

Function

3RP15 and 3RP20 function table

Function	Function chart	3RP20 timing relay and 3RP19 01 label set	3RP15 timing relay and 3RP19 01 label set	Identification letter	3RP15 1.	3RP15 25	3RP15 27	3RP15 3.	3RP15 40	3RP15 55	3RP15 7.
	Timing relay energized Contact closed Contact open	3RP20 05-A	3RP20 25	3RP15 05-A 3RP19 01-0A							
1 CO contact											
ON-delay				A							
OFF-delay with auxiliary voltage				B ¹⁾							
OFF-delay without auxiliary voltage											
ON-delay and OFF-delay with auxiliary voltage ($t = t_{on} = t_{off}$)				C ¹⁾							
Flashing, starting with interval (pulse/interval 1:1)				D							
Clock-pulse, starting with interval (dead time, pulse time, and time setting ranges each separately adjustable)											
Passing make contact				E							
Passing break contact with auxiliary voltage				F ¹⁾							
Pulse-forming with auxiliary voltage (pulse generation at the output does not depend on duration of energizing)				G ¹⁾							
Additive ON-delay with auxiliary voltage				H ¹⁾							
1 NO contact (semiconductor)											
ON-delay											

¹⁾ Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero. This does not apply to G, G● and H, H●, which are not retriggerable.

■ Function is possible

3RP Timing Relays

General data

Function	Function chart	3RP20 timing relay and 3RP19 01 label set		3RP15 timing relay and 3RP19 01 label set												
	<div><div></div> Timing relay energized</div> <div><div></div> Contact closed</div> <div><div></div> Contact open</div>	3RP20 05-B	3RP20 25	3RP15 05-B	3RP19 01-0B	3RP15 05-R	3RP19 01-0A	Identification letter	3RP15 1.	3RP15 25	3RP15 27	3RP15 3.	3RP15 40	3RP15 55	3RP15 60	3RP15 7.
2 CO contacts																
ON-delay	<div>A1/A2</div> <div>15/18</div> <div>15/16</div> <div>25/28</div> <div>25/26</div> <div>NSB00671</div> <div>t</div>							A								
ON-delay and instantaneous contact	<div>A1/A2</div> <div>15/18</div> <div>15/16</div> <div>21/24</div> <div>21/22</div> <div>NSB00672</div> <div>t</div>							A●								
OFF-delay with auxiliary voltage	<div>A1/A2</div> <div>15/18</div> <div>15/16</div> <div>25/28</div> <div>25/26</div> <div>NSB00673</div> <div>≥ 35 ms</div> <div>t</div>							B ¹⁾								
OFF-delay with auxiliary voltage and instantaneous contact	<div>A1/A2</div> <div>15/18</div> <div>15/16</div> <div>21/24</div> <div>21/22</div> <div>NSB00674</div> <div>≥ 35 ms</div> <div>t</div>							B ¹⁾								
OFF-delay without auxiliary voltage	<div>A1/A2</div> <div>15/18</div> <div>15/16</div> <div>25/28</div> <div>25/26</div> <div>NSB00675</div> <div>≥ 200 ms</div> <div>t</div>															
ON-delay and OFF-delay with auxiliary voltage ($t = t_{on} = t_{off}$)	<div>A1/A2</div> <div>15/18</div> <div>15/16</div> <div>25/28</div> <div>25/26</div> <div>NSB00676</div> <div>t</div> <div>t</div>							C ¹⁾								
ON-delay and OFF-delay with auxiliary voltage and instantaneous contact ($t = t_{on} = t_{off}$)	<div>A1/A2</div> <div>15/18</div> <div>15/16</div> <div>21/24</div> <div>21/22</div> <div>NSB00677</div> <div>t</div> <div>t</div>							C● ¹⁾								
Flashing, starting with interval (pulse/interval 1:1)	<div>A1/A2</div> <div>15/18</div> <div>15/16</div> <div>25/28</div> <div>25/26</div> <div>NSB00678</div> <div>t</div> <div>t</div>							D								
Flashing, starting with interval (pulse/interval 1:1) and instantaneous contacts	<div>A1/A2</div> <div>15/18</div> <div>15/16</div> <div>21/24</div> <div>21/22</div> <div>NSB00679</div> <div>t</div> <div>t</div>							D●								
Passing make contact	<div>A1/A2</div> <div>15/18</div> <div>15/16</div> <div>25/28</div> <div>25/26</div> <div>NSB00680</div> <div>t</div>							E								
Passing make contact and instantaneous contact	<div>A1/A2</div> <div>15/18</div> <div>15/16</div> <div>21/24</div> <div>21/22</div> <div>NSB00681</div> <div>t</div>							E●								

For footnote see page 7/47.

