Durakool (a Solid State brand)
Solid State Supplies Ltd
Ravensbank Business Park
2 Hedera Road
Redditch
B98 9EY UK

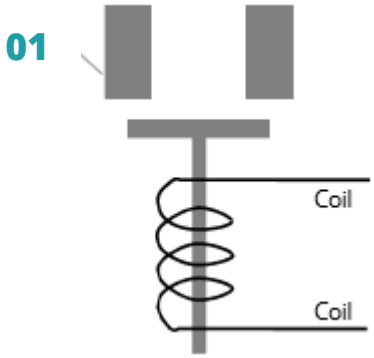
t + 44 1527 830800
e sales@solsta.co.uk

Company Reg. No: 5386353

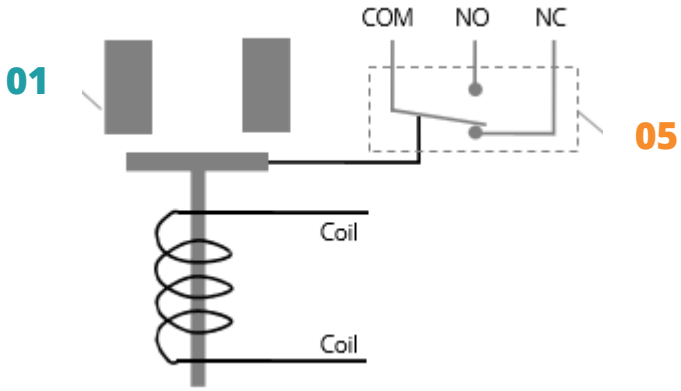
DC Contactor User Manual

Coil Control Circuit Diagram

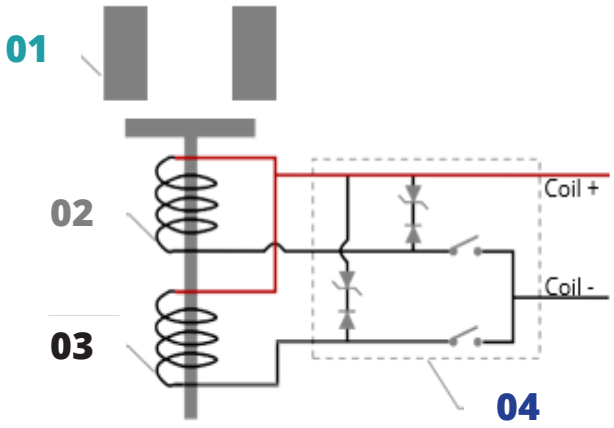
Single coil, without auxiliary contact



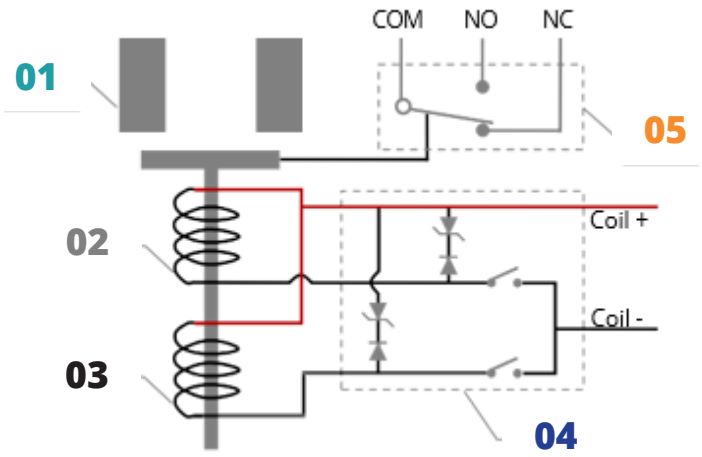
Single coil, with auxiliary contact



Dual coil, without auxiliary contact



Dual coil, with auxiliary contact

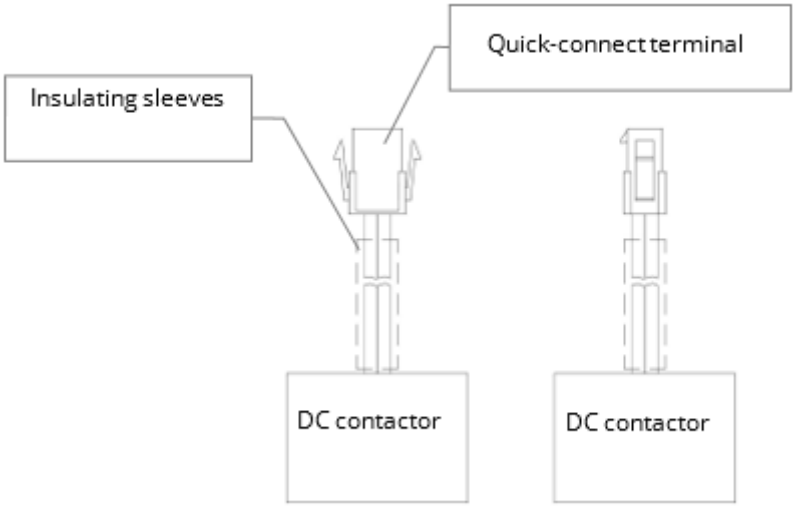


01 Power Contact **02** Start Coil **03** Keep Coil **04** Coil Control Board **05** Auxiliary Contact

Coil and Auxiliary Output

Durakool typically provides buyers with standard coil (and auxiliary, if selected) wire length DC contactors - without connectors.

We also offer customisation, including the length of coil leads, different insulation sleeve materials, length of auxiliary leads, insulating sleeves, quick-connect terminals and labelling. When purchasing Durakool DC contactors, please contact our team with your specific custom requirement.



Instructions for Use

Load

