

401 relay - Safety critical, 40 contacts

Datasheet



Description

The 401 relay has 40 double break contacts in all N/O and N/C combinations.

The plug-in design offers secure locking feature for maximum ease of maintenance (no wires need to be disconnected or other hardware removed for relay inspection or replacement). The resistance to impact and vibration is conform to standards in force for Railway Transported Equipment.

Weld no transfer safety contacts are standard. If one N/O contact welds, no N/C contact can close and visa versa. All relays are factory tested to insure they meet this important safety requirement.

The 401 relay can be plugged in the COR OU type socket.

Application

The 401 latching relay is especially build for double driver desk equipped locomotives and used to switch all controls of a drivers desk in a locomotive at once to the other driver desk on the other side of the locomotive.

Features

- Instantaneous & safety critical relay
- Plug-in design with secure locking feature for maximum ease of maintenance
- 40 double break contacts in all N/O and N/C combinations
- Weld no transfer safety contacts standard
- Contact life (mechanical) of 100 million cycles
- -40 °C...+80 °C operating temperature

Benefits

- Proven reliable
- Long life cycle
- Easy to maintain and replace
- Used in safety critical operations
- Low life cycle cost
- No maintenance

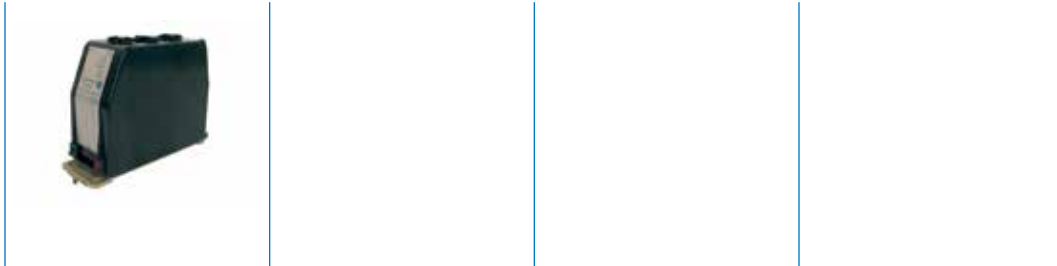
Railway compliancy

- NF F 62-002 Rolling stock - Instantaneous relays contacts and sockets
- NF F 16-101/102 Fire behaviour - Railway rolling stock

