

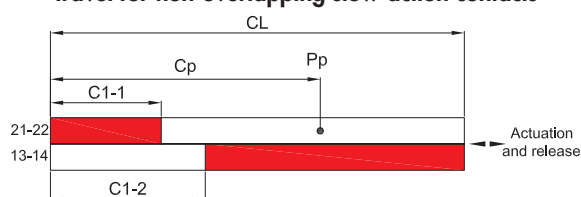
The minimum amount of force/torque that is to be applied to the switch actuator to ensure positive opening operation of the N.C. contact.



Travel for snap action contacts



Travel for non-overlapping slow-action contacts



For slow-action contacts:

C3 = 0

C1-1 = pre-travel of contacts 21-22

C1-2 = pre-travel of contacts 13-14

Po Free position

Position of the switch actuator when no external force is exerted on it.

Pa Operating position

Position of the switch actuator, under the effect of force F1, when the contacts leave their initial free position.

Pp Positive opening position

Position of the switch actuator from which positive opening operation is ensured.

L Max. travel position

Maximum acceptable travel position of the switch actuator under the effect of a force F1.

Pr Release position

Position of the switch actuator when the contacts return to their initial free position.

C1 Pre-travel

Distance between the free position Po and the operating position Pa.

Cp Positive opening travel

Minimum travel of the switch actuator, from the free position Po, to ensure positive opening operation of the N.C. contacts.

C2 Max. travel

Distance between the operating position Pa and the max. travel position L.

CL Max. travel

Distance between the free position Po and the max. travel position L.

C3 Differential travel (C1-C4)

Travel difference between Pa and Pr.

C4 Release travel

Distance between Pr and Po.

YFC Series Limit switch

Sample order code

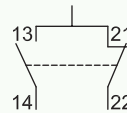
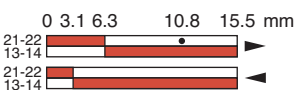
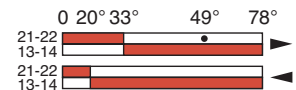
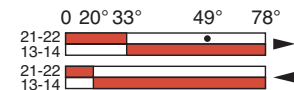
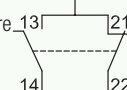
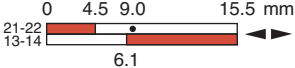
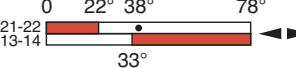
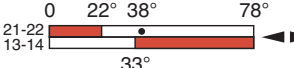
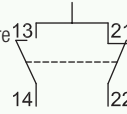
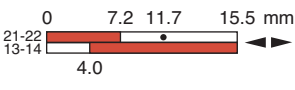
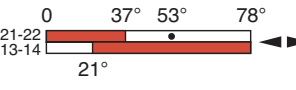
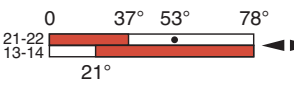
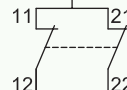
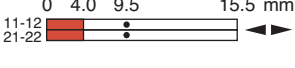
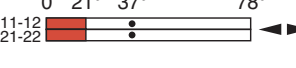
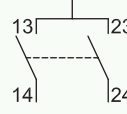
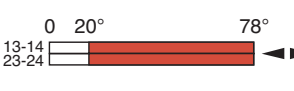
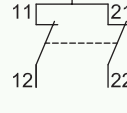
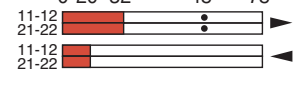
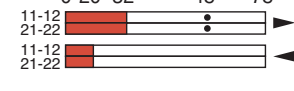
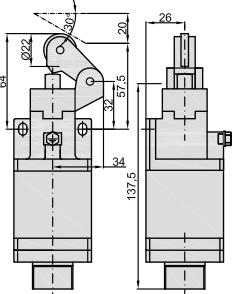
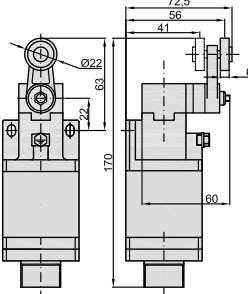
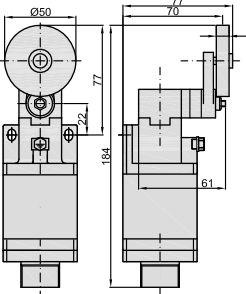
YFC	-	E21	Z11
MODEL		OPERATING HEAD TYPE	CONTACT TYPE

