

<b>APPLICATION NOTE</b>	<b>AN-General-0007v100EN</b>
<b>RHC charging circuit avoidance wiring</b>	

<b>Inverter type</b>	FRENIC Series and RHC
<b>Software version</b>	All versions
<b>Required options</b>	None
<b>Related documentation</b>	The omission of RHC charging circuit
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<b>Use</b>	Public, Web
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<b>Languages</b>	English

## 1. Introduction.

When connecting a RHC-C series to FRENIC series, charging circuit has to be included. In other words, charging circuit is done externally.

In some cases, because of FRENIC series charging circuit performance, this external wiring can be avoided. It means that RHC-C series and FRENIC series capacitors are supplied through FRENIC series charging circuit.

This document describes how to connect FRENIC series with RHC-C series. Those cases where charging circuit can be avoided will be explained.

## 2. Procedure.

In order to know which inverters (and which capacities) can be used as a charging circuit for RHC-C series, please refer to table 1.

Table 1. RHC-C series charging circuit avoidance

400V series inverters	Charging circuit performance (*1)	Can be used for charging RHC-C series
Mini, Multi, Eco, Lift( ~ 30L1M□-4) MEGA( ~ 22G1□-4)	1 time	No
MEGA(280 ~ 630G1□-4) (*2) VG7(280 ~ 630VG7□-4) (*3)	2 times	No
Lift(37, 45L1M□-4) MEGA(30 ~ 220G1□-4) VG7(3.7 ~ 220VG7□-4)	2 times	Yes

\*1) Compared to the own smoothing capacitor.

\*2) The capacity of the charging circuit (resistor) of these inverters is twice the value required, but the smoothing capacitor is smaller than the one inside RHC-C series. Therefore the performance (power) of the charging circuit is not enough.

\*3) The performance of the charging circuit is enough, but the time required for the complete charging is longer than the typical one for RHC-C series. This time difference will cause a charging error in the RHC-C converter.

Wiring varies depending on FRENIC series and also depending on capacities. Below, wirings are specified for each FRENIC series, and each capacity range.

**FRENIC-Lift series (LM1)**

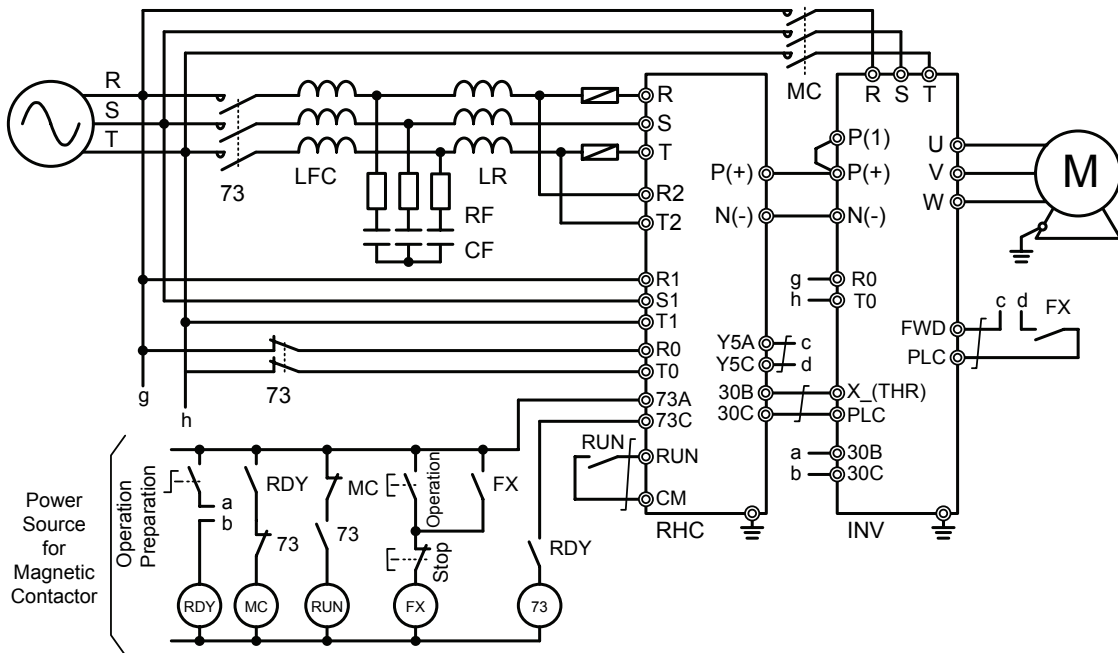


Figure 1. Connection of RHC and FRENIC-Lift (37 and 45 kW)