■ Function is possible

Function	Function chart	3RP20 timing relay and 3RP19 01 label set	3RP15 timing relay and 3RP19 01 label set	3RP20 05-B	3RP20 25	3RP15 05-B	3RP19 01-0B	3RP15 05-R	3RP19 01-0A	Identification letter	3RP15 1.	3RP15 25	3RP15 27	3RP15 3.	3RP15 40	3RP15 55	3RP15 60	3RP15 7.
	<div> <div></div> Timing relay energized <div></div> Contact closed <div></div> Contact open </div>																	
2 CO contacts																		
Passing break contact with auxiliary voltage										F ¹⁾								
Passing break contact with auxiliary voltage and instantaneous contact										F● ¹⁾								
Pulse-forming with auxiliary voltage (pulse generation at the output does not depend on duration of energizing)										G ¹⁾								
Pulse-forming with auxiliary voltage and instantaneous contact (pulse generation at the output does not depend on duration of energizing)										G● ¹⁾								
Additive ON-delay with auxiliary voltage										H ¹⁾								
Additive ON-delay with auxiliary voltage and instantaneous contact										H● ¹⁾								
Wye-delta function										YΔ								
2 NO contacts																		
Wye-delta function YΔ																		
3 NO contacts																		
Wye-delta function with overtravel function ²⁾ (idling)																		

¹⁾ Note on function with start contact: A new control signal at terminal B, after the operating time has started, resets the operating time to zero. This does not apply to G, G● and H, H●, which are not retriggerable.

²⁾ For function diagrams showing the various possibilities of operation of the 3RP15 60-1S.30 see page 7/48.

■ Function is possible

3RP Timing Relays

General data

3RP15 function table

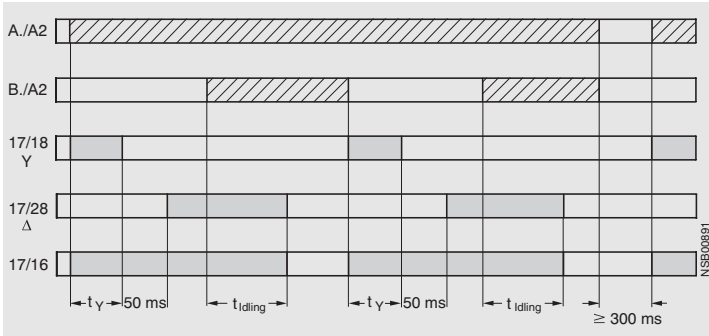
Possibilities of operation of the 3RP15 60-1S.30 timing relay