Applications with capacitors (C load) will require a pre-charge circuit (refer to Fig. 1), otherwise, it may cause power contacts welding.

U = Supply voltage
F = Fuse
K_{1+} = Contactor positive line
K_2 = Pre-charge relay
R_1 = Pre-charge Resistor
K_{1-} = Contactor negative line
C_1 = Capacitor
MCU = Motor Control Unit
M = Motor load

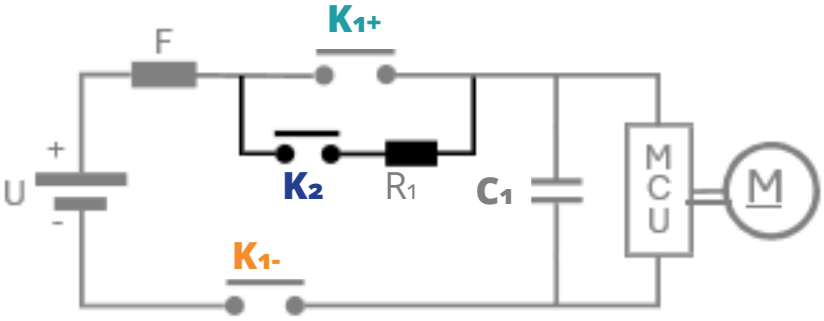


Fig.1

'Dry' (no load) switching cycles should be applied to the contactor before use, to optimise contact resistance, by mechanically cleaning/polishing the surface of the contacts). This is recommended for ALL contactors.

Electrical Life

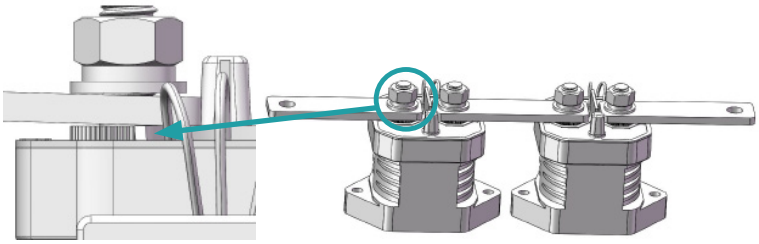
The rating is based on resistive load (L/R ≤ 0.1ms). Your application may be different, therefore, we suggest you test the DC contactor in your circuit, to verify life is as required.

End of life is defined as when the dielectric, insulation resistance or contact resistance exceeds the specifications listed.

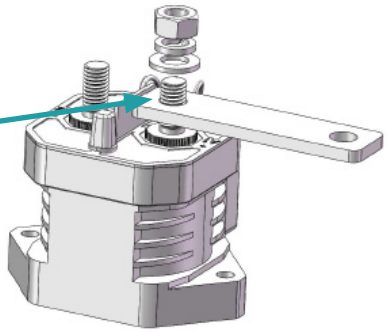
- DC contactor is a high-voltage DC switch. At the end of its life, it may lose its normal operating capability. Therefore, do not exceed the standard switching capacity and number of life cycles. Treat the DC contactor as a product with a limited life span and replace it when necessary.

