



VA Medical Center Phase IV

North Las Vegas, NV



OPERATION & MAINTENANCE DATA

Boiler Plant Equipment – Burner Atomizing Air Compressors

Specification Sections 15622.2.3.D

Location: Central Plant Boiler Room

OPERATION & MAINTENANCE DATA

Burner Atomizing Air Compressors

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2. Spare Parts - Below are recommended spare parts by the manufacturer of these equipments:

Suggested Spare Parts:

Per the manufacturer of this equipment, there are no recommended spare parts. Please see the specifications for spares that were provided per the requirements of this project.

Atlas Copco Stationary Air Compressors

LE/LT15, -22, -40, -55, -75, -110

LE150

LF15, -22, -40, -55, -75

Instruction Book

This instruction book meets the requirements for instructions specified by the machinery directive 89/392/EEC and is valid for CE as well as non-CE labelled machines

No. 2920 1257 03

Registration code: APC L / 38 / 991

Replaces 2920 1257 02

1998-04



* 2 9 2 0 1 2 5 7 0 3 *

Atlas Copco

This instruction book describes how to handle the machines to ensure safe operation, optimum efficiency and long service life.

Read this book before putting the machine into operation to ensure correct handling, operation and proper maintenance from the beginning. The maintenance schedule comprises measures for keeping the machine in good condition.

Keep the book available for the operator and make sure that the machine is operated and that maintenance is carried out according to the instructions. Record all operating data, maintenance performed, etc. in an operator's logbook available from Atlas Copco. Follow all relevant safety precautions, including those mentioned on the cover of this book.

Repairs must be carried out by trained personnel from Atlas Copco who can be contacted for any further information.

In all correspondence mention the type and the serial number, shown on the data plate.

For all data not mentioned in the text, see sections "Preventive maintenance schedule" and "Principal data".

The company reserves the right to make changes without prior notice.

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1 LEADING PARTICULARS

1.1 General description

LE, LF and LT are air-cooled, single-acting piston compressors. LE and LT are lubricated compressors; LF are oil-less compressors which deliver oil-free air. LF15 up to LF40, LE15 up to LE55 and LE75 50 Hz are single-stage compressors; LE75 60 Hz, LE110/150, LF55/75 and LT are two-stage compressors.

LE/LF/LT15 up to -55 and LE/LT75 50 Hz are two-cylinder compressors, LE/LT75 60 Hz, LF75, LT110 and LE110/150 are three-cylinder compressors.

Note: Take care that three-cylinder compressors rotate in the direction as indicated by the arrow on the fan housing.

LE/LF are built for effective working pressures up to 10 bar. LT are built for effective working pressures up to 30 bar (LT15 only for 15 and 20 bar).

1.1.1 Compressor variants

The **Compressor Block** (Fig. 1a) includes:

- Crankcase (4) and cylinders (14)
- Air inlet filter (AF) and inlet silencer (3)
- Fan (FN)
- Air cooler piping (12) and (5)
- Unloader (7, for LE/LF/LT40 up to -75, LE/LT110 and LE150)
- Relief valve (8, for LF55/75, LE75 up to LE150 and LT)

The **Power Pack** comprises (Figs. 1b/1c):

- **For LE/LF/LT15 and -22:** the Compressor Block as described above, with flanged-on electric motor (M), check valve (CV-Fig. 2a) and air pressure switch/start switch (MDR3-Fig. 2a).
- **For LE/LF/LT40 up to -75, LT/LF110 and LE150:** the Compressor Block as described above, with flanged-on electric motor (M) and solenoid valve (Y1-Fig. 2c).

The **Complete Unit** comprises:

- **For LE/LF/LT15 and -22:** the Power Pack mounted on a horizontal (Fig. 2a) or vertical (Fig. 2b) air receiver (AR) with air outlet valve (AV), pressure gauge (Gp), safety valve (SV) and condensate drain valve (Dm).
- **For LE/LF/LT40 up to -75, LT/LF110 and LE150** (Fig. 2c/2d): the Power Pack mounted on an air receiver (AR) with air outlet valve (AV), pressure gauge (Gp), safety valve (SV) and condensate drain valve (Dm). An electric cabinet (6) including the motor starter, air pressure switch (MDR3) and start switch (13) is provided.

A sound-insulated **hood** (1-Fig. 4a) is available as option. The hood has a hinged top to allow easy access for maintenance.

The **Pack Unit** (Fig. 4b) is the Power Pack mounted on a frame, enclosed in a sound-insulated bodywork. The electric cabinet (2) including the motor starter, air pressure switch and start switch (3) is mounted outside the bodywork. The bodywork has a hinged top to allow easy access for maintenance.

LE, LF and LT **Trolley** units (Fig. 5) are mobile compressors. They are equipped with either a directly flanged electric motor (LE/LF/LT15EC up to LE/LF/LT55EC and LE/LT75EC) or a petrol engine (LE/LF/LT22ES up to LE/LF/LT55ES). The compressors have two outlet connections:

- Connection (5) for compressed air at working pressure
- Connection (8) for compressed air at reduced pressure via pressure regulator (7)

1.2 Air flow

1.2.1 LE/LF15 up to -40, LE55 and LE75 50 Hz (Fig. 3a)

Air drawn through air filter (AF) and inlet silencer (1) into cylinders (3) is compressed, then discharged through cooler piping (4) and (6) and check valve (CV) into air receiver (AR).

1.2.2 LE75 60 Hz, LE110/150, LF55/75 and LT (Fig. 3b)

Air drawn through air filter (AF) and inlet silencer (1) into LP (low-pressure) cylinder(s) (7) is compressed, then discharged to HP (high-pressure) cylinder (8) via intercooler (10).

The air is further compressed and discharged through cooler piping (6) and check valve (CV) into air receiver (AR).

1.3 Regulating system

1.3.1 LE/LF/LT15 up to -55 with DOL starter (Fig. 3a)

The regulating system includes:

- Check valve (CV)
- Air pressure switch (MDR3) with pressure release valve (2) and on/off switch (AUTO/OFF) (5).

Operation

Air pressure switch (MDR3) opens and closes its contacts at pre-set pressures. During loaded operation, the contacts are closed: the motor is running.

When the pressure in the air receiver reaches the pre-set maximum pressure, the contacts as well as pressure release valve (2) are opened. The motor stops, the air at the delivery side of the compressor is vented to atmosphere and check valve (CV) closes to prevent venting of the receiver.

When the pressure in the air receiver decreases to the pre-set minimum pressure, the contacts of the air pressure switch close and pressure release valve (2) closes. The motor restarts and compressed air is supplied to the receiver again.

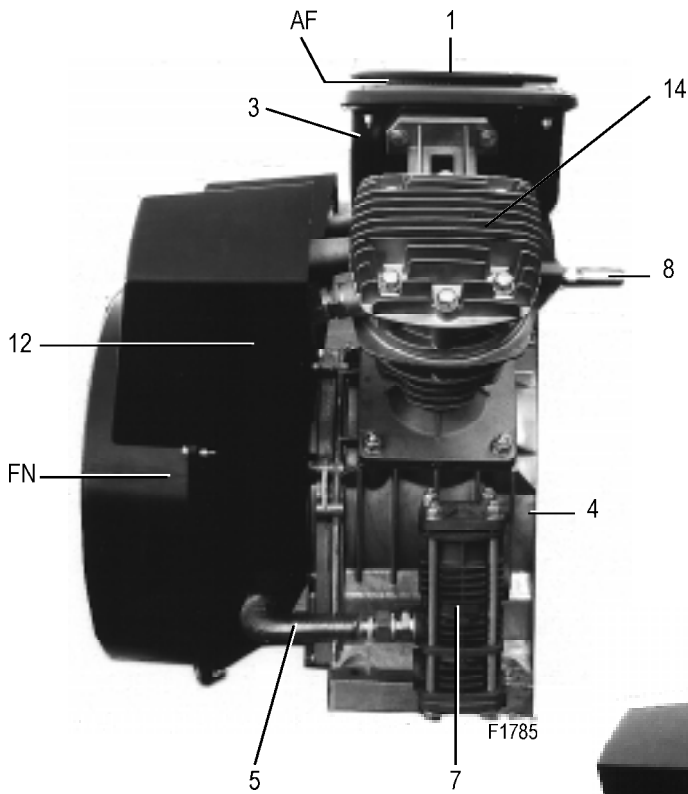


Fig. 1a. Example of Compressor Block

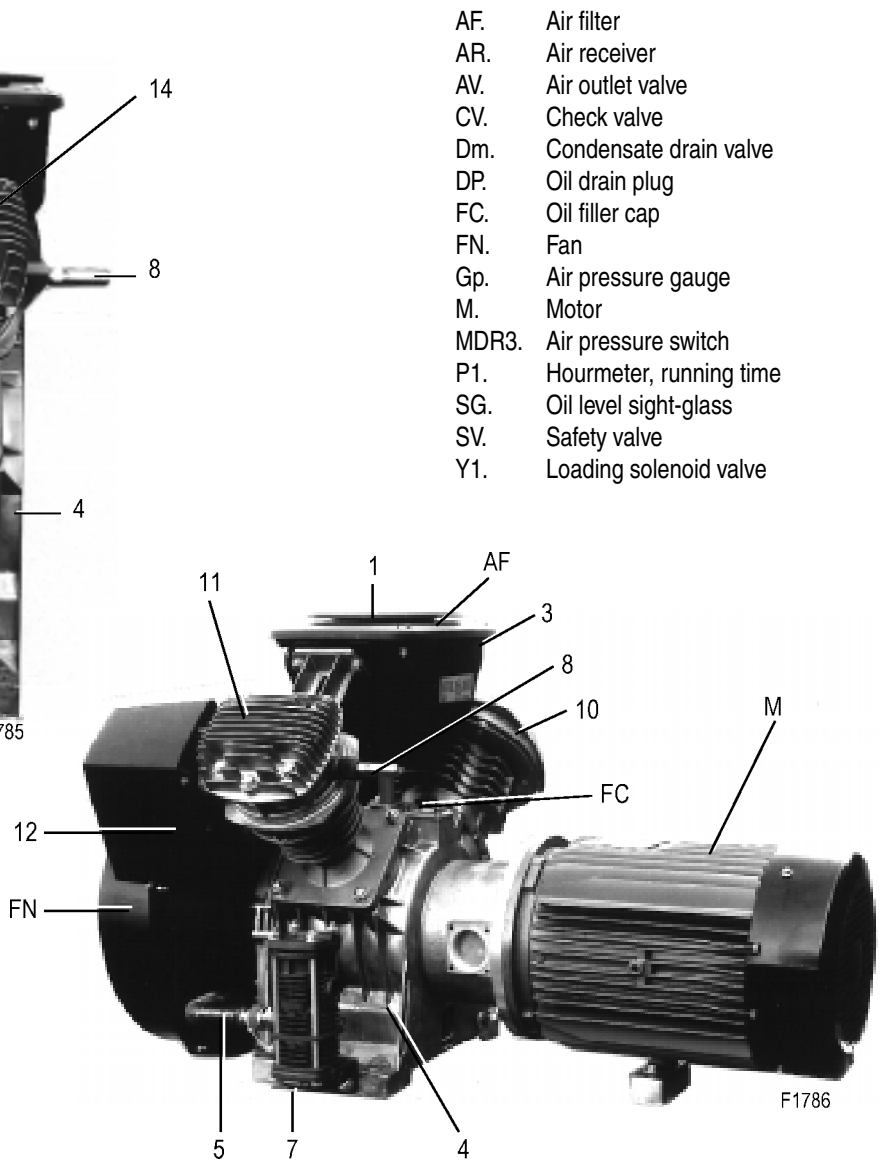


Fig. 1b. Example of Power Pack

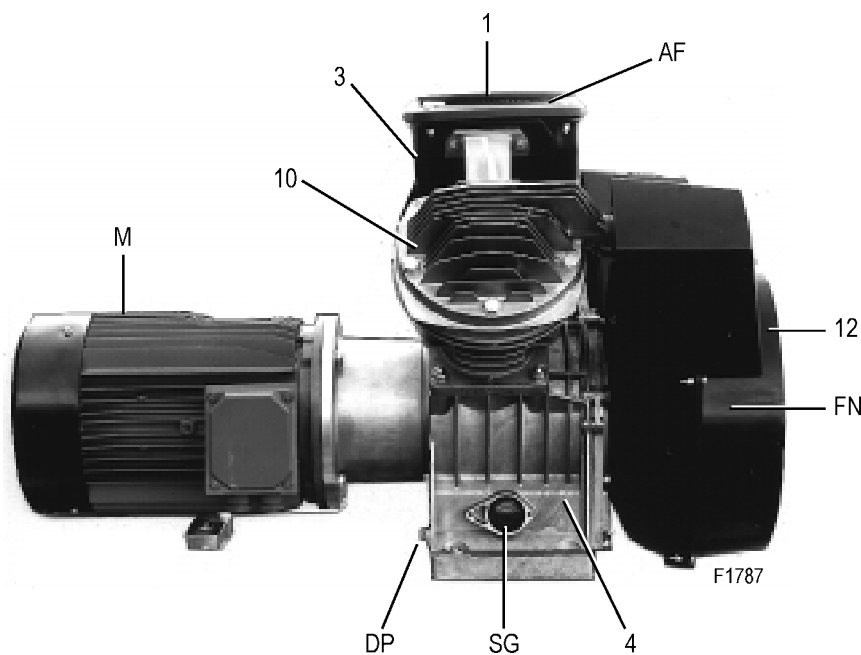


Fig. 1c. Example of Power Pack

- AF. Air filter
- AR. Air receiver
- AV. Air outlet valve
- CV. Check valve
- Dm. Condensate drain valve
- DP. Oil drain plug
- FC. Oil filler cap
- FN. Fan
- Gp. Air pressure gauge
- M. Motor
- MDR3. Air pressure switch
- P1. Hourmeter, running time
- SG. Oil level sight-glass
- SV. Safety valve
- Y1. Loading solenoid valve

- 1. Cover
- 2. Blow-off silencer
- 3. Air inlet silencer
- 4. Crankcase
- 5. Cooling pipe
- 6. Electric cabinet
- 7. Unloader
- 8. Relief valve
- 9. Pictograph, switch off voltage and depressurize before maintenance or repair
- 10. LP cylinder
- 11. HP cylinder
- 12. Intercooler
- 13. On/off switch
- 14. Cylinder

Figs. 1 and 2. General views, Compressor Block - Power Pack - Complete Unit

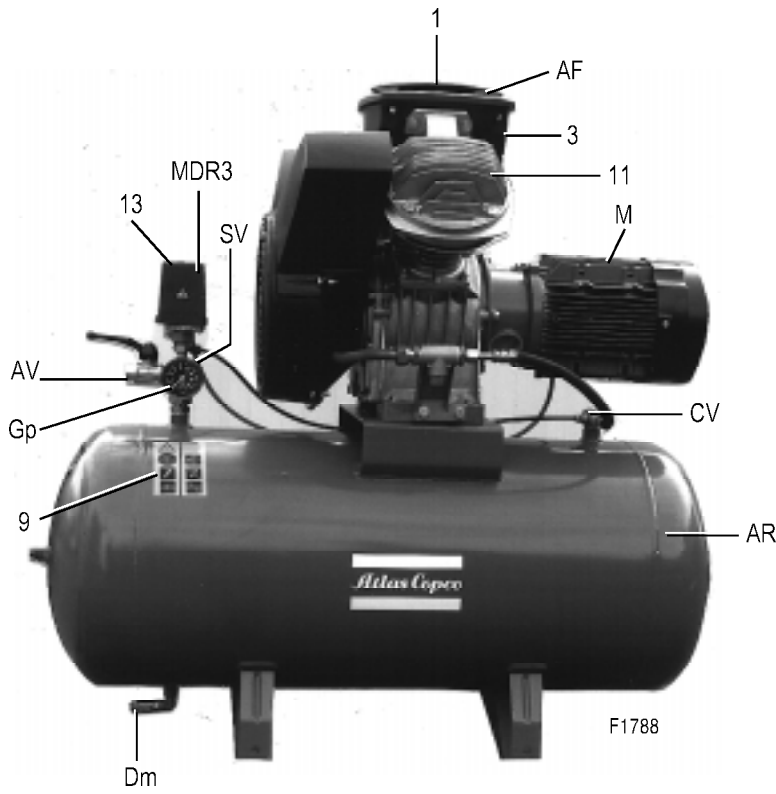


Fig. 2a. Complete Unit, LT15/22, horizontal receiver

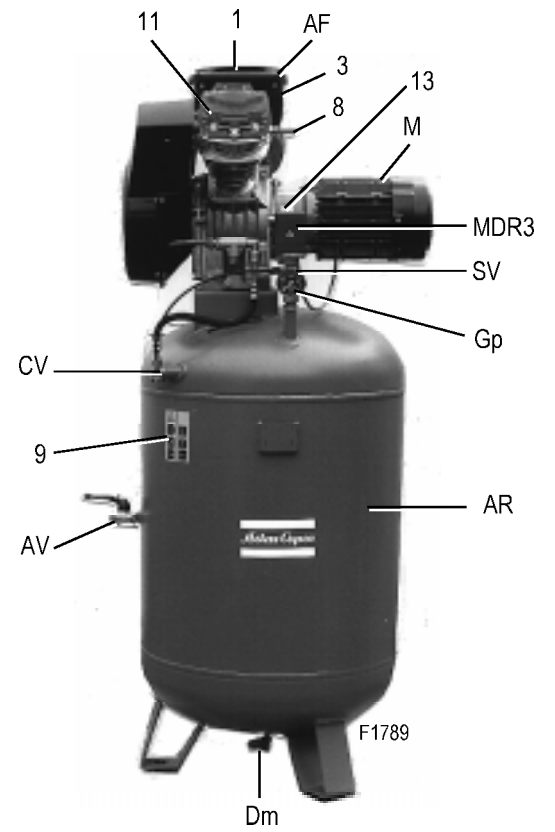


Fig. 2b. Complete Unit, LT15/22, vertical receiver

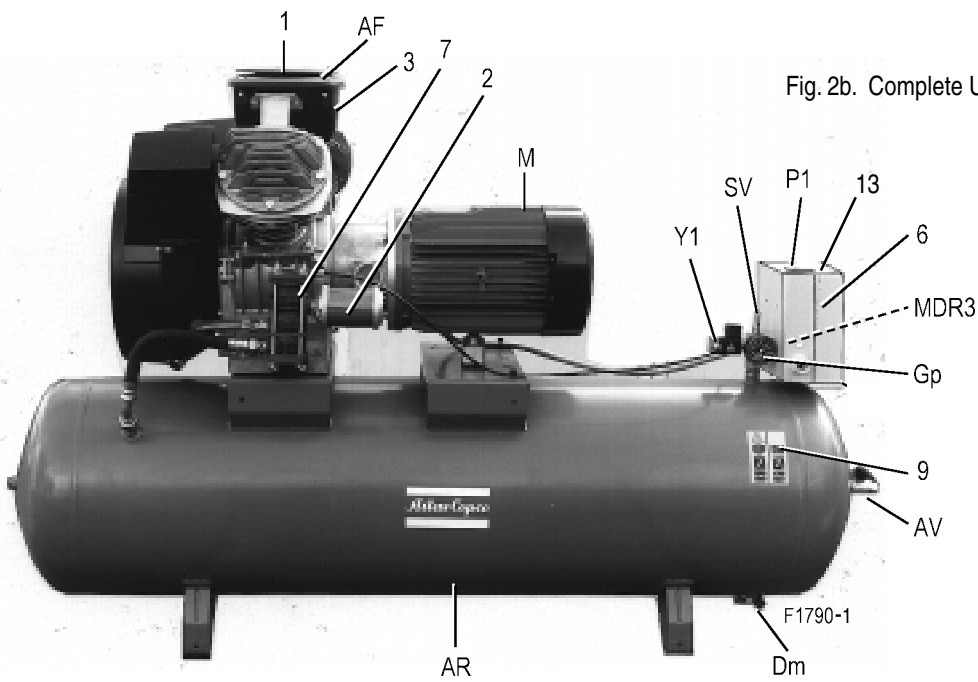
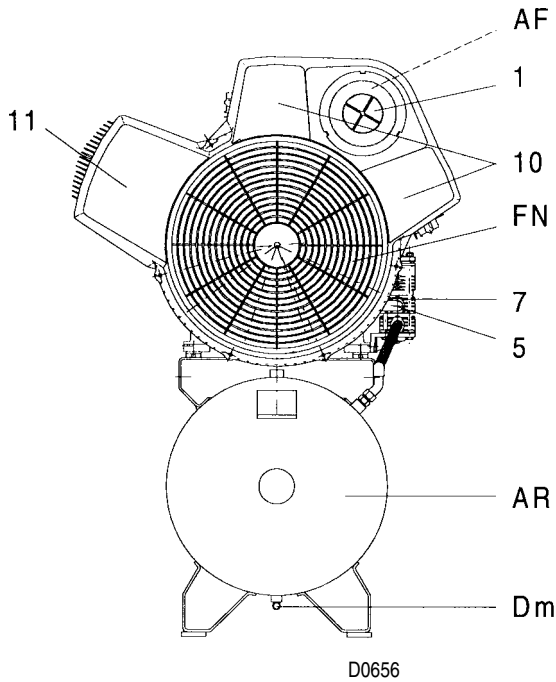


Fig. 2c. Complete Unit, LT40 up to -55 and LT75 50 Hz



1.3.2 LE/LT40 up to -110, LF40 up to -75 and LE150, each with Y/D starter (Fig. 3b)

The regulating system includes:

- Electric cabinet (11) with integrated air pressure switch (MDR3)
- On/off switch (AUTO/OFF) (5)
- Solenoid valve (Y1)
- Unloader (UA) with integrated check valve (CV)

Operation

Air pressure switch (MDR3) opens and closes its contacts at pre-set pressures. During loaded operation, the contacts are closed: the motor is running and solenoid valve (Y1) is energized preventing the compressed air from flowing to unloader (UA).

