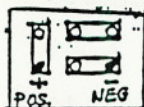
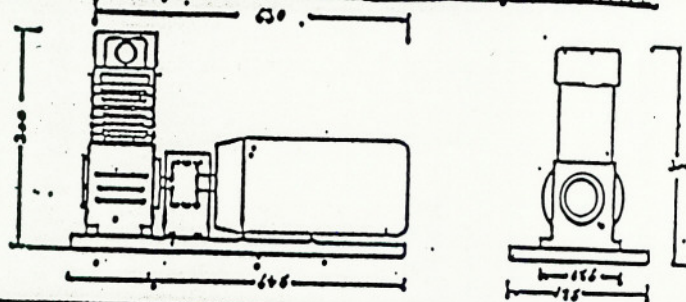


DESCRIPTION AIR COMPRESSOR & ASSEMBLY	BM: 193
FOR S.A.T.S. LOCOMOTIVES "PANTOGRAPH"	MOD:
	DRAWN: P.D.M.
	DATE: 15.10.90
	SHEET: 1 OF 6



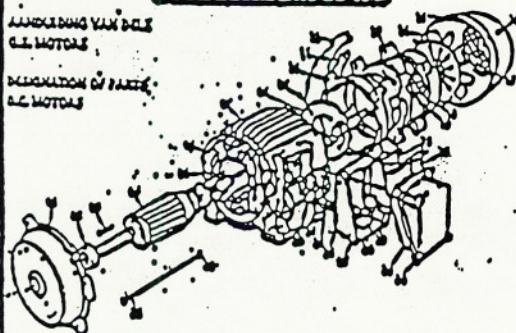
# AIR COMPRESSOR AND MOTOR ASSEMBLY



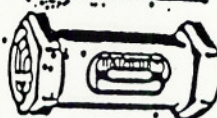
## ELECTRIC MOTOR

ASSEMBLING VAN BELT  
ON MOTOR

DISASSEMBLING VAN BELT  
ON MOTOR



## Single Check Valve

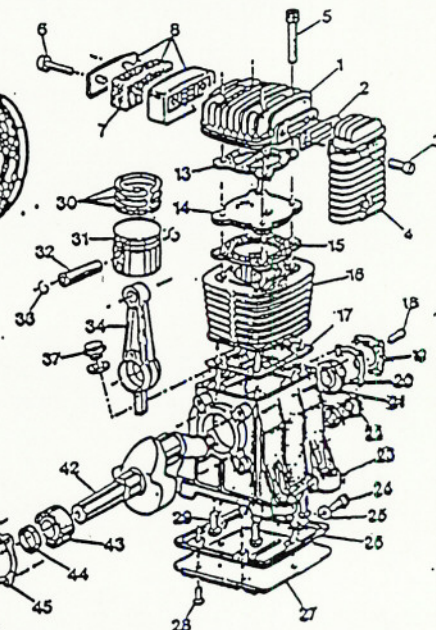
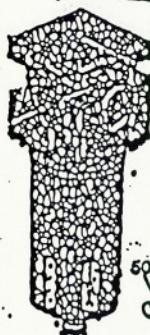


