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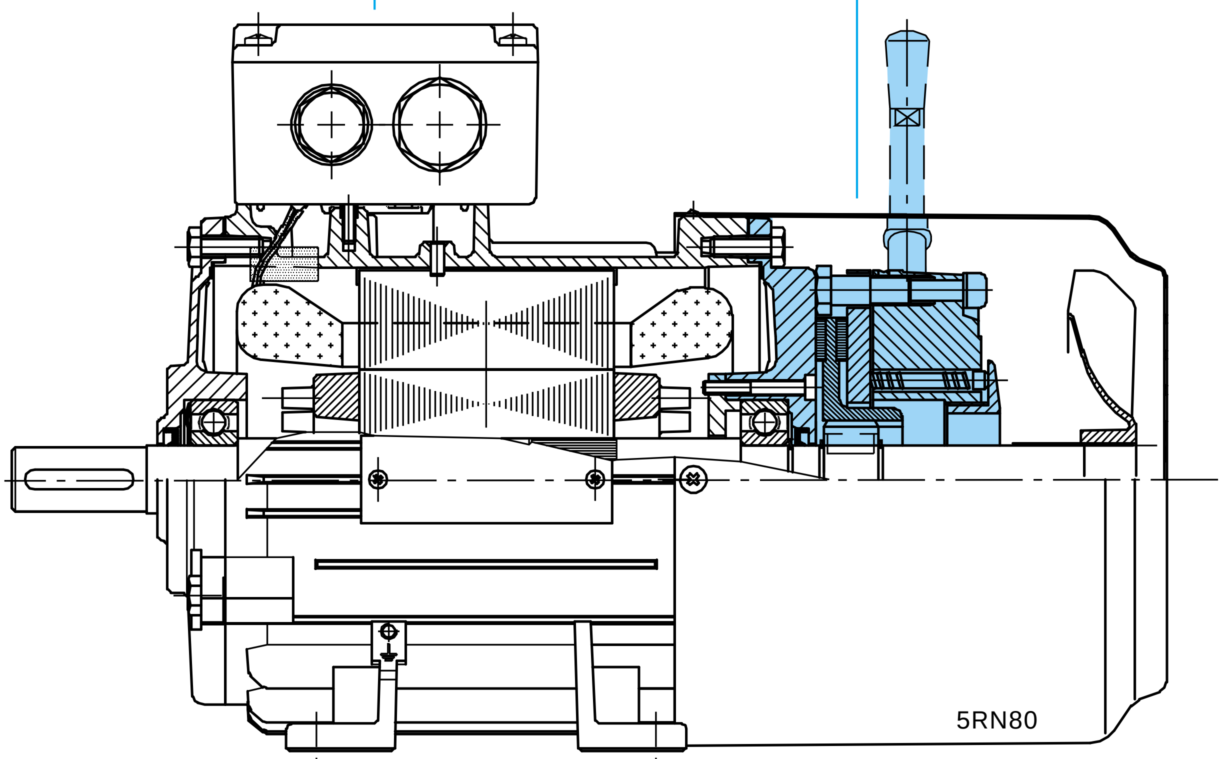
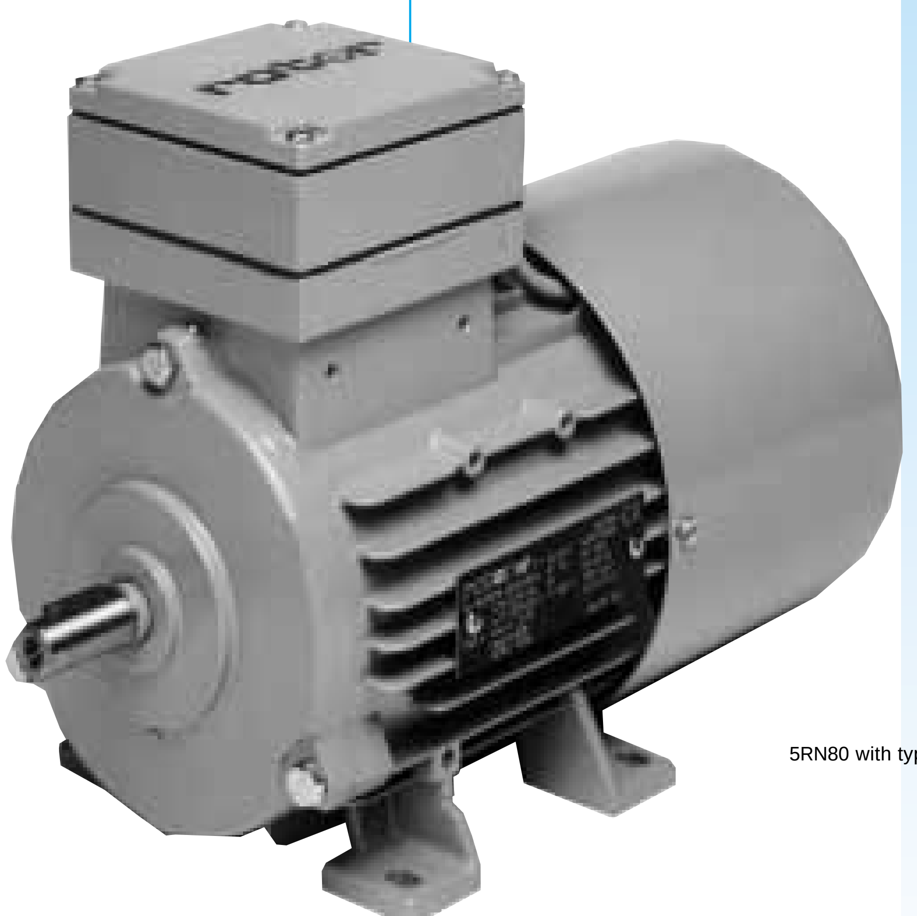
rotor nl®