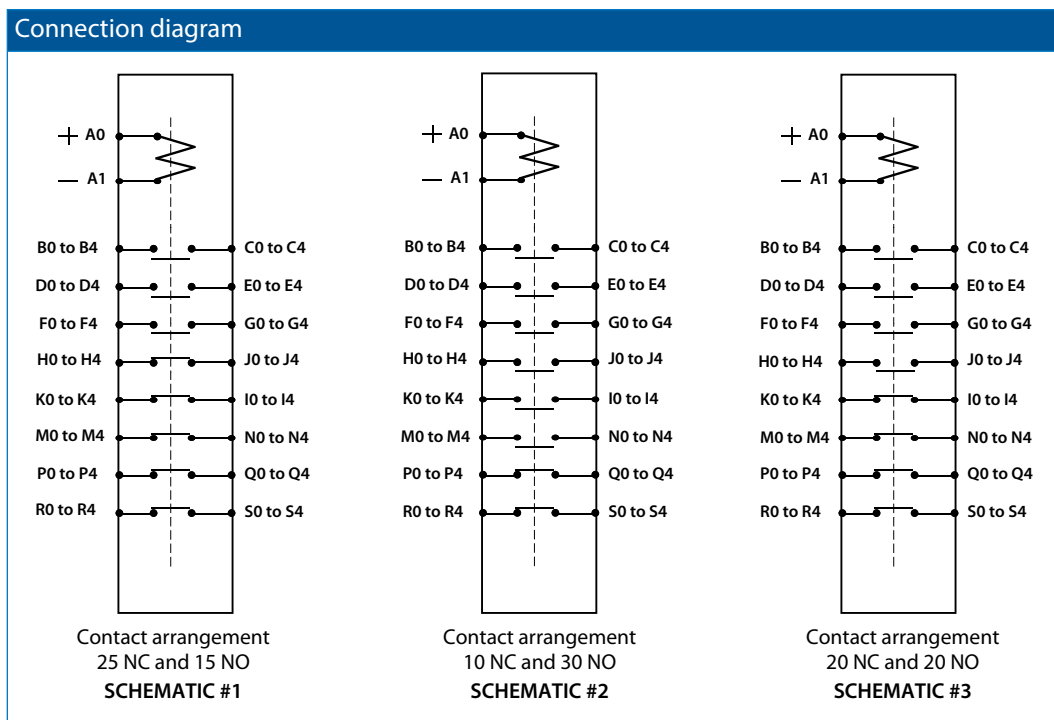
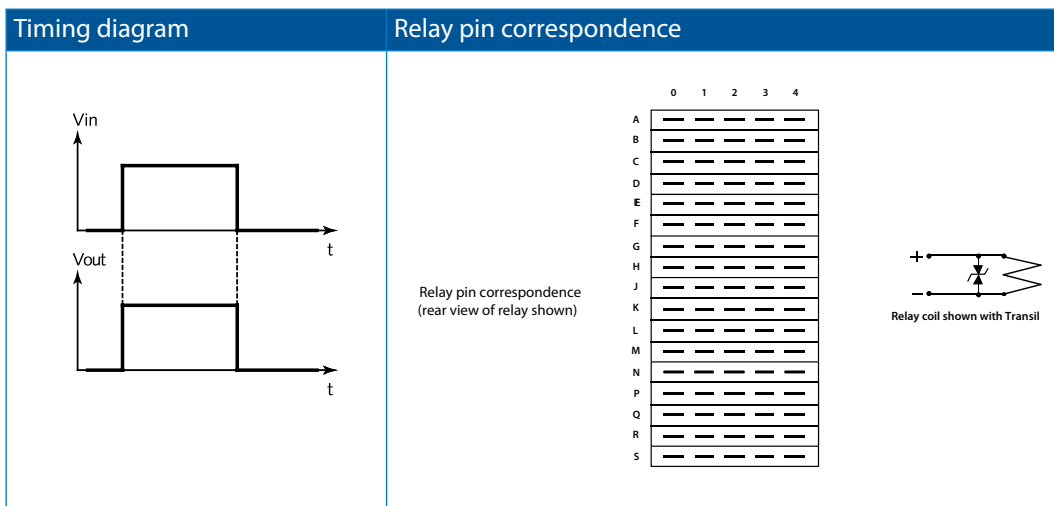


401 relay

Technical specifications



Functional and connection diagrams



401 relay

Technical specifications

Coil data

Unom (VDC)	Uoperating	Pnom (W)	Uhold (VDC) ⁽¹⁾	Udrop-out	R coil (Ω) ⁽³⁾	L/R (ms) ⁽⁴⁾
36	25 / 45	6	21	3.5	215	10
72	48 / 90	6.5	40.5	6.5	800	10

(1) Minimum assured value

(2) Maximum assured value

(3) Coil resistance tol.: $\pm 8\%$ at 20 °C

(4) Valid for closed relay

Contact data

Nominal current	8 A resistive		
Nominal breaking capacity and life	2.4 A at 72 VDC	L/R : 0 ms	Electrical life: 5 x 10 ⁶ op.
	0.8 A at 72 VDC	L/R: 30 ms	Electrical life: 2 x 10 ⁶ op.
	2.4 A at 220 VAC 60 Hz	cos ϕ =1	Electrical life: 2 x 10 ⁶ op.
	Lamp filament circuit: 160 W at 72 VDC		Electrical life: 5 x 10 ⁵ op.
Contact closure pick-up time	< 120 ms		
Contact opening drop-out time	< 40 ms		
Minimum contact continuity	20 mA at 24 VDC		
Number of contacts	40 double make / double break contacts (forms X & Z)		
Contact material	Hard silver overlay laminated to copper		
Contact resistance	initial	18 to 25 m Ω max at 8 A	
	end of life	50 to 60 m Ω max at 8 A	

