

Technische Daten zur elektrischen Ausrüstung
Technical Daten for electrical equipment
Caracteristiques techniques de équipement électrique

Maschinentype

Type of machine
Type de la machine

6 GRW

Zeichgs.-Nr.:

Drawing-No. 903118

Plan-No.

Betriebsspannung

Line voltage
Tension nominale

380 V, 50 Hz

Steuerspannung

Controlling voltage
Tension de commande

220 V, 50 Hz

Hilfsspannung

Auxiliary voltage
Tension auxiliaire

Anschlußwert

Power requirement
Puissance connexion

ca. 117 kW

Vorschrift

Instruction
Prescription

VDE

Aufstellungshöhe

Installation altitude
Altitude d'installation

Anlagen Wiring diagram, Parts list, description of controller, first start up,
Encl.
P.J. circuit diagram, data sheet,

Stromlaufplan

Wiring diagram
Plan de câblage

Zeichgs.-Nr.

Drawing-No.
Plan-No.

903118-SP

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Page
Feuille

14

Klemmenplan

Terminal diagram
Plan de bornes

Zeichgs.-Nr.

Drawing-No.
Plan-No.

Blatt

Page
Feuille

Aufbauplan

Mounting plan
Plan de montage

Zeichgs.-Nr.

Drawing-No.
Plan-No.

903118

Blatt

Page
Feuille

1

Elektrogeräteleiste

Electrical parts list
Liste des pieces electriques

Nr.

No.
No.

903118

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Page
Feuille

1

Achtung !

Erddung, Nullung, Schutzschaltung nach VDE oder örtlichen Vorschriften ausführen.
Rechtsdrehfeld beachten.

Attention !

Earthing, neutralization and protective circuit to be carried out according
to VDE or local instructions. Pay attention to right rotary field !

Attention !

Visé a terre, neutre et protection suivant prescription locale ou VDE.
Sens de rotation a droite a ventier !

gez.

geor

kelvi

plast

Technical data : Kelviplast - temperature control unit

Typ : 6 GRW
with 6 plug-in-units
each circuit to be cut-off separately

Connections : cooling water : flange DN 80,PN 40
with dirt filter and stop valve
with solenoid valve = 24 V-DC.

cooling water out : flange DN 80,PN 40
with stop valve

Filling : 1 x R 3/4" female thread

Dimensions : frame : width = 2985 mm
depth = 800 mm
hight = 1600 mm

Total connected load : about 117 kW, 380 V, 50 Hz

Control voltage : 220 V, 50 Hz

Technical data	: circuits 1 - 2 (G200-screw, G200 barrel)
Type	: WE 100/130-12/30
Circulating agent	: water
Cooling agent	: water
Range of temperature	: up to 130 deg. C
Cooling	: indirect by cleanable tube-bundle heat exchanger, (Bronze, CuNi30Fe)
Cooling capacity	: 30 kW at 60 deg.C forward temperature and 32 deg. C temperature of cold water
Heating power	: 12 kW
control	: external
Pump	: inline - rotary pump
Pump capacity	: 2 x 100 l/min at 3,5 bars overpressure
Driving force	: P =(2 x 1,1 kW) at 2900 l/min
System	: closed-pressure tight with automatical filling and ventilation
Connections	: circulation 2 x R 1 1/4" female thread

Technical data	: circuits 3 - 4 (G250 screw, G250 barrel)
Type	: WE 100/130- 18/30
Circulating agent	: water
Cooling agent	: water
Range of temperature	: up to 130 deg. C
Cooling	: indirect by cleanable tube-bundle heat exchanger, (Bronze, CuNi30Fe)
Cooling capacity	: 30 kW at 60 deg. C forward temperature and 32 deg. C temperature of cold water
Heating power	: 18 kW
Control	: external
Pump	: inline - rotary pump
Pump capacity	: 2 x 100 l/min at 3,5 bars overpressure
Driving force	: P =(2 x 1,1 kW) at 2900 l/min
System	: closed-pressure tight with automatical filling and ventilation
Connections	: circulation 2 x R 1 1/4" female thread