Fig. 2d. Complete Unit, LT75 60 Hz and LT110

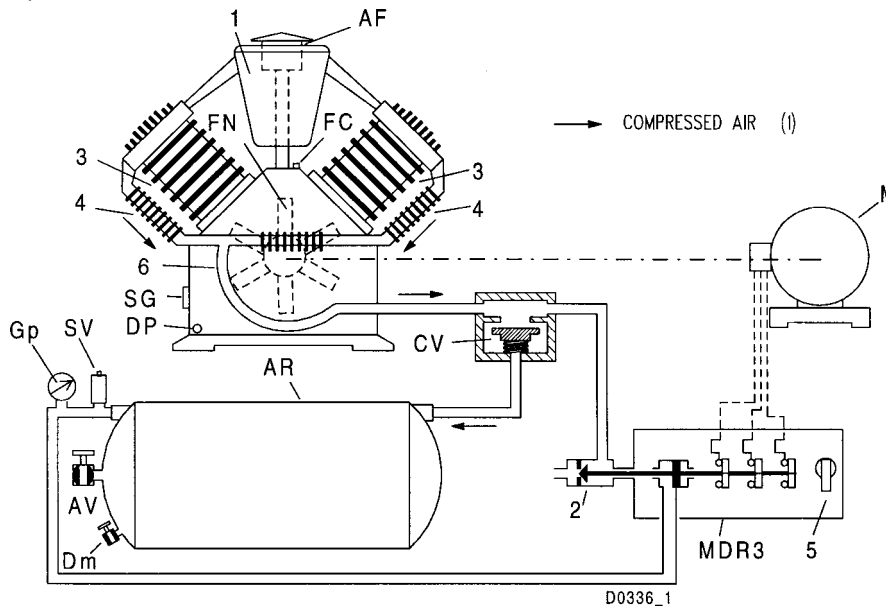


Fig. 3a. Air flow of LE and regulating system of LE/LF/LT15 up to -55 with DOL starter and separate air pressure switch

AF. Air filter	MDR3. Air pressure switch	4. Cooler
AR. Air receiver	PD. Pulsation damper	5. On/off switch
AV. Air outlet valve	RV. Regulating valve	6. Cooling pipe
AV1/2. Air outlet valves	SG. Oil level sight-glass	7. LP cylinder
CV. Check valve	SV. Safety valve	8. HP cylinder
Dm. Condensate drain valve	UA. Unloader	9. Blow-off silencer
DP. Oil drain plug	UV. Unloading valve	10. Intercooler
FC. Oil filler cap	Y1. Loading solenoid valve	11. Electric cabinet
FN. Fan	1. Air inlet silencer	12. Plunger
Gp. Air pressure gauge	2. Pressure release valve	13. Spring
M. Motor	3. Cylinder	14. Pressure regulator

Figs. 3. Air flow and regulating systems

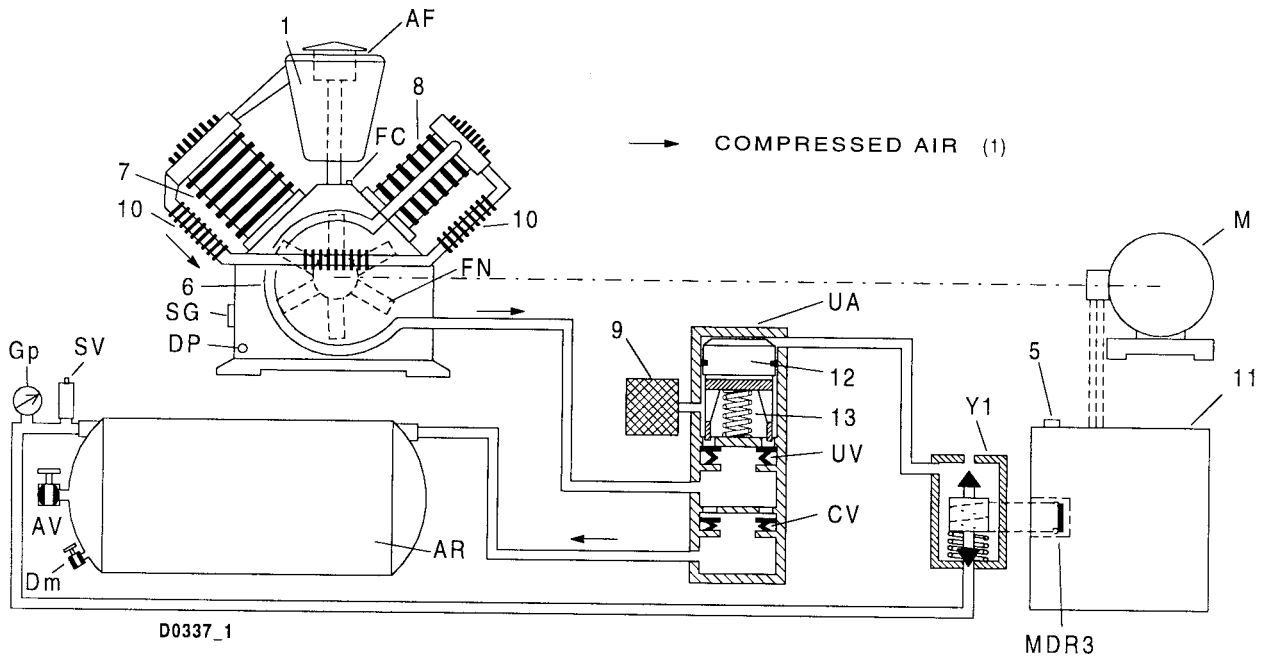


Fig. 3b. Air flow of LT and regulating system of LE/LT40 up to -110, LE150 and LF55/75 with Y/D starter and electric cabinet

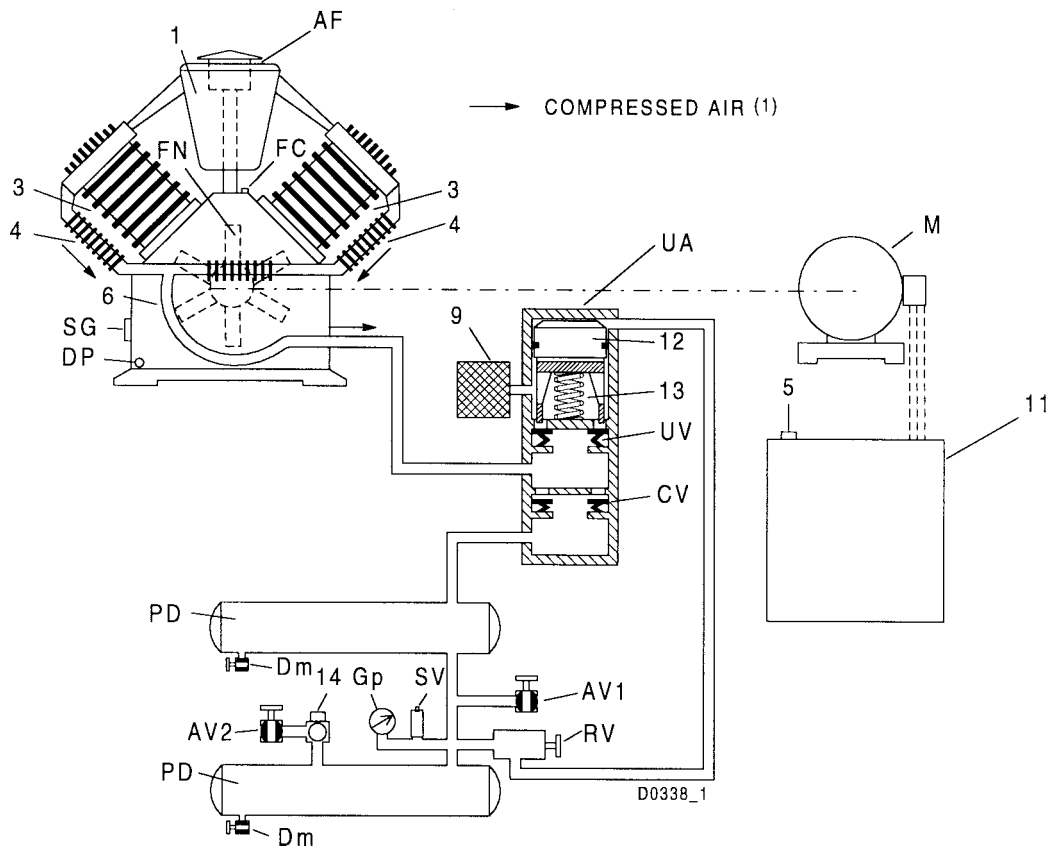


Fig. 3c. Air flow of LE Trolley and regulating system of LE/LF/LT Trolley

When the pressure in the air receiver reaches the pre-set maximum pressure, the contacts of pressure switch (MDR3) open. The motor stops and solenoid valve (Y1) is de-energized. Compressed air from the receiver will flow via the solenoid valve to plunger (12) which causes unloading valve (UV) to open. The air at the delivery side of the compressor is blown through silencer (9) to atmosphere and check valve (CV) closes to prevent venting of the receiver.

When the pressure in the air receiver decreases to the pre-set minimum pressure, the contacts of the pressure switch close. The motor restarts and, after switching over from star to delta, solenoid valve (Y1) is energized. Control air from the unloader plunger chamber is vented to atmosphere. Unloading valve (UV) closes and compressed air is supplied to the receiver again.

1.3.3 LE/LF/LT Trolley (Fig. 3c)

The regulating system includes:

- Regulating valve (RV)
- Unloader (UA) with integrated check valve (CV)
- Electric cabinet (11) (only on electric motor driven Trolley compressors)

Operation

Regulating valve (RV) opens and closes at pre-set pressures. During loaded operation, regulating valve (RV) is closed preventing the compressed air from flowing to unloader (UA).

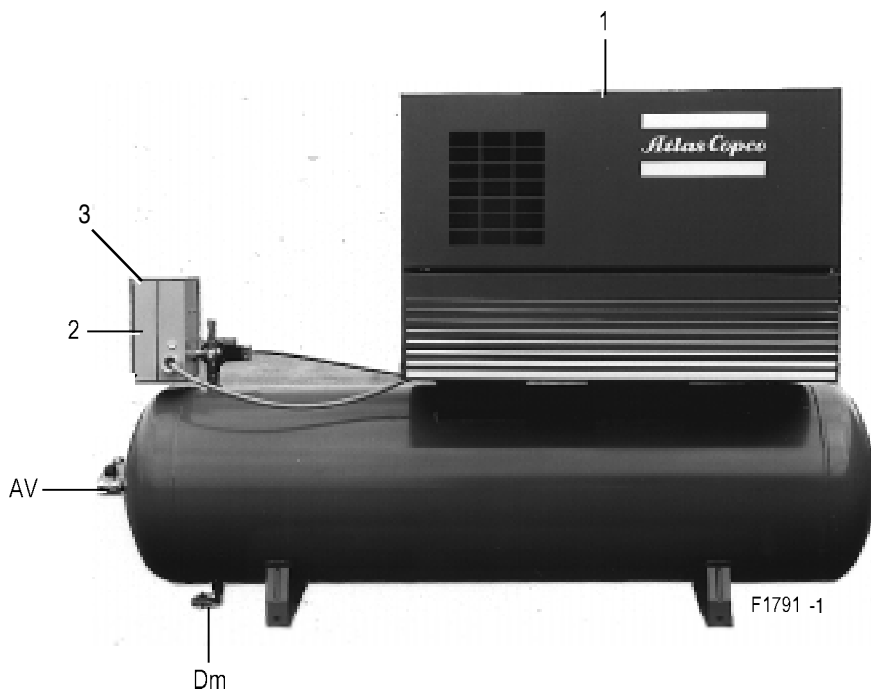


Fig. 4a. Optional silencing hood

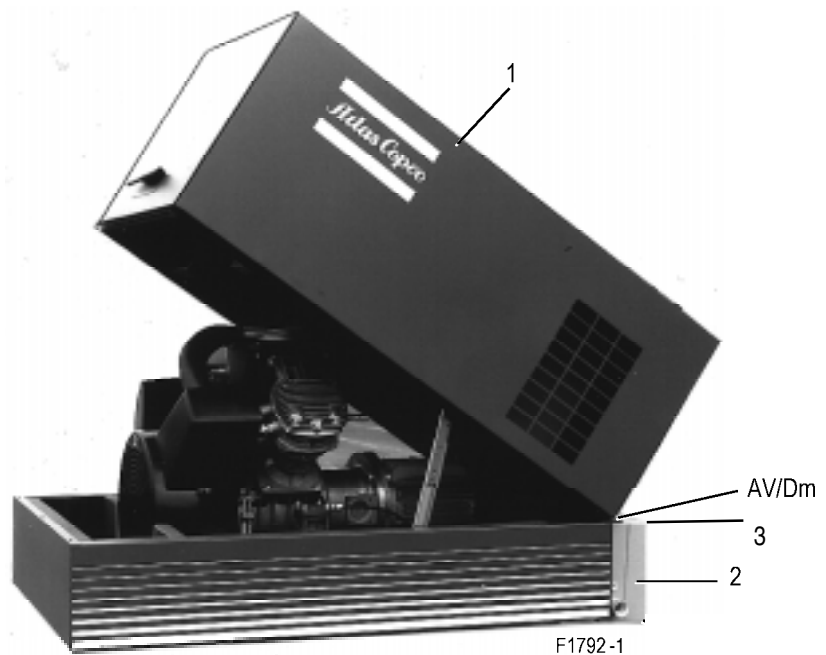


Fig. 4b. Example of Pack compressor

- AV. Air outlet valve
- Dm. Condensate drain valve
- 1. Silencing hood
- 2. Electric cabinet
- 3. On/off switch

Figs. 4. Pack - silencing hood

When the pressure in the pulsation dampers (PD) reaches the pre-set maximum pressure, regulating valve (RV) will open. Compressed air from the pulsation dampers will flow to plunger (12) which causes unloading valve (UV) to open. The air at the delivery side of the compressor is blown through silencer (9) to atmosphere and check valve (CV) closes to prevent venting of the pulsation dampers. The compressor runs unloaded.

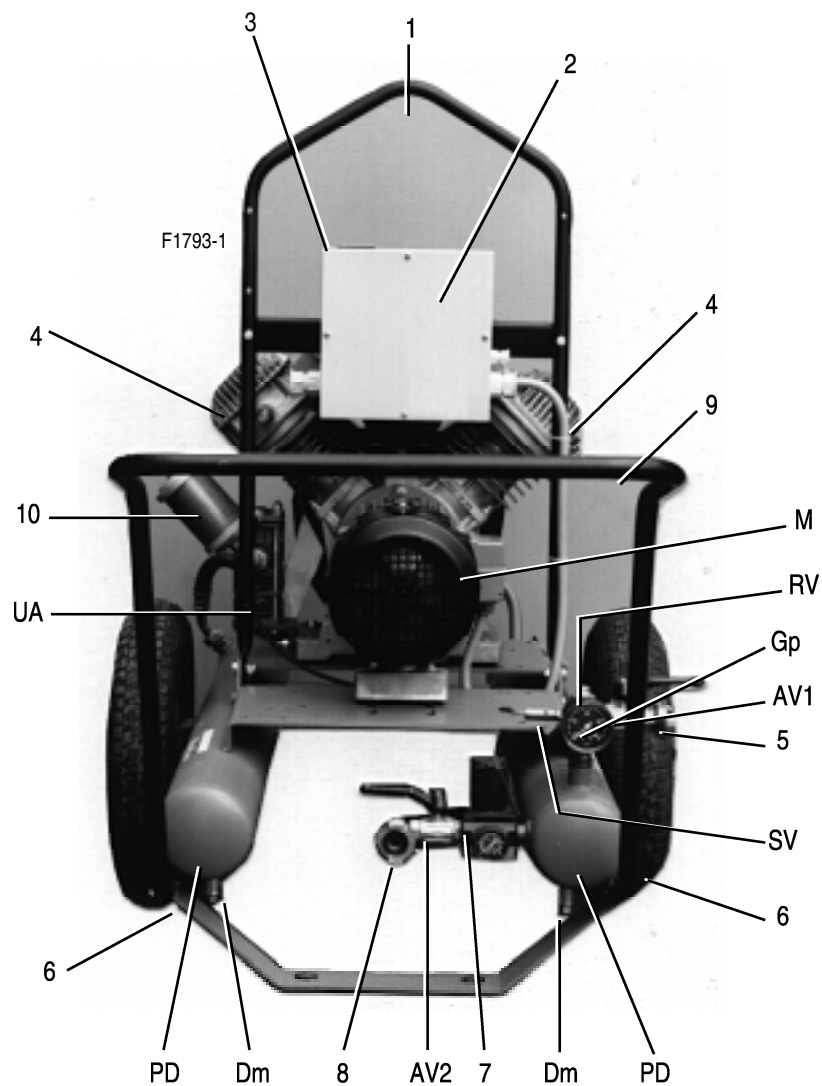
When the pressure in the pulsation dampers decreases to the pre-set minimum pressure, the regulating valve closes. Control air from the unloader plunger chamber is vented to atmosphere. Unloading valve (UV) closes and compressed air is supplied to the pulsation dampers again.

2 INSTALLATION AND HANDLING

2.1 LE/LF/LT

Install the compressor horizontally, in a cool but frost-free and well-ventilated room. Place the compressor as level as possible; however, it can be operated with an angular deviation below 15° in any direction. The air should be clean. Also consult section 10.

A **Pack Unit** must be installed away from walls to allow easy maintenance. Keep the ventilation openings free.



- | | | |
|----------------------------|---------------------|--------------------------|
| AV1. Air outlet valve | SV. Safety valve | 5. Air outlet connection |
| AV2. Air outlet valve | UA. Unloader | 6. Wing nut |
| Dm. Condensate drain valve | 1. Lifting yoke | 7. Pressure regulator |
| Gp. Air pressure gauge | 2. Electric cabinet | 8. Air outlet connection |
| M. Motor | 3. On/off switch | 9. Towing handle |
| PD. Pulsation damper | 4. Cylinder | 10. Blow-off silencer |
| RV. Regulating valve | | |

Fig. 5. LE/LF/LT Trolley

A condensate drain valve must be installed downstream of the compressor in the lowest part of the air net. If any further information is required, consult Atlas Copco.

2.2 LE/LF/LT Trolley

- The compressors are equipped with a lifting eye or yoke (1-Fig. 5).
- When running, the compressor must be installed as level as possible; however, it can be operated temporarily in an out-of-level position not exceeding 15°. Keep the compressor in a frost-free and well-ventilated place.

2.3 Electrical connections

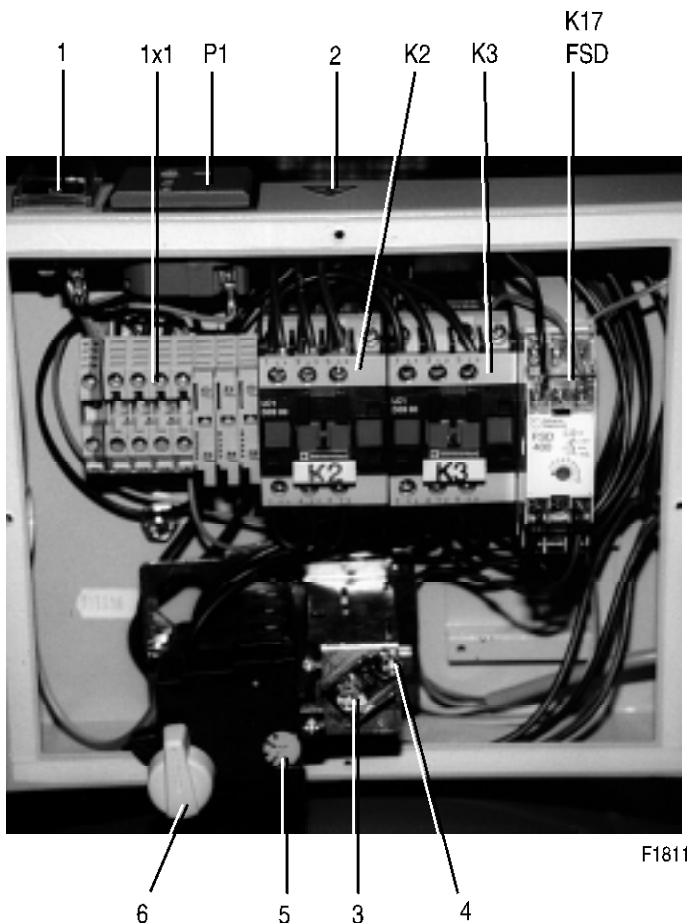
The electrical diagrams are shown in section 9.

The electrical installation must be carried out by an electrician and correspond to the local codes.

The indications on the motor data plate must correspond to the mains supply voltage and frequency. The installation must include an isolating switch in the power line near to the unit and be protected against short-circuits by fuses in each phase. See section 2.4.

The mains supply and earthing lines must be of suitable size. See section 2.4.