Electrical characteristics

Dielectric strength	2200 VAC, 1 min
Insulation resistance	≥ 1000 M Ω at 500 VDC



401 relay

Technical specifications

Mechanical & environmental characteristics

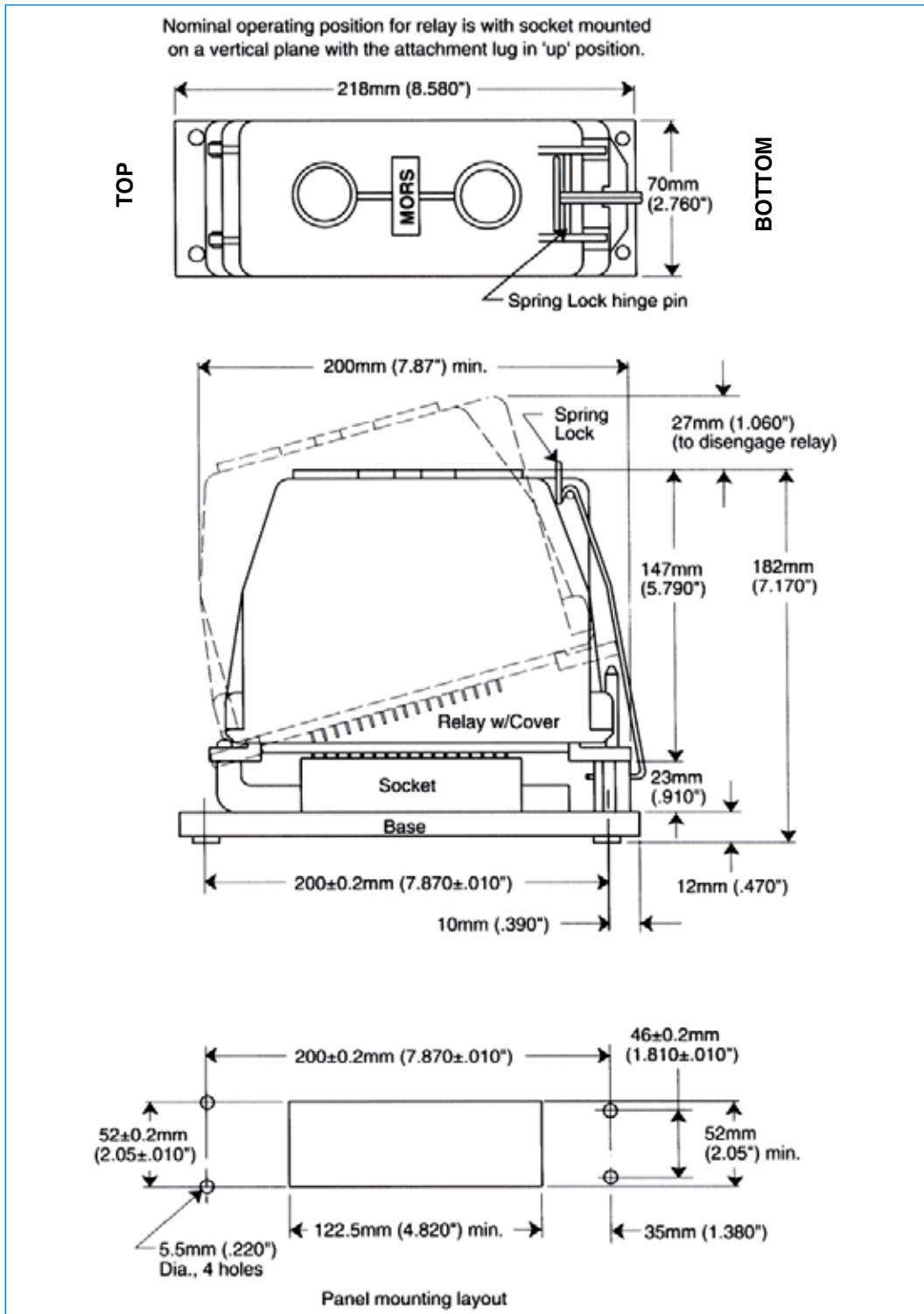
Vibration	The tests are conducted in the X, Y, Z planes at resonant frequency between 5 & 50 cycles at 1 g, or if indeterminate at 10 Hz (sinusoidal)
Shock	The shock is applied in both directions in the X, Y & Z planes. Three successive shocks are administered consisting of the positive component of sinusoidal with a value of 15 g, 11 ms
Contact life (mechanical)	100 million cycles
Weight	1.8 kg (63.5 ounces)
Operating temperature	-40 °C...+85 °C
Environmental	Standard climatic category: -25 °C...+70 °C, 4 days continuous humidity in installation section
Operating position	Maybe mounted in any attitude, see recommendations in installation sections
Humidity	93% RH, 40° C for 4 days
Salt mist	5% NaCl, 35° C for 4 days
Protection	IP40 (relay on socket)
Material	Cover: Rutaform PF 51905-P10Z2 Base: Polyester



401 relay

Technical specifications

Dimensions (mm)