Technical data	: circuits 5 - 6 (head middle section, movable section)
Type	: WE- 60/130- 24/30
Circulating agent	: water
Cooling agent	: water
Range of temperature	: up to 130 deg. C
Cooling	: indirect by cleanable tube-bundle heat exchanger, (Bronze, CuNi30Fe)
Cooling capacity	: 30 kW at 60 deg. C forward temperature and 32 deg. C temperature of cold water
Heating power	: 24 kW
Control	: external
Pump	: inline - rotary pump
Pump capacity	: 2 x 60 l/min at 8 bars overpressure
Driving force	: P =(2 x 2,2 kW) at 2900 l/min
System	: closed-pressure tight with automatical filling and ventilation
Connections	: circulation 2 x R 1" female thread

STUECKLISTE

Nr.	Stck.	Kurzbez.	Bezeichnung	Typ	Hersteller
No.	qu.	abbr.	description	type	manufacturer
1	1		frame	800/2985/1600 B x T x H	Kelviplast
2	6		internal part-frame	57-00-90 470x800	Kelviplast
3	2		cooler-housing	Ø88 x 3000	Kelviplast
4	8		flange	DN 80, PN40	Petropiping
5	1	43	dirt filter	DN 80-12050	ARI
6	2	28	stop valve	DN 80-12008	ARI
7	12	28,44	stop valve	R 3/4" RG	Herose
8	2	28,44	stop valve	R 1" RG	Herose
9	1		stop valve	R 1 1/4"-RG	Herose
10	10	28,44	stop valve	R 1/2"	Herose
11	1		non return valve	R 1 1/4"	Urban & Schlick
12	2		non return valve	R 1/2"	Urban & Schlick
13	1		non return valve	R 1"	Urban & Schlick
14	6		non return valve	R 3/4"	HSK
15	1		solenoid valve 1"	SCE 210 24VDC	Asco
16	1		solenoid valve 1 1/4"	SCE 210 24VDC	Asco
17	2		solenoid valve 1/2"	SCE 210 24VDC	Asco
18	6		housing	09300100301	Harting
19	6		housing	09300160301	Harting
20	2		housing	09300060302	Harting
21	6		socket-implant	09330102701	Harting
22	6		socket-implant	09310062701	Harting
23	2		socket-implant	09330062701	Harting

Bearbeiter.: Kiese Wetter
Gerätetyp.: 6 GRW (frame)

Bearbeitungsdatum.: 06.07.90
Geräte-Nr.: 903118

STUECKLISTE

Nr. No.	Stck. qu.	Kurzbez. abbr.	Bezeichnung description	Typ type	Hersteller manufacturer
24	6		filling-hose	Dampf Trix 2000 1/2", 1600 mm	Phönix
25	6		cooling water-out	Dampf Trix 2000 3/4", 1200 mm	Phönix
26	6		cooling water	Dampf Trix 2000 3/4", 1000 mm	Phönix
27	1	31	pressure reducing valve	D0F6, R 3/4"	Braukmann
28	1	PI	manometer	0-6 bar, Ø63, o.R.hi	Wika

Bearbeiter.: Kiese Wetter
Gerätetyp.: 6 GRW (frame)

Bearbeitungsdatum.: 06.07.90
Geräte-Nr.: 903118

STUECKLISTE

Nr.	Stck.	Kurzbez.	Bezeichnung	Typ	Hersteller
No. qu.	abbr.		description	type	manufacturer
1	1	15	pump	CR4-60-A-A-A	Grundfos
2	1	1M31	motor-pump 1,1 kW	MG 80B2-19F100	Grundfos
3	1	17	heat exchanger	BCF 300-8-W-4 CuNi30Fe, Bronze	Funke
4	2	1E41/1E42	heater	403K, 6 kW	Hilzinger
5	1	3Y81	solenoid valve	SCE210D2V R 3/4"	Asco
6	1	3S51	temperature limiter	ATH-2	Juchheim
7	1	3S21	pressure switch	MCS 4	Klöckner-Meoler
8	1	PI10	manometer	0-10 bar, 213.40.063 FR.CR	Wika
9	1	21	membran expansion tank	1901 8 ltr.	Amtrol
10	1	23	vent valve	R 3/8"	INT
11	1	24	safety valve	652/8, R 1/2"	Götze
12	1		terminal box	M 244	Bopla
13	1	32	non return valve	R 1/2"	HSK
14	1		housing	09300101521	Harting
15	1		housing	09300161520	Harting
16	1		internal part	09310062601	Harting
17	1		internal part	09330102601	Harting