## E1 BARE COMPRESSOR

## Shaft Couplings



## FILTER



Part Name	Part Number	Description
1. Air Inlet Valve	1	1. Air Inlet Valve
2. Air Inlet Valve Gasket	2	2. Air Inlet Valve Gasket
3. Air Inlet Valve Spring	3	3. Air Inlet Valve Spring
4. Air Inlet Valve Spring Retainer	4	4. Air Inlet Valve Spring Retainer
5. Air Inlet Valve Spring Retainer Gasket	5	5. Air Inlet Valve Spring Retainer Gasket
6. Air Inlet Valve Spring Retainer Nut	6	6. Air Inlet Valve Spring Retainer Nut
7. Air Inlet Valve Spring Retainer Bolt	7	7. Air Inlet Valve Spring Retainer Bolt
8. Air Inlet Valve Spring Retainer Washer	8	8. Air Inlet Valve Spring Retainer Washer
9. Air Inlet Valve Spring Retainer Lock Washer	9	9. Air Inlet Valve Spring Retainer Lock Washer
10. Air Inlet Valve Spring Retainer Lock Nut	10	10. Air Inlet Valve Spring Retainer Lock Nut
11. Air Inlet Valve Spring Retainer Lock Washer	11	11. Air Inlet Valve Spring Retainer Lock Washer
12. Air Inlet Valve Spring Retainer Lock Nut	12	12. Air Inlet Valve Spring Retainer Lock Nut
13. Air Inlet Valve Spring Retainer Lock Washer	13	13. Air Inlet Valve Spring Retainer Lock Washer
14. Air Inlet Valve Spring Retainer Lock Nut	14	14. Air Inlet Valve Spring Retainer Lock Nut
15. Air Inlet Valve Spring Retainer Lock Washer	15	15. Air Inlet Valve Spring Retainer Lock Washer
16. Air Inlet Valve Spring Retainer Lock Nut	16	16. Air Inlet Valve Spring Retainer Lock Nut
17. Air Inlet Valve Spring Retainer Lock Washer	17	17. Air Inlet Valve Spring Retainer Lock Washer
18. Air Inlet Valve Spring Retainer Lock Nut	18	18. Air Inlet Valve Spring Retainer Lock Nut
19. Air Inlet Valve Spring Retainer Lock Washer	19	19. Air Inlet Valve Spring Retainer Lock Washer
20. Air Inlet Valve Spring Retainer Lock Nut	20	20. Air Inlet Valve Spring Retainer Lock Nut
21. Air Inlet Valve Spring Retainer Lock Washer	21	21. Air Inlet Valve Spring Retainer Lock Washer
22. Air Inlet Valve Spring Retainer Lock Nut	22	22. Air Inlet Valve Spring Retainer Lock Nut
23. Air Inlet Valve Spring Retainer Lock Washer	23	23. Air Inlet Valve Spring Retainer Lock Washer
24. Air Inlet Valve Spring Retainer Lock Nut	24	24. Air Inlet Valve Spring Retainer Lock Nut
25. Air Inlet Valve Spring Retainer Lock Washer	25	25. Air Inlet Valve Spring Retainer Lock Washer
26. Air Inlet Valve Spring Retainer Lock Nut	26	26. Air Inlet Valve Spring Retainer Lock Nut
27. Air Inlet Valve Spring Retainer Lock Washer	27	27. Air Inlet Valve Spring Retainer Lock Washer
28. Air Inlet Valve Spring Retainer Lock Nut	28	28. Air Inlet Valve Spring Retainer Lock Nut
29. Air Inlet Valve Spring Retainer Lock Washer	29	29. Air Inlet Valve Spring Retainer Lock Washer
30. Air Inlet Valve Spring Retainer Lock Nut	30	30. Air Inlet Valve Spring Retainer Lock Nut
31. Air Inlet Valve Spring Retainer Lock Washer	31	31. Air Inlet Valve Spring Retainer Lock Washer
32. Air Inlet Valve Spring Retainer Lock Nut	32	32. Air Inlet Valve Spring Retainer Lock Nut
33. Air Inlet Valve Spring Retainer Lock Washer	33	33. Air Inlet Valve Spring Retainer Lock Washer
34. Air Inlet Valve Spring Retainer Lock Nut	34	34. Air Inlet Valve Spring Retainer Lock Nut
35. Air Inlet Valve Spring Retainer Lock Washer	35	35. Air Inlet Valve Spring Retainer Lock Washer
36. Air Inlet Valve Spring Retainer Lock Nut	36	36. Air Inlet Valve Spring Retainer Lock Nut
37. Air Inlet Valve Spring Retainer Lock Washer	37	37. Air Inlet Valve Spring Retainer Lock Washer
38. Air Inlet Valve Spring Retainer Lock Nut	38	38. Air Inlet Valve Spring Retainer Lock Nut
39. Air Inlet Valve Spring Retainer Lock Washer	39	39. Air Inlet Valve Spring Retainer Lock Washer
40. Air Inlet Valve Spring Retainer Lock Nut	40	40. Air Inlet Valve Spring Retainer Lock Nut
41. Air Inlet Valve Spring Retainer Lock Washer	41	41. Air Inlet Valve Spring Retainer Lock Washer
42. Air Inlet Valve Spring Retainer Lock Nut	42	42. Air Inlet Valve Spring Retainer Lock Nut
43. Air Inlet Valve Spring Retainer Lock Washer	43	43. Air Inlet Valve Spring Retainer Lock Washer
44. Air Inlet Valve Spring Retainer Lock Nut	44	44. Air Inlet Valve Spring Retainer Lock Nut
45. Air Inlet Valve Spring Retainer Lock Washer	45	45. Air Inlet Valve Spring Retainer Lock Washer

## MAINTENANCE REQUIRED:

1. Compressor oil to be checked regularly. S.A.E 30
2. Periodic check on motor brushes (Require changing approx. 500 hours)
3. Filter to be checked and cleaned on a regular basis
- 4.a) Check build-up time of air pressure  
b) Check system for air leaks.
5. Check drive coupling on a regular basis.
6. Check Non-return valve on a regular basis.

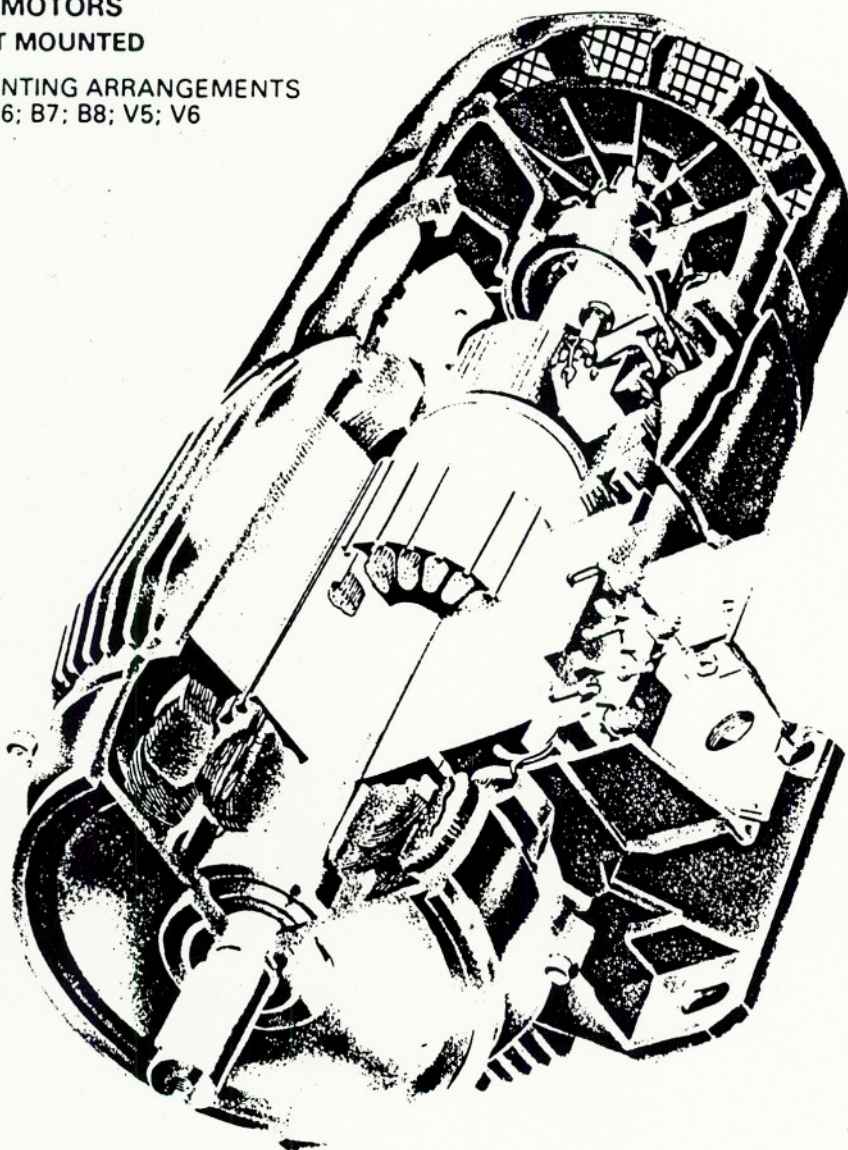
DESCRIPTION COMPRESSOR AND MOTOR ASSEMBLY	BM: 193
SPARE'S AND MAINTENANCE PROCEDURES	MOD:
	DRAWN: P.D.M.
	DATE: 16.9.91
	SHEET: 1 OF 1



