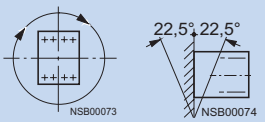
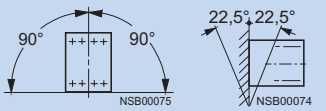
Technical specifications

Contactor	Type	3TH42/3TH43
Permissible mounting position		
The contactors are designed for operation on a vertical mounting surface.	AC operation	
	DC operation	
Upright mounting position:	AC and DC operation	 Special design required

Positively-driven operation in contactor relays with 8 and 10 contacts

3TH42/3TH43

Yes, the contactor relays satisfy the conditions for positively-driven operation according to:

- ZH 1/457
- IEC 60947-5-1, Amendment 2, Annex L, Edition 10.1999
- SUVA

Explanation:
There is positively-driven operation if it is ensured that the NC and NO contacts cannot be closed at the same time.

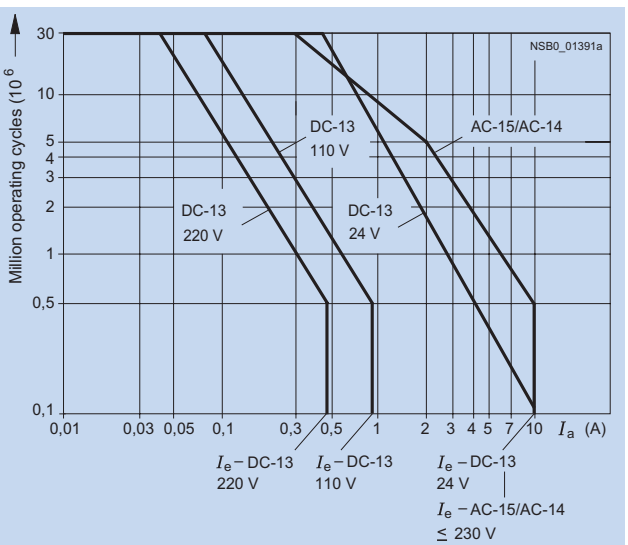
ZH1/457
Safety rules for control units on power-operated presses in the metal-working industry.

IEC 60947-5-1, Amendment 2, Annex L, Edition 10.1999
Low-voltage controlgear, control equipment, and switching elements. Special requirements for positively-driven contacts

SUVA
Accident prevention regulations of the Schweizer Unfallversicherungsanstalt (Swiss Institute for Accident Insurance).

Contact endurance for utilization categories AC-15/AC-14 and DC-13

The contact endurance is mainly dependent on the breaking current. The conditions are arbitrary i.e. control stations that do not switch synchronously to the phase angle of the network.
If magnetic circuits other than the contactor coil systems or solenoid valves are present, e.g. magnetic brakes, protective measures for the load circuits are necessary.
RC elements and freewheeling diodes would be suitable as protective features.



Legend:
I_a = Breaking current
I_e = Rated operating current

Contactor relays, 8- and 10-pole

Contactor	Type		3TH42/3TH43
CSA and UL rated data			
Basic units			
Rated control supply voltage U_s			max. AC 600 V, DC 230 V (to UL DC 240 V)
Rated voltage **Switching capacity**			AC 600 V, DC 600 V A 600, P 600
General data			
Mechanical endurance	Basic units	Operating cycles	30 million
Rated insulation voltage U_i (pollution degree 3)		V	690
Rated impulse withstand voltage U_{imp}		kV	8
Safe isolation between coil and main contacts (to DIN VDE 0106 Part 101 and A1 Draft 02/89)		V	up to 500
Permissible ambient temperature	in operation when stored	°C °C	-25 ... +55 -55 ... +80
Degree of protection to IEC 60947-1 and IEC 60529			IP20
Shock resistance			
Rectangular pulse	AC operation DC operation	g/ms g/ms	7.7/5 and 4.4/10 9.3/5 and 5.4/10
Sine pulse	AC operation DC operation	g/ms g/ms	12/5 and 6.8/10 14.7/5 and 8.5/10
Conductor cross-sections			
Screw terminals solid finely stranded with end sleeve		 mm^2 mm^2	M 3.5 2 x (0.5 ... 1) 2 x (1 ... 2.5) 1 x 4 2 x (0.75 ... 2.5)
Short-circuit protection			
(weld-free protection at I_k ≥1 kA)			
• Fuse links, operational class gL/gG	NH Type 3NA DIAZED Type 5SB NEOZED Type 5SE, quick	A A A	16 16 20
• Miniature circuit-breaker	C characteristic B characteristic	A A	16 16

