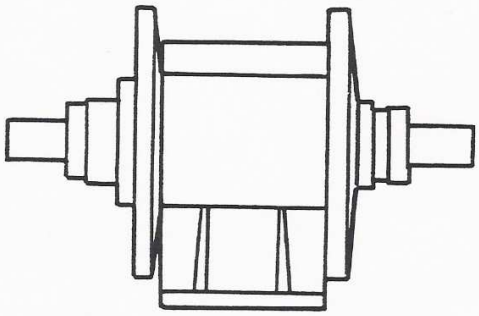
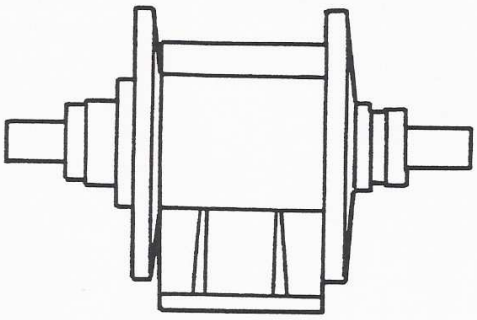
Stepping Clutch/Brakes
Owners Manual
SRA 15, 18, 20, 23, 25, 30 and 36

Instructions 4-1989

Contents



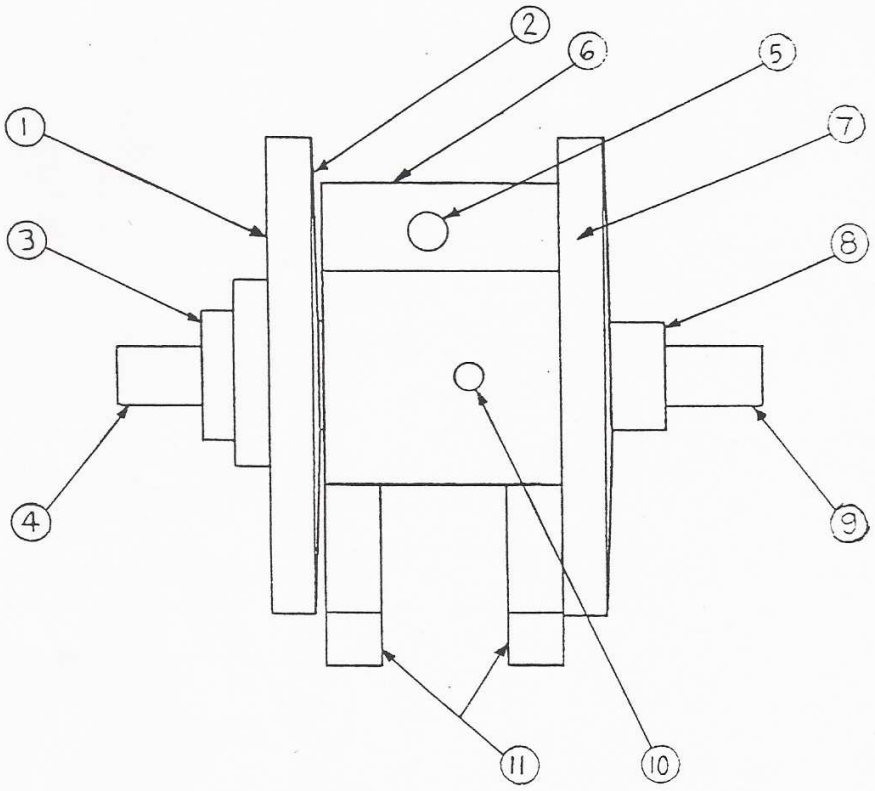
Instructions SRA 15, 18, 20, 23, 25, 30 and 36



Introduction

The Clutch/Brake and associated control unit have been designed to give millions of cycles of use with a minimum amount of maintenance. The following pages explain how to get started as well as the diagnosis of problems if they should occur.

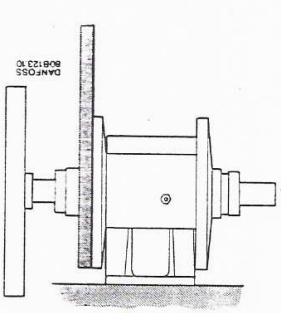
Due to the complexity of construction as well as the necessity of special tools, we HIGHLY recommend that when the Clutch/Brake does wear out or becomes damaged that you send it back to us for repair. We will repair your unit usually in 24 hours or less.

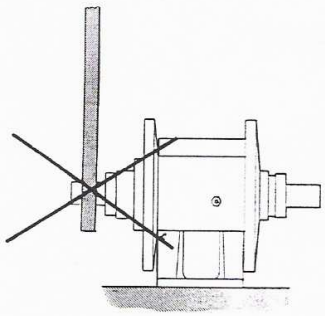


1. Clutch flange
2. Clutch disc
3. Input mounting hub
4. Clutch side output thru shaft
5. Plug for electrical connection
6. Cover
7. Brake flange
8. Brake disc
9. Brake side output thru shaft
10. Vacuum hose connection (both sides)
11. Foot brackets

Input

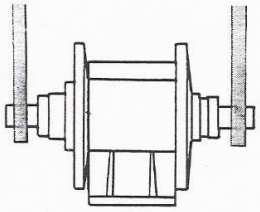
Input to the Clutch/Brake may be made only to the input hub. This may be done with the use of a timing pulley, sprocket, or gear which is bolted to the input hub. For bolt circle information refer to the dimension page of the Danfoss SRA 10-36 data sheet. Input must never be made to the output shaft. Never allow the mounting bolts to bottom out in the hub. Never allow the pulley edge to make contact with the clutch flange.