# ELECTRIC MOTORS

D.C. MOTORS  
FOOT MOUNTED

MOUNTING ARRANGEMENTS  
B3; B6; B7; B8; V5; V6



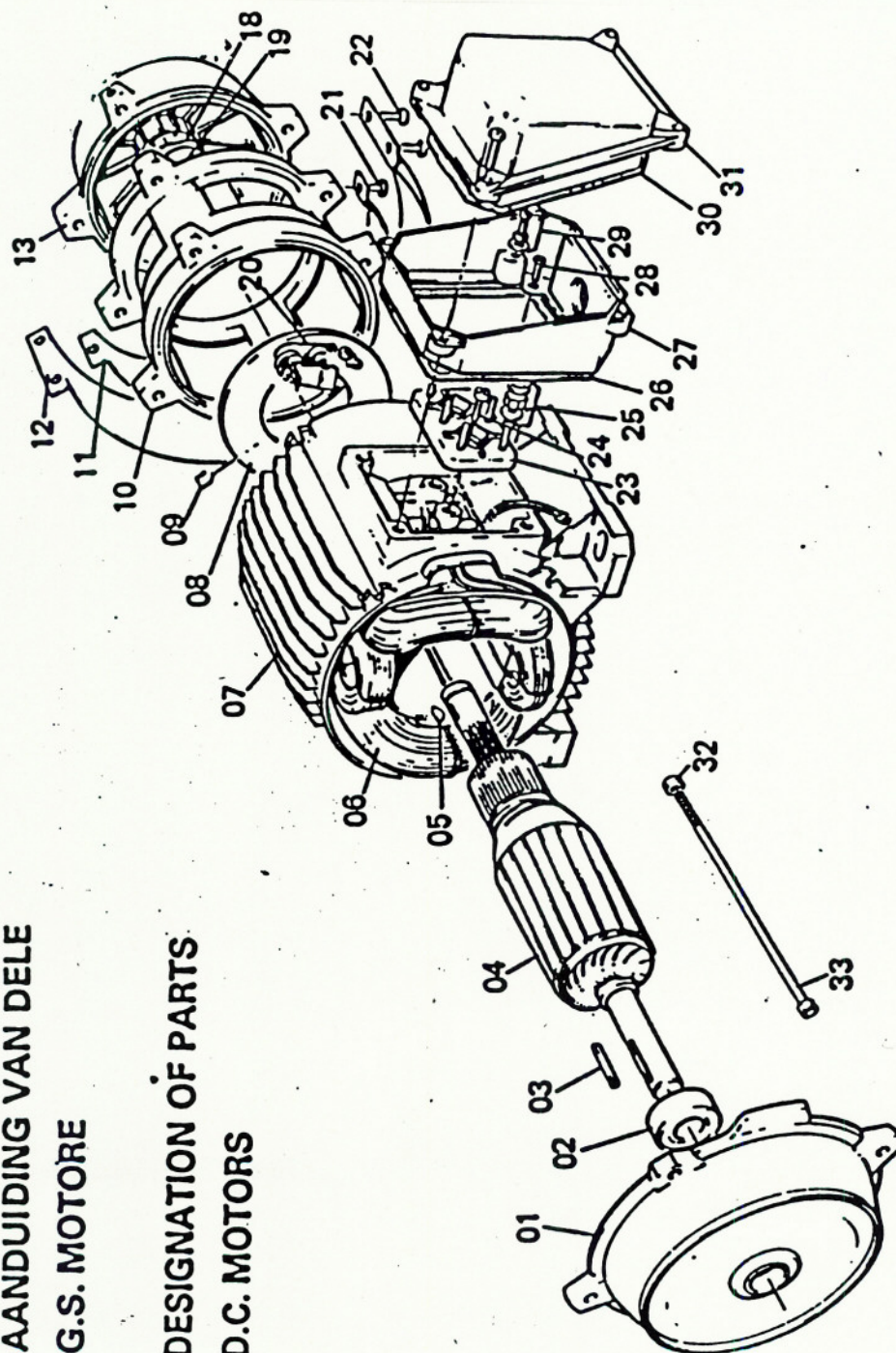
DESCRIPTION	AIR COMPRESSOR AND MOTOR	BM:	193
	ASSEMBLY FOR S.A.T.S.LOCOMOTIVES	MOD:	
	"PANTOGRAPH"	DRAWN:	P.D.M.
		DATE:	15.10.90
		SHEET:	2 OF 6



# ELECTRIC MOTORS

AANDUIDING VAN DELE  
G.S. MOTORE

DESIGNATION OF PARTS  
D.C. MOTORS



DESCRIPTION	AIR COMPRESSOR AND MOTOR	BM:	193
	ASSEMBLY FOR S.A.T.S. LOCOMOTIVE	MOD:	
	"PANTOGRAPH"	DRAWN:	P.D.M.
		DATE:	15.10.90
		SHEET:	OF

