



NG STEEL RULE NICK-GRINDER

Mod. "NG91"

Mod. "NG91 p-std" and "NG91 p-ext" – *pneumatically operated.*

DECLARATION OF CONFORMITY

OPERATION MANUAL

- Field of application
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- Instructions for assembly
- Instructions for installation
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- Product data – air-motor LZB 14 A-190-12
- Instructions for overhaul/maintenance
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- Drawing/spare-parts list "air-motor"



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DECLARATION OF CONFORMITY

**We
NOR-GRAPHIC LTD,
declare under our sole responsibility that the product:**

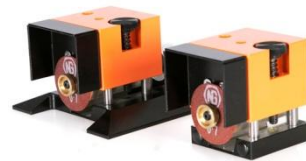
**NG-Steel rule nick-grinder – Mod. “NG91”
–pneumatically operated**

**-to which this declarations relates, is in conformity with the previsions
of the following EU-directive:**

98/ 37/ EEC



**Mod.”NG91 p-std”
Complete with air-hose and grinding discs.**



**Mod. “NG91 p-ext”
(pneumatically operated/extended base-plate)
Mod. “NG91 p-std”
(pneumatically operated/ standard base-plate)**

Klavestadhaugen, 01.01.2009

NOR-GRAPHIC LTD

Hilde Jelsness-Larsen

OPERATION MANUAL

- **Field of application:**

The NG Steel rule nick-grinder is designed to the sole purpose of grinding “nicks” of various widths and depths in the cutting rule of steel rule dies used for the die cutting and creasing of paper, cardboard and corrugated board.

THE MACHINE MUST NOT BE USED FOR ANY OTHER PURPOSES.

- **Work station:**

The NG-Steel rule nick-grinder is installed and operated:

- In the die-room at a suitable working table, or
- At the die-cutting machine with the die pulled out and supported by the two carrier arms of the die cutter.

For maximum safety:

- Keep work area clean and tidy.
 - Use appropriate lighting in work areas
 - When not in use, store the NG-steel rule nick-grinder in a safe place to avoid unintentional starting
- IF STORED A WAY IN A DRAWER, DISCONNECT THE UNIT FROM THE AIR SUPPLY LINC.

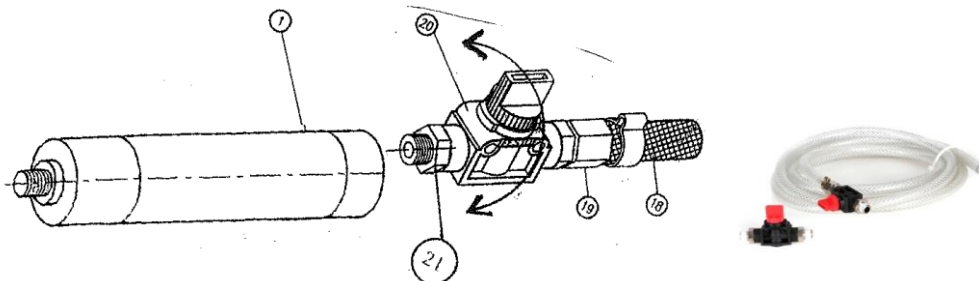
- **Instructions for assembly:**

The NG-Steel rule nick-grinder consists of the following main components:

- Grinding head assembly (grinding head and base-plate - (upper part).
- Air-motor.
- Air-hose -2.5mm with on/off-valve.

The unit is delivered with the grinding head assembly and Air-motor completely assembled.

Complete the assembly by:



- Connecting the threaded part of the on/off-valve to the air-motor at the unmarked air inlet hole.
- Fix the on/off-valve firmly to the air-motor by tightening nut (21).
Turn the swiveling valve-housing (20) to a vertical position with the knob facing upwards.

• Instruction for installation:

- Connect the air-hose to the central, compressed air line, or to a suitable compressor. The air consumption at maximum load is 0.22 m³/min. at 6.3 bar air pressure.
- To avoid unintentional starting of the air-motor when connecting the unit to the air supply line, make sure that the on/off-valve for the air-motor is shut off.

Airmotor:

- The air-motor is designed to operate at an air pressure of 6-7 bar.
- The correct air size is: 5mm.
- Blow out the air-hose before connecting.
- During operation the air-motor should be lubricated with oil.

Lubrication is preferable carried out by means of Atlas Copco Lubricating system DOSOL, or by means of Atlas Copco oil-fog lubrication Mini-dim 08. In most cases the oil-fog lubricator Mini-dim08 is preferred. However, if the air-motor is operated only for short periods of time (max.1 min) the oil supply will be more effectively controlled by means of the DOSOL lubricating system.