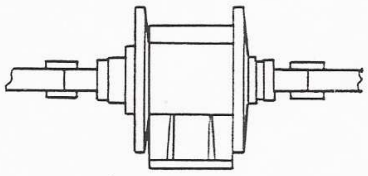


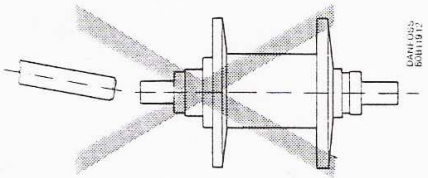


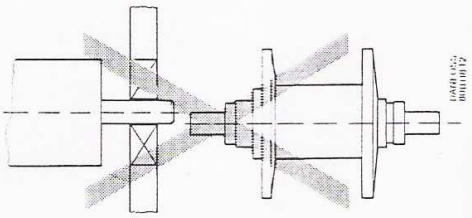
Output

Output may be taken from either end of the thru shaft. Anti-Backlash couplings, pulleys, and gears are some of the possibilities.



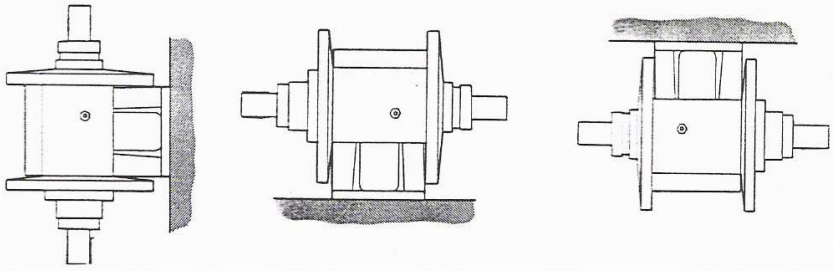






Mounting

Use the (4) bolt holes in the foot brackets only. The Clutch/Brake can mount in any position, on a flat machined surface. Never pound on the Clutch/Brake with a hammer.



Vacuum

Vacuum pumps must be rotary vane. Pumps must have a regulator and a liquid filled gauge. Be sure that the gauge is set to 20" hg. Use the chart to determine pump size requirements.

Cycles/min	100	200	300	400	500	600	700	800	900	1000+
SRA 15	1/4 HP				3/4 HP					
SRA 18										
SRA 20										
SRA 23										
SRA 25										
SRA 30										
SRA 36										

Wiring

To wire the valve coils, use the attached connector plug. To connect the wire from the control unit to the connector plug, use the wiring diagram below.

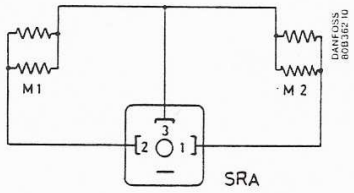
Note! Ensure that the screw in the connector plug is properly teighted.

Pick-up voltage: 32V ± 2V for 5 ms ± 1 ms

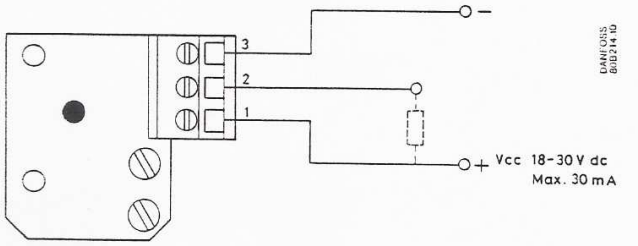
Holding voltage: 7V ± 1V

Diagram: M1 Brake
M2 Clutch

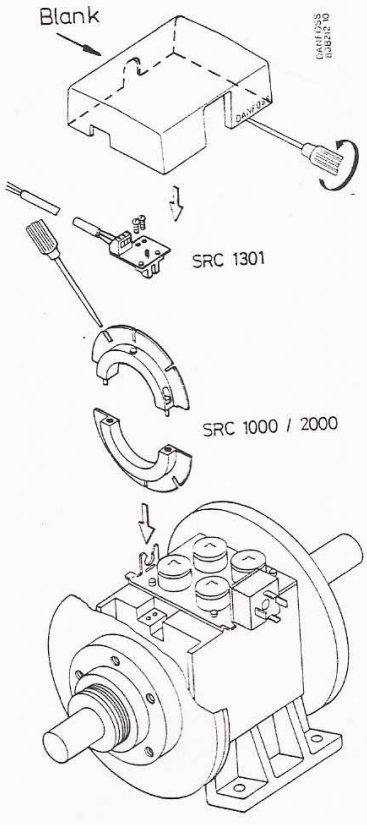
Two coils in parallel



The Danfoss clutch/brake (SRA 25, 30 and 36 only) can be equiped with internal photocell and stepping disc. To wire the photocell, remove the cover on the top of the SRA unit, connect the wire from the control unit to the photocell using the diagram below.