# MOTOR SPECIFICATIONS.

1. Brush Grade	E.G. 120
2) SPRING TENSION	180 - 200 Grams
3) Distance of brush box From commutator	2,0 mm
4) a Max Dia. Commutator	64 mm
b Min Dia. Commutator	56 mm
5) Lubrication	Sealed Lubrication
6) MAINTENANCE	Service brush gear & bearings
7) Bearings	DE620620 & N D F 620522
8) Normal Data	110 Volts DC Current 8.5 amps
9) Armature to field air gap	1.75 mm
10) Class of insulation	F.
11) Type of windings	Compound wound
12) Segments undercut	0.5 mm
13) Type of brush box	F.C.C. B 106 5 m
14) Type of brush spring	Clock Spring
15) Mica between segments	0.4 mm
16) Type of Paint	Femco Grey (Chrome expoxy primer)

DESCRIPTION AIR COMPRESSOR AND MOTOR	BM: . 193
ASSEMBLY FOR S.A.T.S. LOCOMOTIVES	MOD:
"PANTOGRAPH"	DRAWN:
	DATE: 15.10.9
	SHEET: OF



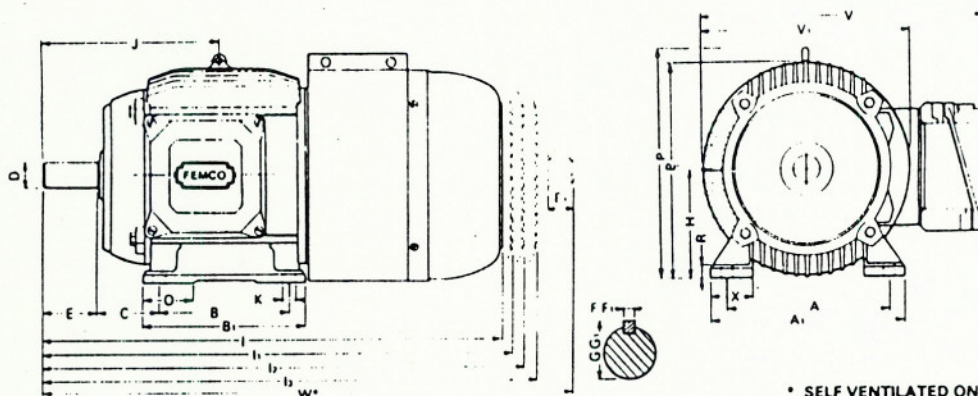
DESCRIPTION		PART NAME	QTY	PART NUMBER DEEL NOMMER	DEELNAAM
AIR COMPRESSOR AND MOTOR  ASSEMBLY FOR S.A.T.S. LOCOMOTIVE "PANTOGRAPH"  MOD: DRAWN: P.D.M. DATE: 15.10.90 SHEET: OF	BM: 193	Drive End Endshield	1	01	Dryfentskerm
		Drive End Ball Bearing	1	02	Dryfentkoeëllaer
		Key	1	03	Spy
		Armature	1	04	Anker
		Wood Ruff Key	1	05	Woodruff-spy
		Field	1	06	Veld
		Housing	1	07	Huls
		Brush Ring Assembly	1	08	Borselring Samestelling
		Grub Screw	2	09	Skroeftap
		Spacer	1	10	Afstandstuk
		Inner Wrapper	1	11	Binne Dekplaat
					Buite Dekplaat
		Non Drive Endshield	1	13	Nie-dryfentskerm
		Loading Spring	1	18	Belasveer
		Non Drive End Ball Bearing	1	19	Nie-dryfentkoeëllaer
		Armature Brushes	4	20	Ankerborsels
		Inner Wrapper Screw	2	21	Binne Dekolaat Skroef
		Terminal Board	1	23	Aansluitbord
		Terminal Board Holding Screw	2	24	Skroef van Aansluitbordhouer
		Terminal Board Washers & Nuts	9	25	Aansluitbord Wassers en Moere
		Gasket	1	26	Pakstuk
		Terminal Box	1	27	Aansluitkas
		Terminal Box Holder Screw	4	28	Skroef van Aansluitkashouer
		Earth Screw and Washers	2	29	Aardskroef en Wassers
		Gasket	1	30	Pakstuk
		Terminal Box Cover	1	31	Aansluitkas deksel
		Nut	4	32	Moer
		Stay Bolt	4	33	Ankerbout



# ELECTRIC MOTORS

DIMENSIONS  
D.C. MOTORS  
FOOT MOUNTED

MOUNTING ARRANGEMENTS  
B3; B6; B7; B8; V5; V6



• SELF VENTILATED ONLY  
• SLEGS SELF GEVENTILEERD

SELF VENTILATED

SELF GEVENTILEERD

FRAME RAAM	A	A <sub>1</sub>	B	B <sub>1</sub>	C	D	E	E <sub>1</sub>	F	G	H	I	J	K	O	P	P <sub>1</sub>	R	V	V <sub>1</sub>	X	W*
56	90	112	71	90	36	9	20	20	3	10,2	56	236,5	-	M6	-	-	108,5	8	142	110	27	-
63	100	125	80	105	40	11	23	23	4	12,5	63	264	-	M6	-	-	124	9	155	123	30	-
71	112	134	90	108	45	14	30	30	5	16	71	310	-	M8	29	-	141	8	189	140	31,5	344
80	125	151	100	126	50	19	40	40	6	21,5	80	352	-	M8	38	-	141	9	218	162	33	402
90L	140	170	125	155	56	24	50	50	8	27	90	435	-	M10	48	-	183	11	243	186	34,5	498
100L	160	195	140	172	63	28	60	60	8	31	100	478	-	M10	51	-	200	12	254	200	47,5	551
112M	190	225	140	175	70	28	60	60	8	31	112	532	-	M10	55	-	224	15	278	224	56	607
132M	216	260	178	215	89	38	80	80	10	41	132	645	258	M10	57,5	335	-	20	307	260	57,5	743,1