Mounting

- Installation of a Durakool DC Contactor should always be undertaken by a competent person, with sufficient knowledge of DC safe working practices.
- All surfaces should be free of surface contamination. Oils and greases and protection materials should be removed before the connection process commences, to avoid additional heat generation.
- Always use the washers provided (if included), to prevent the screws from loosening. Connection systems should be tightened to the locking torque as specified. Over torquing the product can lead to premature life failure.
- Ensure there is no gap between the conductors and the power contact terminal. A gap will cause the power contacts to abnormally overheat.



- Conductor mounting holes should be sufficiently sized to ensure a tight fit. With this in mind, the contact surface area, between the conductor and power contact terminal should be as large as possible.



- The dual coil and PWM coil leads are polarised (see 'Coil control circuit diagrams').
- Please connect the coils according to the standard.
- Incorrect cable polarity can result in contactor pick-up failure and may damage the contactor.
- Thread locker should not be used.

Please refer to Stud Information Table below and on page 5:

Series	Version	Drill depth max. (mm)	Effective thread length min. (mm)	Intended fit tolerance	Proposed tolerance class
CHV40	Female	6.5	6.0	M4-6h	M4-6H
CHV300	Female	10.0	9.0	M6-6h	M6-6H
CHV400	Female	19.0	15.0	M6-6h	M6-6H
	Male	16.0 ±0.1	16.0 ±0.1	M8-6H	M8-6h
CHV500	Female	19.0	15.0	M6-6h	M6-6H
	Male	16.0 ±0.1	16.0 ±0.1	M8-6H	M8-6h
CHV600	Female	19.0	15.0	M6-6h	M6-6H
	Male	16.0 ±0.1	16.0 ±0.1	M8-6H	M8-6h
CHV800	Female, with busbars	22.0 ±0.1	20.0 ±0.1	M10-6H	M10-6h
	Male, no busbars	18.5 ±0.1	16.0 ±0.1	M10-6H	M10-6h
	Female, no busbars	15.0 ±0.1	12.0 ±0.1	M8-6h	M8-6H
CHV800P	Female	19.0	15.0	M8-6h	M8-6H
	Male	16.0 ±0.1	16.0 ±0.1	M10-6H	M10-6h
DEVR01 V1	Female	9.5 ±0.5	7.0 ±1.0	M4-6h	M4-6H
DEVR03 V1	Female	9.5 ±0.5	7.0 ±1.0	M4-6h	M4-6H
DEVR05 V1	Female	9.5 ±0.5	7.0 ±1.0	M4-6h	M4-6H
DEVR10 V1	Female	10.0 ±0.5	8.0 ±1.0	M5-6h	M5-6H
DEVR13 V1	Female	10.0 ±0.5	8.0 ±1.0	M5-6h	M5-6H
DEVR20 V3	Female	11.0 ±1.0	10.2 ±0.7	M6-6h	M6-6H
	Male	N/A	14.5 ±1.0	M8-6G	M8-6g
DEVR30 V3	Female	11.0 ±1.0	10.2 ±0.7	M6-6h	M6-6H
	Male	N/A	14.5 ±1.0	M8-6G	M8-6g
DEVR40 V3	Female	11.0 ±1.0	10.2 ±0.7	M6-6h	M6-6H
	Male	N/A	14.5 ±1.0	M8-6G	M8-6g

Stud Information Table (continued)