Recommended lubricating oils: (temperature of ambient air: +10 oc - +30 oc)		
Make:	Grade	Air supply requirements:
BP	Energol/RD-E-46	The ISO/DIS quality specifications require that: <ul style="list-style-type: none">• The air is free from solid particles larger than 15 micron.• Remaining water content in the air to be max. 6gr./m³ (pressure dew point: +3 degrees c.)• That air may contain max. 5 mg/m³ of oil. Dirty and un-lubricated air will drastically reduce the lifetime of the air-motor, as rust will cause damage to gears and ball bearings.
Esso	Arox-EP68	
Mobil	Almo oil 525	
Shell	Turcule 68	
Castorol	RD Oil 100	
Gulf	Gulfstone oil 46	
Nynäs	LB-31	
Texaco	RD Lube 32	

• Instructions for operation:

- A NG-grinding disc (50x8mm) in the desired widths – (thickness available from 0.3 – 6.0mm) is chosen and mounted on the air motor spindle between the washers –pos.14. Lock the spindle with the spanner, and fasten securely by means of the knurled retaining nut – pos. 17.
- The depth of the nick to be ground can be set by adjusting the depth control screw – pos. 9. By turning the depth control screw clockwise, the grinding depth will be reduced, and vice versa. The depth of the nick should be equivalent to the thickness of the board to be die-cut. Avoid grinding unnecessarily deep, as this will only cause undue wear on the grinding discs.
- Switch on the air supply to the motor by means of the on/off-valve located at the air-hose coupling.
- Position the grinding head squarely on top of the cutting rule to be nicked, and press down the upper, spring-loaded part of the grinding head firmly and quickly to bring the grinding disc into the steel rule. A quick grinding action will considerably reduce the wear on the grinding discs.

Important safety precautions:

- During the grinding action it is vitally important to keep the grinding head absolutely steady as the grinding disc is penetrating the cutting rule. Twisting or undue movement of the grinding head at this stage, may cause breakage or damage to the grinding disc.
- The operator should wear safety goggles and face the grinding disc guard at all times.
- If the noise level at the work station exceeds 85 db (A), the operator must use ear-protection (ear-plugs/or ear-mufflers.)
- Disconnect air supply before changing grinding discs.
- Check that the spanner used for locking the air-motor spindle when changing grinding discs, is removed before starting the motor.
- In order not to deteriorate the environmental air quality do not lubricate the air-motor in excess of the quantity of oil specified in the “instructions for installation”.
- Check that the grinding disc has no cracks or other damages before starting the nick-grinder.
- Run the unit for a few seconds at no load before starting the grinding operation.
- Use only original, “NG”-marked grinding discs which have been tested for safe performance in the NG-steel rule nick-grinder.

- **Product data – Air-motor Lzb14 A-190 - at air pressure 6.3 bar (91 psi)**

Max power:	0.16	Kw
	0.22	Hp
Speed at max power:	9100	r/min
Torque at max power:	0.17	Nm
	0.12	lbf.ft
Min. starting torque	0.26	Nm
	0.19	lbf.ft
Free speed	19500	r.min
Air consumption at max power	4.2	litre/sec
	8.9	cmf
Weight	0.3	Kg.
	0.66	Lb
Shaft loading code	a	
Lubrication free	No	

- **Instructions for overhaul/maintenance:**

- **AIRMOTOR:**

Regular overhaul and cleaning will considerable add to the lifetime of the air-motor.

The air-motor should be taken apart for overhaul and cleaning every 6. Months, even if it is working satisfactory. If the air-motor is in continuous service, it should be overhauled and cleaned more frequently.

The planetary gears, ball-bearings and needle bearings should be greased when taking the air-motor apart for the regular overhaul.

Recommended types of grease:			
Makes:	Grade.	Makes:	Grade.
BP	Energrease LS-EP2	Mobil	Mobilplex 48
Castrol	Spheerol EP L2	Nynäs	FL3-42 EP
Esso	Beacon 2	Shell	Alvania grease EP 2
Gulf	Gulfcrown grease EP no. 2	Texaco	Multifak EP 1
Gulf	Universal Greas		

Equivalent grades of other reputable makes can, of course, also be used.

To get access to the air-motor, for regular overhaul and repairs, proceed in the following manner:

- Disconnect the nick-Grinder from the air supply line to avoid unintentional starting of the air-motor.
- Loosen locking screw-pos.10, unbrako:M5x20
- Remove the grinding disc.
- Pull the air-motor out of the grinding head.
- Disconnect the on/off-valve and air-hose.

- **GRINDING HEAD:**

Every 6 months the grinding head should be taken apart for cleaning and greasing.

