Softstart

Installation of semiconductor

PS D370...840
PS DH300...720

With catalogue number
1SFA88X 2XX-xxx and 1SFA88X 3XX-xxx

5366 116-4 Edition 5 Nov -03

Contents

1. General.

These provisions are intended to specify how semiconductors with mounting clamps are to be assembled to ensure good thermal and electrical contact without mechanical damage to the semiconductors and associated details.

1.1 Aids and tools

- Polishing block, surface grinding machine.
- Abrasive cloth P600 6846 5517-50
- Silicone oil 4857 087-C
- Ethanol 1177 1012-205
- Lint-free paper 6861 003-2
- Vaseline 1171 5011-102

1.2 Handling

- Semiconductors and heat sinks are to be handled carefully to avoid scratches and other marks.
- Avoid touching the contact surfaces.
- Don't lift the semiconductor by the gate wire.
- There must be no damage to the welding flange or to the contact surface. See fig. 1.

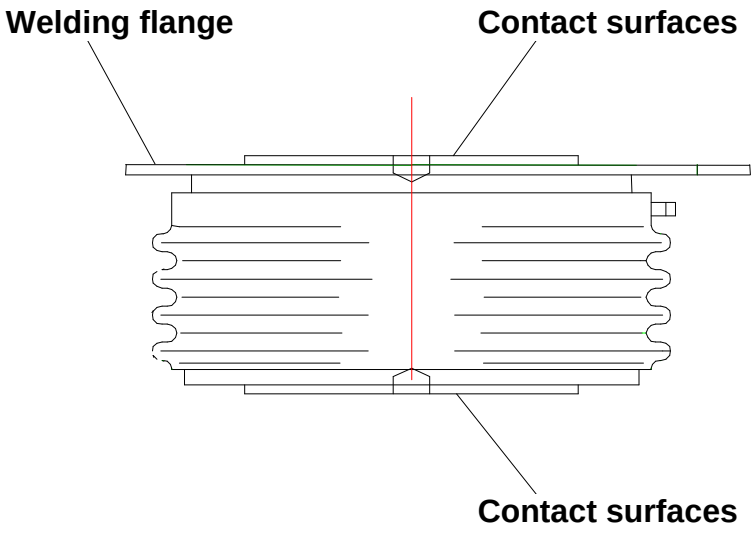


Fig. 1

2. Installing of gate wires

- Avoid bending the contacts of the thyristor. After installing, a 100% inspection is to be carried out to ensure that the contacts are installed without any play.

3. Preparation of heat sink and semiconductor

- Plan the work to avoid interruption before prepared contact surfaces are lubricated.
- Lightly polish the contact surface of semiconductor (the nickel layer must not be polished through) with abrasive cloth P600 which is fix on a flat surface.
- Clean all polished contact surfaces carefully with Ethanol.
- Use well moistened lint-free paper.
- Avoid contact with surface.
- Lubricate directly after polishing/cleaning, within 5 minutes. The contact surfaces must be dry before lubrication.
- Drip a couple of drops of silicone oil on the cleaned contact surfaces, avoid getting oil in the guide hole. Smooth the oil lightly over the whole surface using lint-free paper. Then wipe off the surface in order to get a very thin layer of oil.
- Avoid contact with the surfaces after lubrication.

4. Assembling

- Check the semiconductor's symbol and type specification. The specifications must correspond to the production drawings. A component that has no specification or has a different specification must not be installed.
- Place the semiconductor in the right direction. Follow the symbol and the assembly drawing (Fig. 7 page 7).
- Handle the semiconductor with care, don't let the guide pin or ball scratch the contact surfaces.
- Centre the semiconductor with an guide pin. See fig.2.

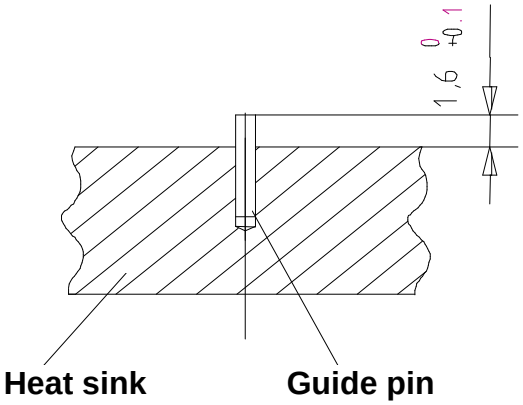


Fig. 2

WARNING If the pin touches the bottom of the hole in the capsule or is not located in it correctly, it will not allow a good contact between the device and heatsink mounting surfaces. This will also damage the internal components of the capsule which in turn will lead to device failure.