For DOL starters, connect the power supply cables as shown on Figs. 13a/b. For Y/D starters, connect the power supply cables to strip (1X1-Fig. 6) as shown on Fig. 13c/d. Check the setting of the overload relay. See section 2.4.



- K2. Star contactor
- K3. Delta contactor
- K17-FSD. Star-delta timer
- P1. Hourmeter, running hours
- 1X1. Terminal strip
- 1. On/off switch
- 2. Pictograph, warning: voltage
- 3. Adjusting screw, stopping pressure **1)**
- 4. Adjusting screw, pressure difference
- 5. Dial, overload relay
- 6. Reset knob, overload relay

1) Unloading pressure for Trolley version

Fig. 6. Electric cabinet

2.4 Setting of overload relay - fuses - cable size

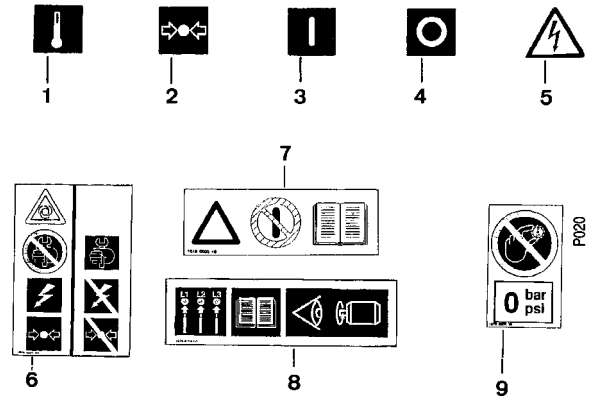
Overload relay - fuses

Type	Starter	Frequency (Hz)	Voltage (V)	Overload relay (A)	Fuses (A)
LE15 10 bar	DOL	50	230 (1-phase)	10.5	16
LF15 10 bar			230	6.5	10
			400	4	10
		60	440-460	4	10
LE15 10 bar USA	DOL	60	230 (1-phase)	11.5	16
LF15 10 bar USA			230-460	4.3	10
LT15 15 bar	DOL	50	230 (1-phase)	10.5	16
LT15 20 bar			230	6.5	10
			400	4	10
		60	440-460	4	10
LT15 15 bar USA	DOL	60	230 (1-phase)	11.5	16
LT15 20 bar USA			230-460	4.3	10
LE22 10 bar	DOL	50	230	9.1	16
LF22 10 bar			400	5.5	10
		60	440-460	5.5	10
LE22 10 bar USA	DOL	60	230 (1-phase)	17.7	25
LF22 10 bar USA			230-460	7.4	10
LT22 15 bar	DOL	50	230	9.1	16
LT22 20 bar			400	5.5	10
		60	440-460	5.5	10
LT22 15 bar USA	DOL	60	230 (1-phase)	17.7	25
LT22 15 bar USA			230-460	7.4	10
LT22 30 bar	DOL	50	230	9.1	16
			400	5.5	10
		60	440-460	5.5	10
LT22 30 bar USA	DOL	60	230 (1-phase)	17.7	25
			230-460	7.4	10
LE40 10 bar	DOL	50	230	15.5	25
LF40 10 bar			400	9.4	16
		60	440-460	9.4	16
LE40 10 bar USA	DOL	60	230 (1-phase)	28.8	40
LF40 10 bar USA			230-460	11.4	16
LT40 15 bar	DOL	50	230	15.5	25
LT40 20 bar			400	9.4	16
		60	440-460	9.4	16
LT40 15 bar USA	DOL	60	230 (1-phase)	28.8	40
LT40 20 bar USA			230-460	11.4	16
LT40 30 bar	DOL	50	230	15.5	25
			400	9.4	16
		60	440-460	9.4	16

Type	Starter	Frequency (Hz)	Voltage (V)	Overload relay (A)	Fuses (A)
LT40 30 bar USA	DOL	60	230-460	11.4	16
LE55 10 bar	DOL	50	230	20.1	25
LF55 10 bar			400	12	25
			60	440-460	12
LE55 10 bar USA LF55 10 bar USA	DOL	60	230-460	13	25
LT55 15 bar	DOL	50	230	20.1	25
			400	12	25
			60	440-460	12
LT55 15 bar USA LT55 20 bar USA LT55 30 bar USA	DOL	60	230-460	13	25
LE40 10 bar	Y/D	50	230	9.6	25
LF40 10 bar			400	5.7	16
			500	4.7	16
			60	230	11.9
			380	7.1	25
			440-460	5.6	16
			575	4.8	16
LT40 15 bar LT40 20 bar		Y/D	50	230	9.6
	400			5.7	16
	500			4.7	16
	60		230	11.9	25
			380	7.1	25
			440-460	5.6	16
		575	4.8	16	
LE55 10 bar LF55 10 bar LT55 15 bar	Y/D	50	230	12.3	40
			400	7.3	25
			500	5.6	16
		60	230	14.5	40
			380	8.6	25
			440-460	7.3	25
		575	5.9	16	
LE75 10 bar LT75 15 bar LF75 10 bar	Y/D	50	230	14.7	40
			400	8.6	25
			500	7	25
		60	230	18.3	63
			380	10.8	40
			440	9.1	25
			460	8.8	25
			575	7.3	25
LE110 10 bar LT110 15 bar	Y/D	50	230	22.8	63
			400	13.4	40
		60	440	13.4	40
LE150 10 bar	Y/D	50	230	--	--
			400	16.5	40
			440	16.8	40

Cable size

Type	Starter	Cable size (mm ²)
LE/LF/LT15/22	DOL	2.5
LE/LF/LT40/55	DOL	4
LE/LF/LT40	Y/D	2.5
LE/LF/LT55	Y/D	4
LE/LF/LT75	Y/D	6
LE/LT110	Y/D	6
LE150	Y/D	10



2.5 Pictographs

Fig. 7. Pictographs (typical examples)

- 1. Temperature
- 2. Pressure
- 3. On
- 4. Off
- 5. Warning: voltage
- 6. Switch off voltage and depressurize before maintenance or repair
- 7. Read Instruction book before starting
- 8. Consult Instruction book for correct direction of rotation
- 9. Do not adjust switch if it is depressurized

Fig. 7. Pictographs (typical examples)

3 OPERATING INSTRUCTIONS

Safety precautions

The operator must apply all relevant safety precautions, including those mentioned in this book.

3.1 Initial start-up

Note: It is strongly recommended to install an interstage drain kit, to remove excess condensate, on LT compressors with a load factor less than 20% per hour. Consult Atlas Copco.

- For Complete Units, remove the transport brackets from underneath the compressor.
- Check the electrical installation, which must be in accordance with the instructions given in section 2.3.
- LE/LT** are filled with PAO (polyalphaolefine) compressor oil. Check that the oil level is still near the top of the red circle of sight-glass (SG-Fig. 1c). Top up, if necessary.
- Switch on the voltage. Start the motor.
- On three-cylinder compressors, check for correct direction of rotation as indicated by the arrow on the fan housing. If the rotation direction is wrong, switch off the voltage and reverse two of the input line connections.
- Check the operation of the air pressure switch (MDR3) on LT (15 or 20 bar) and LE/LF or switch (MDR5) on LT 30 bar versions. See section 5.4 or 5.5. Check the operation of regulating valve (RV) on LE/LF/LT Trolley. See section 5.6.

3.2 Starting

LE/LF/LT

- On LE/LT**, check the oil level, which must be near the top of the red circle of sight-glass (SG-Fig. 1c). The minimum level is the lower part of the red circle.
- Switch on the voltage.
- Move switch (13-Figs. 2) or (1-Fig. 6) to on (I). **1)**
- Open air outlet valve (AV-Figs. 2 or 4).
- Regularly drain condensate (Dm-Figs. 2 and 4).

LE/LF/LT Trolley with electrical motor

- On LE/LT**, check the oil level, which must be near the top of the red circle of sight-glass (SG-Fig. 1c). The minimum level is the lower part of the red circle.
- Set regulating valve (RV-Fig. 5) in the unload position by turning the red handle 90° (see section 5.6).
- Attach the air lines to the air outlets (5 and 8-Fig. 5).
- Plug in and switch on the voltage at the main circuit breaker.

Warning

Never move the compressor after plugging in.

- Move switch (1-Fig. 6) to on (I).
- Open the outlet valves (AV1/2-Fig. 5).
- Set regulating valve (RV-Fig. 5) in the load position by turning the red handle 90° (see section 5.6).
- Turn the regulating knob of the pressure regulator (7-Fig. 5) clockwise or anti-clockwise to increase or decrease the pressure at the outlet of the pressure regulator.
- Regularly drain condensate (Dm-Fig. 5).

LE/LF/LT Trolley with petrol engine

- On LE/LT**, check the oil level, which must be near the top of the red circle of sight-glass (SG-Fig. 1c). The minimum level is the lower part of the red circle.
- Check the engine oil level as follows:
 - Remove the oil filler cap and wipe the dipstick clean.
 - Insert the dipstick into the filler neck, but do not screw it in.
 - The oil level must show between the minimum and maximum mark on the dipstick.
- Fill the fuel tank with unleaded or low-leaded petrol (gasoline).
- Start the engine, consult the engine "Owner's manual".
- Attach the air lines to the air outlets (5 and 8-Fig. 5).
- Open the outlet valves (AV1/2-Fig. 5).
- Set regulating valve (RV-Fig. 5) in the load position by turning the red handle 90° (see section 5.6).
- Turn the regulating knob of the pressure regulator (7-Fig. 5) clockwise or anti-clockwise to increase or decrease the pressure at the outlet of the pressure regulator.
- Regularly drain condensate (Dm-Fig. 5).

3.3 Stopping

LE/LF/LT

- Move switch (13-Figs. 2) or (1-Fig. 6) to off (O). **2)**
- Close air outlet valve (AV-Figs. 2 or 4).
- Switch off the voltage.

If a compressor with pressure switch with pressure release valve stops during operation through a power failure, the pressure from the air receiver must be released by moving the start switch on the air pressure switch to OFF to prevent the compressor from restarting against back-pressure when the power becomes live again.

LE/LF/LT Trolley

- Set regulating valve (RV-Fig. 5) in the unload position by turning the red handle 90° (see section 5.6).
- On LE/LF/LT Trolley with electrical motor:**
Move switch (1-Fig. 6) to off (O).
If the compressor is not required for immediate further use, switch off the voltage at the main circuit breaker and unplug.
- On LE/LF/LT Trolley with petrol engine:**
Stop the engine, consult the engine "Owner's manual".
- Close the air outlet valves (AV1/2-Fig. 5). Depressurize and disconnect the air lines from the outlet valves.

3.4 Taking out of operation at end of compressor service life

At the end of the service life of the compressor, proceed as follows:

- Stop the compressor and close the air outlet valve(s).
- Switch off the voltage and disconnect the compressor from the mains.
- Depressurize the compressor.
- Shut off and depressurize the part of the air net which is connected to the outlet valve. Disconnect the compressor from the air net.
- On LE/LT**, drain the oil.

- For LT 30 bar units, push the start button (I) provided on the cover of pressure switch (Fig. 11a)
- For LT 30 bar units, push the stop button (O) provided on the cover of pressure switch (Fig. 11a).

4 MAINTENANCE

4.1 Petrol engine maintenance

Consult the engine "Owner's manual".

4.2 Preventive maintenance schedule of the compressor 1)

The schedule contains a summary of the maintenance instructions. Read the respective section before taking maintenance measures.

When servicing, replace all disengaged packings, e.g. gaskets, O-rings, washers.

The "longer interval" checks must also include the "shorter interval" checks.

Period 2)	Running hours 2)	Consult section	See note	Preventive maintenance kit (Fig. 8)	Operation
Weekly	-----	3.2	1	--	On LE/LT , check oil level
"	-----	--	--	--	Drain condensate from air receiver or pulsation damper
6-monthly	-----	5.7/5.8	2	--	Test safety valve, and if provided also relief valve
"	-----	4.4/5.3	3	2	Inspect air filter
Yearly	500	4.4/5.3	3	2	On LF75, LE/LT110 and LE150 , replace air filter
"	600	4.4/5.3	3	2	On LE/LT40 up to -75 and LF40/55 , replace air filter
"	800	4.4/5.3	3	2	On LE/LF/LT15/22 , replace air filter
"	2000	4.4	--	2	Change blow-off silencer, if provided
"	2000	4.3/4.4	--	--	On LE/LT, if mineral oil is used , change oil
2-yearly	3000	4.3/4.4	--	5	On LE/LT, if Atlas Copco PAO oil is used , change oil
-----	3000 to 4000	4.4/5.1	--	3/4	Replace check valve or unloader
-----	4000	4.4/5.2	--	1	On LE/LF/LT15 up to -40 , replace valve discs
-----	5000	4.4/5.2	--	1	On LE/LT55/150 and LF55/75 , replace valve discs

- 1) **Use only authorized parts. Any damage or malfunction caused by the use of unauthorized parts is not covered by Warranty or Product Liability.**
- 2) **Whichever interval comes first.** The local Sales Company may overrule the maintenance schedule, especially the service intervals, depending upon the environmental and working conditions of the compressor.

Notes

1. Maintain the level in the red circle of the sight-glass.
2. Wear gloves and safety glasses.
3. For normal operation in clean surroundings. More frequently when operating in dusty environment.

4.3 Lubrication of LE/LT compressors

It is strongly recommended to use the Atlas Copco approved PAO (polyalphaolefine) compressor oil to keep the compressor in excellent operating condition.

Although PAO oil is recommended, a high-quality mineral oil or a special diester synthetic lubricant can also be used after taking some precautions. The previously used oil should first be drained:

- **At normal operating conditions**, a mineral motor oil (not multigrade) with a viscosity grade of SAE 10 W can be used. The oil must meet the requirements of the API (American Petroleum Institute) classification code SE-CC, SE-CD or better. If mineral oil is used, the oil must be changed more frequently (see section 4.2). Mineral oil can be mixed with PAO oil, but the excellent PAO lubrication properties are reduced.
- **At extreme operating conditions** (high ambient temperature, high loading factor, high pressure), a special diester synthetic lubricant should be used. Consult Atlas Copco for the specifications and change interval.

4.4 Service kits

Service kits are available offering the benefits of genuine Atlas Copco parts while keeping the maintenance budget low. The kits comprise all parts needed for servicing. Consult the Parts list for the contents of all kits.

Service kit	Ordering number	Ref. on Fig. 8
Service kit for air filter (AF)		
For LE/LF/LT15/22	1503 6129 61	2
For LE/LF/LT40 up to -55 and LE/LT75 50 Hz	1503 6129 62	2
For LE/LT75 60 Hz, LF75, LE/LT110 and LE150	1503 6130 60	2
Service kit for PAO oil (1 l)		
For all LE and LT	1503 6142 63	5
Service kit for PAO oil (5 l)		
For all LE and LT	1503 6142 60	5
Service kit for unloader (UA)		
For LE/LF/LT40 up to -75	1503 6176 60	4
Service kit for check valve (CV)		
For all LE/LF/LT40 up to -150	1503 6177 60	3
Service kit for valve discs		
For LE15 up to -40 and LF15/22	1503 5800 60	1
For LE55, LE75 50 Hz and LF40	1503 5800 61	1
For LT15 up to -40	1503 5800 62	1
For LT55, LT75 50 Hz and LF55	1503 5800 63	1
For LE/LT75 60 Hz, LE/LT110, LE150 and LF75	1503 5800 64	1



1. Valve kit
2. Filter kit
3. Check valve
4. Unloader
5. PAO oil

Fig. 8. Preventive maintenance kits (typical examples) 1)

1) For the contents of the kits, consult the Parts list.

5 SERVICING AND ADJUSTMENT PROCEDURES

Warning

Release the pressure from the compressor before starting repair or maintenance works. Switch off the voltage and isolate the compressor from the mains.

5.1 Unloader or check valve

Dirt, condensate, coke formation and oxidation influence the proper operation of the valve. Depending on the working conditions (ambient temperature, working pressure, load cycle, oil type), it is recommended to replace the unloader or check valve as indicated in section 4.2. Replacement instructions are included in the maintenance kits.

5.2 Valves

A faulty valve must be replaced immediately. A faulty valve can be discovered as stated in section 6, points 1 and 4. It is highly recommended to replace the valve discs, O-rings and joints in case the cylinder heads are disassembled.

Replacement of valve discs (Figs. 9)

LE15/55		Operation sequence	
LE75 50 Hz			
LF15/40			
LE75 60 Hz	LE75 60 Hz		
LP cylinder	HP cylinder		
LE110/150	LE110/150		
LP cylinder	HP cylinder		
LT15/110	LT15/110		
LP cylinder	HP cylinder		
LF55/75	LF55/75		
LP cylinder	HP cylinder		

- Remove the fan guard, unscrew the cap and remove the cover (1-Fig. 1a), air filter and cover of the air inlet silencer.
- Disconnect cylinder head cover (12) from the inlet and outlet pipe flanges. Remove cover (12).
- Disconnect head (13) from the inlet and outlet pipe flanges. Remove cylinder head cover (12). Remove head (13).

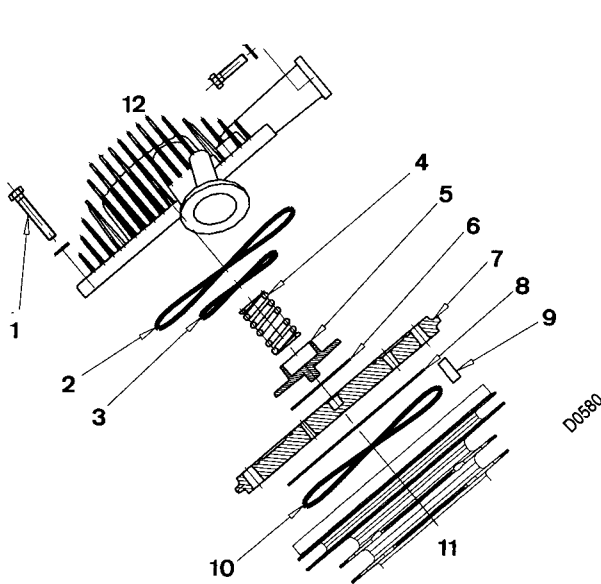


Fig. 9a. LE, LF15 up to -40 and low-pressure side of LT and LF55

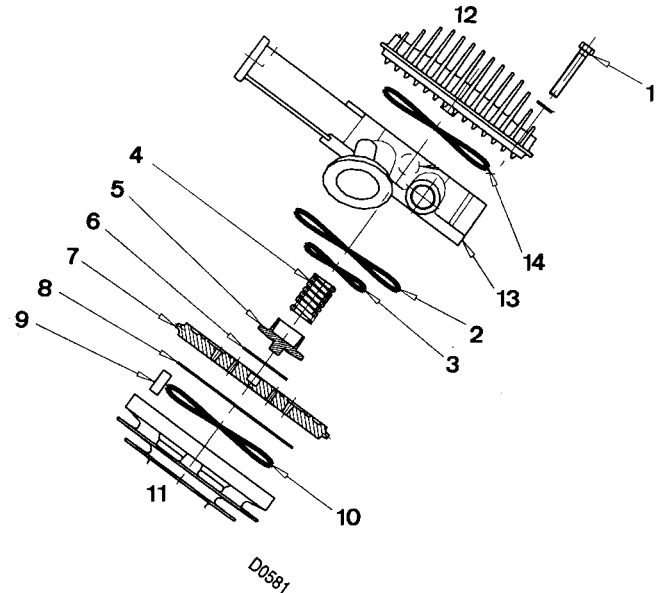


Fig. 9b. High-pressure side of LT and LF55

- | | | | | |
|-----------|-----------------------|---------------------|--------------------|-------------------|
| 1. Bolt | 4. Spring | 7. Valve seat | 10. Joint | 13. Cylinder head |
| 2. Joint | 5. Outlet valve guard | 8. Inlet valve disc | 11. Cylinder | 14. Joint |
| 3. O-ring | 6. Outlet valve disc | 9. Guide pin | 12. Cylinder cover | |

Figs. 9. Cylinder heads

		Operation sequence
LE15/55		
LE75 50 Hz		
LF15/40		
LE75 60 Hz	LE75 60 Hz	
LP cylinder	HP cylinder	
LE110/150	LE110/150	
LP cylinder	HP cylinder	
LT15/110	LT15/110	
LP cylinder	HP cylinder	
LF55/75	LF55/75	
LP cylinder	HP cylinder	
•	•	Remove spring (4), outlet valve guard (5) and outlet valve disc (6).
•	•	Lift off valve seat (7) and remove inlet valve disc (8). Do not remove guide pins (9).
•	•	Remove and discard all O-rings and rubber joints.
•	•	If necessary, remove the carbon deposits from the inlet valve guard at the cylinder top. Take care that no dirt drops into the cylinder.
•	•	Clean and inspect all parts.
•	•	Fit a new joint (10). Do not stretch the cord while inserting it in its groove; the ends should meet.
•	•	Put a new inlet valve disc (8) into place and install valve seat (7).
•	•	Fit a new O-ring (3) and joint (2).
•	•	Install a new outlet valve disc (6), guard (5) and spring (4).
•	•	Install cylinder head cover (12). Use new flange gaskets, if necessary. Fit the flange and cylinder head bolts and tighten them alternately.
	•	Reinstall head (13). Fit a new joint (14). Install cylinder head cover (12). Fit the flange and cylinder head bolts and tighten them alternately.
•	•	Reinstall the fan guard, cover of the air inlet silencer, air filter, cover (1-Fig. 1a) and cap.