Limit switch with stainless steel lateral plain plunger and snap-action contact (1N.O. + 1N.C.)

CODE SELECTION TABLE

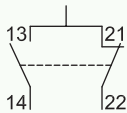
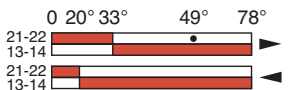
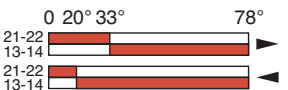
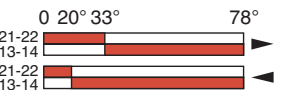
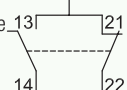
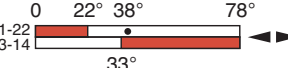
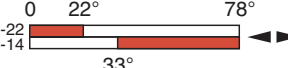
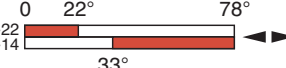
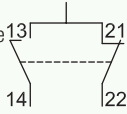
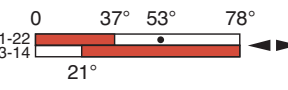
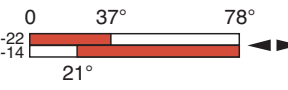
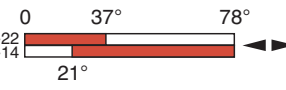
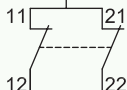
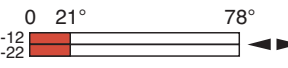
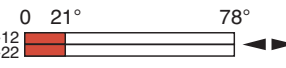
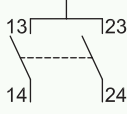
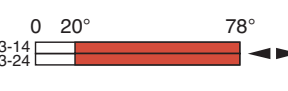
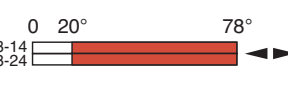
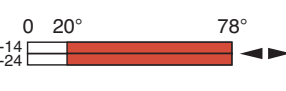
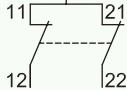
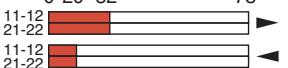
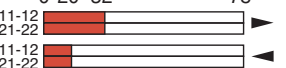
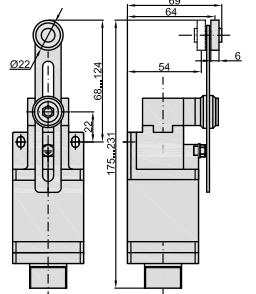
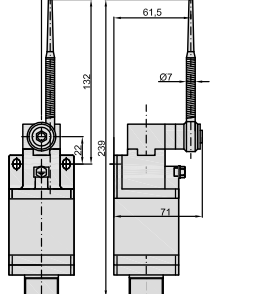
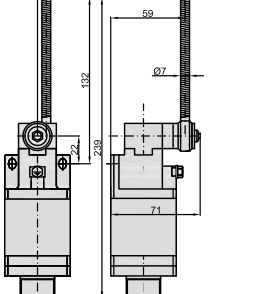
OPERATING HEAD MODEL	E21 Stainless steel lateral plain plunger	E22 Stainless steel lateral plunger with Ø12 vertical roller	E23 Stainless steel lateral plunger with Ø12 horizontal roller
Compliance / (positive opening operation N.C. contacts)	EN 50041	EN 50041	EN 50041
Max. control speed [m/s]	0.5	0.5	0.5
Minimum actuation force [N] or torque [Nm]	30 / 50	30 / 50	30 / 50
CONTACT TYPE			
Z11 Snap-action contacts (1N.O.+1N.C.)	YFC-E21Z11 	YFC-E22Z11 	YFC-E23Z11
X11 Slow action break before make (1N.O.+1N.C.)	YFC-E21X11 	YFC-E22X11 	YFC-E23X11
Y11 Slow action make before break 1NO+1NC	YFC-E21Y11 	YFC-E22Y11 	YFC-E23Y11
W02 Slow-action contacts (2N.C.)	YFC-E21W02 	YFC-E22W02 	YFC-E23W02
W20 Slow-action contacts (2N.O.)	YFC-E21W20 	YFC-E22W20 	YFC-E23W20
Z02 Snap action (2N.C.)	YFC-E21Z02 	YFC-E22Z02 	YFC-E23Z02
DIMENSIONS (mm)			