squirrel-cage induction motors

with lenze disc brake IP55





5RN80 with type of brake 14.458.10

type

5RN

frame sizes

63 to **160**

outputs (S1-50 Hz)

0.18 to 18.5 **kW**
2-pole, 3000 min^{-1}

0.12 to 15 **kW**
4-pole, 1500 min^{-1}

0.12 to 11 **kW**
6-pole, 1000 min^{-1}

0.04 to 7.5 **kW**
8-pole, 750 min^{-1}

type 5RN
disc brake IP55

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type of brake
- single disc brake mounted by means of a special built-up set.

braking principle
- by means of loose springs. The brake is lifted electro-mechanically with direct current voltage 205 V DC.

supply
- standard single side rectifier 400V AC/DC, with possibility to switch also direct current side.

cooling
- T.E.F.C. IC 411 according IEC 34-6 with standard external cooling.

protection class
- brake and electric motors IP55.

adjustment
- reduction of the braking torque by means of adjustment ring (40% max.)

special executions
- on request for instance:
  - manual brake release.
  - seperate motor cooling 230 V/AC or 400 V/AC.
  - built-up to pole-changing motors.
  - brake motors IP56 - T.E.N.V. for S2 duty (so without cooling fan).
  - motors with increased output.

description
- At high switching frequencies and/or mass of inertia is to be considered the heat dissipation of the motor and the brake.
- The operating temperature is determined by the braking energy (Q) and the (starting) losses of the motor transformed into heat.
- Whether temperature limits are being reached, can only be established when the running conditions are known. The table shows the maximum allowable braking energy Q_E

special features
- low rotating mass.
- short built-up method.
- air gap adjustable without disassembling the brake.
- brakes at power failure.