Torque values

M6:	10 Nm +/- 2
M8:	23 Nm +/- 2
M10:	46 Nm +/- 5

5.3 Air filter

1. Stop the compressor.
2. **On LE/LF/LT15 up to -55 and LE/LT75 50 Hz:** unscrew the cap on top of cover (1-Fig. 1a). Lift off the cover and filter element. Take care that no dirt drops inside the suction silencer.
On LE/LT75 60 Hz, LF75, LT110 and LE110/150: unscrew cap (1-Fig. 2d) and take out the air filter. Take care that no dirt drops inside the suction silencer.
3. Using a damp cloth, clean the filter chamber and cover. Discard damaged elements.
4. Install the new element, cover and cap.

5.4 Air pressure switch on LT (15 and 20 bar) and LE/LF (MDR3-Figs. 10)

The adjustment of the maximum or stopping pressure of the compressor is effected by means of the air pressure switch. The switch also controls the pressure difference between the maximum pressure (stopping pressure) and that at which compression is resumed (starting pressure).

Caution

- Adjust the air pressure switch while it is pressurized.
- Switch off the voltage before removing the cover of the switch; reinstall it after an adjustment has been made and before the voltage is switched on again.

Adjustment

The maximum pressure is controlled by adjusting screw (3). Turn the screw clockwise to raise the maximum or stopping pressure, anti-clockwise to lower it.

The pressure difference is adjusted by means of screw (4). To reduce the difference between the stopping and starting pressures, i.e. increase the starting pressure, turn the screw anti-clockwise. To increase the pressure difference, turn the screw clockwise. The adjustment range is shown on the diagrams (Figs. 10c/d).

5.5 Air pressure switch on LT 30 bar (MDR5-Figs. 11)

The maximum (stopping) pressure is controlled by adjusting knob (1). Turn the knob clockwise to raise the maximum or stopping pressure, anti-clockwise to lower it.

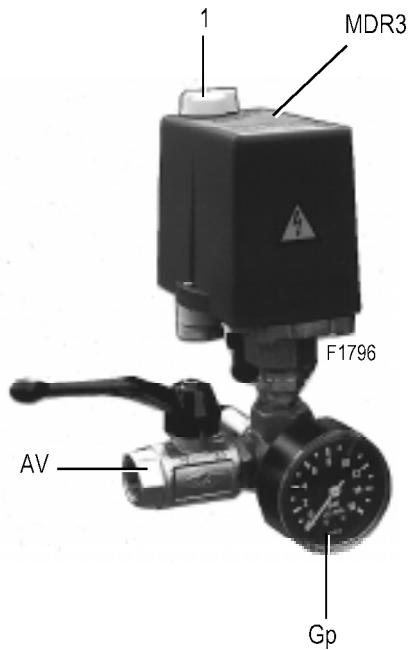


Fig. 10a. View of air pressure switch MDR3

- AV. Air outlet valve
- Gp. Working pressure gauge
- MDR3. Air pressure switch
- 1. On/off switch
- 3. Adjusting screw, stopping pressure
- 4. Adjusting screw, pressure difference
- 5. Dial, overload relay

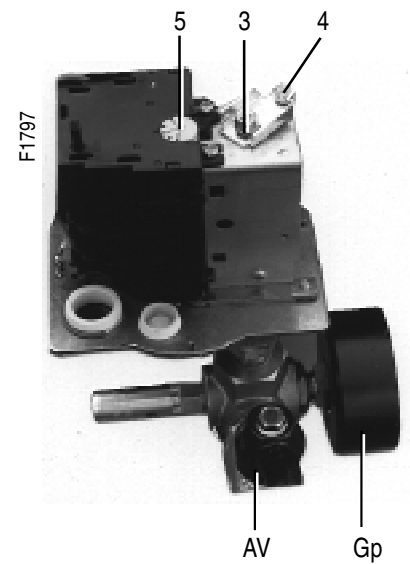


Fig. 10b. Adjusting screws

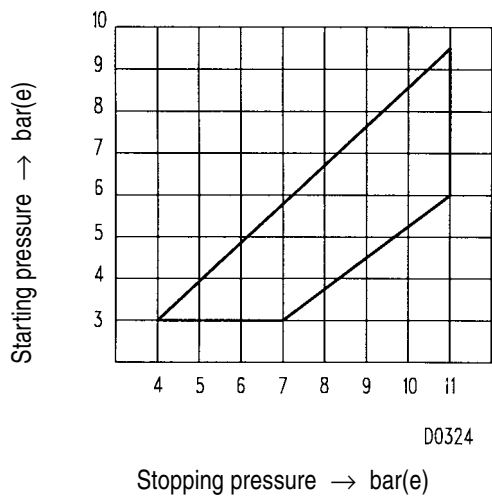


Fig. 10c. Pressure difference diagram, switch MDR3/11 (10 bar units)

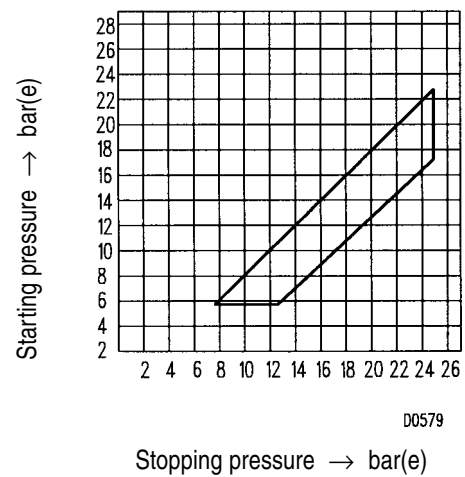
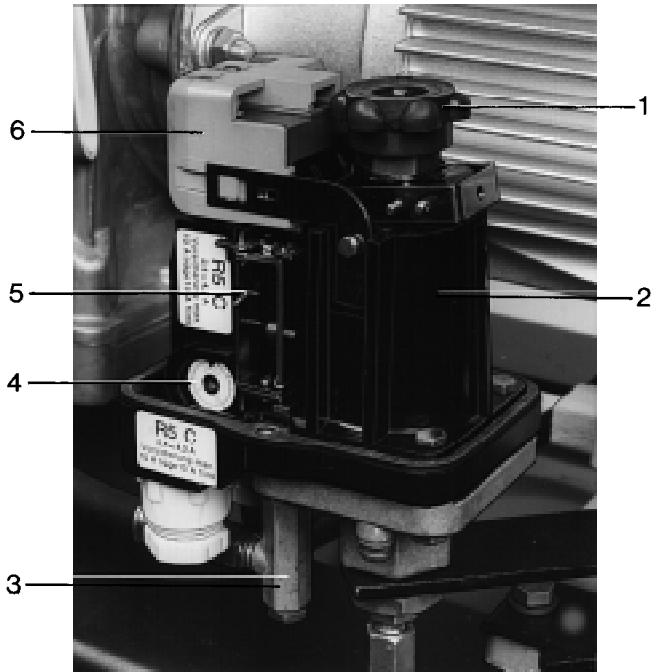


Fig. 10d. Pressure difference diagram, switch MDR3/25 (15/20 bar units)

Example: LE
 Stopping pressure: 7 bar(e)
 Starting pressure: adjustable between 3 and 5.7 bar(e)

Figs. 10. Air pressure switch MDR3 1)

- 1) Is incorporated in electric cabinet for units with Y/D starter.
 Is not provided on Trolley version.



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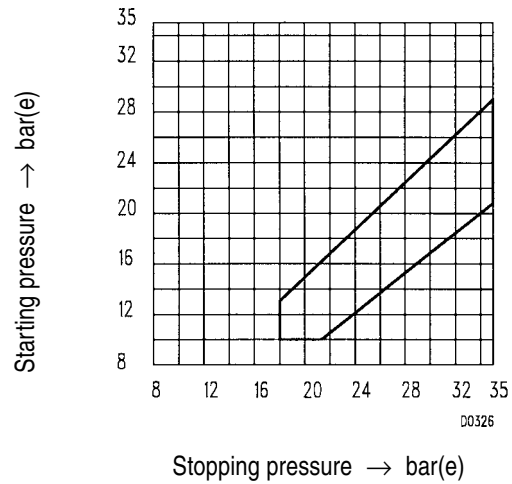
1. Adjusting knob for stopping and starting pressures
2. Spring housing, air pressure switch
3. Pressure release valve
4. Setting dial, overload relay
5. Motor overload relay
6. Switching mechanism

Fig. 11a. View of pressure switch

The pressure difference is adjusted by means of the same knob. Push down the knob and turn it clockwise to reduce the difference between the stopping and starting pressures, i.e. to increase the starting pressure. Turn the knob anti-clockwise to increase the pressure difference. The adjustment range is shown on the diagram (Fig. 11b).

5.6 Regulating valve on LE/LF/LT Trolley (Fig. 12)

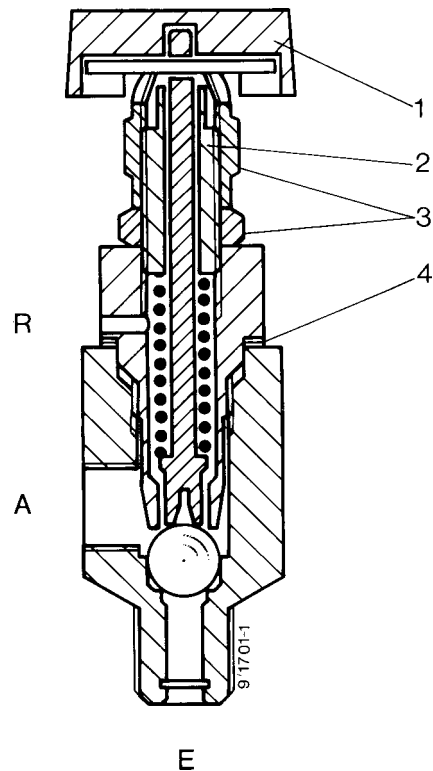
The adjustment of the maximum or unloading pressure of the compressor is effected by means of regulating valve (RV-Fig. 5). The valve also controls the difference between the preset maximum pressure and that at which compression is resumed.



Example: LT
 Stopping pressure: 28 bar(e)
 Starting pressure: adjustable between 15.5 and 22 bar(e)

Fig. 11b. Pressure difference diagram, switch MDR5/35 (30 bar units)

Figs. 11. Air pressure switch MDR5 with ON/OFF switch (30 bar units)



- A. Control air to unloader
- E. Compressed air from pulsation dampers
- R. Vent hole
- 1. Unloading handle
- 2. Pressure adjusting screw
- 3. Nuts
- 4. Shims

Fig. 12. Regulating valve on LE/LT Trolley

Unload mechanism

The regulating valve is equipped with a hand-operated unload mechanism: by turning the red handle (1) 90°, the plunger of the valve will be lifted, releasing the spring force. The air pressure from the pulsation dampers will force down unloader plunger (12-Fig. 3c), the compressor will run unloaded. By turning handle (1) 90° further, the plunger returns to its original position so that the regulating valve will again unload and load the compressor at the pre-set pressures.

Setting of the regulating valve

The maximum pressure is controlled by adjusting screw (2):

- Loosen handle (1) and the two nuts (3).
- Turn the adjusting screw (2) clockwise to increase the maximum pressure.
- The pressure difference can be increased by removing one or more shims (4).
- Fit the two nuts (3) and handle (1) in their original position.

5.7 Safety valve (SV-Figs. 2) 1)

Replace the valve if it does not open at the correct pressure. **No adjustments are allowed.**

Testing on LE/LF/LT

1. Close the air outlet valve, depressurize and disconnect the hose or pipe from the valve.
2. Start the compressor and run it until it stops automatically.
3. Switch off the voltage.
Remove the cover from the air pressure switch and, with the air receiver now under pressure, turn the adjusting knob or screw one turn clockwise to increase the stopping pressure (see also sections 5.4/5.5). Reinstall the cover.
4. Switch on the voltage, slightly open the outlet valve and start the compressor.
5. Gradually close the outlet valve while checking the air pressure gauge. If the safety valve has not opened at the pressure specified in section 7, it must be replaced by a new one. If the compressor unloads before the specified opening pressure is reached, repeat the procedure as mentioned from step 3.
6. Readjust the unloading pressure as described in sections 5.4 and 5.5.
7. Reconnect the hose or pipe to the closed air outlet valve.

Testing on LE/LF/LT Trolley

1. Close the air outlet valves, depressurize and disconnect the hoses from the valves.
2. Loosen the red handle of the regulating valve (1-Fig. 12) and the two nuts (3).
3. Open outlet valve (AV1-Fig. 5) a fraction. Start the compressor.
4. Gradually turn adjusting screw (2-Fig. 12) clockwise while checking pressure gauge (Gp-Fig. 5).
If the safety valve has not opened at the pressure specified in section 7, it must be replaced by a new one.
5. Readjust the normal working pressure after testing. Consult section 5.6.
6. Fit nuts (3-Fig. 12) and handle (1) in their original positions.

5.8 Relief valve (8-Fig. 1a) on LF55/75, LE75 up to -150 and LT

The relief valve protects the LP side of the compressor. **No adjustments are allowed.**

Remove the relief valve and fit a 3/8" B.S.P. plug instead. Remove the safety valve from the air receiver and replace it by the relief valve. The latter can then be tested at increasing air receiver pressure after the compressor has been started with open air outlet valve. If the valve has not opened at the pressure specified in section 7, it must be replaced by a new one. Reinstall the valves in their respective places after testing.

6 PROBLEM SOLVING

1. Insufficient air pressure

- a. Air leak
 - a. Check and correct as necessary
 - b. Air filter choked
 - b. Replace filter
 - c. Air pressure switch incorrectly set
 - c. Adjust switch
 - d. Air consumption exceeds maximum output of compressor
 - d. Check equipment connected
 - e. Damaged valve
 - e. Inspect valves and replace parts where necessary
 - f. Unloader **2)** malfunctioning
 - f. Inspect and replace parts where necessary
 - g. Solenoid valve **2)** out of order
 - g. Remove and check. Replace if necessary

2. Unit does not speed up

- a. Voltage drop at motor terminals
 - a. Consult power supplier. Use correct size of cable
 - b. Unloader malfunctioning
 - b. See 1f
 - c. Solenoid valve out of order
 - c. See 1g
 - d. Blow-off silencer **2)** choked
 - d. Replace

3. Air receiver pressure rises above maximum and causes safety valve to blow

- a. Air pressure switch or regulating valve **2)** incorrectly set or out of order
 - a. Check. Replace switch or valve, if necessary
 - b. Solenoid valve defective
 - b. See 1g
 - c. Unloader malfunctioning
 - c. See 1f
 - d. Blow-off silencer choked
 - d. See 2d

- 1) Not on Compressor Block/Power Pack.
- 2) If provided

4. Relief valve blows 1)

- a. Defective inlet valve in HP cylinder head
- a. Inspect and replace part(s) as necessary
- b. Relief valve not airtight
- b. Replace valve

5. Receiver does not hold pressure

- a. Check valve leaks
- a. Check for broken valve and springs
- b. Air leaks
- b. Check and correct as necessary

6. Too frequent starting/too short operating periods

- a. Air pressure switch or regulating valve **1)** incorrectly set
- a. Increase pressure difference
- b. Check valve leaks
- b. See 5a

7. High oil consumption on LE/LT compressors

- a. Oil level too high
- a. Do not overfill crankcase. Keep level in red circle of sight-glass
- b. Piston ring(s) worn or broken
- b. Have condition of piston rings checked

8. Unit does not start

- a. Electrical failure
- a. Have electrical system checked. Check fuses and line terminals for tightness
- b. Overload relay cut out
- b. Reset overload relay. If the relay cuts out again after starting, see point 9
- c. Air pressure above pre-set starting pressure
- c. Compressor will start when air pressure is lower than pre-set starting pressure of air pressure switch

9. Overload relay cuts out

- a. Overload relay incorrectly set
- a. Check and adjust. Reset relay
- b. Solenoid valve out of order
- b. See 1g
- c. Unloader plunger jammed
- c. See 1f
- d. Blow-off silencer choked
- d. See 2d
- e. Ambient temperature too high
- e. Improve ventilation of room
- f. Motor stops and starts too frequently
- f. See 6
- g. Overcurrent due to motor or compressor failure
- g. Have motor line current measured. If currents exceed rated motor current, have compressor inspected; if currents are not equal, have motor inspected

7 PRINCIPAL DATA

7.1 Reference conditions

1. Inlet pressure (absolute)	bar	1
2. Relative air humidity	%	0
3. Air inlet temperature	°C	20
4. Working pressure:		
- for LE 10 bar	bar(e)	7
- for LF 10 bar	bar(e)	7
- for LT 15 bar	bar(e)	12
- for LT 20 bar	bar(e)	20
- for LT 30 bar	bar(e)	30

7.2 Limitations

1. Minimum inlet temperature	°C	0
2. Maximum inlet temperature	°C	40
3. Maximum working pressure	bar(e)	See below

1) If provided.

7.3 Compressor data for LE 10 bar

7.3.1 50 Hz

Compressor type	LE15	LE22	LE40	LE55	LE75	LE110	LE150
Maximum working pressure for LE bar(e)	10	10	10	10	10	10	10
Maximum working pressure for LE Trolley bar(e)	9.5	9.5	9.5	9.5	9.5	9.5	9.5
Pre-set pressure difference for LE Trolley bar	1	1	1	1	1	1	1
Temperature at outlet valve, approx. °C	40	44	66	59	80	65	91
Power input at max. working pressure kW	2.05	2.96	5.52	6.65	9.08	10.8	14.65
Motor shaft speed r/min	1500	1500	1500	1500	1500	1500	1500
Displacement at 1500 r/min . . . l/s	6.8	8.4	15.3	19.1	26	26	33.3
Oil capacity l	0.8	0.8	0.8	1.4	1.4	1.7	1.7
Opening pressure of safety valve (not for Block/Power Pack) bar(e)	11	11	11	11	11	11	11
Maximum sound pressure level 1) :							
- Standard version dB(A)	80	81	81	82	83	86	87
- With silencing hood dB(A)	67	68	68	72	72	75	75
- Pack version dB(A)	65	66	66	70	70	72	72

7.3.2 60 Hz

Compressor type	LE15	LE22	LE40	LE55	LE75	LE110	LE150
Maximum working pressure for LE bar(e)	10	10	10	10	10	10	10
Maximum working pressure for LE Trolley . . bar(e)	9.5	9.5	9.5	9.5	9.5	9.5	9.5
Pre-set pressure difference for LE Trolley . . bar	1	1	1	1	1	1	1
Temperature at outlet valve, approx. °C	49	54	80	74	59	67	127
Power input at max. working pressure kW	2.36	3.38	6.36	7.57	9.97	12.83	17.87
Motor shaft speed r/min	1800	1800	1800	1800	1800	1800	1800
Displacement at 1800 r/min l/s	8.2	10.1	18.3	22.9	22.9	31.2	40.0
Oil capacity l	0.8	0.8	0.8	1.4	1.7	1.7	1.7
Opening pressure of safety valve (not for Block/Power Pack) bar(e)	11	11	11	11	11	11	11
Maximum sound pressure level 1) :							
- Standard version dB(A)	82	83	83	84	85	86	87
- With silencing hood dB(A)	69	70	70	74	76	77	77
- Pack version dB(A)	67	68	68	72	--	74	75

1) According to CAGI PNEUROP PN8NTC2.2.

7.4 Compressor data for LF 10 bar

7.4.1 50 Hz

Compressor type	LF15	LF22	LF40	LF55	LF75
Maximum working pressure for LF bar(e)	10	10	10	10	10
Maximum working pressure for LF Trolley bar(e)	9.5	9.5	9.5	9.5	9.5
Pre-set pressure difference for LF Trolley bar	1	1	1	1	1
Temperature at outlet valve, approx. °C	40	44	45	50	51
Power input at max. working pressure kW	2.05	2.71	5.11	5.89	8.65
Motor shaft speed r/min	1500	1500	1500	1500	1500
Displacement at 1500 r/min l/s	6.8	8.4	15.3	13.0	19.1
Opening pressure of safety valve (not for Block/ Power Pack) bar(e)	11	11	11	11	11
Maximum sound pressure level 1) :					
- Standard version dB(A)	82	83	83	84	86
- With silencing hood dB(A)	69	70	70	74	77
- Pack version dB(A)	67	68	68	72	74

7.4.2 60 Hz

Compressor type	LF15	LF22	LF40	LF55	LF75
Maximum working pressure for LF bar(e)	10	10	10	10	10
Maximum working pressure for LF Trolley bar(e)	9.5	9.5	9.5	9.5	9.5
Pre-set pressure difference for LF Trolley bar	1	1	1	1	1
Temperature at outlet valve, approx. °C	49	54	54	60	58
Power input at max. working pressure kW	2.36	3.10	5.89	6.70	10.66
Motor shaft speed r/min	1800	1800	1800	1800	1800
Displacement at 1800 r/min l/s	8.2	10.1	18.3	15.6	22.9
Opening pressure of safety valve (not for Block/ Power Pack) bar(e)	11	11	11	11	11
Maximum sound pressure level 1) :					
- Standard version dB(A)	84	85	85	86	88
- With silencing hood dB(A)	71	72	72	76	79
- Pack version dB(A)	69	70	70	74	76

1) According to CAGI PNEUROP PN8NTC2.2.

