



Specification N°

**04RRCONR02-E**

Product:

**Buchholz Relays "Custos" Series RR, RRF, GQ**

Page N°

**1 of 2**

Title:

**Contact's performance - General features of wiring diagrams**

Revision N°

**02 - 18/09/02**

## 1.0 Contents of specification

The specification outlines the characteristics of the contacts as well as their electrical and mechanical performance and the different wiring diagrams that can be supplied; for the detailed description of the operation and disposition of the contacts for every wiring diagram see specification N° 04RRSCHRxx.

## 2.0 Electric contacts

### 2.1 Contact's type

The contacts used for the Buchholz relays Series RR, RRF and GQ are hermetically sealed, inert gas filled, magnetically operated contacts, which can be of the normally open (NO), normally closed (NC) or changeover type (SC). They are made up by two blades, a rigid and a flexible one, which both have at one end a contact cap and are rigidly fixed in a sealed glass cylinder at the other end that encloses them; the glass cylinder is filled with inert gas. By bringing a magnet near the free end of the blades, the flexible blade is pressed against the rigid one (or separated from the rigid one in a NC contact) thus closing (or opening) the contact. The SC contact has two rigid blades and the flexible blade switches between the two ones.

### 2.2 Materials and contacts performance

- Contact's cap material Silver
- Cable insulation heat shrinking Teflon
- Admissible temperature range -50°C / +125°C
- Interruption power for  $1 \times 10^5$  cycles and max 3 operations per minute
  - NO and NC contacts 250 W / 400 VA
  - SC contact 200 W / 300 VA
- Insulation to earth at 20° C 2.500 V
- Insulation of the open contact at 20°C
  - NO and NC contacts 2.500 V
  - SC contact 2.000 V
- Maximum current 2 A
- Maximum current admissible for 1 sec. 100 A
- Admissible tension 2a V / 250 V
- Electrical resistance of the closed contact 500 mΩ

## 3.0 Feasibility limits of the wiring diagrams and performance

The wiring diagrams described in detail by specification N° 04RRSCHRxx are those most commonly used. Other wiring diagrams can be obtained within the limitations shown below.

### 3.1 Limits of the wiring diagram

#### 3.1.1 Buchholz Relay Type RR 025 (MD 25 mm)

Maximum two independent contacts; one operated by upper float and one operated by lower float and oil flow vane. Maximum 6 terminals.

#### 3.1.2 Buchholz Relay Series RR, RRF and GQ with MD 50 mm

For this Buchholz relay the lower float operates always also for continuous gas accumulation, after the upper float has operated; therefore all wiring diagrams which contemplate the operation of the lower float only for the low oil condition are not possible.



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Specification N° SPR/

**04RRSCHR03-E**

Product:

**Buchholz Relays "Custos" Series RR, RRF, GQ**

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Title:

**Performance and description of wiring diagrams**

Revision N°

**03 - 18/09/02**

## 1.0 Performance and description of the wiring diagrams

The specification gives a complete description of the performance and function of the wiring diagrams.

## 2.0 Wiring diagrams

### 2.1 Identification by numbering of the wiring diagrams

The identification numbering of the wiring diagrams follows criteria that allow to identify the type and approximate operation of the wiring diagram from its number.

#### 2.1.1 Key to numbering of wiring diagrams

Every position in the number identifying a wiring diagram is related to a function of the Buchholz relay. Taking as an example the standard wiring diagram 04-101C, the numbering has the following meaning:

##### **04-101C**

**04-xxxx** = Wiring diagram for Buchholz relay;

**04-Xxxx** = Number and type of contacts worked by the upper float; in the example 1 normally open contact;

**04-xXxx** = Number and type of contacts worked exclusively by the oil flow vane; in the example (0) no contact is worked exclusively by the oil flow vane.

**N.B.:** If, like in the example, no contact is worked by the oil flow vane, the vane is connected to the lower float so as to lower it when the oil flow trips the vane, thus operating the lower float contact. If one or more contacts are worked exclusively by the oil flow vane (value ? 0) the vane is independent from the lower float.

**04-xxXx** = Number and type of contacts worked by the lower float; in the example 1 normally open contact;

**04-xxxX** = Operation of the lower float:

**C** = operation only for low oil; **F** = operation for low oil and gas accumulation.

#### 2.1.2 Meaning of the numbers or letters

The numbers or letters of every position in the number of the wiring diagram indicate number and type of contacts operated by every function of the Buchholz relay according to following list:

##### **One contact for every function**

**0** = no contact for this function

**1** = 1 contact NO;

**2** = 1 contact NC;

**3** = 1 contact SC

##### **Two contacts for every function, operating simultaneously**

**5** = 2 NO contacts;

**4** = 2 NC contacts;

**6** = 2 SC contacts;

**7** = 1 NO + 1 NC contact;

**8** = 1 NC + 1 SC contact;

**9** = 1 NO + 1 SC contact;

##### **Two contacts for every function, operating in sequence**

**A** = 2 NO contacts;

**B** = 2 NC contacts;

**C** = 2 SC contacts;

**D** = 1 NO + 1 NC contact;

**E** = 1 NC + 1 SC contact;

**F** = 1 NO + 1 SC contact;

##### **Oil flow vane and lower float linked rigidly**

**Y** = the letter Y in the positions of the oil flow vane indicates that the oil flow vane is connected rigidly to the lower float. The letter Y is followed by two numbers, the first indicating the total number of contacts for the two positions and the second indicating the type of contact.