Bearbeiter.: Kieseewetter
Gerätetyp.: 6 GRW (G200 screw)

Bearbeitungsdatum.: 06.07.90
Geräte-Nr.: 903118

STUECKLISTE

Nr.	Stck.	Kurzbez.	Bezeichnung	Typ	Hersteller
No. qu.	abbr.		description	type	manufacturer
1	1	15	pump	CR4-60-A-A-A	Grundfos
2	1	1M51	motor-pump 1,1 kW	MG 80B2-19F100	Grundfos
3	1	17	heat exchanger	BCF 300-8-W-4 CuNi30Fe, Bronze	Funke
4	2	1E61/1E62	heater	403K, 6 kW	Hilzinger
5	1	4Y81	solenoid valve	SCE210D2V R 3/4"	Asco
6	1	4S51	temperature limiter	ATH-2	Juchheim
7	1	4S21	pressure switch	MCS 4	Klöckner-Meoler
8	1	PI10	manometer	0-10 bar, 213.40.063 FR.CR	Wika
9	1	21	membran expansion tank	1901 8 ltr.	Amtrol
10	1	23	vent valve	R 3/8"	IMT
11	1	24	safety valve	652/8, R 1/2"	Götze
12	1		terminal box	M 244	Bopla
13	1	32	non return valve	R 1/2"	HSK
14	1		housing	09300101521	Harting
15	1		housing	09300161520	Harting
16	1		internal part	09310062601	Harting
17	1		internal part	09330102601	Harting

Bearbeiter.: Kiese Wetter
Gerätetyp.: 6 GRW (G250 barrel)

Bearbeitungsdatum.: 05.07.90
Geräte-Nr.: 903118

STUECKLISTE

Nr.	Stck.	Kurzbez.	Bezeichnung	Typ	Hersteller
No. qu.		abbr.	description	type	manufacturer
1	1	15	pump	CR4-60-A-A-A	Grundfos
2	1	1M71	motor-pump 1,1 kW	MG 80B2-19F100	Grundfos
3	1	17	heat exchanger	BCF 300-8-W-4 CuNi30Fe, Bronze	Funke
4	2	1E81/1E82	heater	403K, 9 kW	Hilzinger
5	1	5Y81	solenoid valve	SCE210D2V R 3/4"	Asco
6	1	5S51	temperature limiter	ATH-2	Juchheim
7	1	5S21	pressure switch	MCS 4	Klöckner-Meoler
8	1	PI10	manometer	0-10 bar, 213.40.063 FR.CR	Wika
9	1	21	membran expansion tank	1901 8 ltr.	Amtrol
10	1	23	vent valve	R 3/8"	IMT
11	1	24	safety valve	652/8, R 1/2"	Götze
12	1		terminal box	M 244	Bopla
13	1	32	non return valve	R 1/2"	HSK
14	1		housing	09300101521	Harting
15	1		housing	09300161520	Harting
16	1		internal part	09310062601	Harting
17	1		internal part	09330102601	Harting

Bearbeiter.: Kieseewetter
Gerätetyp.: 6 GRW (G250 screw)

Bearbeitungsdatum.: 06.07.90
Geräte-Nr.: 903118

STUECKLISTE

Nr.	Stck.	Kurzbez.	Bezeichnung	Typ	Hersteller
No. qu.	abbr.		description	type	manufacturer
1	1	15	pump	CR4-60-A-A-A	Grundfos
2	1	2M11	motor-pump 1,1 kW	MG 80B2-19F100	Grundfos
3	1	17	heat exchanger	BCF 300-8-W-4 CuNi30Fe, Bronze	Funke
4	2	2E21, 2E22	heater	403K, 9 kW	Hilzinger
5	1	6Y81	solenoid valve	SCE210D2V R 3/4"	Asco
6	1	6S51	temperature limiter	ATH-2	Juchheim
7	1	6S21	pressure switch	MCS 4	Klöckner-Meoler
8	1	PI10	manometer	0-10 bar, 213.40.063 FR.CR	Wika
9	1	21	membran expansion tank	1901 8 ltr.	Amtrol
10	1	23	vent valve	R 3/8"	IMT
11	1	24	safety valve	652/8, R 1/2"	Götze
12	1		terminal box	M 244	Bopla
13	1	32	non return valve	R 1/2"	HSK
14	1		housing	09300101521	Harting
15	1		housing	09300161520	Harting
16	1		internal part	09310062601	Harting
17	1		internal part	09330102601	Harting