7.5 Compressor data for LT 15 bar

7.5.1 50 Hz

Compressor type	LT15	LT22	LT40	LT55	LT75	LT110
Maximum working pressure for LT bar(e)	15	15	15	15	15	15
Maximum working pressure for LT Trolley . . . bar(e)	13.7	13.7	13.7	13.7	13.7	13.7
Pre-set pressure difference for LT Trolley . . . bar	1	1	1	1	1	1
Temperature at outlet valve, approx. °C	49	57	68	56	75	72
Power input at max. working pressure kW	2.29	2.87	4.95	6.64	8.67	12.10
Motor shaft speed r/min	1500	1500	1500	1500	1500	1500
Displacement at 1500 r/min l/s	4.2	5.3	9.5	13	16.7	26.0
Oil capacity l	0.8	0.8	0.8	1.4	1.4	1.7
Opening pressure of safety valve (not for Block/Power Pack) bar(e)	16	16	16	16	16	16
Opening pressure of relief valve bar(e)	6.5	6.5	6.5	6.5	6.5	6.5
Maximum sound pressure level 1) :						
- Standard version dB(A)	80	81	81	82	83	86
- With silencing hood dB(A)	67	68	68	72	72	75
- Pack version dB(A)	65	66	66	70	70	72

7.5.2 60 Hz

Compressor type	LT15	LT22	LT40	LT55	LT75	LT110
Maximum working pressure for LT bar(e)	15	15	15	15	15	15
Maximum working pressure for LT Trolley . . . bar(e)	13.7	13.7	13.7	13.7	13.7	13.7
Pre-set pressure difference for LT Trolley . . . bar	1	1	1	1	1	1
Temperature at outlet valve, approx. °C	57	66	81	65	40	76
Power input at max. working pressure kW	2.49	3.44	6.16	8.27	9.28	14.55
Motor shaft speed r/min	1800	1800	1800	1800	1800	1800
Displacement at 1800 r/min l/s	5.0	6.4	11.5	15.6	22.9	31.2
Oil capacity l	0.8	0.8	0.8	1.4	1.7	1.7
Opening pressure of safety valve (not for Block/Power Pack) bar(e)	16	16	16	16	16	16
Opening pressure of relief valve bar(e)	6.5	6.5	6.5	6.5	6.5	6.5
Maximum sound pressure level 1) :						
- Standard version dB(A)	82	83	83	84	85	86
- With silencing hood dB(A)	69	70	70	74	75	76
- Pack version dB(A)	67	68	68	72	73	74

1) According to CAGI PNEUROP PN8NTC2.2.

7.6 Compressor data for LT 20 bar 2)

7.6.1 50 Hz

Compressor type	LT15	LT22	LT40	LT55	LT75	LT110
Maximum working pressure bar(e)	20	20	20	20	20	20
Temperature at outlet valve, approx. °C	37	49	60	43	56	44
Power input at max. working pressure kW	2.04	2.56	4.21	5.33	6.97	10.50
Motor shaft speed r/min	1500	1500	1500	1500	1500	1500
Displacement at 1500 r/min l/s	3.4	4.2	7.6	9.5	13	26.0
Oil capacity l	0.8	0.8	0.8	1.4	1.4	1.7
Opening pressure of relief valve bar(e)	6.5	6.5	6.5	6.5	6.5	6.5
Maximum sound pressure level 1) dB(A)	80	81	81	82	83	86

7.6.2 60 Hz

Compressor type	LT15	LT22	LT40	LT55	LT75	LT110
Maximum working pressure bar(e)	20	20	20	20	20	20
Temperature at outlet valve, approx. °C	40	53	65	50	43	49
Power input at max. working pressure kW	2.48	3.11	5.14	6.66	9.86	12.86
Motor shaft speed r/min	1800	1800	1800	1800	1800	1800
Displacement at 1800 r/min l/s	4.1	5.0	9.2	11.5	22.9	31.2
Oil capacity l	0.8	0.8	0.8	1.4	1.7	1.7
Opening pressure of relief valve bar(e)	6.5	6.5	6.5	6.5	6.5	6.5
Maximum sound pressure level 1) dB(A)	82	83	83	84	85	86

7.7 Compressor data for LT 30 bar 2)

7.7.1 50 Hz

Compressor type	LT22	LT40	LT55	LT75	LT110
Maximum working pressure bar(e)	30	30	30	30	30
Temperature at outlet valve, approx. °C	49	60	42	58	51
Power input at max. working pressure kW	2.83	4.73	6.11	7.89	11.53
Motor shaft speed r/min	1500	1500	1500	1500	1500
Displacement at 1500 r/min l/s	4.2	7.6	9.5	13	26.0
Oil capacity l	0.8	0.8	1.4	1.4	1.7
Opening pressure of relief valve bar(e)	6.5	6.5	6.5	6.5	6.5
Maximum sound pressure level 1) dB(A)	81	81	82	83	--

1) According to CAGI PNEUROP PN8NTC2.2.

2) Only for Compressor Block and Power Pack.

7.7.2 60 Hz

Compressor type	LT22	LT40	LT55	LT75	LT110
Maximum working pressure bar(e)	30	30	30	30	30
Temperature at outlet valve, approx. °C	53	65	49	47	54
Power input at max. working pressure kW	3.44	5.77	7.63	10.87	14.14
Motor shaft speed r/min	1800	1800	1800	1800	1800
Displacement at 1800 r/min l/s	5.0	9.2	11.5	22.9	31.2
Oil capacity l	0.8	0.8	1.4	1.7	1.7
Opening pressure of relief valve bar(e)	6.5	6.5	6.5	6.5	6.5
Maximum sound pressure level 1) dB(A)	83	83	84	85	86

8 CONVERSION LIST OF SI UNITS INTO US/BRITISH UNITS

1 bar = 14.504 psi	1 kW = 1.341 hp (UK and US)	1 m = 3.281 ft	1 N = 0.225 lbf
1 g = 0.035 oz	1 l = 0.264 US gal	1 mm = 0.039 in	1 Nm = 0.738 lbf.ft
1 kg = 2.205 lb	1 l = 0.220 Imp gal (UK)	1 m ³ /min = 35.315 cfm	x°C = (32 + 1.8 x)°F 2)
1 km/h = 0.621 mile/h	1 l = 0.035 cu.ft	1 mbar = 0.401 in wc	

1) According to CAGI PNEUROP PN8NTC2.2.

2) A temperature difference of 1°C = a temperature difference of 1.8°F.

9 ELECTRICAL DIAGRAMS

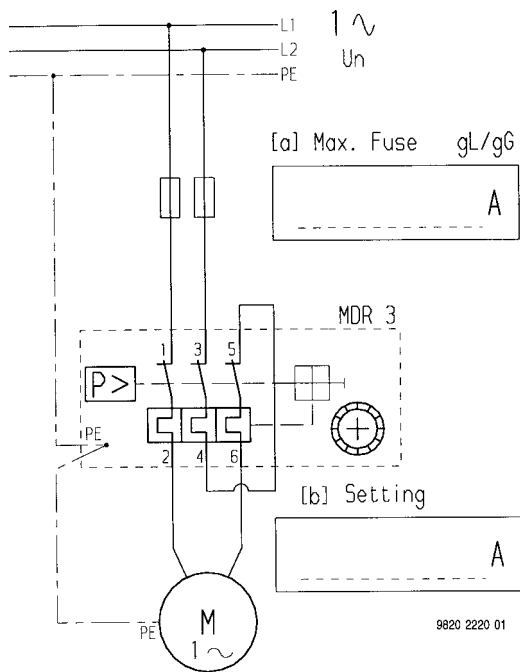


Fig. 13a. Electrical diagram of single-phase LE/LF/LT with direct-on-line starter

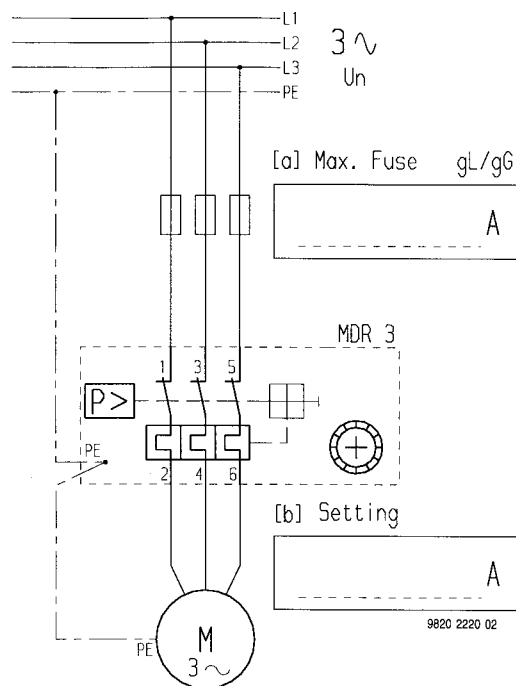


Fig. 13b. Electrical diagram of 3-phase LE/LF/LT15 up to -55 with direct-on-line starter

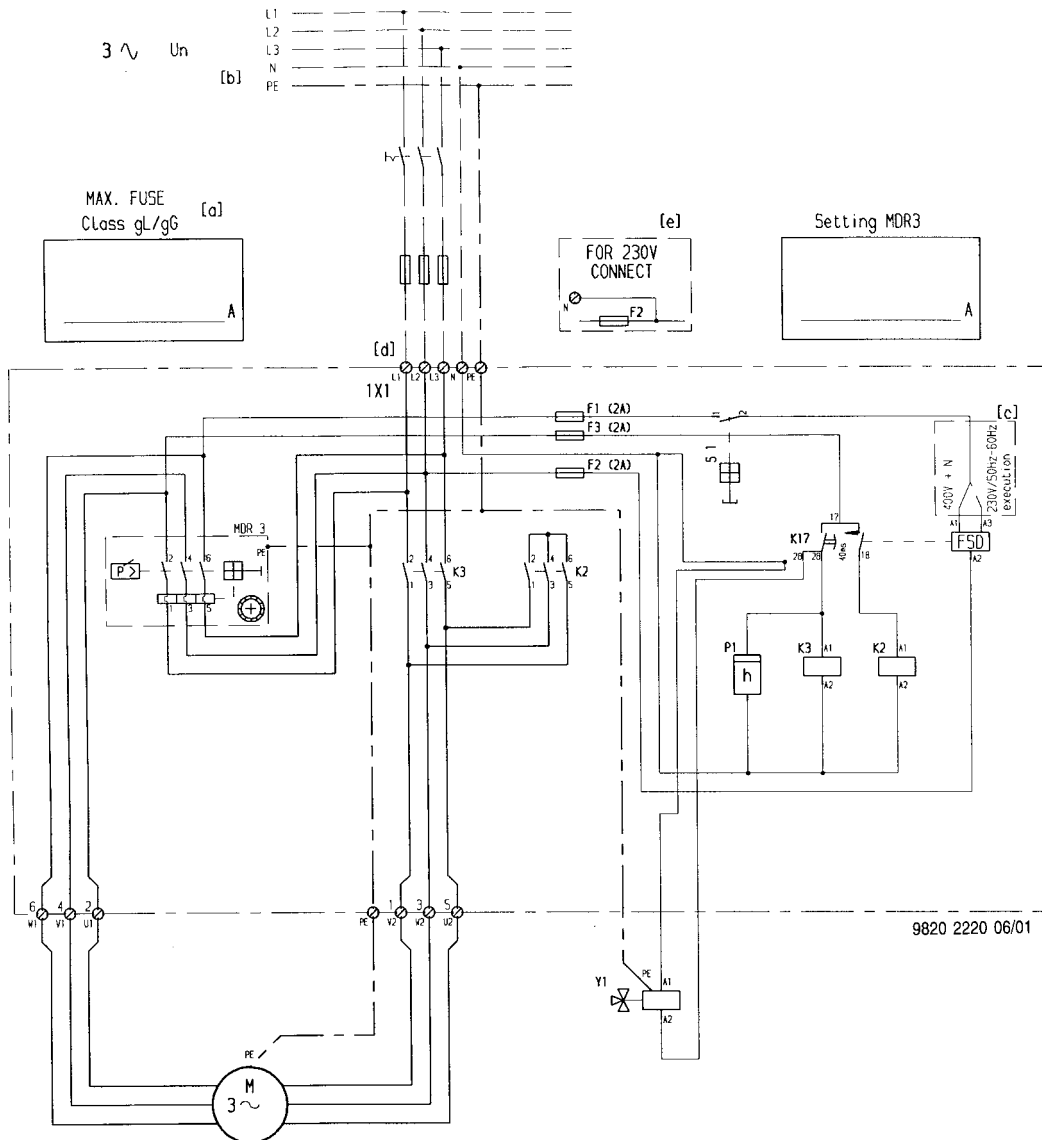


Fig. 13c. Electrical diagram of 3-phase LE/LT40 up to -110, LE150 and LF40 up to -75 with star-delta starter

- | | | | |
|----------|-------------------------------|-----------|----------------------------------|
| F1/3. | Fuses | P1. | Hourmeter, running hours |
| K2. | Star contactor | T1. | Transformer |
| K3. | Delta contactor | Y1. | Loading solenoid valve 1) |
| K17-FSD. | Star-delta timer | 1X1. | Terminal strip |
| M. | Compressor motor | | |
| MDR3. | Air pressure switch 1) | 1) | Not on Trolley version. |

Figs. 13. Electrical diagrams

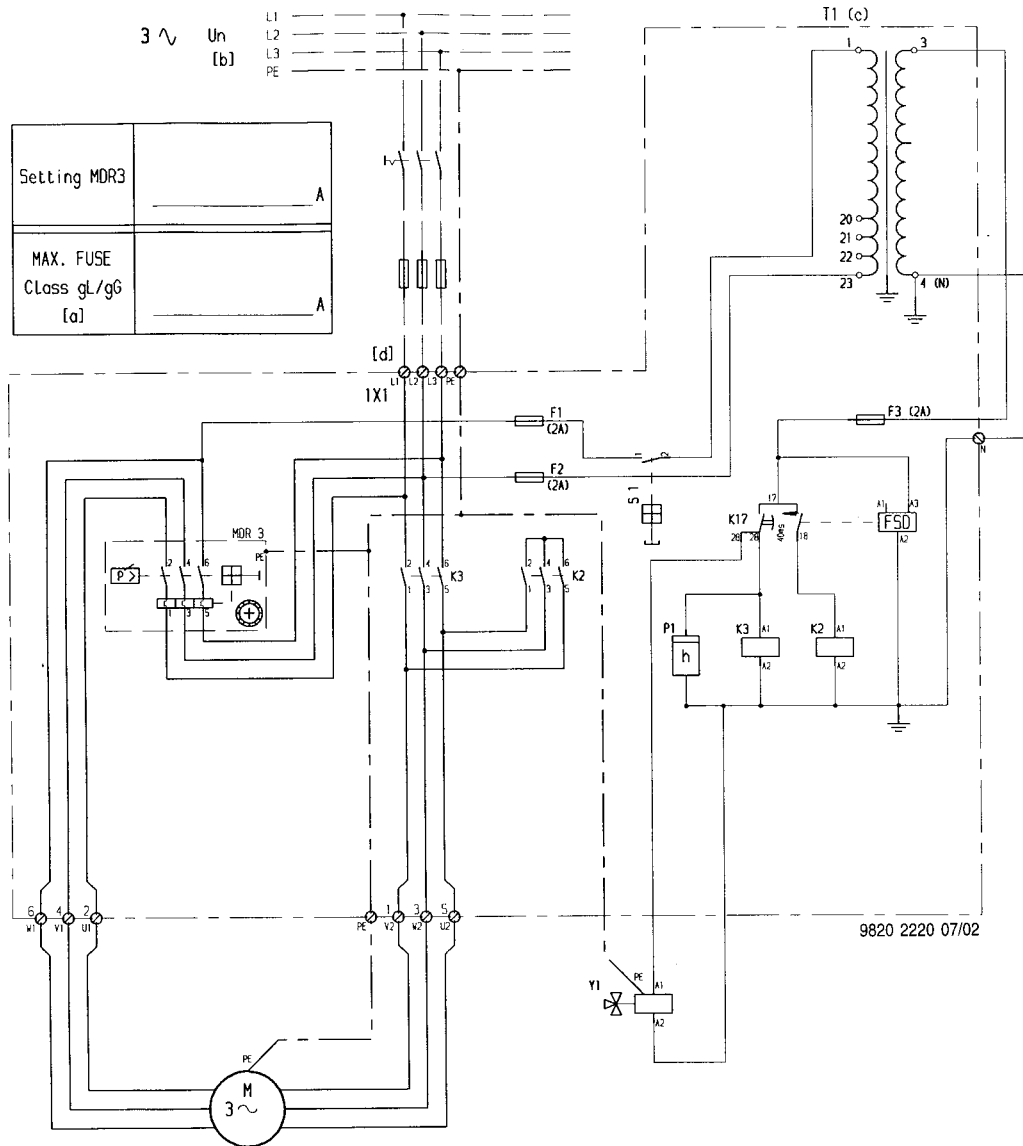


Fig. 13d. Electrical diagram of 3-phase LE/LT40 up to -110, LE150 and LF40 up to -75 with transformer and star-delta starter

10 INSTALLATION PROPOSALS

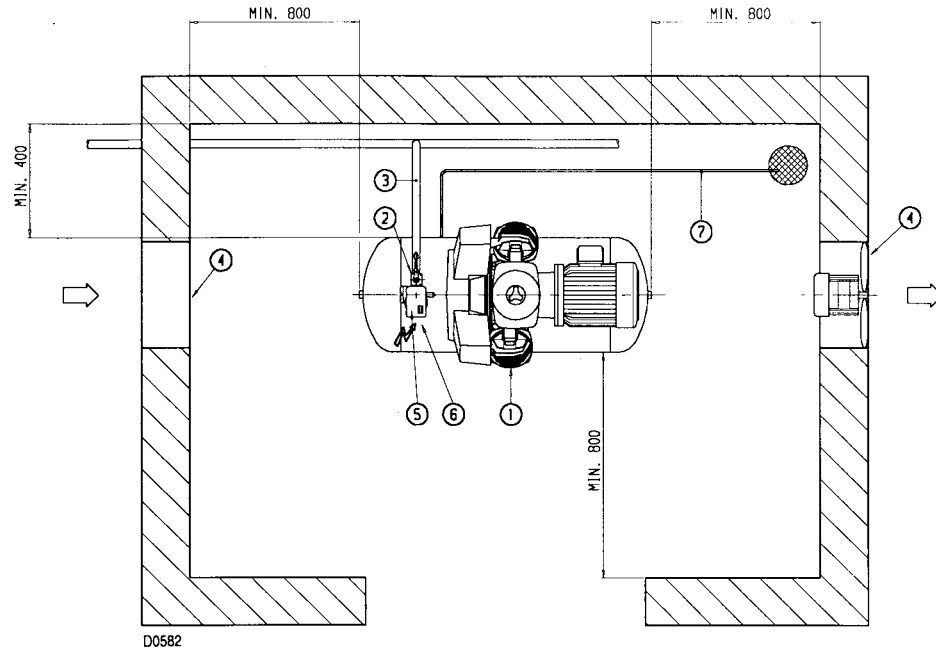


Fig. 14. Installation proposal for Complete Unit (120 l receiver)

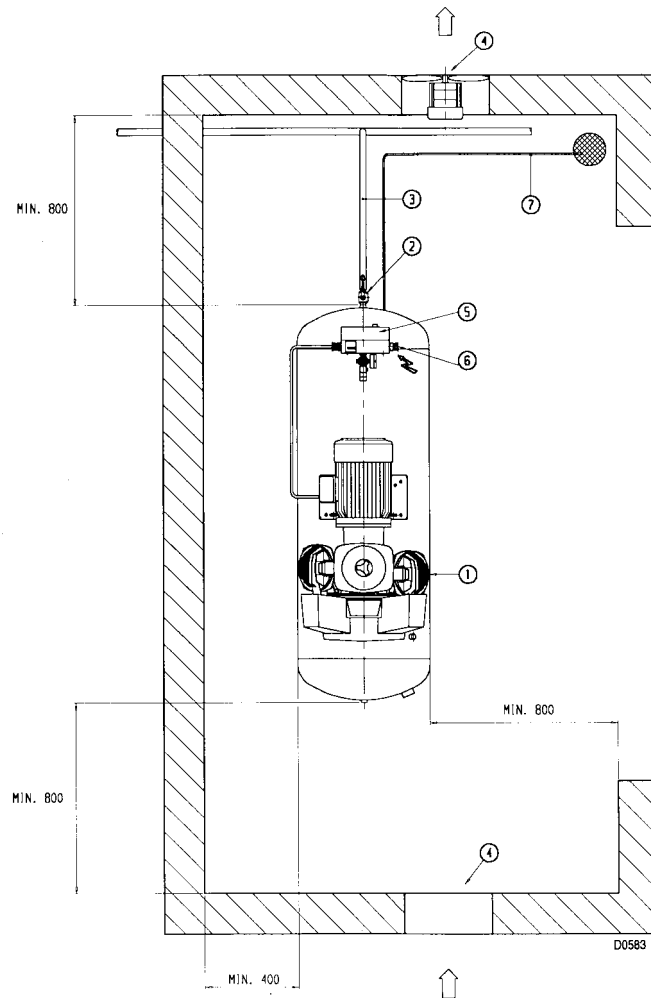


Fig. 15. Installation proposal for Complete Unit (250/475 l receiver)