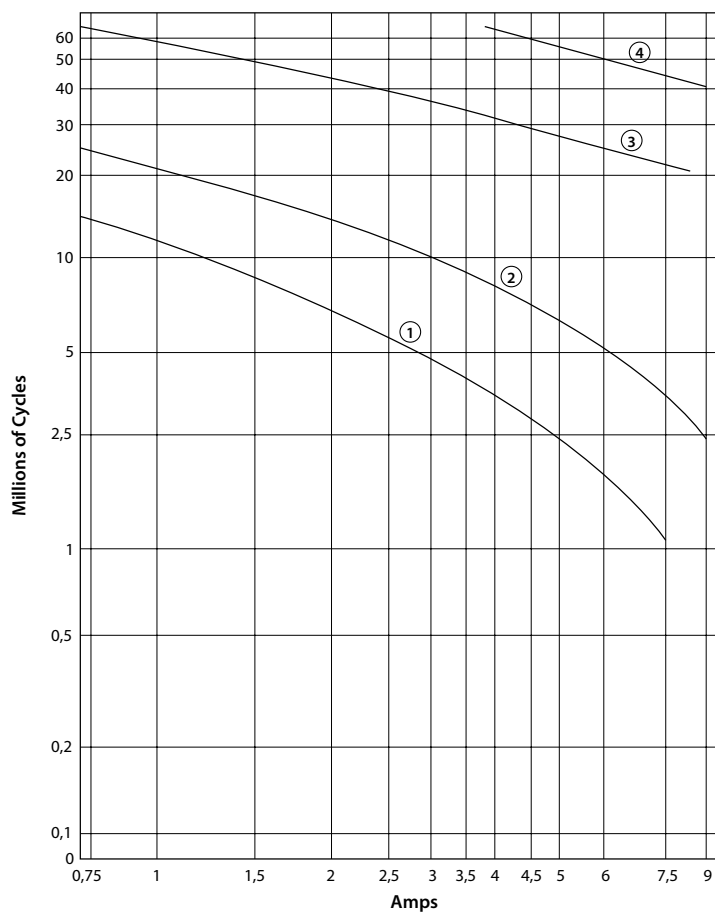
401 relay

Technical specifications

Dynamic relay selection curve No 1

AC Current breaking capacity versus life expectancy in millions of cycles.
 Rate of contacts opening and closing = 1200 operations per hour.
 Curves shown for resistive load (Power Factor = 1).