Contactor	Type		3TH42/3TH43
Control circuit			
Coil operating range			
AC operation			0.8 ... 1.1 x U_s [1]
DC operation (exception: 24 V) • at DC 24 V			0.8 ... 1.1 x U_s 0.8 ... 1.2 x U_s
Power consumption of magnetic coils (when coil is cold and 1.0 x U_s)			
AC operation, 50 Hz, standard version • closing • closed		 VA/p.f. VA/p.f.	 68 / 0.82 10 / 0.29
AC operation, 50/60 Hz, standard version • closing, 50 Hz • closed, 50 Hz • closing, 60 Hz • closed, 60 Hz		 VA/p.f. VA/p.f. VA/p.f. VA/p.f.	 77 / 0.81 11 / 0.28 71 / 0.75 9 / 0.27
AC operation, 50 Hz, USA/Canada • closing • closed		 VA/p.f. VA/p.f.	 68 / 0.82 10 / 0.29
AC operation, 60 Hz, USA/Canada • closing • closed		 VA/p.f. VA/p.f.	 75 / 0.76 9.4/0.29 ... 0.3
AC operation, 50 Hz, standard version • closing • closed		 VA/p.f. VA/p.f.	 80 / 0.8 10.7 / 0.29
AC operation, 60 Hz, standard version • closing • closed		 VA/p.f. VA/p.f.	 75 ... 90/0.73 8.5 ... 10.7/0.29 ... 0.3
DC operation up to 250 V	closing = closed	W	6.2
Permissible residual current of the electronics (with 0 signal)			
for AC operation		mA	≤ 8 x (220 V/U_s)
for DC operation		mA	≤ 1.25 x (220 V/U_s)
Operating times [2] Total break time = opening time + arcing time (the values apply up to and including 20 % undervoltage, 10 % overvoltage, and with the coil in the cold state and at operating temperature)			
AC operation			
Closing • ON-delay NO contact • opening time NC contact		 ms ms	 8 ... 35 6 ... 20
Opening • OFF-delay NO contact • closing time NC contact		 ms ms	 4 ... 18 5 ... 30
Arcing time		ms	10
DC operation			
Closing • ON-delay NO contact • opening time NC contact		 ms ms	 20 ... 170 18 ... 110
Opening • OFF-delay NO contact • closing time NC contact		 ms ms	 10 ... 25 15 ... 30
Arcing time		ms	10
Switching times [2] **at 1.0 x U_s**			
AC operation			
Closing • ON-delay NO contact • opening time NC contact		 ms ms	 10 ... 25 7 ... 20
Opening • OFF-delay NO contact • closing time NC contact		 ms ms	 5 ... 18 7 ... 20
DC operation			
Closing • ON-delay NO contact • opening time NC contact		 ms ms	 30 ... 70 28 ... 65
Opening • OFF-delay NO contact • closing time NC contact		 ms ms	 10 ... 20 15 ... 25

1) Coils for USA, Canada and Japan: 0.85 to 1.1 x U_s, at 60 Hz:

2) The opening times of the NO contacts and the closing times of the NC contacts increase if the contactor coils are protected against voltage peaks (suppression diode 6 to 9 times, diode assemblies 2 to 6 times, varistor +2 to 5 ms).

Contactor relays, 8- and 10-pole

Contactor	Type			3TH42/3TH43
Load side				
Rated operating currents I_e				
AC-12			A	16
AC-15/AC-14 for rated operating voltage U		230 V	A	10
		400 V	A	6
		500 V	A	4
		690 V	A	2
DC-12, for rated operating voltage U_e				
• 1 conducting path		up to 48 V	A	10
		110 V	A	2.1
		220 V	A	0.8
		440 V	A	0.6
		600 V	A	0.6
• 2 series-connected conducting paths		up to 48 V	A	10
		110 V	A	10
		220 V	A	1.6
		440 V	A	0.8
		600 V	A	0.7
• 3 series-connected conducting paths		up to 48 V	A	10
		110 V	A	10
		220 V	A	10
		440 V	A	1.3
		600 V	A	1
DC-13, for rated operating voltage U_e				
• 1 conducting path		24 V	A	10
		48 V	A	5
		110 V	A	1
		220 V	A	0.45
		440 V	A	0.25
		600 V	A	0.2
• 2 series-connected conducting paths		24 V	A	10
		48 V	A	10
		110 V	A	2.5
		220 V	A	0.75
		440 V	A	0.5
		600 V	A	0.4
• 3 series-connected conducting paths		24 V	A	10
		48 V	A	10
		110 V	A	10
		220 V	A	2
		440 V	A	0.9
		600 V	A	0.8
Rated output power of induction motors acc. to utilization category AC-2 and AC-3, 50 Hz				
		230/220 V	kW	2.4
		400/380 V	kW	4
		500 V	kW	4
		690/660 V	kW	4
Operating frequency z [1]				
Operating cycles per hour for rated operation for utilization category		AC-12/DC-12	h^{-1}	1000
		AC-2	h^{-1}	500
		AC-3	h^{-1}	1000
		AC-15/AC-14	h^{-1}	3600
		DC-13	h^{-1}	3600
		No-load operating frequency	h^{-1}	10000

1) Dependence of the operating frequency z on the operating current I' and operating voltage U': $z' = z \cdot I_e/I' \cdot (U_e/U')^{1.5}$ 1/h.