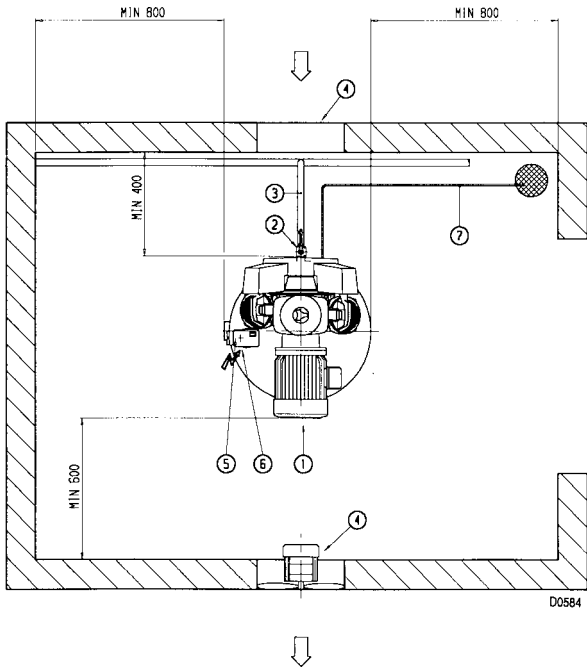


Fig. 16. Installation proposal for Complete Unit (vertical 250 l receiver)

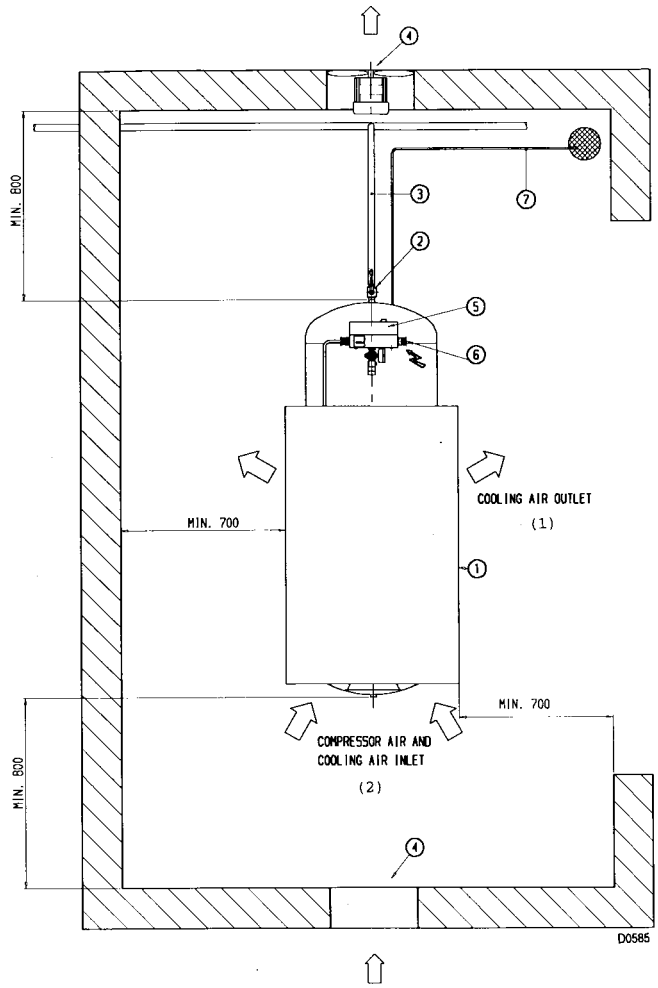


Fig. 17. Installation proposal for Complete Unit with optional silencing hood

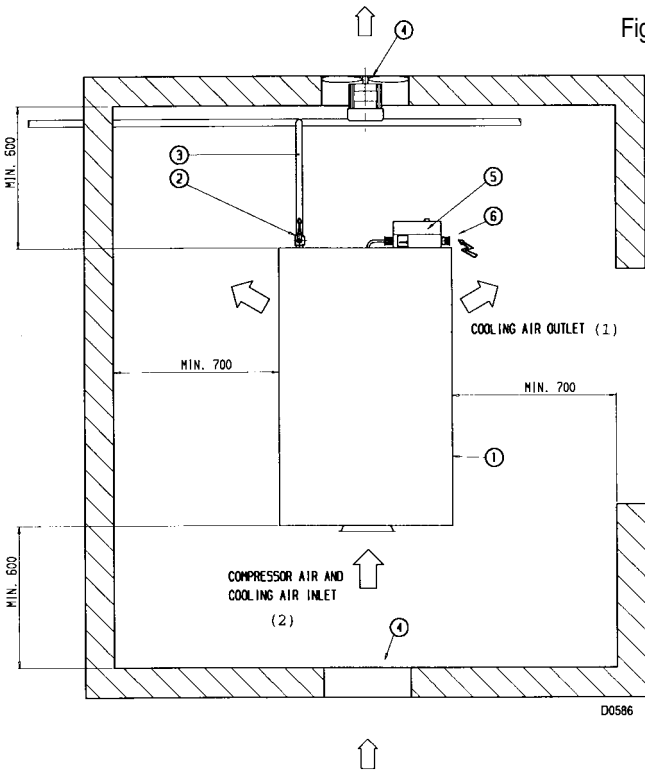


Fig. 18. Installation proposal for Pack compressors

Figs. 14 up to 18. Installation proposals

11 DIMENSION DRAWINGS

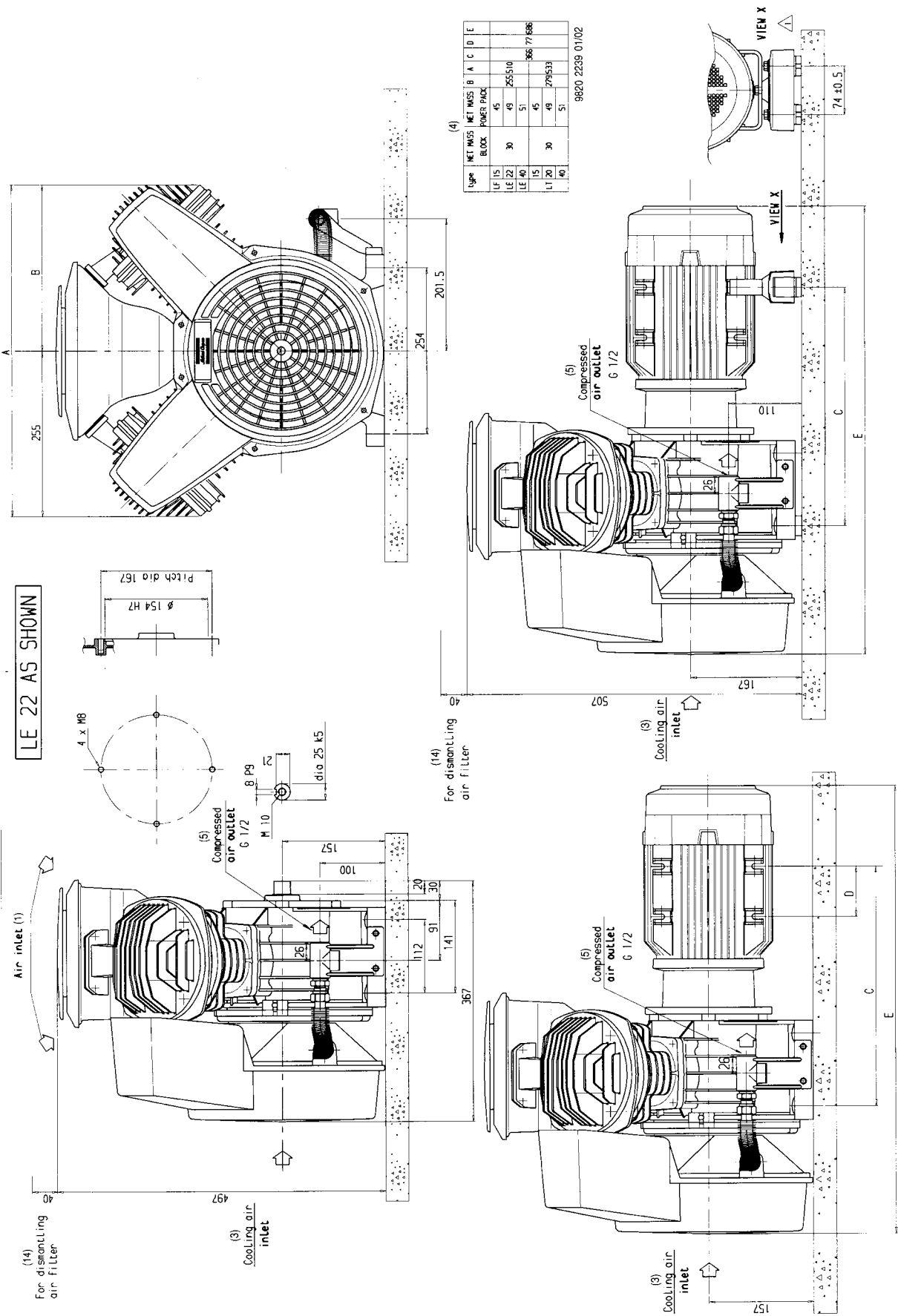


Fig. 19. Dimension drawing, LE/LT15 up to -40 and LF15/22 Power Pack

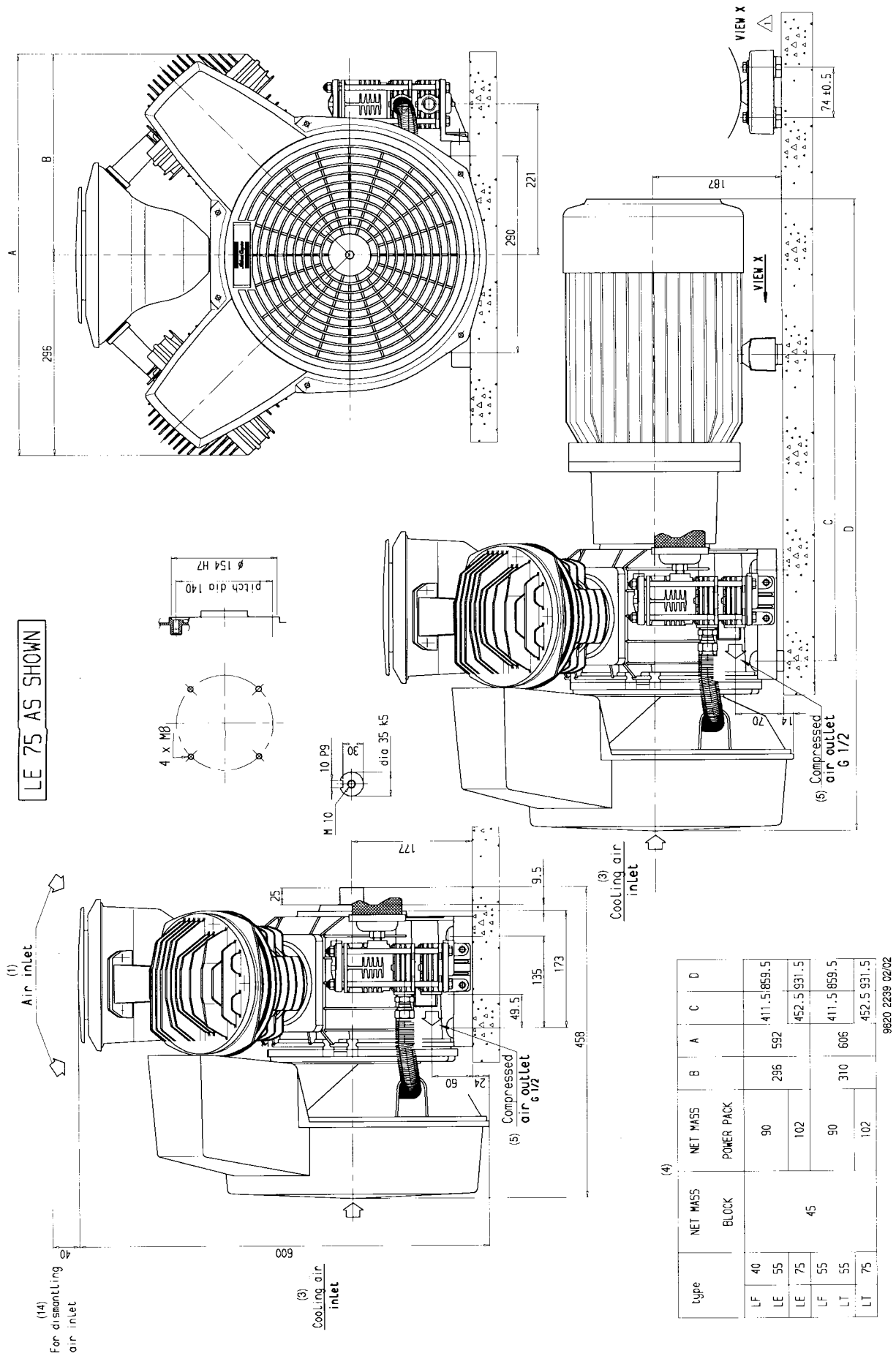


Fig. 20. Dimension drawing, LE/LT55/75 and LF40/55 Power Pack

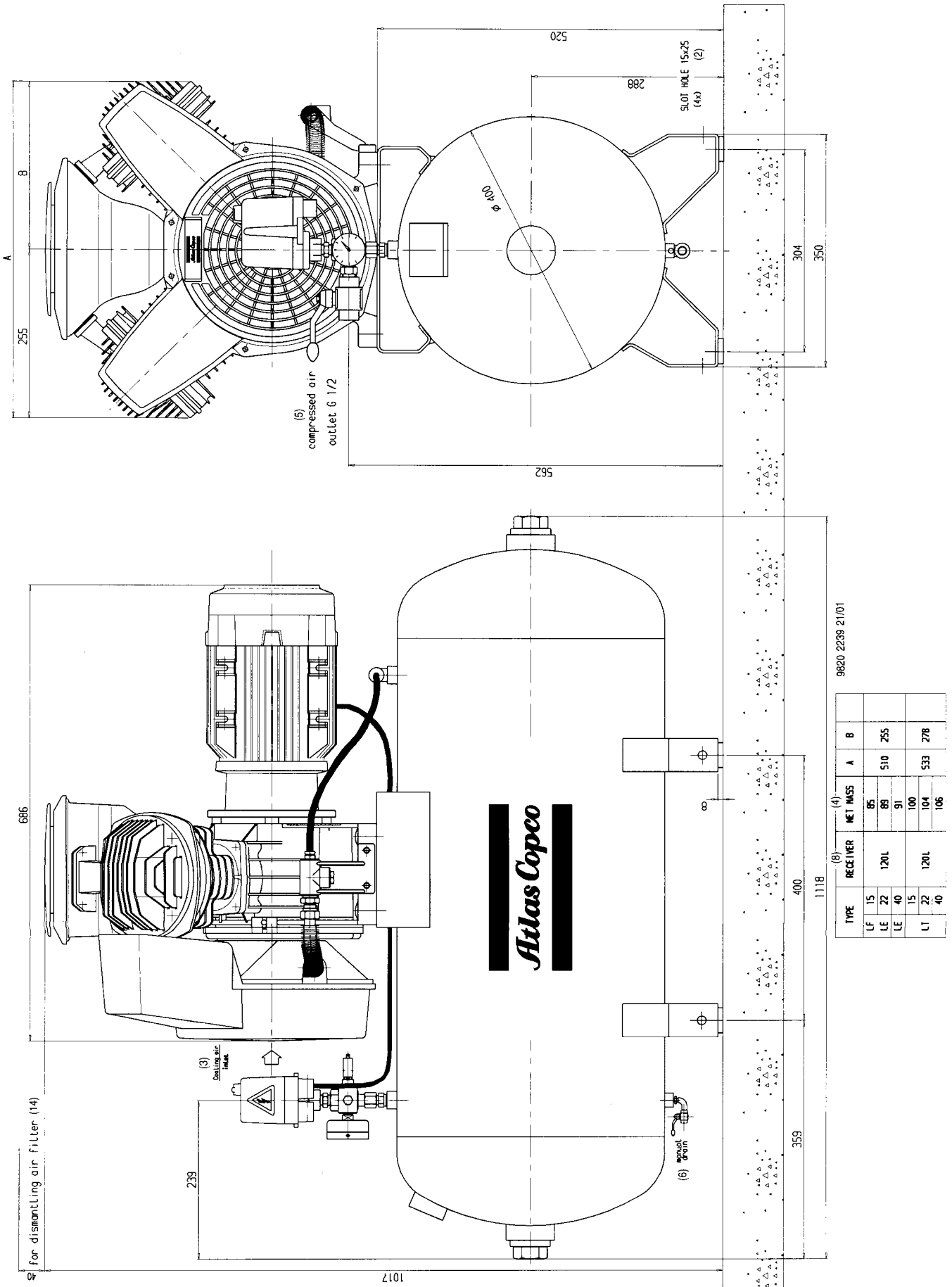


Fig. 21. Dimension drawing, LE/LT15 up to -40 and LF15/22 Complete Unit (horizontal 120 l receiver)

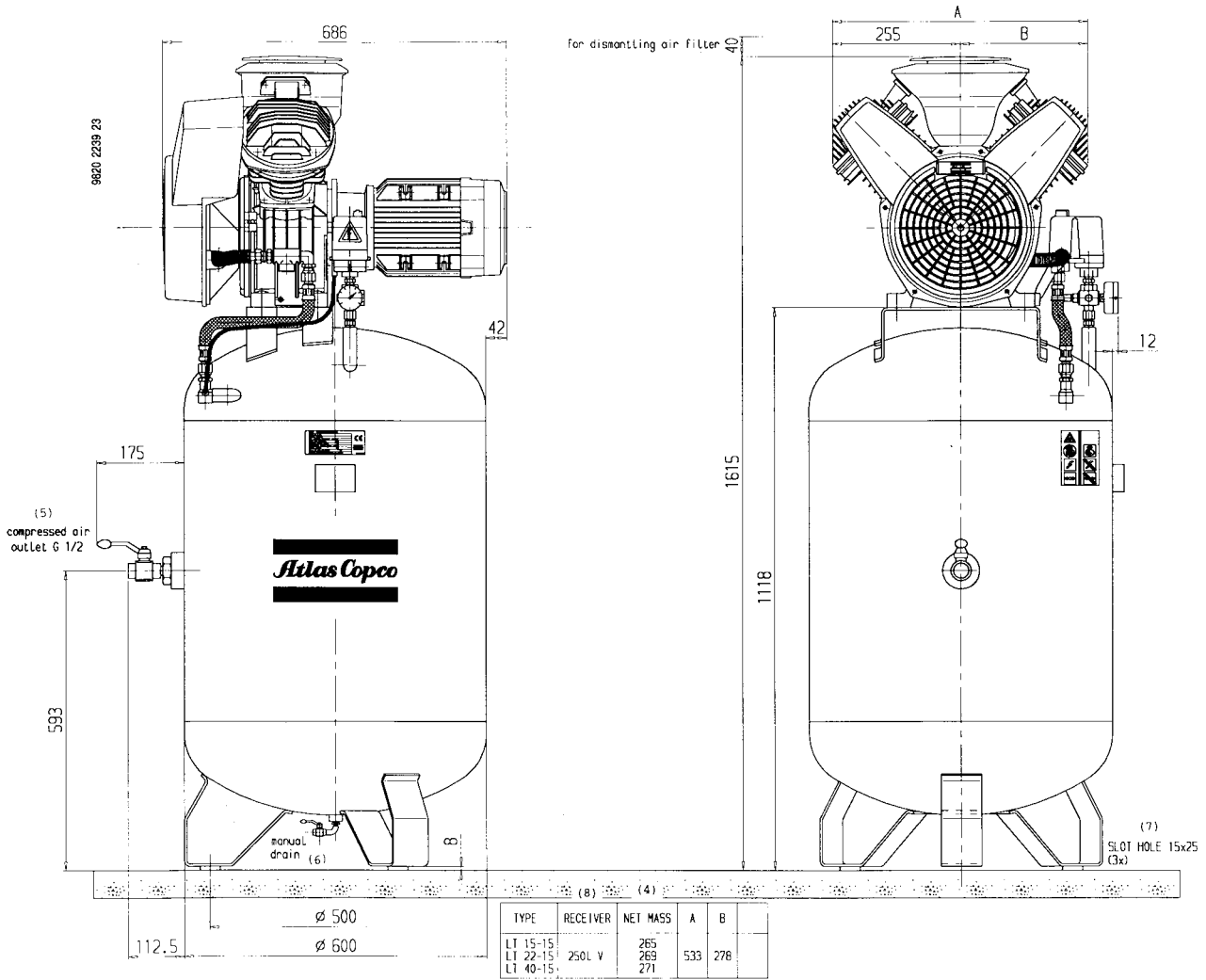
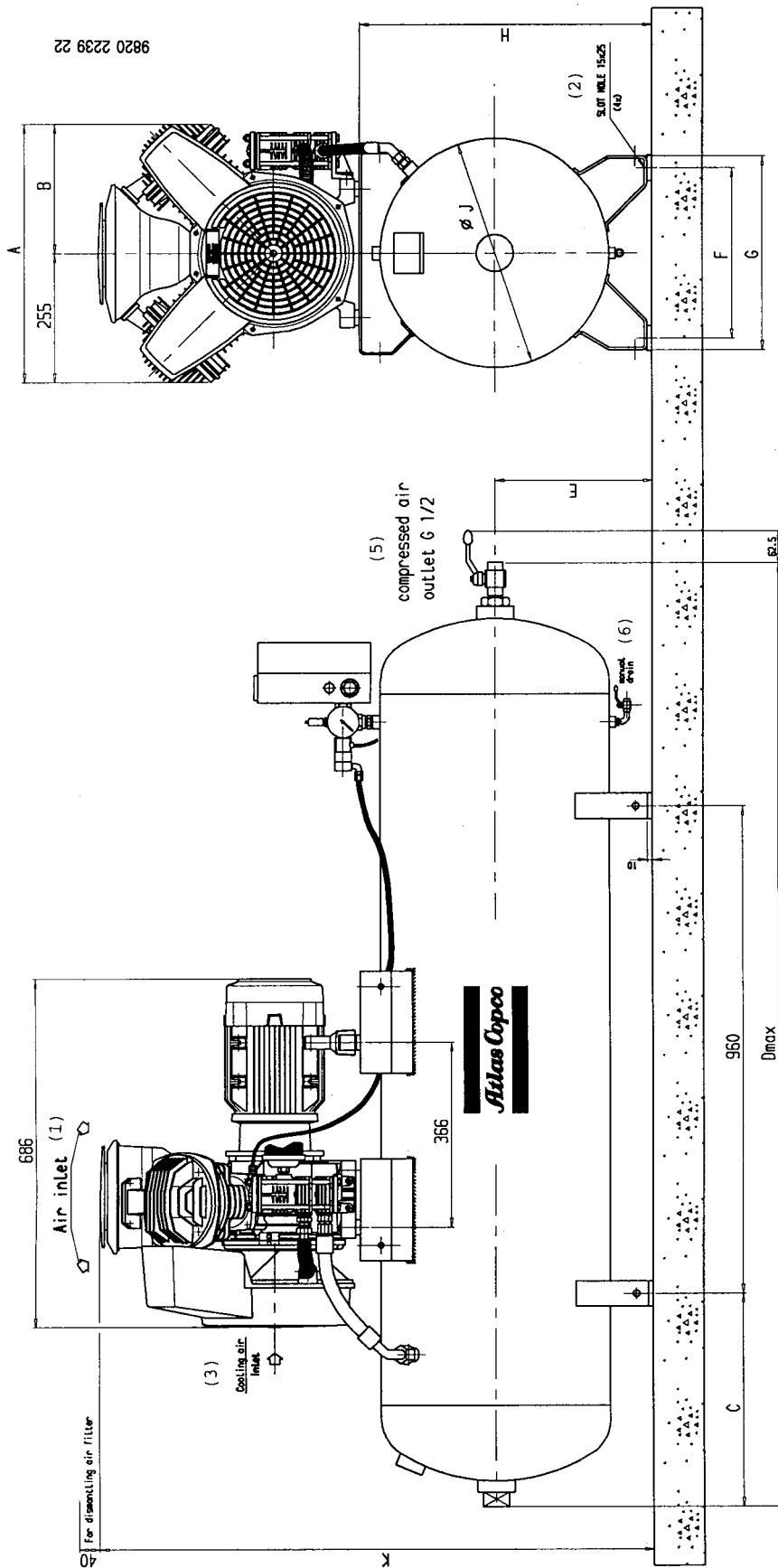