**FRENIC-MEGA Series (G1)**

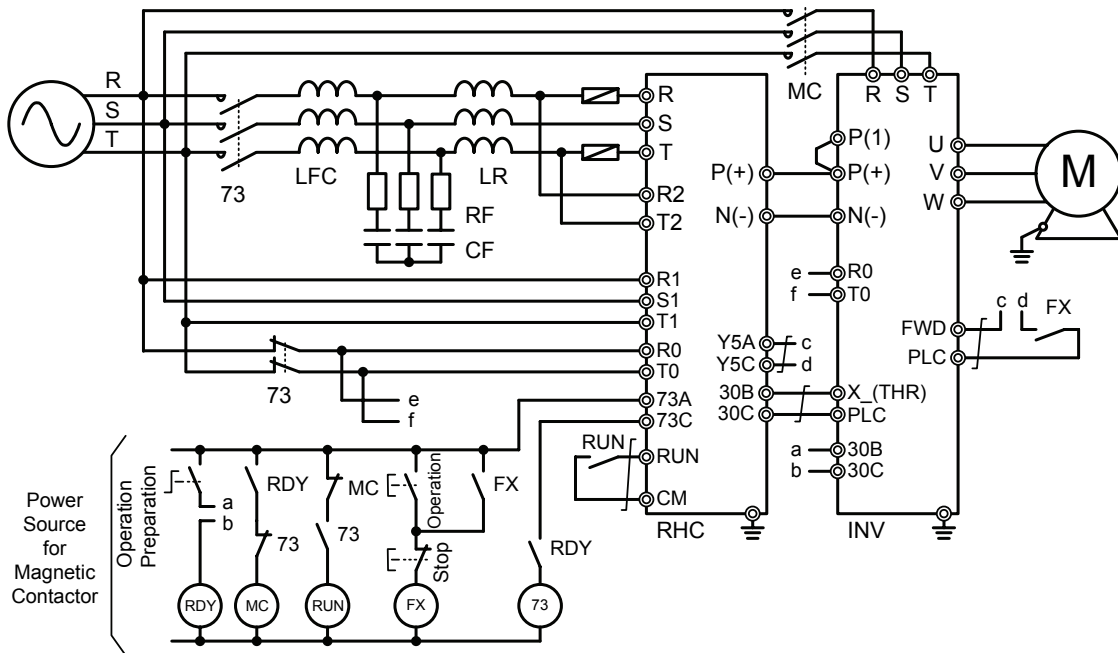


Figure 2. Connection of RHC and FRENIC-MEGA (30 ~ 55 kW)