Bearbeiter.: Kieseewetter
Gerätetyp.: 6 GRW (G250 barrel)

Bearbeitungsdatum.: 06.07.90
Geräte-Nr.: 903118

STUECKLISTE

Nr.	Stck.	Kurzbez.	Bezeichnung	Typ	Hersteller
No.	qu.	abbr.	description	type	manufacturer
1	1	15	pump	CR4-100-A-A-A	Grundfos
2	1	2M31	motor-pump 2,2 kW	MG 90LA2-24F115	Grundfos
3	1	17	heat exchanger	BCF 300-8-W-4 CuNi30Fe, Bronze	Funke
4	2	2E41, 2E42	heater	403K, 9 kW	Hilzinger
5	1	2E43	Rohrheizkörper	403K, 6 kW	Hilzinger
6	1	7Y81	solenoid valve	SCE210D2V R 3/4"	Asco
7	1	7S51	temperature limiter	ATH-2	Juchheim
8	1	7S21	pressure switch	MCS 4	Klöckner-Meoler
9	1	PI10	manometer	0-10 bar, 213.40.063 FR.CR	Wika
10	1	21	membran expansion tank	1901 8 ltr.	Antrol
11	1	23	vent valve	R 3/8"	IMT
12	1	24	safety valve	652/8, R 1/2"	Götze
13	1		terminal box	M 244	Bopla
14	1	32	non return valve	R 1/2"	HSK
15	1		housing	09300101521	Harting
16	1		housing	09300161520	Harting
17	1		internal part	09310062601	Harting
18	1		internal part	09330102601	Harting
19	1		housing	09300061541	Harting
20	1		internal part	09330062601	Harting

Bearbeiter.: Kieseewetter

Bearbeitungsdatum.: 06.07.90

Gerätetyp.: 6 GRW (head middle section)

Geräte-Nr.: 903118

STUECKLISTE

Nr.	Stck.	Kurzbez.	Bezeichnung	Typ	Hersteller
No. qu.	abbr.		description	type	manufacturer
1	1	15	pump	CR4-100-A-A-A	Grundfos
2	1	2M51	motor-pump 2,2 kW	MG 90LA2-24F115	Grundfos
3	1	17	heat exchanger	BCF 300-8-W-4 CuNi30Fe, Bronze	Funke
4	2	2E61, 2E62	heater	403K, 9 kW	Hilzinger
5	1	2E63	Rohrheizkörper	403K, 6 kW	Hilzinger
6	1	8Y81	solenoid valve	SCE210D2V R 3/4"	Asco
7	1	8S51	temperature limiter	ATH-2	Juchheim
8	1	8S21	pressure switch	MCS 4	Klöckner-Meoler
9	1	PI10	manometer	0-10 bar, 213.40.063 FR.CR	Wika
10	1	21	membran expansion tank	1901 8 ltr.	Amtrol
11	1	23	vent valve	R 3/8"	IMT
12	1	24	safety valve	652/8, R 1/2"	Götze
13	1		terminal box	M 244	Bopla
14	1	32	non return valve	R 1/2"	HSK
15	1		housing	09300101521	Harting
16	1		housing	09300161520	Harting
17	1		internal part	09310062601	Harting
18	1		internal part	09330102601	Harting
19	1		housing	09300061541	Harting
20	1		internal part	09330062601	Harting

Bearbeiter.: Kiesewetter

Gerätetyp.: 6 GRW (movable section)