Fig. 22. Dimension drawing, LT15 up to -40 Complete Unit (vertical 250 l receiver)



9820 2239 22

(8) (4)

TYPE	RECEIVER	NET MASS	A	B	C	D	E	F	G	H	J	K
LE 40	250L	150	510	255	418	1852	310	336	382	575	450	1082
	475L	185		455	1926	395	476	530	754	600	1261	
LT 40	250L	170	533	278	418	1852	310	336	382	575	450	1082
	475L	245		455	1926	395	476	530	754	600	1261	

Fig. 23. Dimension drawing, LE/LT40 Complete Unit (horizontal 250/475 l receiver)

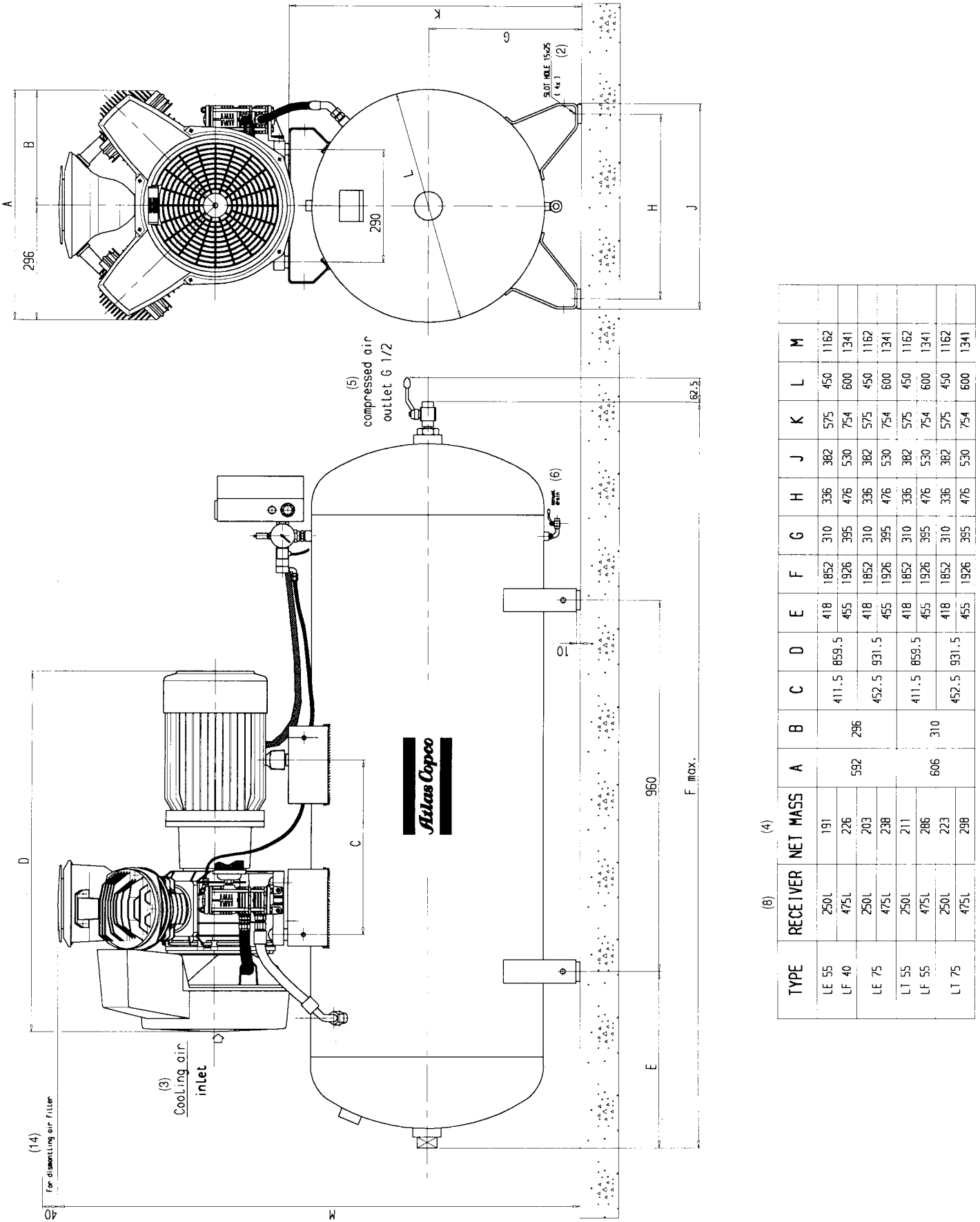


Fig. 24. Dimension drawing, LE/LT55/75 and LF40/55 Complete Unit (horizontal 250/475 l receiver)

LE 40, with 250L air receiver and optional silencing hood, as shown

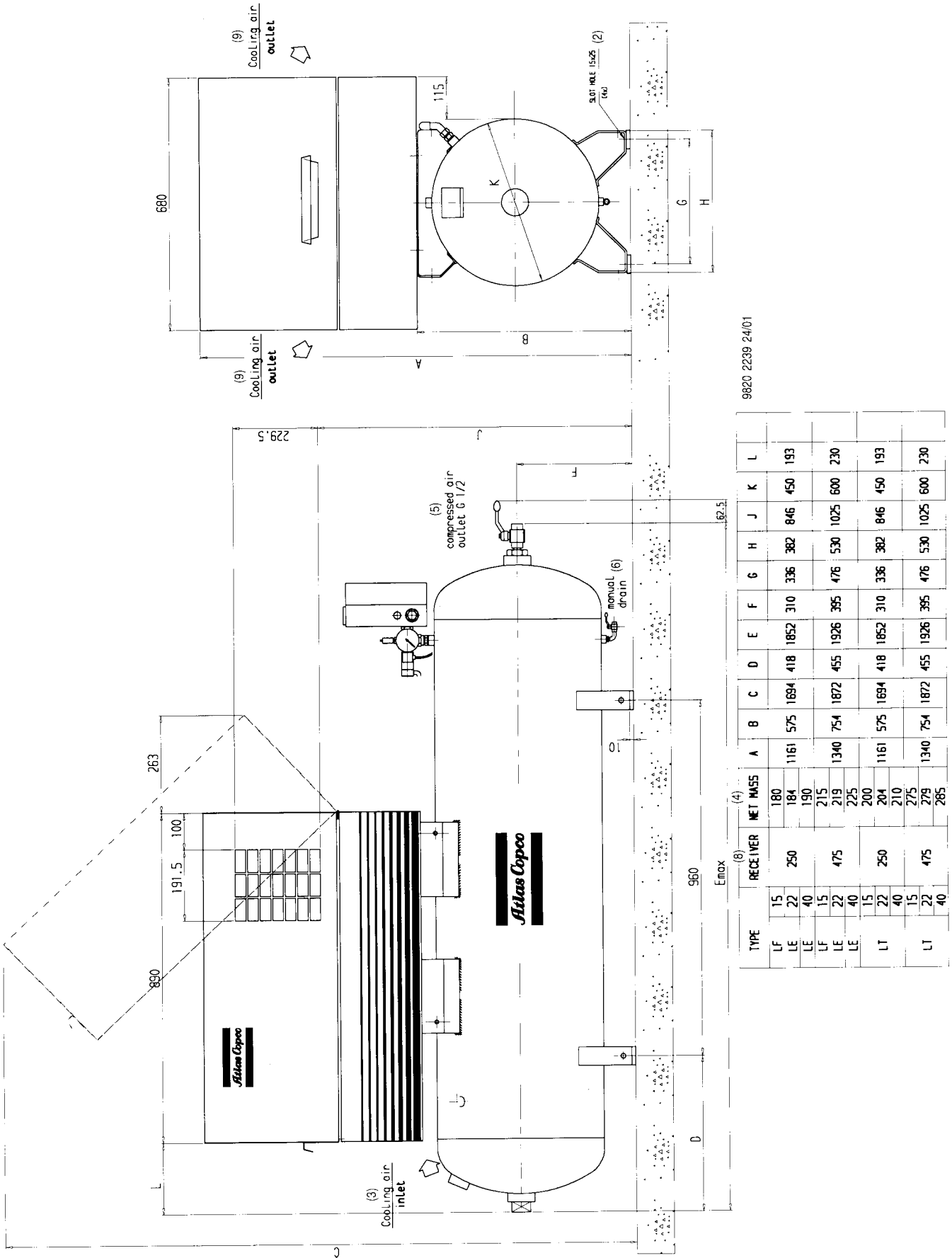


Fig. 25. Dimension drawing, LE/LT15 up to -40 and LF15/22 Complete Unit with optional silencing hood

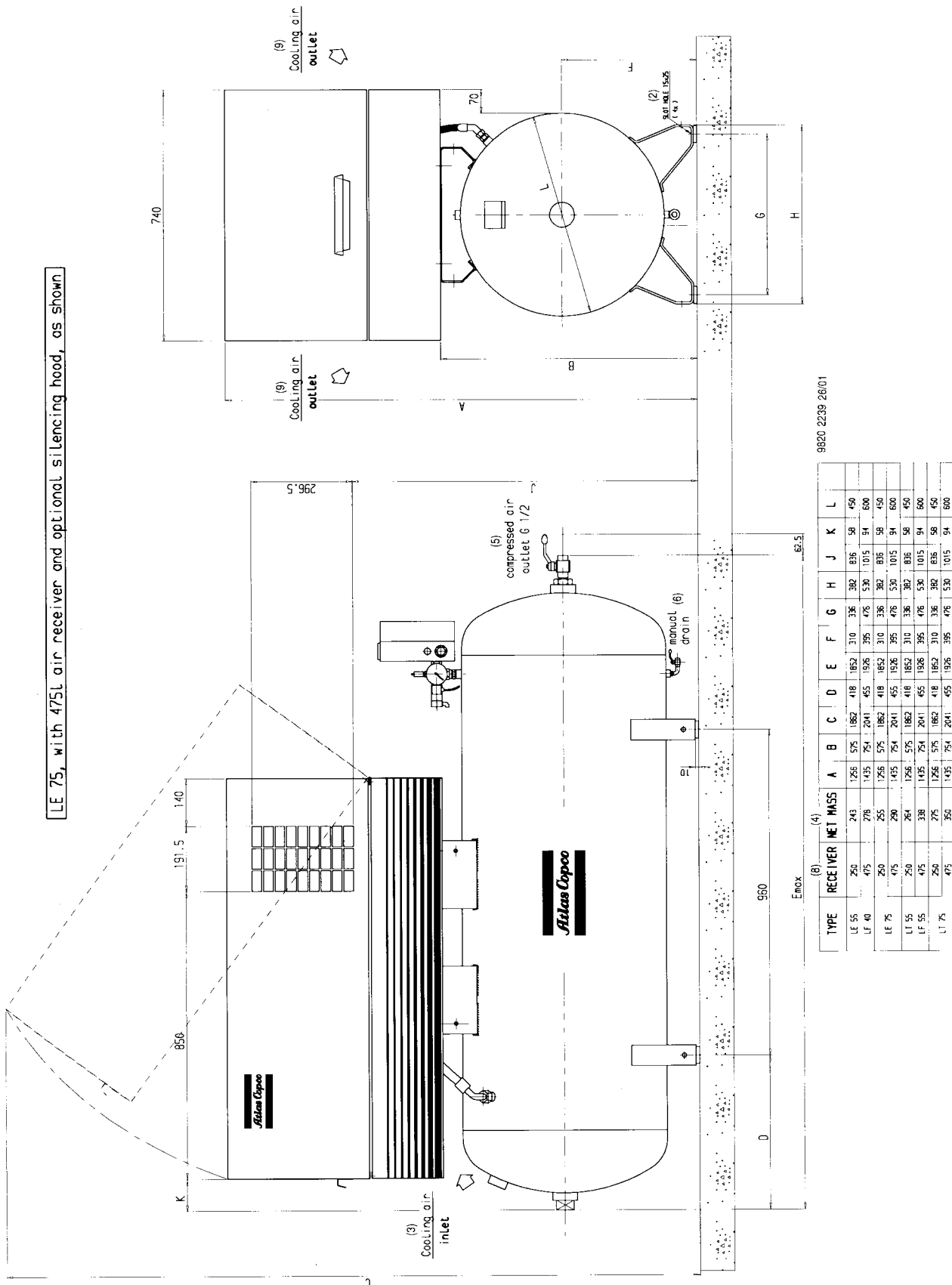
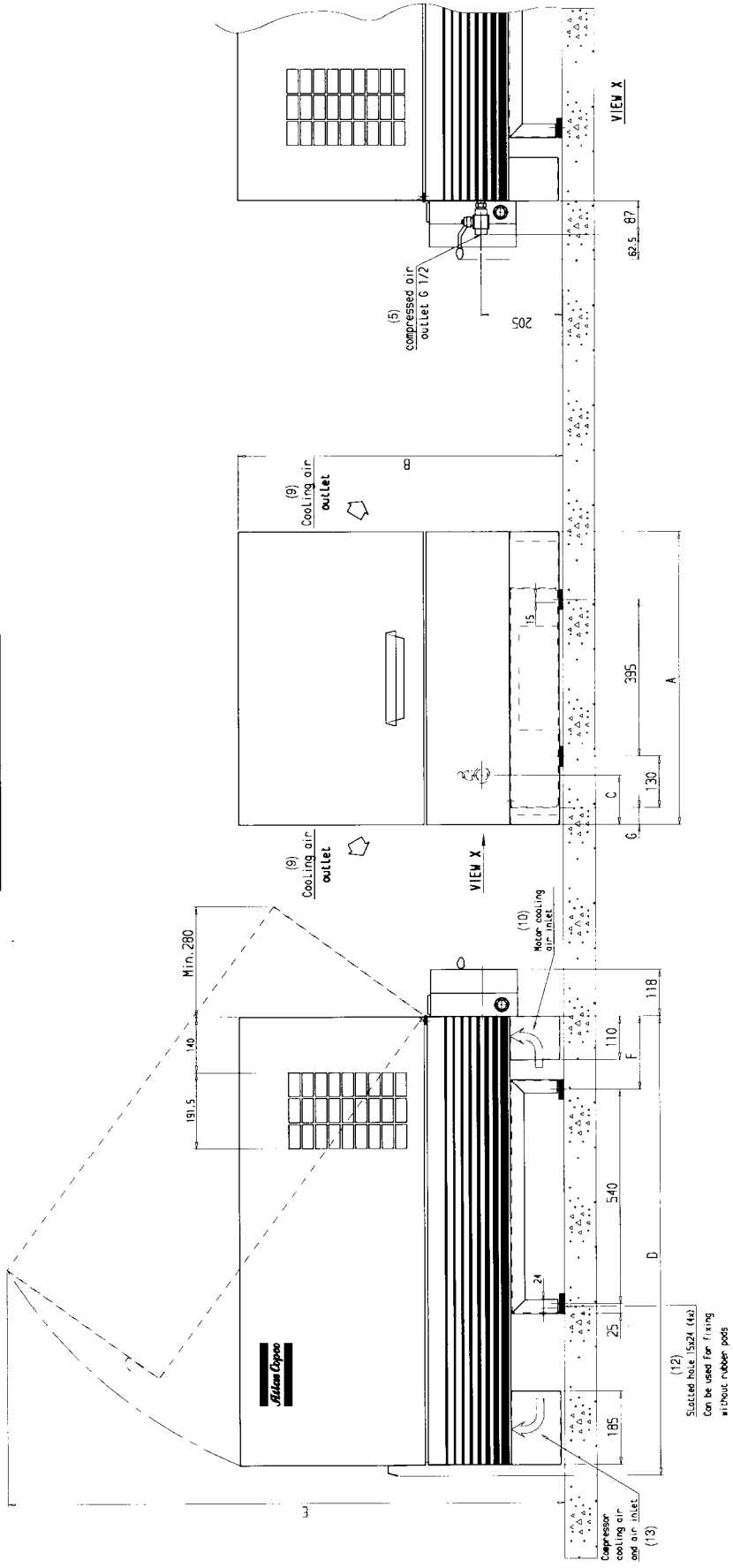


Fig. 26. Dimension drawing, LE/LT55/75 and LF40/55 Complete Unit with optional silencing hood

LE 75 Pack as shown



(4)

TYPE PACK	NET MASS		A	B	C	D	E	F	G	H
LE/LT/LF	15	101	680	721	95	918	1254	130	12.5	
LE/LT	22	105								
LF	40	107								
LE/LT/LF	40	159	740	816	125	1208	1395	185	42.5	
LE/LT	55	159								
LE/LT	75	171								