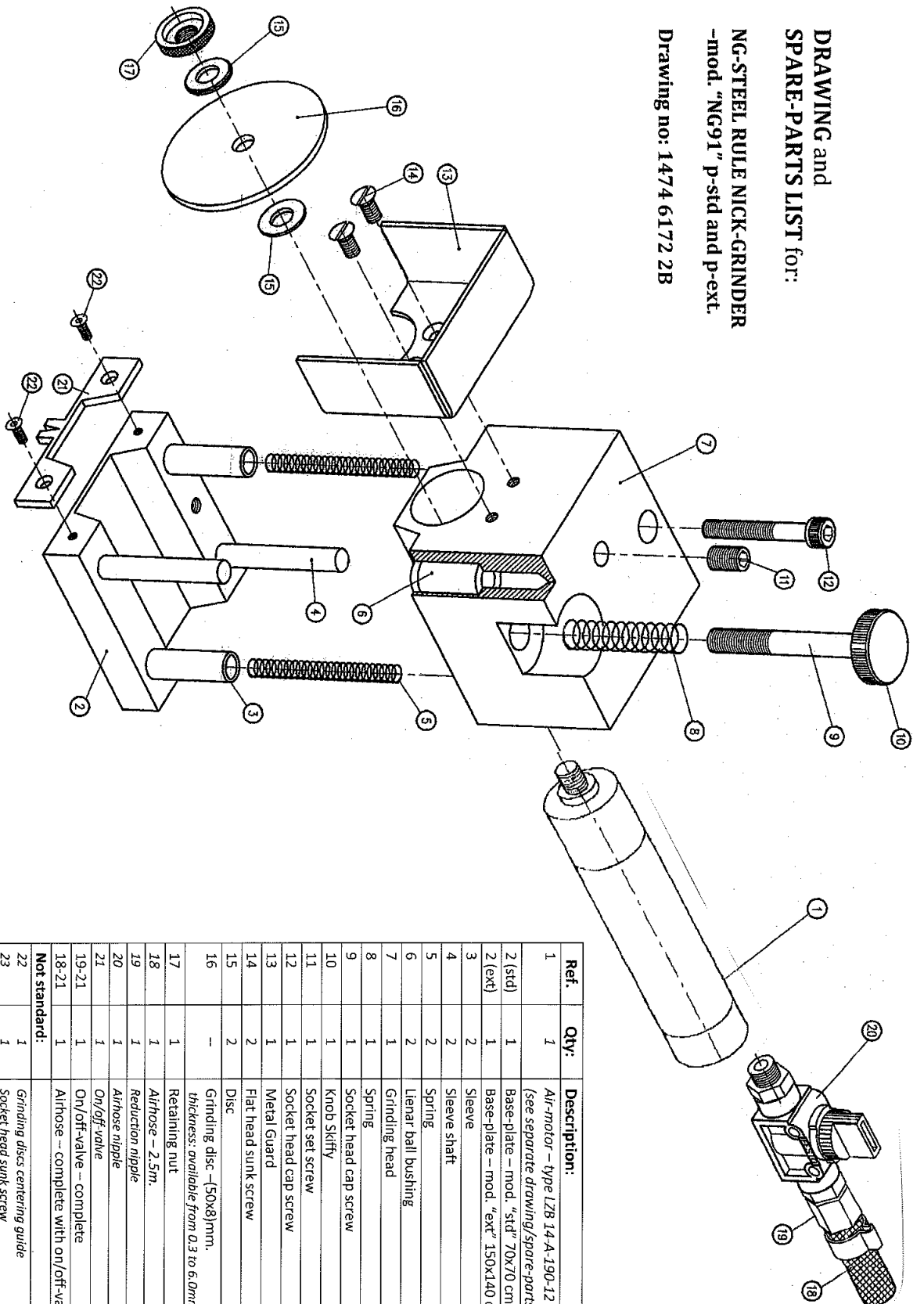
- Separate base-plate – pos.2, from the grinding head – pos. 7, by unscrewing screw -pos.11, -unbrako: MGx45
The base-plate may now be separated from the upper part of the grinding head.
- Apply 2/3 gr. Of ball bearing grease to each of the 2 linear ball bushings – pos. 6. (use grease according the standard DIN-51825 –K2K).
- Apply the grease on top of the ball-race with a suitable wooden stick.
- Remove possible dust in the 2 holes accommodating the sleeves – pos. 3, and spring – pos. 5, of the base-plate, by means of compressed air.
Also blow out possible dust in the two sleeves -pos.4, of the base-plate. Grease slightly the two springs -pos.5.
- Unscrew depth control screw – pos.9, and blow out possible dust in its treaded hole.
- Grease depth control screw – pos. 9, as well as spring – pos.8.