Bearbeitungsdatum.: 06.07.90

Geräte-Nr.: 903118

STUECKLISTE

Nr.	Stck.	Kurzbez.	Bezeichnung	Typ	Hersteller
No. qu.	abbr.		description	type	manufacturer
1	1		switch cabinet	KSP 20084	Eldon
2	1	H21	switch cabinet-lamp	PS 4109	Rittal
3	3	1F31-1F71	fuse base	RS 27/3	Klöckner-Moeller
4	6	1F31-1F51	fuse	Diazed E 27/16A	Lindner
5	6	1F71-2F11	fuse	Diazed E 27/35A	Lindner
6	3	2F11-2F51	fuse base	RS 27/3	Klöckner-Moeller
7	6	2F11-2F51	fuse	Diazed E 27/50A	Lindner
8	1	2F71-2F81	fuse base	RS 27/3	Klöckner-Moeller
9	2	2F71-2F81	fuse	Diazed E 27/10A	Lindner
10	2	2F61/2F72	fuse	5SN1 G 6A	Siemens
11	1	1F21	fuse	5SN1 C 2A	Siemens
12	26	3H11-8H81	indicating lamp	RL 9G	Schlegel
13	17	14K11-14K81	relay	EGR3 24/220 V	Weidmüller
14	6	3K32-8K32	contactor-pump	3TB 4117 OAMO	Siemens
15	3	3K51-5K51	contactor-heater	3TB 4317 OAMO	Siemens
16	1	6K51	contactor-heater	3TB 4417 OAMO	Siemens
17	2	7K51-8K51	contactor-heater	3TF 4622-OAMO	Siemens
18	18	3K21-8K61	auxiliary contactor	3TH 2031 OAMO	Siemens
19	1	1Q11	main switch	N6-100	Klöckner-Moeller
20	4	1Q31,1Q51 1Q71,2Q11	motor protective switch	3VU1300-1MJ00	Siemens
21	2	1Q41,1Q61	motor protective switch	3VU1300-1ML00	Siemens
22	2	1Q81,2Q21,	motor protective switch	3VE3000-2PA00	Siemens
23	2	2Q31,2Q51	motor protective switch	3VU1300-1MK00	Siemens

Bearbeiter.: Kiewewetter

Bearbeitungsdatum.: 06.07.90

Gerätetyp.: 6 GRW (switch cabinet 6 GRW)

Geräte-Nr.: 903118

STÜCKLISTE

Nr. No.	Stck. qu.	Kurzbez. abbr.	Bezeichnung description	Typ type	Hersteller manufacturer
24	2	2Q41,2Q61	protective switch	3VE4200-1CR00	Siemens
25	6	3S31-8S31	switch-pump	CG8 A200	Soleniod
26	6	3S52-8S52	switch-heater	CG8 A200	Soleniod
27	1	1S21	switch-cabinet	AT 11-1-i	Klöckner Moeller
28	1	2T71	transformer	ETK 161-057	SBA
29	3		SPS-control/ simatic ET 100	6ES 5 421-8MA12	Siemens
30	1		SPS-control/ simatic ET 100	6ES 5 318-8MA12	Siemens

Bearbeiter.: Kiese Wetter

Gerätetyp.: 6 GRW (switch cabinet 6 GRW)

Bearbeitungsdatum.: 06.07.90

Geräte-Nr.: 903118

Start up and Function 6 GRW

1. first start up

1.1 Install the unit horizontally

1.2 After connection of consumer and cooling water supply

make up the electrical load, as shown in wiring diagram

Using hoses only connect fitting material like steam hoses
etc.

Make up electrical lead as shown in wiring diagram and acc.
to name plate.

1.3 Filling of system is done self acting if cooling water
supply is under pressure.

1.4 The mounted pressure reducer (31) is adjusted on 2,5 bar
filling pressure (PI12). That is equivalent to a steam
pressure of water at 130 deg C.

If pressure of cooling water changes, adjustment of
pressure reducer (31) is perhaps necessary.

Ventilation is made by ventilator (22) and rapid ventilator
(23) automatically

1.5 switch 1Q11 on main switch.

indication lamp 3H11 shines, if not check elektr. lead

At the same time pump operates 3S31-8S31.

Attention : At the first start up please check turn direction
of pump, for already a short left turn could
destroy sealing joint.

At left turn change 2 phases of lead.

Watch for turn direction marks.

- 1.6 To fill up the system completely switch on and off pump several times that air in circuit can be evacuated by ventilator (22) and rapid ventilator (23)
- 1.7 After circuit is stabilized, adjust index value at controller (TIC 1) and switch on heating (switch) 3S52-8S52.

2. Function

- 2.1 Rotary pump (15) sucks water out of system (which is filled by pressure reducer (31), manometer (PI12) and check valve (32) and delivers it to consumers.