Curve	1	2	3	4
VAC	220	125	48	24



401 relay

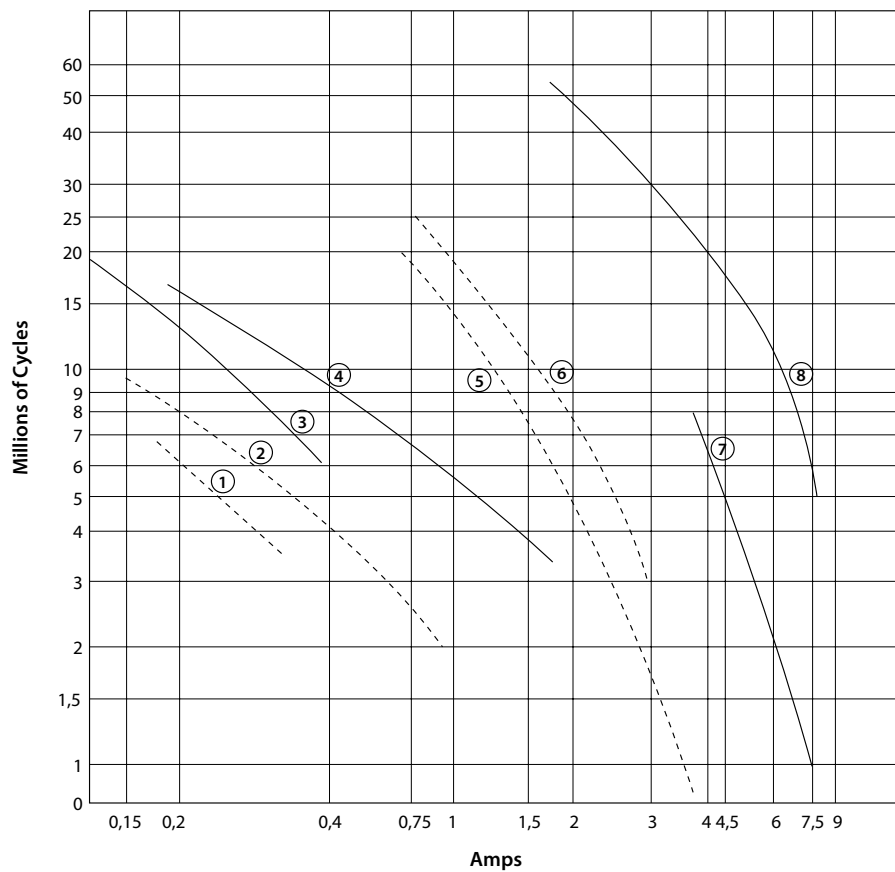
Technical specifications

Dynamic relay selection curve No 2

DC Current breaking capacity versus life expectancy in millions of cycles.
 Rate of contacts opening and closing = 1200 operations per hour.
 Curves shown for inductive load:

- L/R= 20 ms continuous current
- - - L/R= 40 ms continuous current

Curves	1-3	2-4	5-7	6-8
VDC	220	125	48	24



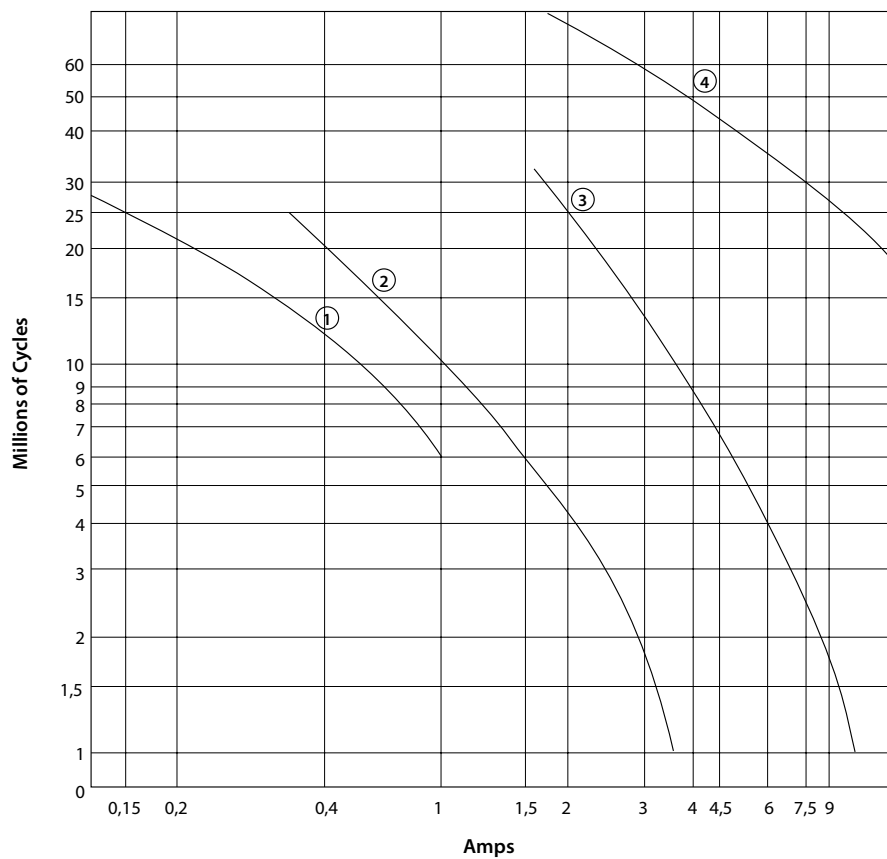
401 relay

Technical specifications

Dynamic relay selection curve No 3

DC Current breaking capacity versus life expectancy in millions of cycles.
 Rate of contacts opening and closing = 1200 operations per hour.
 Curves shown for resistive load (L/R = 0). Continuous current.