• Drawing / spare-parts list “Nick-Grinder”

**DRAWING and
SPARE-PARTS LIST for:**

**NG-STEEL RULE NICK-GRINDER
-mod. “NG91” p-std and p-ext.**

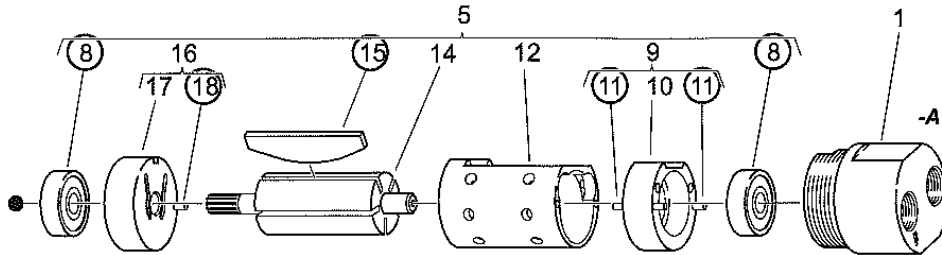
Drawing no: 1474 6172 2B



Ref.	Qty:	Description:
1	1	Air-motor – type LZB 14-A-190-12 <i>(see separate drawing/spare-parts list)</i>
2 (std)	1	Base-plate – mod. “std” 70x70 cm.
2 (ext)	1	Base-plate – mod. “ext” 150x140 cm.
3	2	Sleeve
4	2	Sleeve shaft
5	2	Spring
6	2	Lienar ball bushing
7	1	Grinding head
8	1	Spring
9	1	Socket head cap screw
10	1	Knob Skiffy
11	1	Socket set screw
12	1	Socket head cap screw
13	1	Metal Guard
14	2	Flat head sunk screw
15	2	Disc
16	--	Grinding disc –(50x8)mm. <i>thickness: available from 0.3 to 6.0mm.</i>
17	1	Retaining nut
18	1	Airhose – 2.5m.
19	1	Reduction nipple
20	1	Airhose nipple
21	1	On/off-valve
19-21	1	On/off-valve – complete
18-21	1	Airhose – complete with on/off-valve.
Not standard:		
22	1	Grinding discs centering guide
23	1	Socket head sunk screw
22-23	1	Grinding disc centering guide – compl.

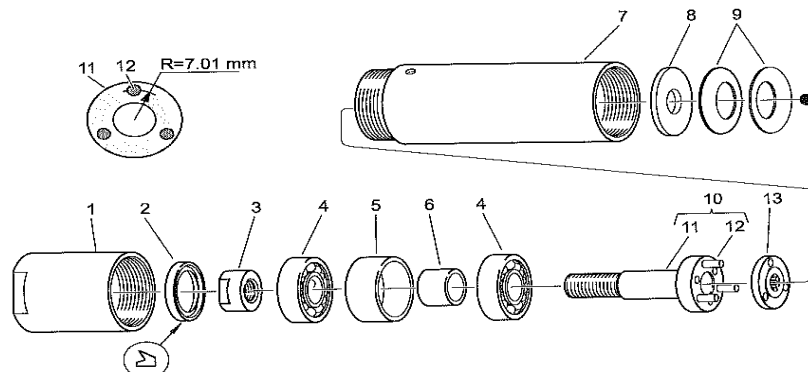
• Drawing / spare-parts list “AIRMOTOR – LZB 14 A-190-12”

MOTOR ASSEMBLY:



Ref.:	Ordering no:	Qty:	Description:	O –Remark/ Included in Service-Kit:
1	4430 0876 00	1	Back head	
5 (8 – 18)	4210 0478 84	1	Motor –complete	
8	4081 0216 90	2	Ball bearing - (625 -2RZ)	O Service kit – ordering 4081 0216 90
9 (10 – 11)	4430 0782 80	1	End plate, complete	
10		1	End plate	
11	4081 0216 90	2	Pin – (Sp 1.5 x 14)	O Service kit – ordering 4081 0216 90
12	4430 0780 00	1	Cylinder	
14	4210 0478 01	1	Rotor (z = 7)	
15	4081 0216 90	5	Vane	O Service kit – ordering 4081 0216 90
16 (17 – 18)	4430 0779 80	1	End plate, complete	
17		1	End plate	
18	4081 0216 90	1	Pin – (Sp 1.5 x 6)	O Service kit – ordering 4081 0216 90

ONE STAGE GEAR UNIT:



Ref.	Ordering no:	Qty:	Decription:
1	4430 0787 00	1	Front Part
2	0666 8100 26	1	Seal ring – (G14/20x3)
3	4210 0528 00	1	Nut
4	0502 1092 47	2	Ball bearing – (EEB 3-2Z)
5	4210 0502 00	1	Spacer
6	4430 0829 01	1	Spacer
7	4430 0778 00	1	Motor casing
8	4210 0474 00	1	Washer
9	4210 0475 00	2	Cup spring
10 (11, 12)	4430 0788 80	1	Planetary shaft – complete
11	--	1	Plant shaft - (UNF 5/16” – 24)
12	4210 0526 00	3	Axle pin – (2.5 h5x9.1)
13	4430 0785 00	1	Driver