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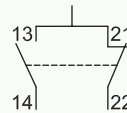
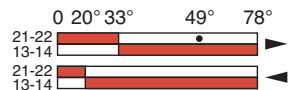
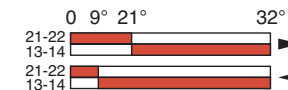
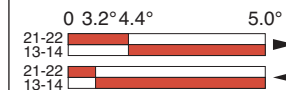
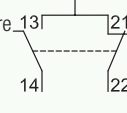
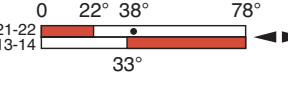
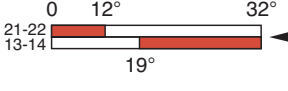
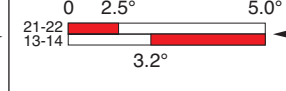
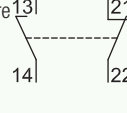
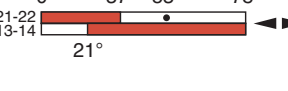
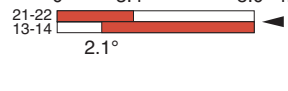
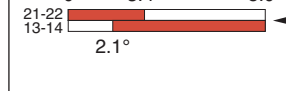
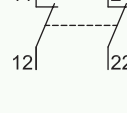
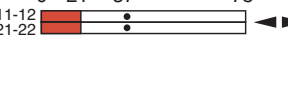
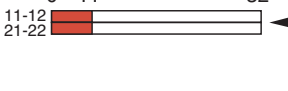
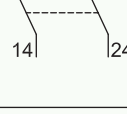
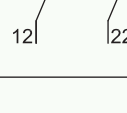
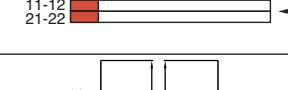
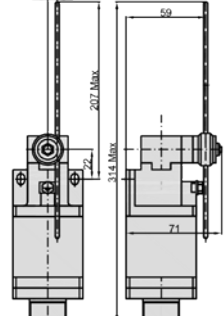
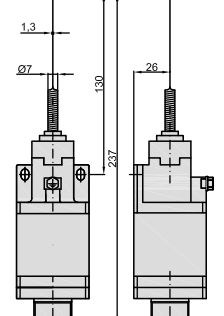
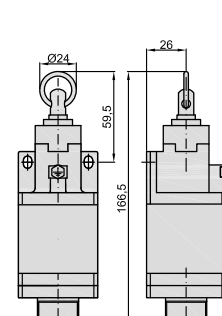
OPERATING HEAD MODEL	E3.. One way lever Ø22 E31: nylon roller E32: stainless steel roller E33: steel bearing 	E4.. Lever with Ø22 roller E41: nylon roller E42: stainless steel roller E43: steel bearing 	E44 Lever with Ø50 rubber roller 
Compliance / (positive opening operation N.C. contacts)	EN 50041 	EN 50041 	EN 50041 
Max. control speed [m/s]	1.5	1.5	1.5
Minimum actuation force [N] or torque [Nm]	12 / 40	0.15 / 0.30	0.15 / 0.30
CONTACT TYPE			
Z11 Snap-action contacts (1N.O.+1N.C.) 	YFC-E3.Z11 	YFC-E4.Z11 	YFC-E4.Z11 
X11 Slow action break before make (1N.O.+1N.C.) 	YFC-E3.X11 	YFC-E4.X11 	YFC-E4.X11 
Y11 Slow action make before break 1NO+1NC 	YFC-E3.Y11 	YFC-E4.Y11 	YFC-E4.Y11 
W02 Slow-action contacts (2N.C.) 	YFC-E3.W02 	YFC-E4.W02 	YFC-E4.W02 
W20 Slow-action contacts (2N.O.) 	YFC-E3.W20 	YFC-E22W20 	YFC-E4.W20 
Z02 Snap action (2N.C.) 	YFC-E3.Z02 	YFC-E4.Z02 	YFC-E4.Z02 
DIMENSIONS (mm)			