Curve	1	2	3	4
VDC	220	125	48	24



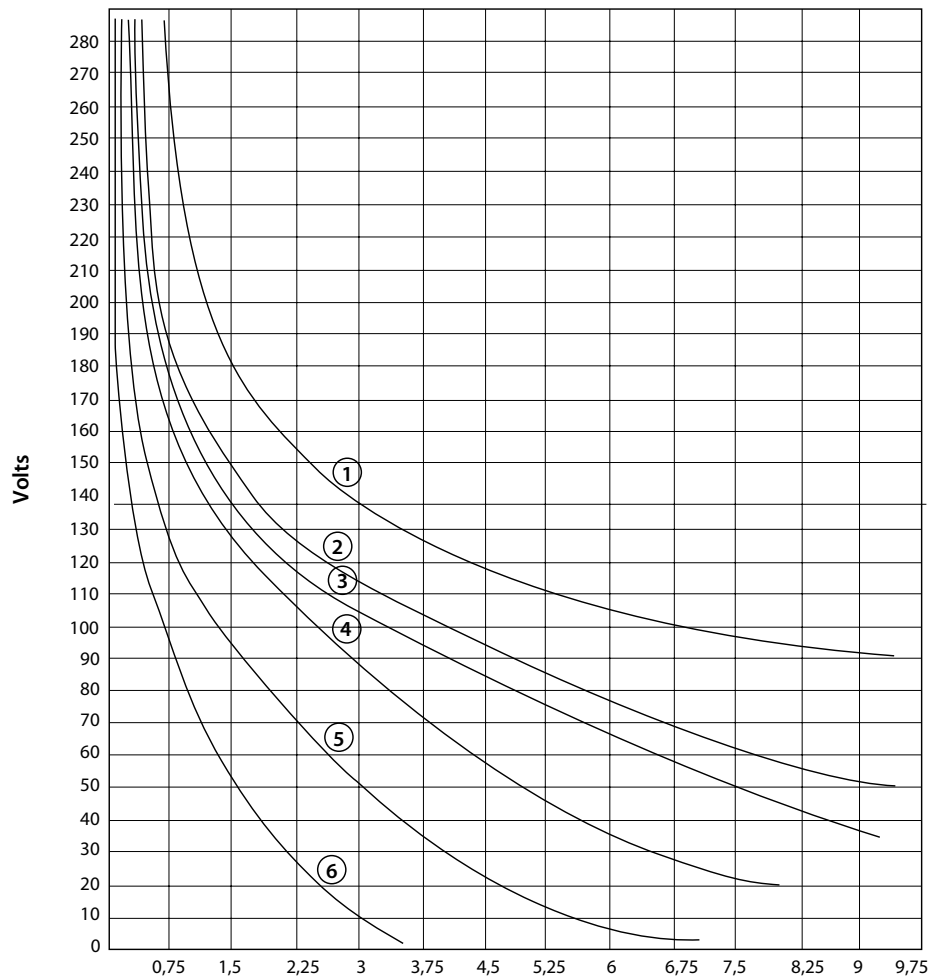
401 relay

Technical specifications

Dynamic relay selection curve No 4

Maximum contact breaking capacity versus voltage for a given L/R.
 Rate of contacts opening and closing = 600 operations per hour.
 Curves shown for resistive load (L/R=0) and inductive loads. Continuous current.

Curve	1	2	3	4	5	6
L/R=	0ms	15ms	20ms	40ms	60ms	100ms



401 relay

Technical specifications

Dynamic relay selection curve No 5

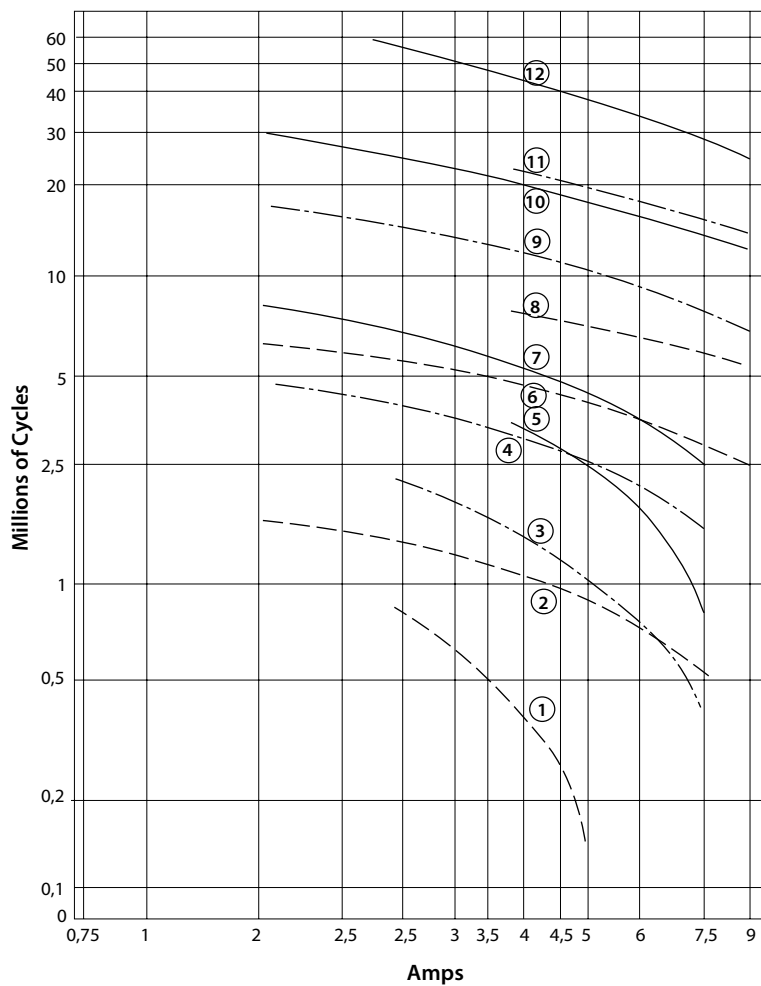
AC Current breaking capacity versus life expectancy in millions of cycles.