9620 2239 4101

Fig. 27. Dimension drawing, LE/LF/LT Pack

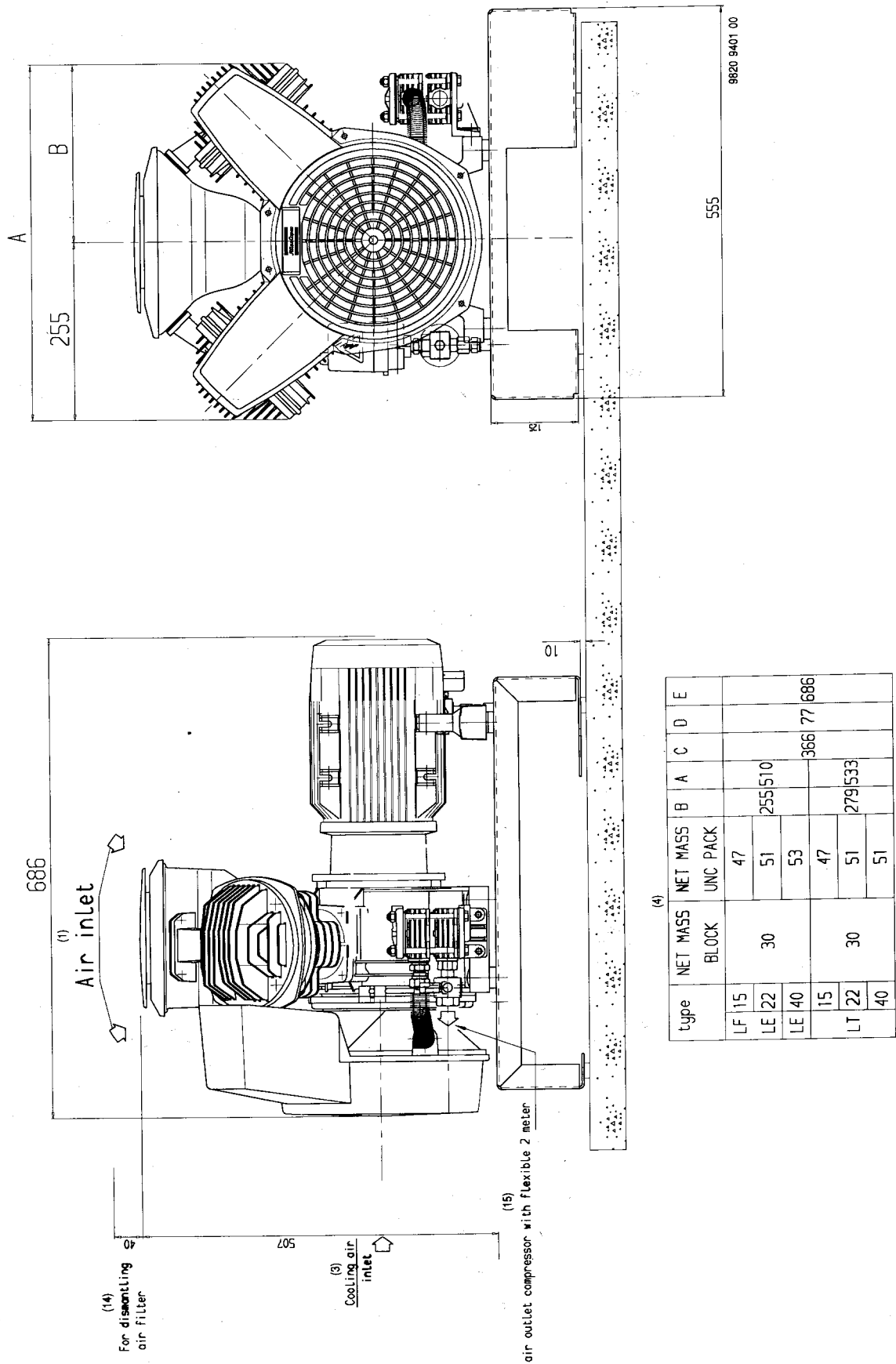


Fig. 28. Dimension drawing, LE/LT15 up to -40 Unsilenced Pack

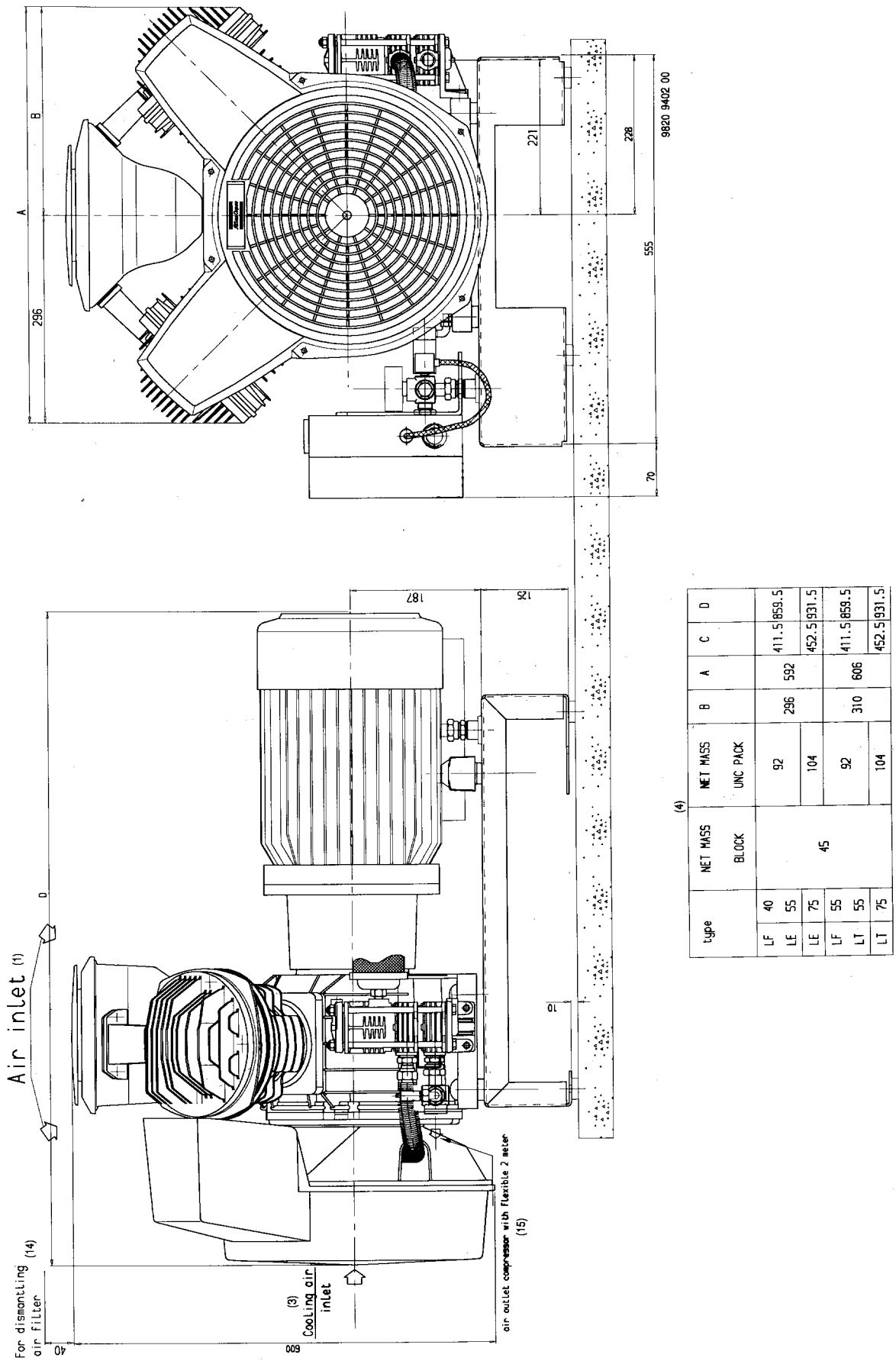


Fig. 29. Dimension drawing, LE/LT55/75 and LF40/55 Unsilenced Pack

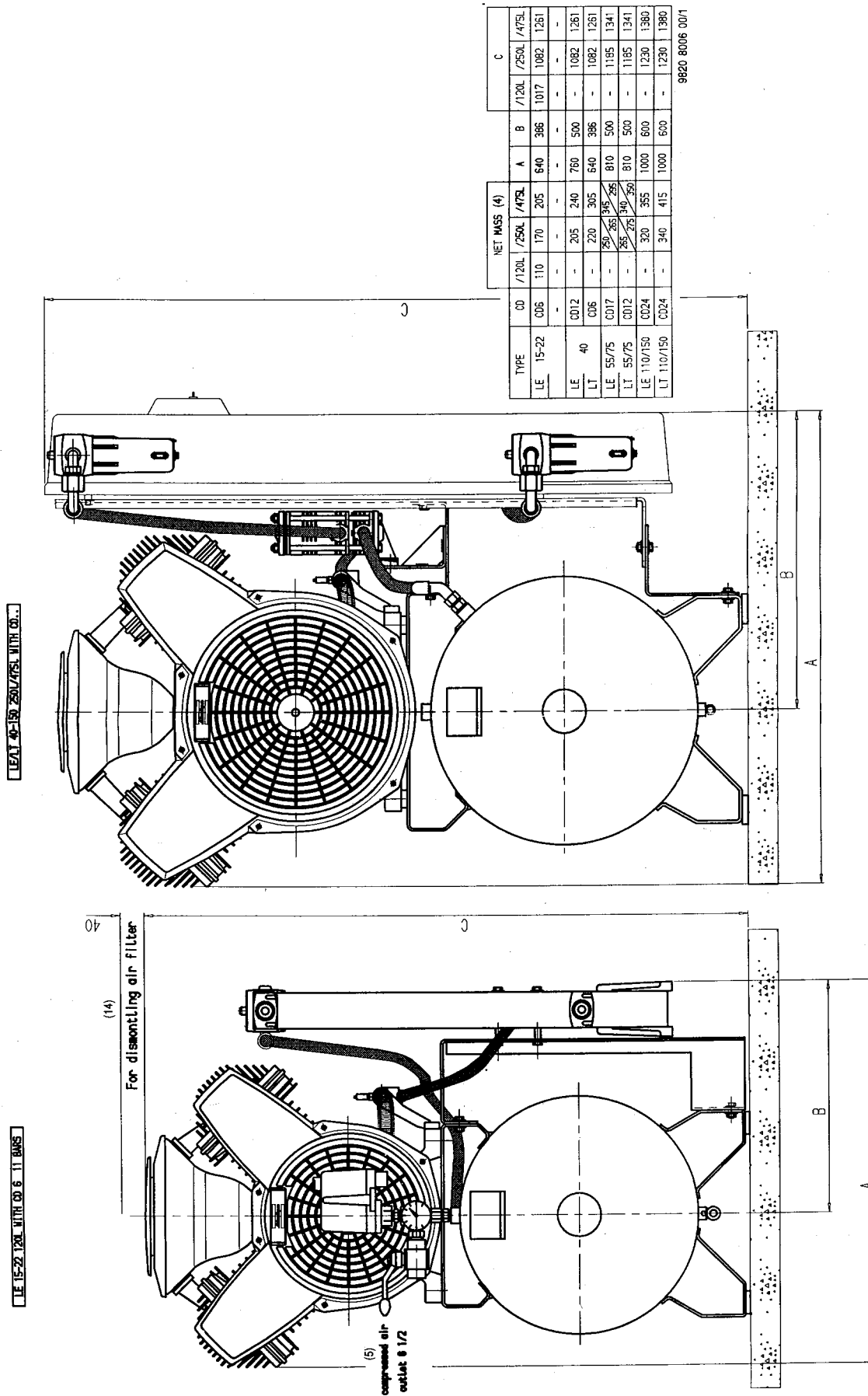


Fig. 30. Dimension drawing, LE/LT15 up to -150 with CD dryer

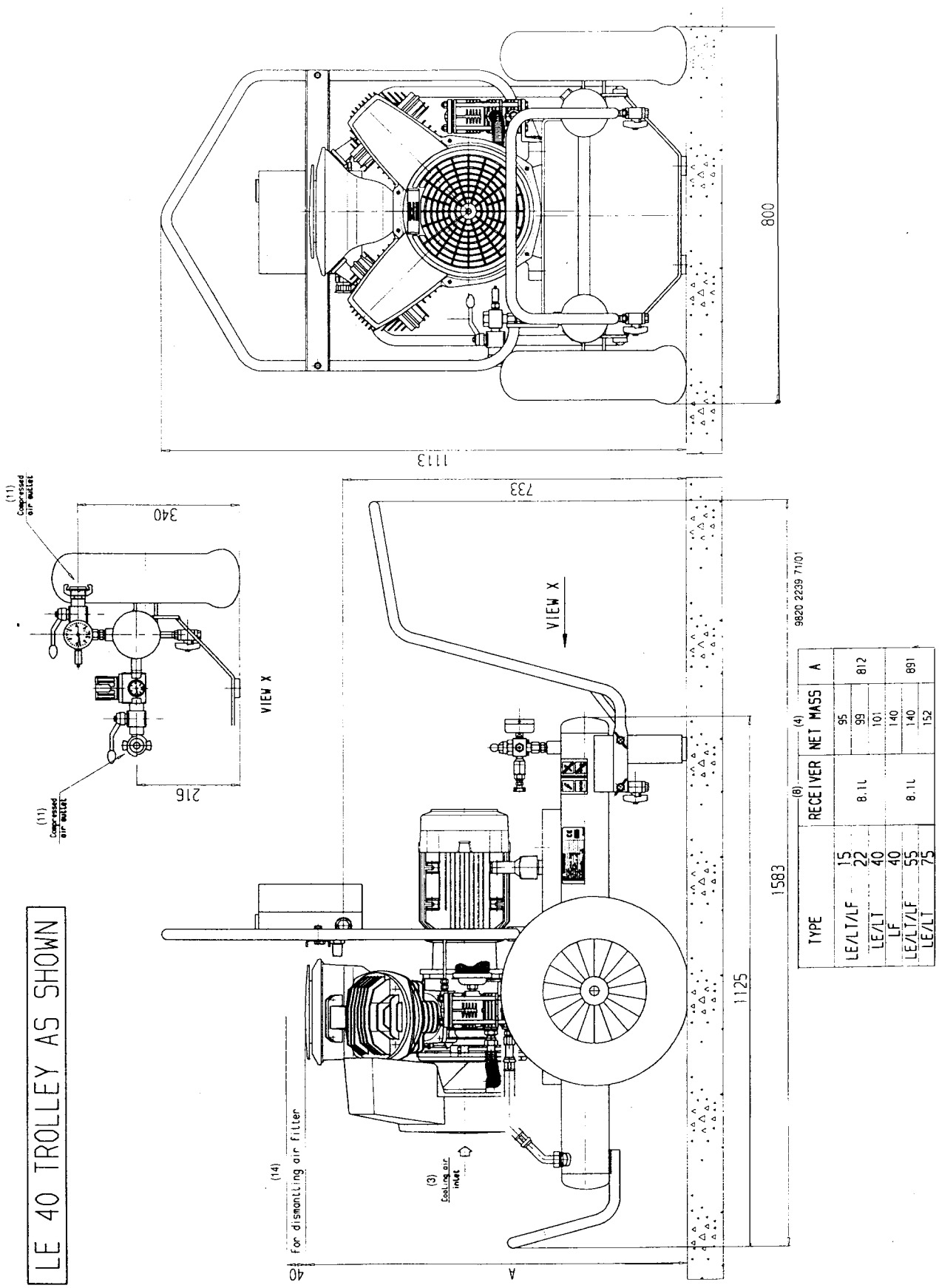


Fig. 31. Dimension drawing, LE/LF/LT Trolley with electrical motor

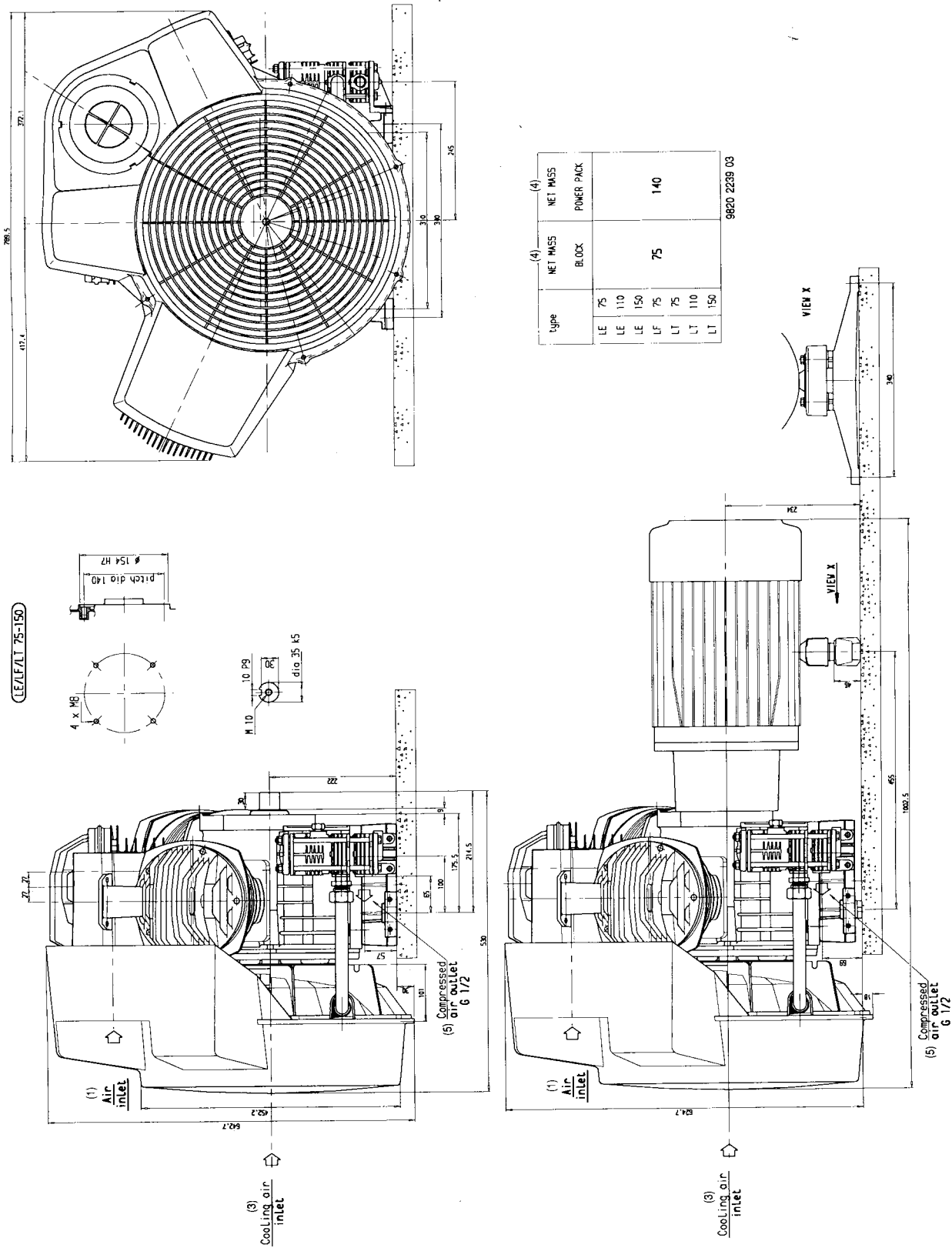


Fig. 32. Dimension drawing, LE/LT75 up to -150 and LF75 Power Pack

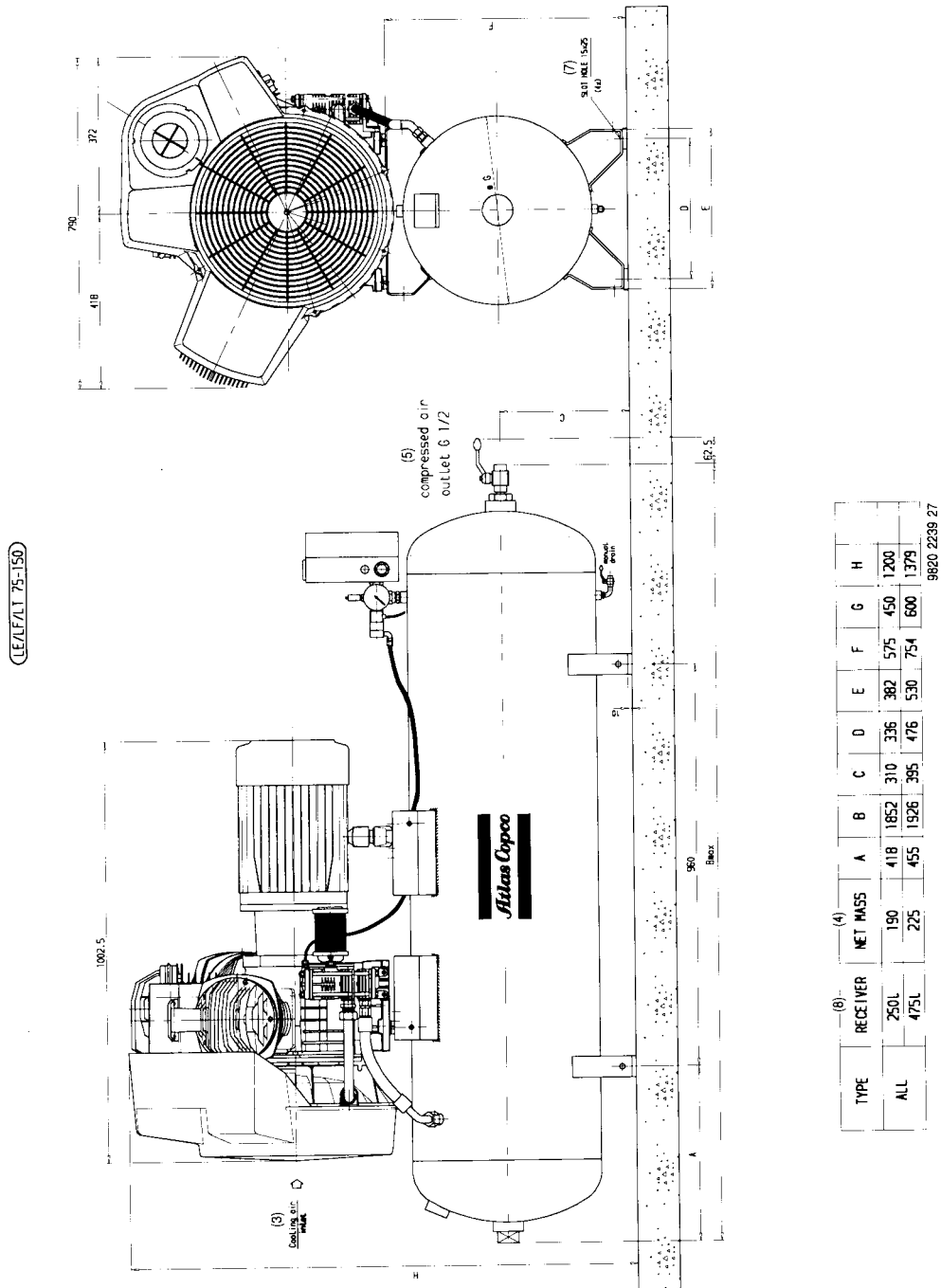


Fig. 33. Dimension drawing, LE/LT75 up to -150 and LF75 Complete Unit (horizontal 250/475 I receiver)

Figs. 19 up to 33. Dimension drawings