DIMENSIONS FOR FITTING OF	80	90L	100L	112M	132M	AFMETINGS VIR MONTERING VAN
FORCE VENTILATION	I <sub>1</sub>	416	515	531	578	GEFORSEERDE VENTILERING I <sub>1</sub>
TACHO GENERATOR	I <sub>2</sub>	473	560	609	652	TAGOGENERATOR I <sub>2</sub>
FORCE VENTILATION AND TACHO GENERATOR	I <sub>1</sub>	525	635	655	702	GEFORSEERDE VENTILERING MET TAGOGENERATOR I <sub>1</sub>

DESCRIPTION AIR COMPRESSOR AND MOTOR	BM: 193
ASSEMBLY FOR S.A.T.S. LOCOMOTIVES	MOD:
"PANTOGRAPH"	DRAWN: P.D.M.
	DATE: 15.10.90
	SHEET: 3 OF 6



**TORQUE AND CURRENT:**

The torque and current can remain constant from zero to maximum speed in force ventilated motors. For self ventilated motors the following table should be applied and the torque or current should be reduced accordingly in order to avoid overheating.

Speed r/min	2000+	1000	750
Torque (IP 54) %	100	100	100
Torque (IP 22) %	100	100	100

**INSULATION:**

The winding insulation is class "F" with a maximum ambient temperature of 40° C. For higher ambient temperature the following de-rating table should apply:

Ambient temperature %	40	45	50
Power available %	100	94	87

**POWER OUTPUT AND RATING:**

The power declared is at maximum 1000 m above sea level. For other altitudes the following table should apply:

Altitude (M.A.S.L.)	1000	2000
Power available %	100	90

Higher power output can be obtained by improving the form factor of the armature supply. This can be improved by connecting a choke in series to the armature circuit. The improvement obtainable is in accordance with the following table:

Form Factor (FF)	1.0	1.1	1.2
Power available %	100	90	83

OR

Form Factor (FF)	1.4	1.3	1.2
Power available %	100	107	116

By applying this method of selecting the motor, the motor size can be reduced, and the saving on the motor alone can be greater than the cost of the choke.

**HOW TO CALCULATE THE FORM FACTOR:**

The form factor of the motor can be obtained by measuring the armature current with an ammeter which reads r.m.s. i. (e.g. moving iron or thermal instrument) and one ammeter which reads the average value i. (e.g. moving coil). The two currents are recorded and the relationship between r.m.s. and average value is the form factor.

$$F.F. = \frac{I_1}{I_2}$$

**WINDING:**

Femco Standard D.C. motors are shunt wound with a separate field. The field can remain switched on continuously without any force cooling when the motor is not running.

**WRINGKRAG EN STROOM:**

Die wringkrag en stroom kan konstant bly van zero tot maksimum spoed in geforseerd geventileerde motore. Vir selfgeventileerde motore is die volgende tabel van toepassing en die wringkrag en stroom behoort ooreenkomstig verminder te word om owerhitting te voorkom.

650	500	250	0	Speed o.p.m.
100	92	85	77	Wringkrag (IP 54) %
90	80	70	60	Wringkrag (IP 22) %

**ISOLASIE:**

Die wikkeling se isolering is klas "F" met 'n maksimum omringende temperatuur van 40° C. Vir hoër omgewings temperatuur is die volgende laer aangeslane tabel van toepassing:

55	60	65°C	Omgewings temperatuur %
80	72	62	Kraglewering beskikbaar %

**KRAGLEWERING EN KENWAARDE:**

Die verklaarde kraglewering is teen 1 000 m bo seevlak. Vir ander hoogtes bo seevlak is die volgende tabel van toepassing.

3000	4000	Hoogte (meters bo seevlak)
80	70	Kraglewering beskikbaar %

Hoër kraglewering kan verkry word deur verbetering van die vormfaktor van die ankertoewoer. Dit kan verbeter word deur die inskakeling van 'n smoorspoel in serie tot die anker stroombaan. Die verbetering in kraglewering hierdaar verkrygbaar is in ooreenstemming met die volgende tabel:

1.2	1.3	1.4	Vormfaktor (VF)
83	77	71	Kraglewering beskikbaar %

OR

1.2	1.1	1.0	Vormfaktor (VF)
116	127	140	Kraglewering beskikbaar %

'n Kleinere motor kan deur middel van hierdie metode geselekteer word en die besparing op die motor alleen mag groter wees as die prys van 'n smoorspoel.

**HOE OM DIE VORMFAKTOR TE BEREKEN:**

Die vormfaktor van die motor kan bepaal word deur die ankerstroom te meet met 'n amperemeter wat w.g.k.-stroom lees (bv. draaiyster of termiese instrument) en een amperemeter wat die gemiddelde waarde lees (bv. draaispoel). Die twee stroomlesings word aangeteken en die verhouding tussen die w.g.k.-stroom en die gemiddelde waarde is die vormfaktor.