- Fix the mounting clamp, heat sink and the semiconductor acc. to fig 3.

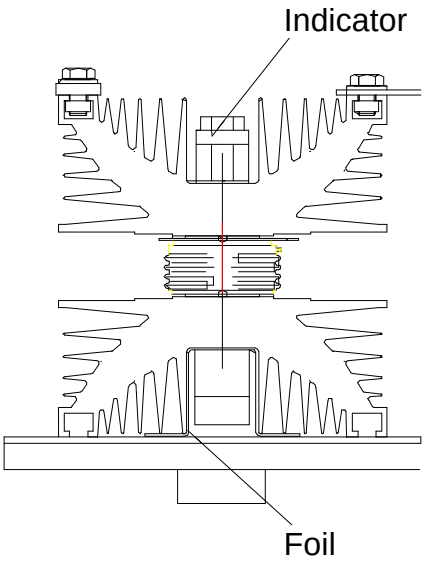


Fig. 3

- Turn the component so that the gate wires point in the right direction. (See Fig. 7 Page 7).
- The nut against the spring and threads are to be lubricated with Vaseline.
- Screw in the screws by hand so the clamp is parallel to the contact of the heat sink.
- Tighten each nut by half a turn alternately until the spring gap indicators are just trapped, then tighten 1/4 turn. See fig. 4.

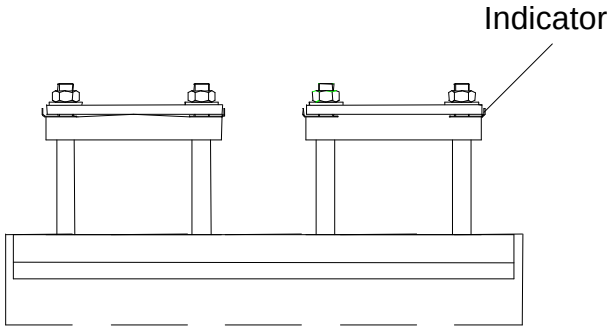
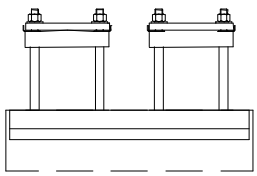


Fig. 4

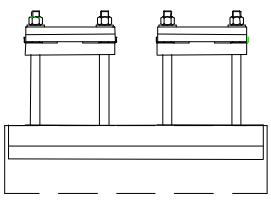
- Monting clamps

4857 237-A



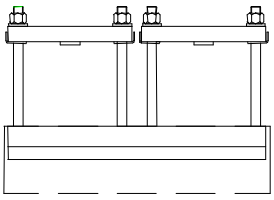
12kN for 4893 1008-A...-B
PS D370...470 220-500V
PS D370 690V
PS DH300...370 220-690V
Thyristor 4855 435-1...-2

4857 237-B



21kN for 4893 1008-C...-D
PS D570...720 220-500V
PS D470…570 690V
PS DH470...570 220-500V
Thyristor 4855 435-3...-4

4847 237-C



30kN for 4893 1008-E...G
PS D840 220-500V
PS D720...840 690V
PS DH7200 220-500V
Thyristor 4855 435-5...-7

Fig. 5

- See that there is a gap of not more than 2 mm. See fig.6.

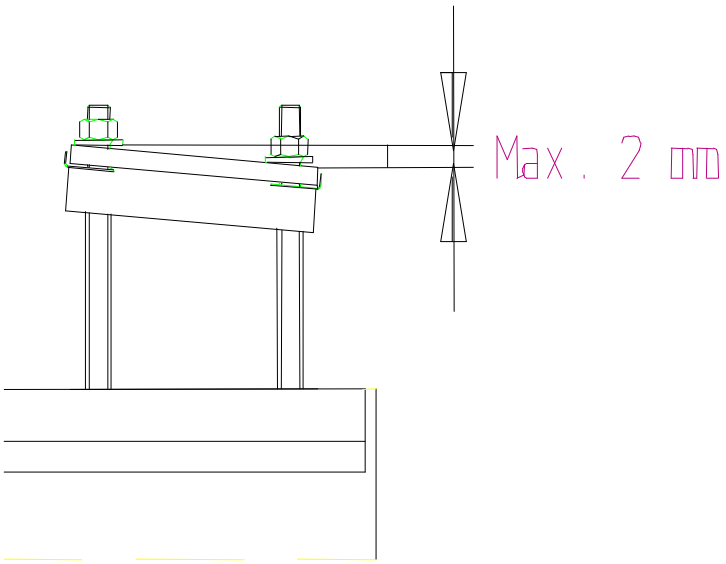


Fig. 6

- The gate wires must be supported.