YFC Series Limit switch

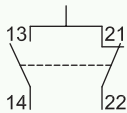
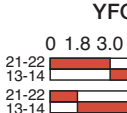
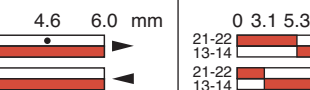
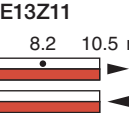
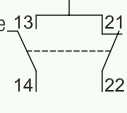
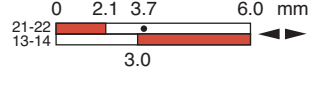
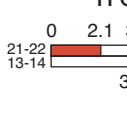
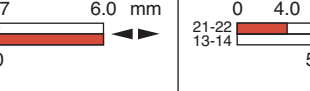
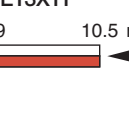
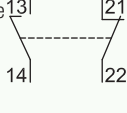
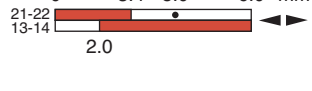
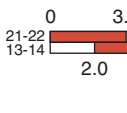
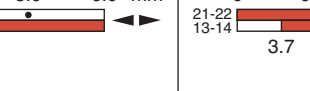
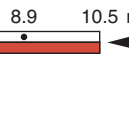
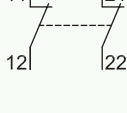
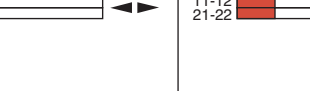
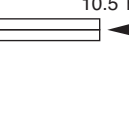
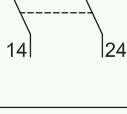
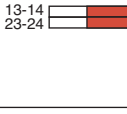
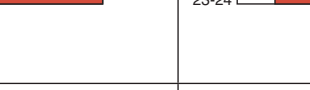
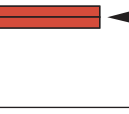
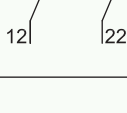
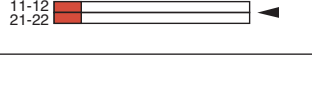
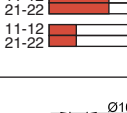
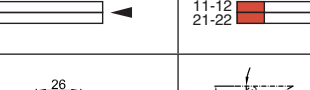
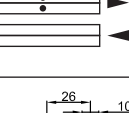
CODE SELECTION TABLE