$$V.F. = \frac{I_1}{I_2}$$

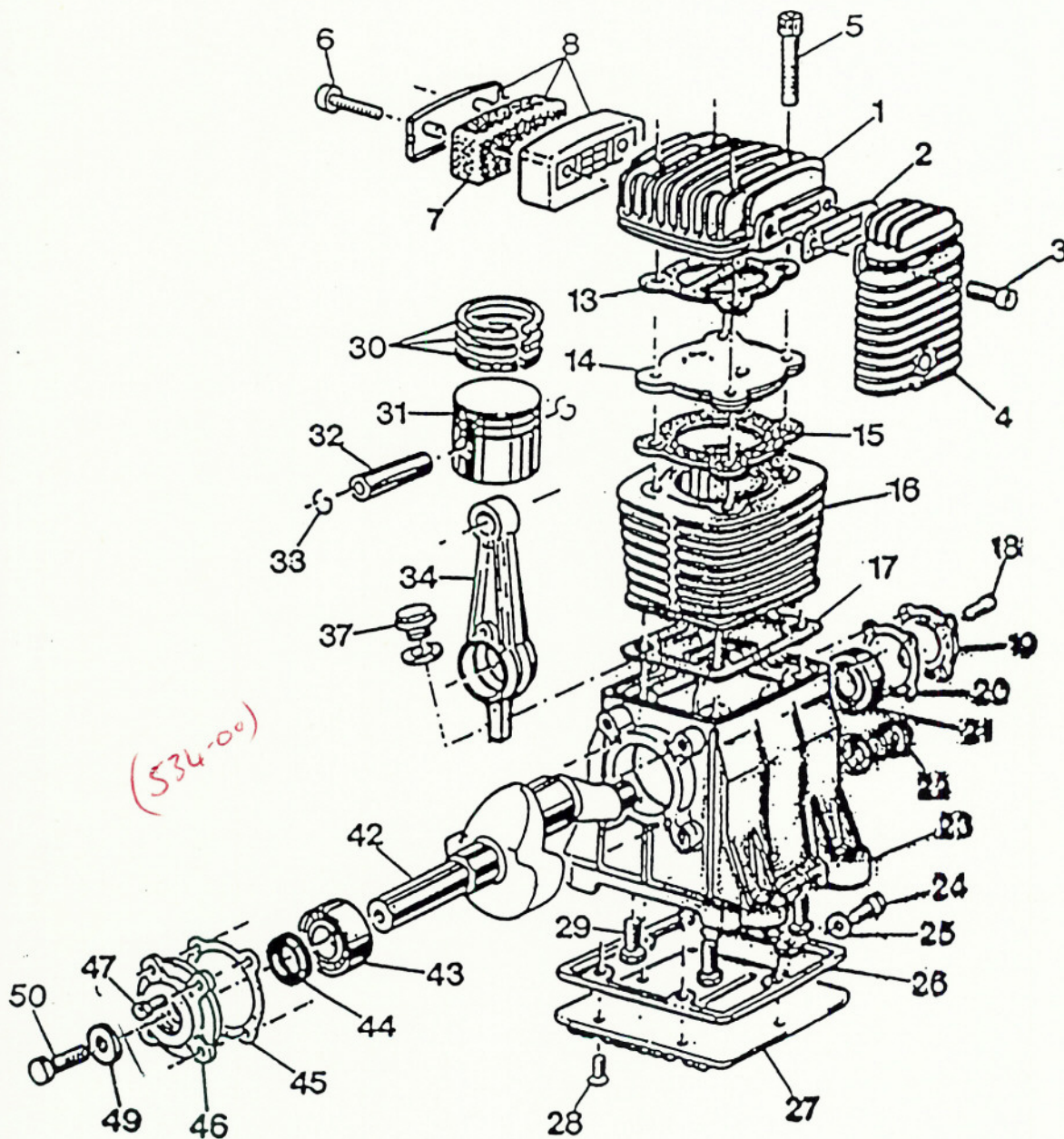
**WIKKELING:**

Femco Standaard G.S. motore is gelykstroom-ontakmotore met 'n afsonderlike veld. Die veld kan aangeskakel bly sonder enige geforseerde verkoeling wanneer die motor nie in werking is nie.

DESCRIPTION	AIR COMPRESSOR AND MOTOR	BM: 193
	ASSEMBLY FOR S.A.T.S. LOCOMOTIVE	MOD:
	"PANTOGRAPH"	DRAWN: P.D.M.
		DATE: 15.10.90
		SHEET: OF



# E1 BARE COMPRESSOR



DESCRIPTION	AIR COMPRESSOR AND MOTOR	BM: 3. 193
	ASSEMBLY FOR S.A.T.S. LOCOMOTIVES	MOD:
	"PANTOGRAPH"	DRAWN: P.D.M.
		DATE: 15.10.90
		SHEET: OF



## SAFETY PRECAUTIONS

This manual contains information that is important to your safety and preventing damage to your air compressor. We are using the following symbols to help you recognize this information. Please read this manual and pay special attention to those sections.