type of brake	brake torque Nm	braking energy Q_E joule x 10^3 per switch	receptive output W	increase mass of inertia kgm²x 10^{-4}	increase mass kg	air gap		friction disc	
						nominal S_L mm.	maximum $S_{L\ max.}$ mm.	minimum thickness mm.	maximum wastage ΔB mm.
14.458.06	4	3	20	0.15	0.8	0.2	0.50	4.5	1.5
14.458.08	8	7.5	25	0.61	1.4	0.2	0.50	5.5	1.5
14.458.10	16	12	30	2.00	2.5	0.2	0.50	7.5	1.5
14.458.12	32	24	40	4.50	4.0	0.3	0.75	8.0	2.0
14.458.14	60	30	50	6.30	5.6	0.3	0.75	7.5	2.5
14.458.16	80	36	55	15.00	8.4	0.4	0.75	8.0	3.5
14.458.18	150	60	85	29.00	12.6	0.4	1.00	10.0	3.0
14.458.20	260	80	100	19.50	19.5	0.4	1.00	12.0	4.0

motor frame size IEC-DIN	2-pole 3000 min^{-1} kW	4-pole 1500 min^{-1} kW	6-pole 1000 min^{-1} kW	8-pole 750 min^{-1} kW	type of brake	increased length of the motor mm.
63	0.18 - 0.25	0.12 - 0.18	0.09	0.04	0.6	51
71	0.37 - 0.55	0.25 - 0.37 - 0.6	0.18 - 0.25	0.09 - 0.12	06 / 08	52
80	0.75 - 1.1	0.55 - 0.75 - 1	0.37 - 0.55	0.18 - 0.25	08 / 10	68
90S	1.5	1.1	0.75	0.37	10 / 12	
90L	2.2	1.5	1.1	0.55	10 / 12	76
100L	3	2.2 - 3	1.5	0.75 - 1.1	12	80
112M	4	4	2.2	1.5	14	90
132S	5.5 - 7.5	5,5	3	2.2	16	140
132M		7,5	4 - 5.5	3	16	140
160Mk-M	11 - 15	11	7.5	4 - 5.5	16 / 18 / 20	145
160L	18.5	15	11	7.5	16 / 18 / 20	145

maintenance

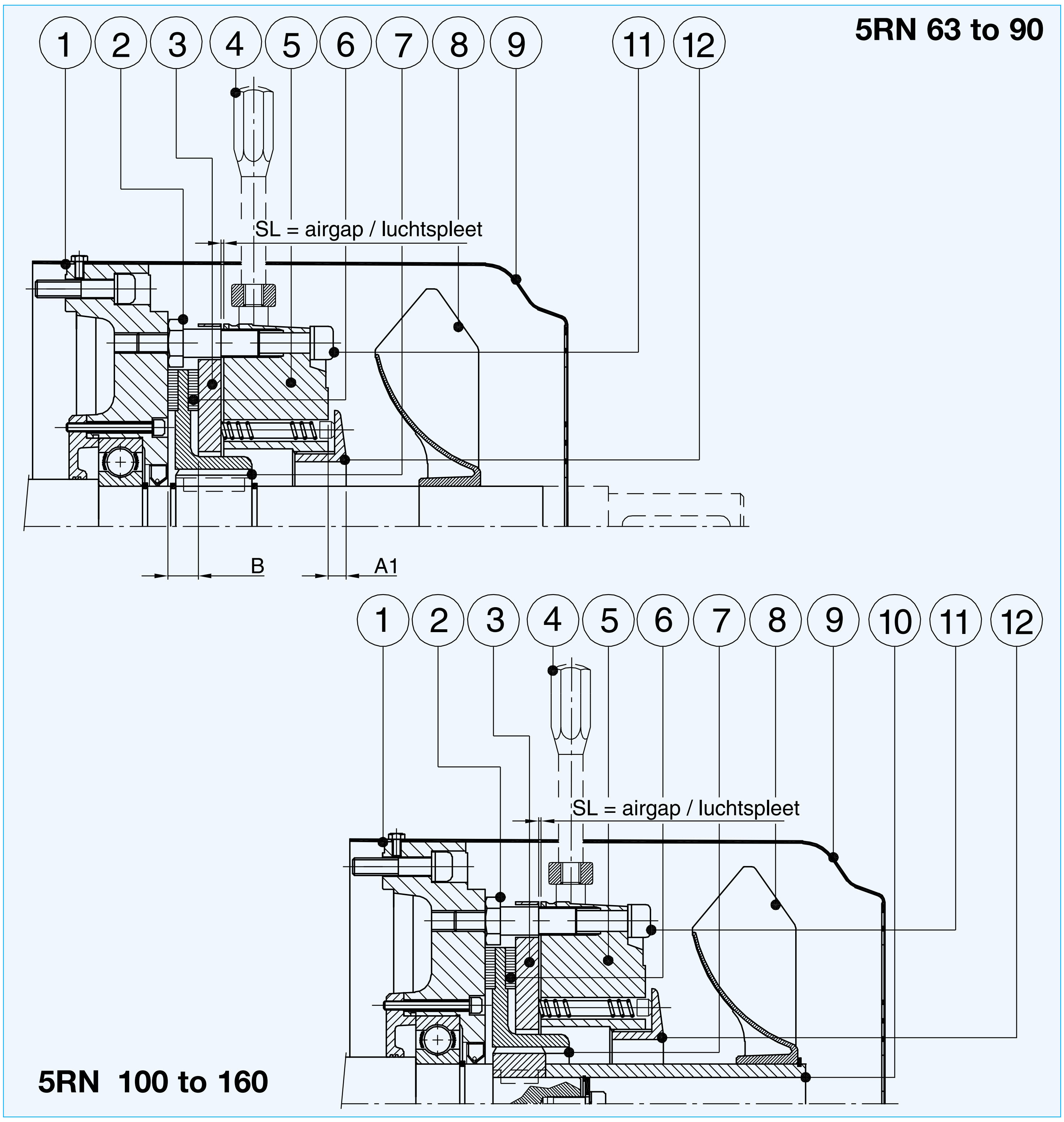
- The brakes are practically maintenance free, but the friction material will of course wear over a period of time (depending on the switching frequency and the mass inertia to be braked). Therefore it is necessary to check the width of the air gap for the maximum value (see table $S_{Lmax.}$). When this maximum value is reached, it is possible to re-adjust the motor for a number of times. When the minimum thickness of the friction disc is reached after a certain number of adjustments, it has to be replaced. The friction disc is allowed to wear a few mm. as indicated in the table by ΔB.