To pass the photocell wire tru the cover, cut out the blank in the cover on the opposite side of the hole for the connector plug.



Caution

Wiring must comply with prevailing local and national codes and ordinances.

Instructions SRA 15, 18, 20, 23, 25, 30 and 36

Problem Guide

How to use the problem guide: On this page are 8 problems that might occur. After each problem is a set of numbers which refer to the numbers of the cause list next page. If there is a letter after the cause, a paragraph on how to check if the cause is correct is found on the following pages.

Problems

Clutch/Brake runs hot 1, 2, 3, 4, 5

Clutch/Brake freewheels; neither clutch nor brake will engage 6, 7, 8, 9, 10

Clutch and brake engaged at the same time 6, 11

In clutch or brake and will not switch 6, 11, 10, 12

Clutch/Brake slips 1, 2, 3

Clutch/Brake will cycle at 10" of vacuum but will not at 20" 10

Clutch/Brake not accurate 13, 10

Clutch/Brake will not operate at start-up but will cycle fine once it is warm 10

Causes

1. Load too high
2. RPM too high
3. Tension too high
4. Cycling frequency too high
5. Not enough ventilation to the Clutch/Brake
6. Check wiring to Clutch/Brake
7. Is there voltage to the Clutch/Brake A
8. Is there vacuum to the Clutch/Brake B
9. Is a coil burnt out C
10. Is the friction material worn out D
11. Is the control unit malfunctioning E
12. Are there incorrect input signals to the control unit F
13. G

How to check

A First, check to see if there are any leds lit on the control unit. If not, check the input voltage to the control unit. If voltage is present check the fuse(s). If blown, replace. NOTE: If the fuse keeps blowing, refer to the control unit tech info and *C* below. By referring to the control unit tech info, determine which mode the Clutch/Brake should be in (clutch or brake). With a voltmeter, check the voltage between the common terminal and the clutch or brake terminal (refer to chart page 6). The reading should be 7 ± 1 volt DC. If correct proceed to *B*, if not, *C*.

B Check if the vacuum gauge reads 20" hg. If not, adjust it using the nut on the bottom of the regulator. If it cannot be adjusted to 20", remove the hose from the Clutch/Brake and hold your finger over the hose. If it now can be adjusted to 20" then the vacuum pump is OK. Proceed to *D*.

C With the control unit turned off check the resistance from the common terminal to the clutch terminal, and the resistance from the common terminal to the brake terminal (refer to chart page 6). The resistance should be 4.5 ohms ± 0.5 ohms. If both read properly then proceed to *D* and *E*. If the resistance is not as above then a coil(s) is bad. While making note of the wiring, remove the coil wires and check each one, they each should be 9.0 ohms. Replacement valve kits are available from Danfoss. When replacing a valve kit, remember that the flat side of the flapper goes up. After replacing a valve kit check the voltages to the coils as at *A* above, referring to the control unit tech info. If the voltages are not correct then proceed to *E*.

D If the vacuum pump and control unit are working and the Clutch/Brake has been used for some time it is most likely that the friction material is worn so much that the clutch and/or brake will nc longer engage, the vacuum drops below 10" hg and the Clutch/Brake will hiss. This hiss is a vacuum leak caused by the inability of the disc to make contact with the friction material. This occurs when the gap between the disc and friction material becomes too great. A quick test to prove this: Using the palm and fingers of both hands, grasp the disc and flange of the energized side and squeeze. The hissing should stop and the vacuum should go back up to 20" as the disc clamps. Do not try this with the motor running as injury may result. Take the Clutch/Brake off and send it back to Danfoss. We will renovate the SRA and send it back to you.

E The control unit is defective if:

Fuses keep blowing
Coils keep burning out
Improper voltage to the coils
Clutch and brake energized at the same time
Leds are not lit

If any of the above occur, send the control unit back to Danfoss. We will repair any problem and return the control unit usually in 24 hours or less.

F Refer to the control unit tech info for proper input definitions.

G The Clutch/Brake will remain accurate through its life. If this is a first time installation consult Danfoss for ideas on how you might improve accuracy of your machine. Because this is an open loop system, accuracy depends on:

Constant speed
Constant load
Constant tension

If any of the above are violated you cannot have an accurate system. Furthermore, signals to stop and start the Clutch/Brake must be solid state. Do not use mechanical relays because they are far more inaccurate than the Clutch/Brake.

If you have used the Clutch/Brake for some time and are seeing a decay in accuracy, it probably has nothing to do with the Clutch/Brake.

Are you running your machine faster?
Have you changed your material?
Have you altered the machine?

Things to check

Tension of drive belts and chains
Are the pulleys loose?
Are any gears loose or worn?
Are couplings in good condition?