Coming from consumers it flows through chiller (17) - at the top of which is mounted the ventilator (22) and rapid ventilator (23) - and heater (16) return to the pump.

- 2.2 Pressure gauge 3S21-8S21 (PSA 4) controls circuit.

Falling below minimal filling pressure it switches off pump.

The larger volume (if heated up) will be absorbed by a membrane expansion tank. (21)

A nitrogen filling equalizes pressure- and volume fluctuations as far as possible.

The check valve (32) in filling pipe avoids reflux of circuit water.

If pressure of system exceeds maximum value, safety valve (24) opens.

- 2.3 The elektron. 3-point step by step controller (TIC 1) has task of temperature control.

The actual temperature is given by resistance thermometer PT 100, in forward, controller compares it with adjusted nominal value and gives impulses (heating-cooling).

- 2.4 Exceeding the adjusted index value solenoid valve (25)
3Y81-7Y81 opens and cooled water streams through heat exchanged
system (17) until rated value is given.
- 2.5 Drain respectively pressure tension release is done by
closing of cooling water supply and opening of safety valve.
- 2.6 Temperature limit 3S51-8S51 (TSA 2) switches off heating when exceeding
max. operating temperature, after cooling down of about 10 K
it reswitches again automatically.

3. Causes of disturbances and their removal

3.1 Pump doesn't work

- a) check overcurrent relay and fuses
- b) cooling water supply is closed
- c) filling pressure is too low
- d) mud flap in pressure reducer (31) is obstructed
- e) safety valve is open

3.2 Adjusted working temperature (heating) is not reached

- a) connected consumer is too large
- b) solenoid valve 5Y81-13Y81 (25) doesn't close (dirt in valve)
- c) check fuses and contactor of heating
- d) check heater with ohmmeter
- e) controller is defective
- f) temperature limiter is wrong adjusted

3.3 Cooling capacity too low

- a) cooling water supply too low
- b) cooling water temperature too high
- c) heat exchanger is dirty, clean with tube brush, perhaps
you can wash it out with hydrochloric-acid-solution
- d) check removals and contact clearance

KREISLAUFSCHEMA / CIRCULATION DIAGRAMM / SCHEMA DE CIRCULATION

MSR- POSI.	BEZEICHNUNG DESCRIPTION	BEMERKUNG REMARKS / COMMENTAIRE
TIC 1	temperature controller	indicated
TSA +2	temperature limeter	max. value
TS +3	thermostat	
PSA -4	pressure switch	
PDA -5	differncial pressure switch	
FSA -6	flow control	
LSA -7	level switch	min. filling
LCA 8	level control	
LI 9	filling indication	
PI 10	manometer	forward
PI 11	manometer	reflux
PI 12	manometer	filling
TI 13	indication thermometer	forward
TI 14	indication thermometer	reflux
15	rotary pump	
16	heater	electr.
17	cooler	
18	heater/cooler	combined
19	expansion tank	
20	hot line	boil out device
21	expansion tank	with membran
22	degazer	
23	vent valve	
24	safety valve	
25	solenoid valve	cooling water

Bearbeiter.: Kiese Wetter
Gerätetyp.: 6 GRW

Bearbeitungsdatum.: 05.07.90
Geräte-Nr.: 903118

KREISLAUFSHEMA / CIRCULATION DIAGRAMM / SCHEMA DE CIRCULATION

MSR- POSI.	BEZEICHNUNG DESCRIPTION	BEMERKUNG REMARKS / COMMENTAIRE
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26	motor valve	cooling water
27	thermostat	cooling water
28	stop valve	cooling water
29	bypass valve	cooling water
30	bypass	cooling water
31	pressure reducer	filling
32	non return valve	filling
33	stop valve	forward
34	stop valve	reflux
35	filter	forward
36	filter	reflux
37	spill valve	bypass
38	filling socket	
39	level control valve	
40	over flow	
41	drain	
42	solenoid valve	filling
43	filter	cooling water
44	stop valve	filling
45	non return valve	cooling water
46	heater	steam
47	motor valve	steam
48	positioner	motor valve
49	solenoid valve	steam
50	oil separator	condensat

Bearbeiter.: Kiesewetter
Gerätetyp.: 6 GRW

Bearbeitungsdatum.: 05.07.90
Geräte-Nr.: 903118