adjusting the nominal air gap

- remove the fanhood (9)
- loosen the socket head bolts (11) with 3 turns.
- turn the hollow air gap adjustment bolts (2) one full turn to the outside.
- screw down the socket head bolts (11) and measure the air gap with a feeler gauge. Repeat the above mentioned three steps until the nominal air gap S_L (see table) is established all around.
- mount the fan (8) and the fanhood (9).
- submit the brake motor to a running test.

replacing the friction disc

- remove the fanhood (9).
- remove the fan (8) by means of a pulling tool.
- loosen the 3 or 4 socket head bolts (11) in the brake coil case (5).
- remove the brake coil case (5) and leave the thrust piece (10) on the shaft.
- replace the friction disc (6) and record for your own information, if required, the replacement date on the new disc.
- screw down the 3 or 4 hollow air gap adjustment bolts (2) as far as possible into the brake coil case (5).
- refit the brake coil case (5).
- Screw down the 3 or 4 socket head bolts (11). The hollow air gap adjustment bolts (2) can now be unscrewed again up to the brake disc surface. Now the air gap is zero.
- adjust the air gap as described in the previous section.



number	description
01	shield N.D.E.
02	air gap adjustment bolts
03	brake disc
04	manuel brake (option)
05	brake coil
06	friction disc
07	brake hub (splain)
08	fan
09	fanhood
10	thrust piece
11	socket head bolts
12	adjustment ring

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the adjustment of the brake torque

- the brake is standard adjusted on the nominal brake torque. It can be reduced by a maximum of 40% by turning the adjustment ring (12), which is on the brake coil case, towards the fan according to the table below.

type of brake	06	08	10	12	14	16	18	20
standard brake torque in Nm	4	8	16	32	60	80	150	260
reduction brake torque in Nm per click rotation of adjustment ring	0,2	0,35	0,8	1,3	1,7	1,6	3,6	5,6
dimension A1 (see drawing) in mm. at 40% brake torque reduction	4,5	4,5	4,5	9,5	11	10	15	16

connection diagram