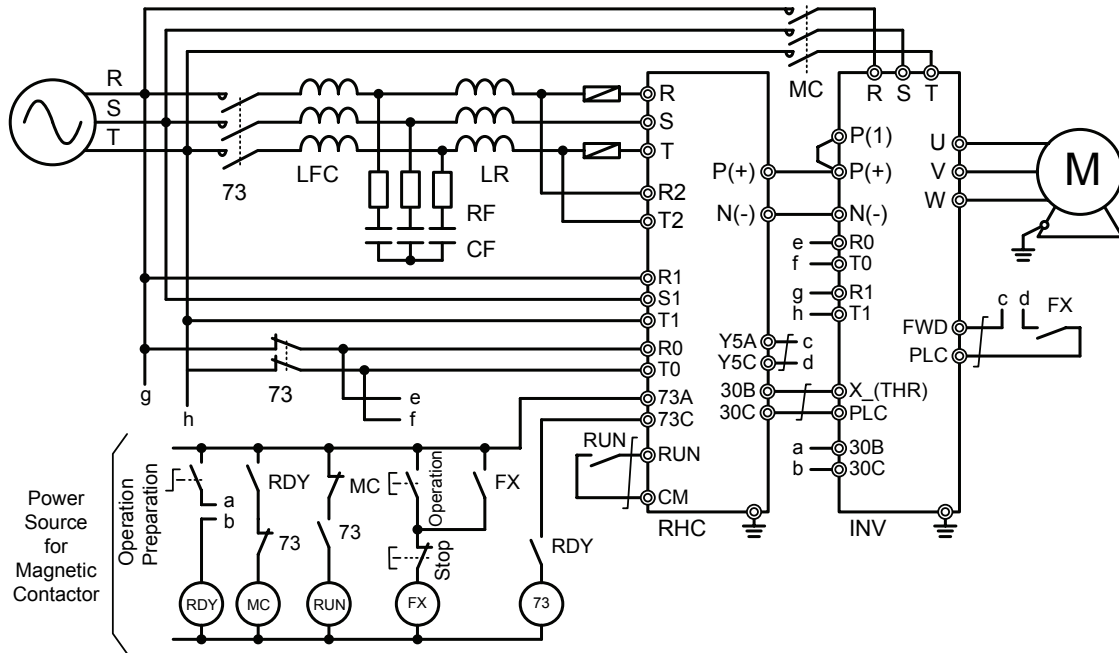


Figure 3. Connection of RHC and FRENIC-MEGA (75 ~ 220 kW)

In case of capacities between 75 and 220 kW, also position of CN R and CN W jumper has to be taken in consideration. When connecting those capacities, jumpers have to be swapped. For additional information, please refer to figure 4 (capacities between 75 ~ 110 kW) and figure 5 (capacities between 132 ~ 220 kW).

Connector configuration		
Use conditions	When not using terminal R1 or T1 (Factory default)	When using terminals R1 and T1 • Feeding the DC-linked power • Combined with a PWM converter

Figure 4. CN R and CN W connectors in capacities between 75 ~ 110 kW

Connector configuration		
Use conditions	When not using terminal R1 or T1 (Factory default)	When using terminals R1 and T1 • Feeding the DC-linked power • Combined with a PWM converter

Figure 5. CN R and CN W connectors in capacities between 132 ~ 220 kW

**FRENIC VG7 Series (VG7)**

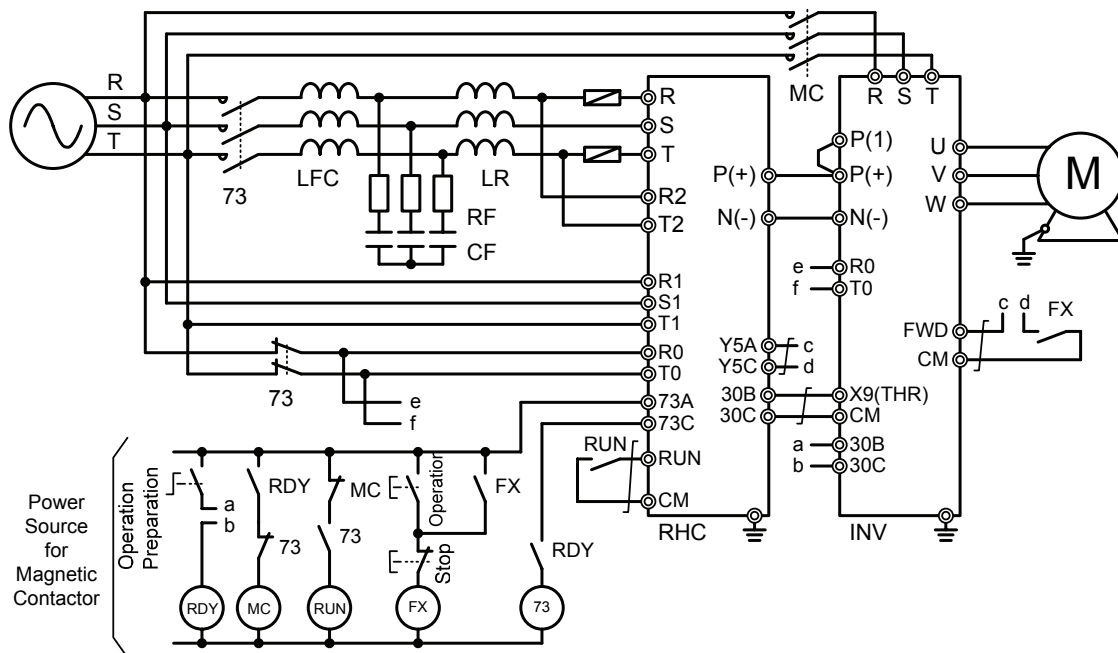


Figure 6. Connection of RHC and VG7 (3,7 ~ 15 kW)