### WARNING

INFORMATION FOR PREVENTING INJURY OR LOSS OF LIFE

### CAUTION

INFORMATION FOR PREVENTING DAMAGE TO EQUIPMENT

## OWNER'S MANUAL

WARNING		
AREA	HAZARD	PRECAUTION
Toxic Vapors	Compressed air from this compressor may contain, poisonous carbon monoxide.	Never directly inhale the compressed air produced by this compressor.
	Certain sprayed material such as paints, insecticides, weed killer, sand, etc., may be harmful if inhaled or used in a closed area.	Always read labels with containers when spraying paints or chemicals.
		Always use the compressor in a well ventilated area.
Electrical Shock	Compressors may be powered by 220 or 240V 1 phase; 380, 220 or 415V, 3 phase. The rated voltage is indicated on motor and on compressor. Wrong supply voltage can cause damages to electrical components.	Use a respirator or mask whenever there is a chance that you might inhale anything that you are spraying. If a mask is used, read all the instructions with the mask so that you know that it will protect you what you are spraying.
		Always connect the power supply to a grounded electrical supply with the specified voltage and fuse protection.
		Always turn off the power supply before doing any maintenance or repair work.
		Check that the supply voltage is the same as the motor rated voltage.
Pressure Switch	Air pressure beyond design limits could cause the air receiver to rupture or explode.	Never use the compressor in the rain, in a wet area or near any explosive atmosphere.
		Pressure switch operation is related to motor horsepower, receiver rating, and safety valve setting. DO NOT ATTEMPT TO ADJUST, REMOVE, OR BY-PASS THE PRESSURE SWITCH, OR CHANGE AND MODIFY ANY PRESSURE CONTROL RELATED DEVICE.
Air Receiver	Never use a motor with a higher horsepower rating than the one specified.	
	Over-pressurizing the air receiver could cause the air receiver to rupture or explode.	The air receiver is protected from over-pressurizing by a safety valve. DO NOT REMOVE, MAKE ADJUSTMENT, OR SUBSTITUTIONS FOR THIS VALVE.
	Change to the receiver structure will cause the receiver to weaken. Air receiver rupture or explosion could occur.	Never drill into, weld to, or change the air receiver in any way.
Compressed Air	Weakening of the air receiver structure caused from internal rusting of the air receiver.	Drain water/condensation from the air receiver daily or before each use.
	Compressed air will propel dirt, sand, metal shaving, etc., and result in possible injury.	Never point any air nozzle or air sprayer toward any part of the body, or toward another person.
Moving Parts	This compressor cycles automatically when the power is ON. This automatic cycling could cause a hazard during service or repair work.	Always wear glasses or goggles when spraying air.
		Always turn off the power supply before attempting to do any maintenance or repair work to the compressor.
		Always turn off the power supply if the compressor is to be left unattended.
	Loose fitting clothing or items hanging near compressor could be pulled into compressor beltwheel or V-belt or rotating parts while compressor is operating.	Always make sure that the air pressure is released from the compressor and the air receiver before doing any maintenance or repair work.
Never operate the compressor with the belt guard assembly removed.		
Hot Parts	Air compressors get hot while running. Serious burns could result if touched.	Never operate the compressor with a damaged or broken belt guard assembly.
		Never operate the compressor with the belt guard assembly removed.
Hot Parts		Never operate the compressor with a damaged or broken belt guard assembly.
		Never touch the bare compressor, the motor, or the discharge tubing during or shortly after operating the compressor.

DESCRIPTION	AIR COMPRESSOR AND MOTOR	BM: 193
	ASSEMBLY FOR S.A.T.S. LOCOMOTIVES	MOD:
	"PANTOGRAPH"	DRAWN: P.D.M.
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		SHEET: OF



# TROUBLESHOOTING GUIDE

PROBLEM	PROBLEM CAUSE	CORRECTIVE ACTION
Motor Will Not Run	Motor overload protection on magnetic starter has tripped.	Press reset button or wait for automatic reset.
	Fuse blown or circuit breaker tripped.	Check for blown fuse and replace as necessary, or reset circuit breaker. Do not use a fuse or circuit breaker with a rating that is higher than specified.
	Wrong gauge wire.	Check for proper gauge wire. If necessary use larger size.
	Air receiver pressure exceeds pressure switch cut-in pressure.	Compressor motor will start automatically when air receiver pressure drops below cut-in pressure of pressure switch.
	Loose electrical connections.	Check wiring connections.
	Faulty motor.	Unless motor is visibly damaged, remove motor and have it checked at your local motor manufacturer's service center. Replace if necessary.
Air Receiver Safety Valve "POPPING OFF"	Pressure switch does not shut off motor.	Replace pressure switch.
Air Leaks	Check Valve defective.	A defective check valve results in a constant air leak from the pressure switch unloader valve when air pressure is in the air receiver but the compressor is not running. If the valve leaks, it must be replaced.
	Air leak in safety valve.	If valve leaks, it should be replaced.
	Safety Valve "POPPING OFF".	Safety valve defective. It must be replaced.
	Leak at welds.	Air receiver must be replaced.
	Tube or hose fitting loose.	Tighten fittings with leak and check under pressure with soapy water (do not overtighten).
Restricted Air Inlet	Dirty air inlet filter.	Clean or replace with new inlet filter element.
Low Discharge Pressure	Excessive air usage.	Decrease air usage, compressor not large enough for air requirement.
	Restricted air inlet filter.	Clean or replace air inlet filter element.
	Hole in hose.	Check and replace if required.
	V-Belt too loose.	Adjust tension if necessary.
Knocking or Rattling	Low oil level.	Check oil level and maintain at prescribed level.
	Loose screws or nuts.	Check all screws and nuts and tighten as required.
	Compressor beltwheel loose.	Check beltwheel screw and tighten as required.
Excessive V-Belt Wear	V-Belt too loose.	Adjust tension.
	V-Belt too tight.	Adjust tension.
	Motor Pulley Wobble.	Check for worn pulley bore or worn keyway resulting from running compressor with loose motor pulley.
Oil in Discharge Air	Piston Rings worn.	Replace with new rings.
	Restricted air inlet.	Clean or replace air inlet filter element. Check for other restrictions in air inlet.
	Restricted crankcase vent.	Check and clean crankcase vent hole in oil filler plug/vent.
	Excessive oil in compressor.	Drain oil to proper level.
	Wrong oil viscosity	Change oil with a suggested type

DESCRIPTION	AIR COMPRESSOR AND MOTOR	BM: 193
	ASSEMBLY FOR S.A.T.S. LOCOMOTIVES	MOD:
	"PANTOGRAPH"	DRAWN: P.D.M.
		DATE: 15.10.90
		SHEET: OF



## MAINTENANCE

### WARNING

#### COMPRESSED AIR AND ELECTRICITY ARE DANGEROUS

BEFORE DOING ANY WORK INVOLVING MAINTENANCE, OR ADJUSTMENT - BE SURE THE ELECTRICAL SUPPLY HAS BEEN CUT-OFF, AND COMPRESSOR INTERNAL SYSTEM HAS BEEN VENTED OF ALL PRESSURE. THESE SIMPLE PRECAUTIONS WILL PREVENT ACCIDENTS.