Rate of contacts opening and closing = 1200 operations per hour.

Values shown for inductive loads:

- Cos ϕ = 0.7
- - - Cos ϕ = 0.5
- - - - Cos ϕ = 0.3

Curves	1,3 &4	2,5 &7	6,9 &10	8,11 &12
VAC	220	125	48	24



401 relay

Mounting possibilities / sockets



COR OU

Panel/flush mounting

COR OU XX*	Socket - Alkyd compound
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* X indicates keying code from relay table



401 relay

Instructions

Installation

Install socket and connect wiring correctly according identification to terminals. Plug relay into socket. Reverse installation into socket not possible due to mechanical blocking by snap-lock.

Don't reverse polarity of coil connection.

Relays can be mounted (tightly) next to each other and in any attitude. However, we recommend the following:

- If the relay is mounted **vertical**; the direction of contact closure should be oriented transverse to the direction of forward motion.
- If the relay is mounted **horizontal**; the direction of contact closure should be oriented so that gravity will cause the contacts to revert to their de-energised position.

Warning! Never use spray near by relays

Operation

Before operating always apply voltage to coil to check correct operation.

Long term storage may corrode the silver on the relay pins. Just by plugging the relay into the socket, the female bifurcated receivers will automatically clean the corrosion on the pins and guarantee a good connection.

Do not use the relay in places with flammable gas as the arc generated from switching could ignite gasses.

Maintenance

When the relay doesn't seem to operate correct, please check presence of coil voltage. Use a multimeter.

If LED is used, coil presence should be indicated. If coil voltage is present, but the relay doesn't work, a short circuit of suppression diode is possible (The coil connection was reversed). If relay doesn't work after inspection, please replace relay unit by a similar model. Send defective relay back to manufacturer. Normal wear and tear excluded.



401 relay

Ordering scheme

Configuration:

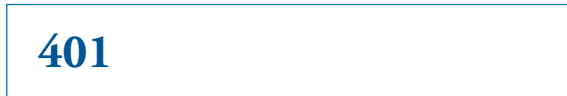


1. Relay model 2. Basic part number 3. Coil OVP 4. Language (test report)

This example represents a **401 0 25 15 72 5A S 1**.

Description: 401 relay, contact material: hard silver overlay laminated to copper, configuration 25 N/C + 15 N/O with U_{nom} : 72 VDC, keying 5A, transil coil protection, test report in English

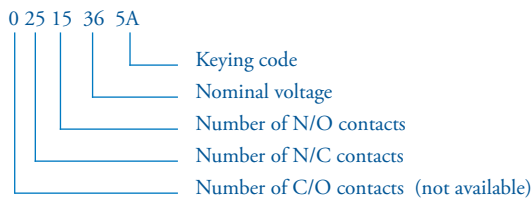
1. Relay model



2. Basic part number*

0 15 25 72 6A	25 N/C + 15 N/O - 72 VDC schem. #1
0 10 30 72 7A	10 N/C + 30 N/O - 72 VDC schem. #2
0 10 30 36	10 N/C + 30 N/O - 36 VDC schem. #2 0
20 20 72 12 A	20 N/C + 20 N/O - 72 VDC schem. #3

* Description



3. Coil overvoltage protection

-	No coil protection
S	Transil coil protection

4. Language on test report

-	French
1	English
2	Spanish





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