OPERATING HEAD MODEL	E5. One way lever Ø22 E51: nylon roller E52: stainless steel roller E53: steel bearing 	E61 Nylon actuator with a stainless steel spring 	E62 Stainless steel spring actuator 
Compliance / (positive opening operation N.C. contacts)	EN 50041 	EN 50041 	EN 50041 
Max. control speed [m/s]	1.5	1.5	1.5
Minimum actuation force [N] or torque [Nm]	0.15 / 0.30	0.15 / -	0.15 / -
CONTACT TYPE			
Z11 Snap-action contacts (1N.O.+1N.C.) 	YFC-E5.Z11 	YFC-E61Z11 	YFC-E62Z11 
X11 Slow action break before make (1N.O.+1N.C.) 	YFC-E5.X11 	YFC-E61X11 	YFC-E62X11 
Y11 Slow action make before break 1NO+1NC 	YFC-E5.Y11 	YFC-E61Y11 	YFC-E62Y11 
W02 Slow-action contacts (2N.C.) 	YFC-E5.W02 	YFC-E61W02 	YFC-E62W02 
W20 Slow-action contacts (2N.O.) 	YFC-E5.W20 	YFC-E61W20 	YFC-E62W20 
Z02 Snap action (2N.C.) 	YFC-E5.Z02 	YFC-E61Z02 	YFC-E62Z02 
DIMENSIONS (mm)			

CODE SELECTION TABLE

OPERATING HEAD MODEL	E7.. Adjustable rod lever E71: stainless steel rod Ø3 E72: nylon rod Ø6 E73: fibreglass rod Ø3 E75: metal rod 3x3 	E91 Multi-directional stainless steel spring actuator 	E99 Pull action with ring 
Compliance / (positive opening operation N.C. contacts)	EN 50041 	EN 50041 	EN 50041 
Max. control speed [m/s]	1.5	1	0.5
Minimum actuation force [N] or torque [Nm]	0.15 / 0.30	0.18 / -	25 / -
CONTACT TYPE			
Z11 Snap-action contacts (1N.O.+1N.C.) 	YFC-E7.Z11 	YFC-E91Z11 	YFC-E99Z11 
X11 Slow action break before make (1N.O.+1N.C.) 	YFC-E7.X11 	YFC-E91X11 	YFC-E99X11 
Y11 Slow action make before break 1NO+1NC 	YFC-E7.Y11 	YFC-E91Y11 	YFC-E99Y11 
W02 Slow-action contacts (2N.C.) 	YFC-E7.W02 	YFC-E91W02 	YFC-E99W02 
W20 Slow-action contacts (2N.O.) 	YFC-E7.W20 	YFC-E91W20 	YFC-E99W20 
Z02 Snap action (2N.C.) 	YFC-E7.Z02 	YFC-E91Z02 	
DIMENSIONS (mm)			

CODE SELECTION TABLE

OPERATING HEAD MODEL	E11	E12	E13
			
Compliance / (positive opening operation N.C. contacts)	EN 50041 	EN 50041 	EN 50041 
Max. control speed [m/s]	0.5	0.5	0.5
Minimum actuation force or torque	30 / 45	30 / 45	22 / 40
CONTACT TYPE			
Z11 Snap-action contacts (1N.O.+1N.C.)	 YFC-E11Z11 	 YFC-E12Z11 	 YFC-E13Z11 
X11 Slow action break before make (1N.O.+1N.C.)	 YFC-E11X11 	 YFC-E61X11 	 YFC-E13X11 
Y11 Slow action make before break 1NO+1NC	 YFC-E11Y11 	 YFC-E61Y11 	 YFC-E13Y11 
W02 Slow-action contacts (2N.C.)	 YFC-E11W02 	 YFC-E61W02 	 YFC-E13W02 
W20 Slow-action contacts (2N.O.)	 YFC-E11W20 	 YFC-E61W20 	 YFC-E13W20 
Z02 Snap action (2N.C.)	 YFC-E11Z02 	 YFC-E61Z02 	 YFC-E13Z02 
DIMENSIONS (mm)	