



Blasting Machine-Tester Solus for 804

PERMITTED FOR GASSY COAL MINES

TECHNICAL DESCRIPTION

Blasting machine tester type SOLUS 804: Limit resistance 55 Ohm for U (F)-detonators

The testing instrument SOLUS 804 is applicable for testing the electric capacity of the condenser discharge blasting machine type 804 at 55 Ohm fixed load resistor and indication of the glow lamp. The glow lamp lights if the capacity has reached the nominal value (100%) or more. When the capacity is reduced by more than 15% under the nominal value the glow lamp does not light anymore during the test. For the electric blasting only the first milliseconds after the activation of the ignition current (impulse) are necessary. Therefore in the testing instrument a comparator condenser (of blasting machine 804) is charged, when the threshold voltage is reached a thyristor will be switched by means of a diode and the glow lamp lights.

Electric data (Testing of the indication):

The indication of the glow lamp lights when the energy content (power of the blasting machine) reaches at least 85% of the nominal value.

Charging voltage	= 545 V (less voltage)	no function
Capacity of the firing condenser	= 8 μ F (normal capacity)	of the glow lamp
Charging voltage	= 600 V (normal voltage)	no function
Capacity of the firing condenser	= 6,8 μ F (less capacity)	of the glow lamp
Charging voltage	= 600 V (normal voltage)	function
Capacity of the firing condenser	= 8 μ F (normal capacity)	of the glow lamp

Construction:

The housing is bipartite and is made of strong plastic. A 7 mm thick sight glass in the top of the housing enables an observation of the indicating glow tube. Both housing parts are connected by means of two screws. The type label is fixed on the bottom of the lower part. A 1 m long cable connects the tester to the special plug, which is applied to the terminals of the blasting machine. This plug is designed in such a manner to enable its connection only with the correct polarity.

Measurement and weight:

Measurement:	Length	88 mm
	Width	35 mm
	Height	44 mm
	Sight glass \varnothing	21 mm
Connecting cable:	Length	1 m
Special plug:	Distance of the plugs:	30 mm
Total weight:		0,25 kg

Handling and testing:

The SOLUS tester is suitable for testing the capacity of the Schaffler blasting machines. The tester is adjusted to the blasting machine type and therefore for each blasting machine type the appropriate tester is required. As the blasting machines have to work under hard conditions without any complication it is necessary to test them periodically at least once a month. If the blasting machine was not in operation for a longer period (more than one month) it has to be tested with the Solus tester before operation. This test shows whether the blasting machine works absolutely reliable in mechanical and electrical field.

The tester SOLUS type 804 is connected to the blasting machine 804. Now the blasting machine is operated in the same manner if detonators were connected to it. If the blasting machine has been correctly operated the indicating glow tube must distinctly light up. If the glow tube gives no response in spite of several operations of the blasting machine the latter is defective and should be taken out of operation, provided that the SOLUS tester is in perfect order, and should be sent to the manufacturer for verification and repair. The tester SOLUS does not need any maintenance at all apart from keeping it clean and protecting it from wetness.

When testing reliability, the blasting machine should also fulfil the following mechanical conditions:

- The connecting terminals must be able to be turned easily; their thread has to in order for the leading line to be steadily connected. The contact surface must be blank.
- The drive and the trigger should be operated easily.
- Machines with direct manual drive need a properly working free-wheel device.
- The housing must be checked for rough damages; this is of great importance for blasting machine types used in gassy coal mines.
- When shaking the blasting machine no noise from inside may occur.

The electric testing should include examination concerning short-circuit and electric capability. The attempt to test the blasting machine with a light bulb or a measuring instrument (voltmeter – amperemeter) does not bring any results apart from destroyed means of help. When some defect has been found out during electric and mechanical tests the blasting machine has to be returned to the manufacturer for repair and service. Repair works which make an opening of the blasting machine necessary must be done in the manufacturer's workshop as he has the essential means and knowledge.

All blasting machines and testing instruments have to be treated gently. They should not be stored in wet mine excavations and not under strong thermal fluctuations to avoid condensed water inside the instrument.