 Timing relay energized

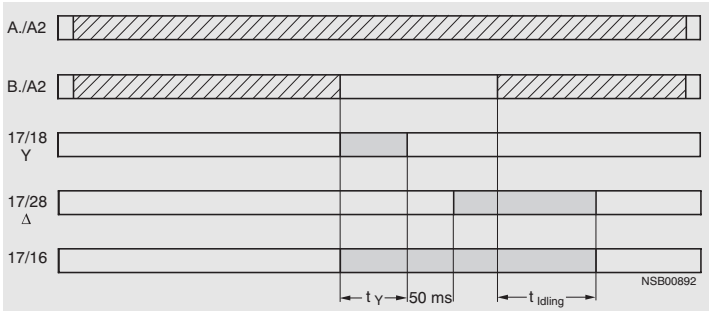
☐ Contact closed

☐ Contact open

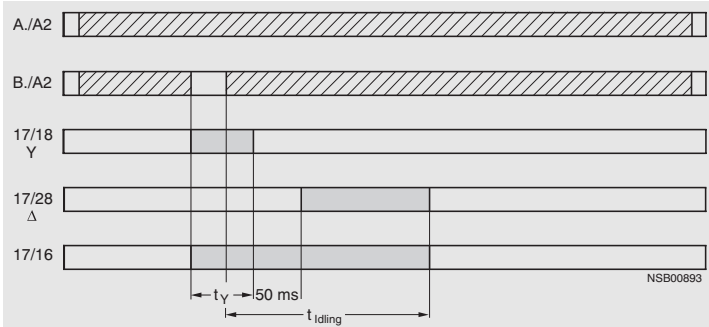
Operation 1



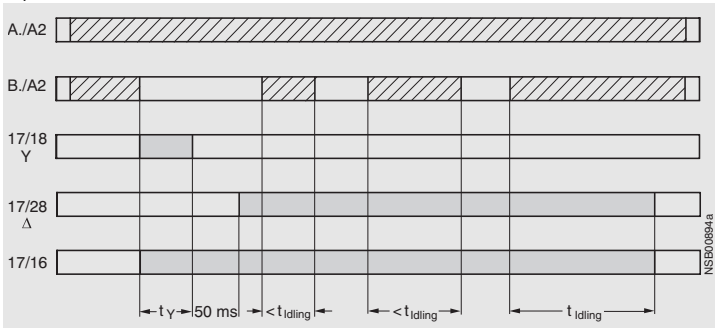
Operation 2



Operation 3



Operation 4


$$t_y = \text{Star time} \quad 1 \text{ to } 20 \text{ s}$$

t_{Idling} = Idling time (overtravel time) 30 to 600 s

Operation 1:

Start contact B./A2 is opened when supply voltage A./A2 is applied

The supply voltage is applied to A₁/A2 and there is no control signal on B₁/A2. This starts the $\Upsilon\Delta$ timing. The idling time (overtravel time) is started by applying a control signal to B₁/A2. When the set time t_{idling} (30 to 600 s) has elapsed, the output relays (17/16 and 17/28) are reset. If the control signal on B₁/A2 is switched off (minimum OFF period 270 ms), a new timing is started.

Comments:

Observe response time (dead time) of 400 ms on energizing supply voltage until contacts 17/18 and 17/16 close.

Operation 2:

Operation 2:
Start contact B./A2 is closed when supply voltage A./A2 is applied

If the control signal B./A2 is already present when the supply voltage A./A2 is applied, **no** timing is started. The timing is only started when the control signal B./A2 is switched off.

Operation 3:

Operation 3.
Start contact B./A2 closes while star time is running.

If the control signal B./A2 is applied again during the star time, the idling time starts and the timing is terminated normally.

Operation 4:

Operation 4:
Start contact B./A2 opens while delta time is running and is applied again

If the control signal on B./A2 is applied and switched off again during the delta time, although the idling time has not yet elapsed, the idling time (overtravel time) is reset to zero. If the control signal is re-applied to B./A2, the idling time is restarted.

Application example based on standard operation

(operation 1): For example, use of 3RP15 60 for compressor control

Frequent starting of compressors strains the network, the machine, and the increased costs for the operator. The new timing relay prevents frequent starting at times when there is high demand for compressed air. A special control circuit prevents the compressor from being switched off immediately when the required air pressure in the tank has been reached. Instead, the valve in the intake tube is closed and the compressor runs in "Idling" mode for a specific time which can be set from 30 to 600 s.

If the pressure falls within this time, the motor does not have to be restarted again, but can return to nominal load operation from no-load operation.

If the pressure does not fall within this idling time, the motor is switched off.

The pressure switch controls the timing via B./A2.

The supply voltage is applied to A./A2 and the start contact B./A2 is open, i.e. there is no control signal on B./A2 when the supply voltage is applied. The pressure switch signals "too little pressure in system" and starts the timing by way of terminal B./A2. The compressor is started, enters Υ A operation, and fills the pressure tank.

When the pressure switch signals "sufficient pressure", the control signal B./A2 is applied, the idling time (overtravel time) is started, and the compressor enters no-load operation for the set period of time between 30 to 600 s. The compressor is then switched off. The compressor is only restarted if the pressure switch responds again (low pressure).

Note:

Note:
The following applies to all operations: The pressure switch controls the timing via B./A2.