Series	Version	Drill depth max. (mm)	Effective thread length min. (mm)	Intended fit tolerance	Proposed tolerance class
DHVC150	Female	12.0 ±0.2	10.0	M6-6h	M6-6H
	Male	16.5 ±0.33	15.0	M8-6H	M8-6h
DHVC200	Female	12.0 ±0.2	10.0	M6-6h	M6-6H
	Male	16.5 ±0.33	15.0	M8-6H	M8-6h
DHVC300	Female	12.0 ±0.2	10.0	M6-6h	M6-6H
	Male	16.5 ±0.33	15.0	M8-6H	M8-6h
DLVC400	Female	12.0 ±0.2	10.0	M6-6h	M6-6H
	Male	16.5 ±0.33	15.0	M8-6H	M8-6h
DSC08	Standard	5.5	N/A	N/A	N/A
	Bi-stable Latching	5.5	N/A	N/A	N/A
DSC10	Standard	5.5	N/A	N/A	N/A
	Bi-stable Latching	5.5	N/A	N/A	N/A
DSC12	Standard	5.5	N/A	N/A	N/A
	Bi-stable Latching	5.5	N/A	N/A	N/A
DSC15	Standard	5.5	N/A	N/A	N/A
	Bi-stable Latching	5.5	N/A	N/A	N/A
DSC20	Standard	7.0	N/A	N/A	N/A
	Bi-stable Latching	7.0	N/A	N/A	N/A
DSC25	Standard	5.5	N/A	N/A	N/A
	Bi-stable Latching	5.5	N/A	N/A	N/A
DSC30	Standard	7.0	N/A	N/A	N/A
	Bi-stable Latching	7.0	N/A	N/A	N/A
DSC30M	Standard	7.0	N/A	N/A	N/A
	Bi-stable Latching	7.0	N/A	N/A	N/A
DSC40	Standard	5.5	N/A	N/A	N/A
	Bi-stable Latching	5.5	N/A	N/A	N/A
DSC50	Standard	7.0	N/A	N/A	N/A
	Bi-stable Latching	7.0	N/A	N/A	N/A
DSC60	Standard	7.0	N/A	N/A	N/A
	Bi-stable Latching	7.0	N/A	N/A	N/A
DSC80	Standard	5.5	N/A	N/A	N/A
	Bi-stable Latching	5.5	N/A	N/A	N/A
DSC100	Standard	N/A	N/A	N/A	N/A
	Bi-stable Latching	N/A	N/A	N/A	N/A
DSC120	Standard	N/A	N/A	N/A	N/A
	Bi-stable Latching	N/A	N/A	N/A	N/A
DSC150	Standard	N/A	N/A	N/A	N/A
	Bi-stable Latching	N/A	N/A	N/A	N/A
DSC180	Standard	N/A	N/A	N/A	N/A
	Bi-stable Latching	N/A	N/A	N/A	N/A
DSC200	Standard	N/A	N/A	N/A	N/A
	Bi-stable Latching	N/A	N/A	N/A	N/A

Temperature Rise of Power Contacts and Cable Sizing

- Cables should always be sized in accordance with global, country or local state normative harmonised standards as a minimum. However, to maintain performance across the full working specification range, please refer to details of the datasheet.
- During normal DC contactor operation, the operating temperature of the contacts needs to be maintained. Follow recommendations specified within the product's datasheet to avoid exceeding maximum allowable temperatures.
- Good ventilation or other active cooling methods should be maintained to ensure effective cooling of the DC contactor. The DC contactor has high current carrying capability, which may generate a large amount of heat. The buyer needs to take sufficient measures to minimise heat generation and use effective cooling methods.

Storage

For silver plated products, such as the DEVR series, discolouration of the power terminals may occur, unless stored in the following optimal condition:

- Ambient temperature between 20ºC - 26ºC.
- Relative humidity between 30% - 60%.
- Avoid storing together with acidic or alkaline substances.

If there is discolouration on the terminals for any reason, it is highly likely not to affect the mechanical or electrical performance of the product.

For other products, please refer to details of the datasheet for specific information.

Other

- All performance data listed in the datasheet are initial values tested under standard testing conditions.
- Please avoid impact or dropping of the DC contactor during application or transportation. To maintain the performance of the DC contactor, it is not recommended to continue using the DC contactor after impact or fall.
- Please avoid installation in a strong magnetic field (around the coil or the magnets) and of heating objects nearby.
- The driving circuit power of the DC contactor coil needs to be sufficient to drive the contactor coil, otherwise it will reduce the breaking capacity of the DC contactor. Please refer to details of the specific product's datasheet.

Statement

- Durakool product specifications are only relevant to Durakool products, used to connect the designer ('buyers'). The buyer understands and agrees that the buyer is still required to conduct adequate testing and evaluation of the Durakool product itself, when designing its system or product, to determine whether the Durakool product is suitable for the buyer's system or product.
- The data in the Durakool product specification sheet is based on standard laboratory conditions and engineering practices. Any discrepancy in the data found by the buyer when evaluating a Durakool product may be the result of different test conditions. Buyers can contact Durakool for technical support.
- In the search of continuous improvement and product evolution, Durakool reserves the right to update its standard product range and may make changes to product specifications without notice. Buyers may contact Durakool or visit the website for the latest product specifications.

This user manual is subject to change without notice. E&OE.