#### DAILY OR BEFORE EACH USE

- Check for proper oil level.
- Drain condensate from air receiver.
- Check for any unusual noise or vibration.

#### WEEKLY

- Clean air inlet filter. See cleaning air inlet filter below.
- Clean all external parts of compressor and motor.

#### MONTHLY

- Inspect entire air system for leaks.
- Inspect oil for contamination and change if necessary

#### EVERY 6 MONTHS/250 HOURS (Whichever comes first)

- Change oil.

#### CHECKING AND CHANGING OIL

### CAUTION

DO NOT OVERFILL THE COMPRESSOR WITH OIL. OVERFILLING WITH OIL WILL CAUSE PREMATURE COMPRESSOR FAILURE.

Check the oil level in the bare compressor before each use. The oil level should be at the center of the sight glass at all times. If level drops below this point, add oil to bring level back to center of sight glass. To drain the oil, remove the oil drain plug and collect the oil in a suitable container. Be sure to replace the oil drain plug securely before adding new oil.

the piping system are the largest single cause of high operating cost. If your compressor runs more than you believe it should, the most likely cause is a leaky pipe line. Leaks are easily located by squirting soap and water solution around all joints and watching for bubbles.

### WARNING

THE USE OF PLASTIC PIPE AND SOLDERED JOINTS OR FAILURE TO INSURE SYSTEM COMPATIBILITY OF FLEX JOINT AND FLEXIBLE HOSE CAN RESULT IN MECHANICAL FAILURE, PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH.

#### CLEANING AIR INLET FILTER

To clean the air inlet filter disassembly the filter box, remove filter element and clean it. Use soapy water for single stage compressor filter and compressed air (inside to outside) for two stage compressor filter.

#### PIPING

The following general instructions cover the installation and replacement of the compressor piping. All pipe and fittings must be certified safe for the pressure involved. Pipe thread lubricant is to be used on all threads, and all joint are to be made up tightly, since small leaks in

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	ASSEMBLY FOR S.A.T.S. LOCOMOTIVES	MOD:
	"PANTOGRAPH"	DRAWN: P.D.M.
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		SHEET: OF



# KIT SPARE PART'S E1 COMPRESSOR

POS.	DESCRIPTION	CPN	RIF. N°
A	AIR FILTER ELEMET KIT	97240758	7
B	AIR FILTER ASS'Y KIT	97240733	8-6
C	VALVE PLATE KIT	91899047	15-13-14 (**)
D	VALVE PLATE KIT (WITHOUT GASKET)	97230239	14 (**)
E	PISTON RING KIT (WITHOUT GASKET)	55887434 <b>55881005</b>	30
F			
G	CYLINDER KIT	55881932	30-32-33-16-26-17-15-34-31
H	BEARING KIT	97240832	43-21
I	CONNECTING ROD-PISTON KIT	55881908	30-32-33-34-31
L	CRANKCASE KIT	92062496	46-19-26-17-20-45-23-27-22-37-24-44-25
M	CONNECTING ROD KIT	92059831	26-17-15-34
N	CRANKSHAFT KIT	92062991	43-21-26-17-20-45-42-44
O	GASKET KIT	97240774	2-26-17-15-13-20-45-44 (*)
P	PISTON KIT	55881916	30-32-33-26-17-15-31
			(**) 91899088 INSERT CA1 FINGER VALVE (*) 97151864 GASKET VALVE PLATE

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## E1 BARE COMPRESSOR COMPONENTS

ITEM	DESCRIPTION	CPN	Q.TY	ITEM	DESCRIPTION	CPN	Q.TY
1	Cylinder Head	97017404	1	32	Wrist Pin Ø15×50	97017149	1
2	Gasket Aftercooler to Head	55881791	1	33	Circlip 15 UNI 7437	97017180	2
3-18-47	Screw M6×14 UNI 5931 - 8.8	97019160	10	34	Connecting Rod	97166136	1
4	Aftercooler	97017503	1	37	Oil Filler/Breather	97017446	1
5	Screw M8×45 UNI 5931 - 8.8	97019269	4	42	Crankshaft	97017388	1
6	Screw M6×25 UNI 5931 - 8.8	97021786	2	43	Bearing 6304	95200747	1
7	Air Filter Element	97021711	1	44	Oil Seal 35×20 Din 3760	97019343	1
8	Air Filter Complete	55875140	1	45	Gasket Cover-Drive	97017362	1
9	Discharge Elbow 3/4"-16 UNF	97175822	1	46	Crankcase Cover Drive	92063221	1
10	Discharge Elbow 1/2" Gas	97218291	1	48	Beltwheel	97017529	1
13	Gasket Head to Valve Plate	97017347	1	49	Washer Beltwheel	97019137	1
14	Valve Plate Kit	97151831	1	50	Screw M8×25 UNI 5739 Left	97019111	1
15	Gasket Cylinder to Valve Plate	97017339	1				
16	Cylinder	97017198	1				
17	Gasket Crankcase to Cylinder	97017321	1				
19	Crankcase Cover	92063239	1				
20	Gasket Crankcase Cover.	97017354	1				
21	Bearing 6302	95226965	1				
22	Oil Level Sight Glass	97017438	1				
23	Crankcase	97017370	1				
24	Oil Drain Screw M6×10	97019194	1				
25	Oil Drain Washer 6,5×10	97019434	1				
26	Gasket Base to Crankcase	97017313	1				
27	Crankcase Base	97017396	1				
28	Screw M5×12 UNI 5933	97019236	6				
29	Screw M8×20 UNI 5331 - 8.8	97019178	4				
30	Ring Kit	55881999	1				
31	Piston Ø60	97266852	1				

DESCRIPTION

AIR COMPRESSOR AND MOTOR

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