5. Changing of semiconductors

5.1 Dismantling

- In the surface of the heat sinks around the semiconductor are dirty, clean them first.
- Loosen the bolts fully.
- Take out the semiconductor carefully, without touching or smearing the contact surfaces or heat sinks, bus bars or connection links.

5.2 Assembling after dismantling

- Don't touch the surfaces of the heat sinks if they are intact.
- Prepare the semiconductor according to section 3.
- Insert the semiconductor according to section 4.
- Tighten the connections in the reverse order to which they were loosened.

6 Some practical advise when installing semiconductors

- Place the heat sinks so you can polish all that are to be assembled at the same time on the work bench.
- Keep the work bench clean and clear. Make sure you have enough space to prepare items and let them lie waiting for assembly.
- Don't polish through the nickel layer. Polishing is onley meant to remove the oxide layer.
- Use the correct abrasive cloth paper (P600). Replace when worn.
- When polishing components, use abrasive cloth paper mounted on a flat surface. Light pressure, twice round in a ∞- formed movement.
- Clean carefully with Ethanol with well moistened lint-free paper.
- If you want to use half a sheet of lint-free paper, use a pair of scissors, don't tear. Torn paper will release fluff.
- Drip silicone oil on the surface and smooth lightly. Avoid getting oil in the guide hole. Wipe off to get a very thin layer of oil. Avoid getting silicone oil on your fingers.
- Put used lint-free paper in a wastepaper basket with a lid.
- Polish, clean and prepare heat sinks, semiconductors, bus bars and connection links without doing other jobs at the same time.
- ***Clean carefully your hands after the installing.***

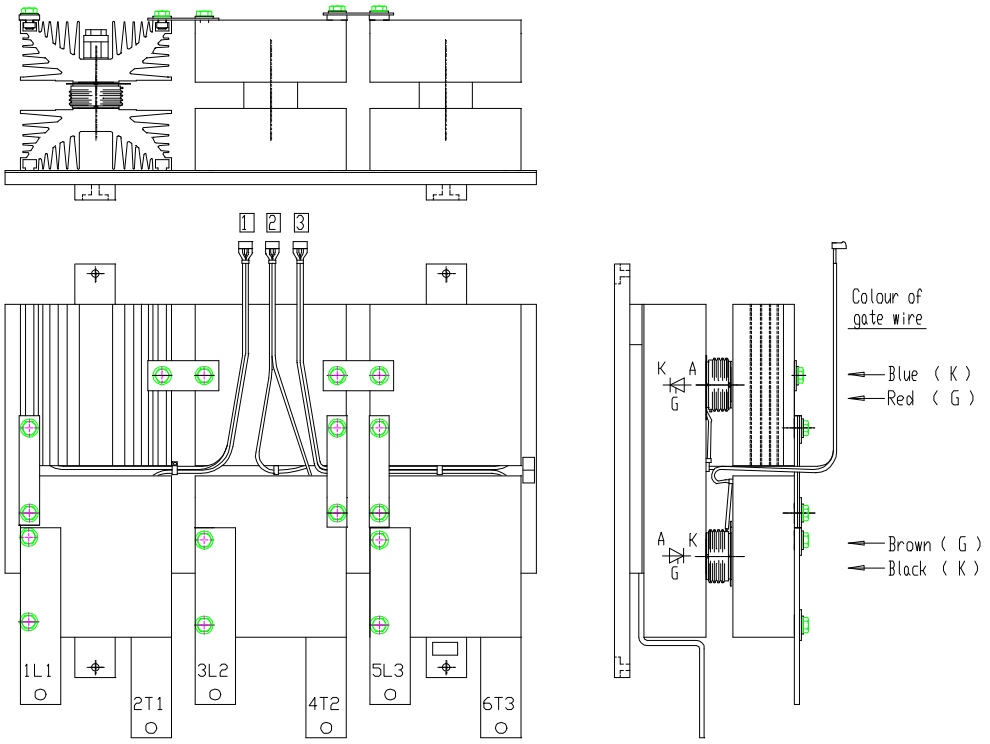

1
2
3
1L1
2T1
3L2
4T2
5L3
6T3
K
A
G
A
K
G
Colour of
gate wire
Blue (K)
Red (G)
Brown (G)
Black (K)

Fig. 7

ABB Automation Technology Products AB, Control
S-721 61 Västerås, SWEDEN

Telephone +46 21 32 07 00
TELEFAX +46 21 12 60 01