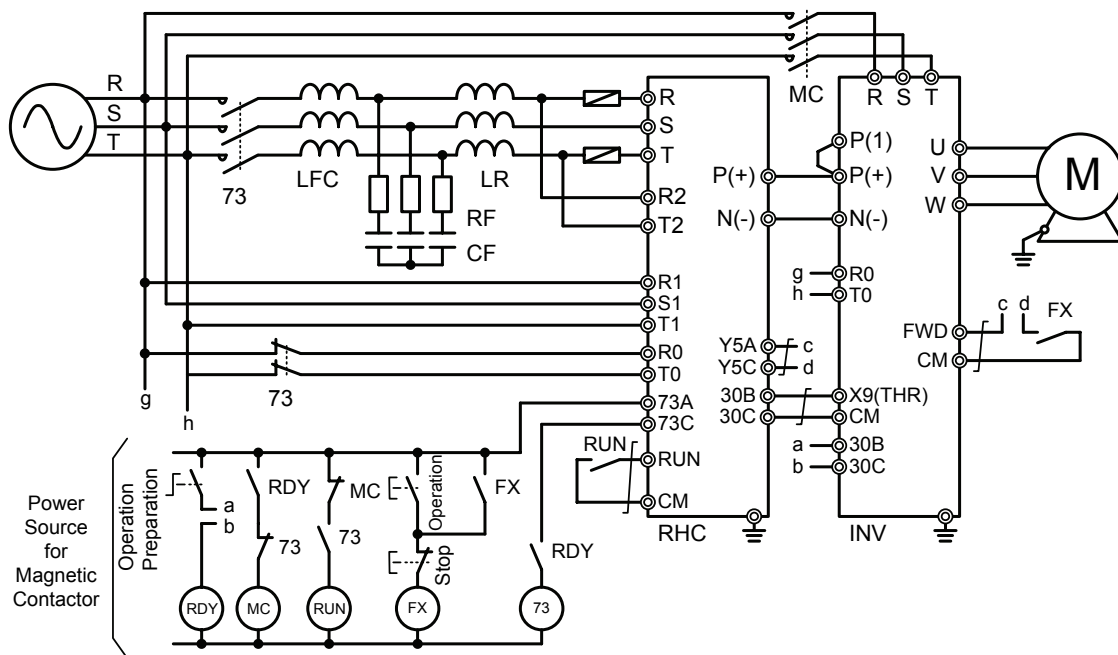


Figure 7. Connection of RHC and VG7 (18,5 ~ 220 kW)

In case of capacities between 18,5 and 220 kW, also position of CN RXTX jumper has to be taken in consideration. In figure 7, position of jumper CN RXTX is shown.

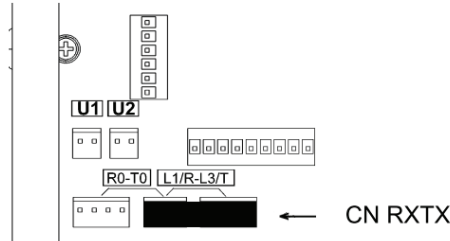


Figure 7. Layout of CN RXTX jumper.

When connecting those capacities, jumper has to be moved from his original position to R0-T0 position. For additional information, please refer to figure 8.

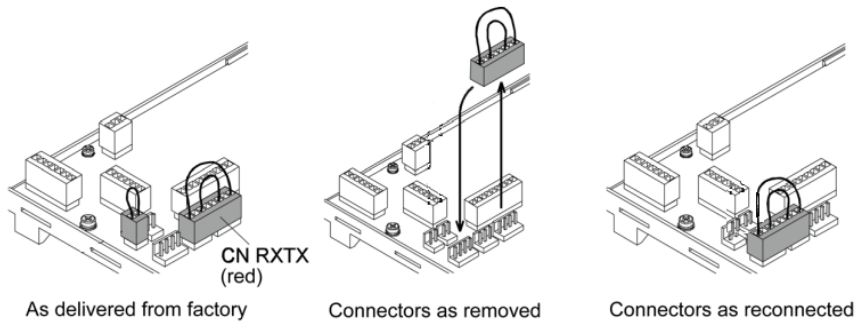


Figure 8. CN RXTX jumper positions.

### 3. Conclusion

In case of RHC-C series charging circuit avoidance, for each FRENIC series, and depending on the capacity, there is a specific wiring. On this application note each wiring is explained.

### 4. Document history.

Version	Changes applied	Date	Written	Checked	Approved
1.0.0	First version	08/07/2011	J. Alonso	D. Bedford	D. Bedford