

Hunter

MFG: REVERCHON
NAME: FLUME
TYPE: NON-KIDDIE

FLUME RIDE 140' x 60'

CARNY TOWN.COM

INSTRUCTIONS FOR

- ERECTION

- OPERATION

- MAINTENANCE

- SPARE PARTS

FARROW AMUSEMENT
Po Box 6747
JACKSON MISSISSIPPI 39212
U.S.A.

AUGUST 1993

REVERCHON U.S.A.
7177 Lake Bluffcourt
WILSONVILLE
OREGON 97070

Tél. 19.1.503.694.2803

SUMMARY

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GENERALITIES

a) Flume ride

This ride is a thematic amusement ride, copying flumes used for carriage of timbers in Canada.

The ride consists of rowing, with one or several steep slopes.

An hydraulic pump with big flow feigns stream of the river. Lake is used as a buffer container.

Boats are shaped as a log. They are supplied with carrying and guide wheels, so that safety catches. They can hold 4 persons of 165 lbs. The limit load should not exceed 660 lbs.

b) Water

The water of the lake must be clear and unsoapy. It can be spring or city water. If that water is continuously renewed, filtering is not indispensable. Otherwise, it must be treated.

c) Filtering

Water filtering requires pumping installation whose flow must filter volume of the lake 4 times a day (for polluted waters). Cleaning produces (Alginine or Chlorine) must be used according to weather and water quality.

Volume of the lake : US gallon : 39 000.

d) Water levels

Lake level at pump location must remain correct, to avoid Vortex phenomenon. A probe is used to control this level. Minimum height of water in the big lake must be 14 inches when pump is off.

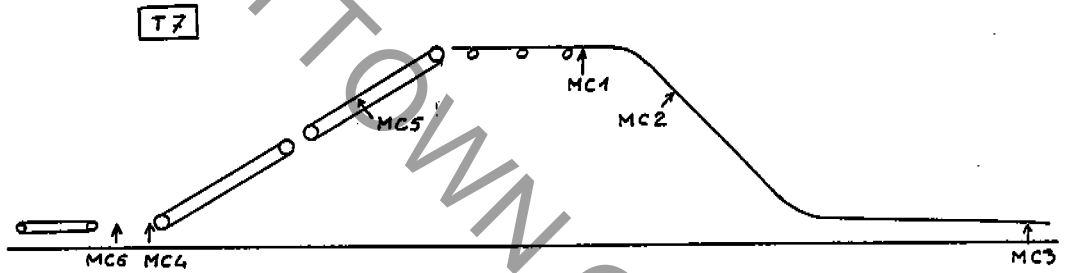
Pump grills must be installed to avoid any unexpected floating materials.

e) Safety system

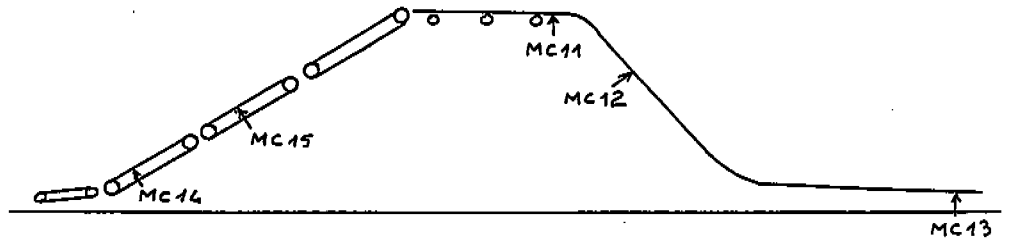
Principle

- never have more than one boat in the drop ;
- never launch a second boat if the first one did not go out through ;
- never have more than 2 boats on the belt/conveyor.

Graph



T11



Drop

System is based on 3 contacts named MC (micro-switch)

- . MC 1, MC 2, MC 3 for elevator T 7 (small one)
- . MC 11, MC 12, MC 13 for elevator T 11 (big one)

- Normal sequence conveyers T 7 and T 11

- Boat (A) activates MC 1, then MC 2, then MC 3
- Boat (B) activates MC 1, then MC 2, then MC 3
- Boat (C) activates MC 1, then

- Default on conveyers T 7 and T 11

- Boat (A) activates MC 1, then MC 2 without MC 3
- Boat (B) activates MC 1
- Result is immediate and automatic : stop of the faulty conveyer.

The restarting of conveyer will be automatic when the boat (A) activates MC 3.

Convever

The system is based on 3 contacts for the conveyer T 7 : MC 4 , MC 5 , MC 6

Action on MC 4 starts the bottom carpet of T 7 (the top carpet continually works). When the boat activates MC 5, the bottom carpet stops. If a boat activates MC 6 while the preceding boat has not activated MC 5, so the station conveyer stops. She will restart only when the first boat will have activated MC 5.

For the conveyer T 11, the system is based on 2 contacts named : MC 14 and MC 15

Action on contact MC 14 automatically stops the small bottom conveyer. It only will be reactivated when the boat gets on MC 15.

CHARACTERISTICS

		Metric	English
. Circuit	Total length	210m	690'
. Conveyer T 11	Height	12m	40'
	Length of conveyer	26m	87'
	Length of drop and splash	35m	116'
. Conveyer T 7	Height	7m	23'
	Length of conveyer	19m	63'
	Length of drop and splash	26m	87'
. Pumps	One submersible pump with impellers to feed the main circuit. Two centrifugal pumps for the cascades.		
. Station	Type Straight. Length = 6,2 m (20')		
. Lake	Surface	405m ²	4500 sqft
	Volume of water	150 m ³	39000 US gal
. Sign (optional)	Height	14 m	46'
. Floor space		42m x 18m	140' x 60'
. Boats		8	
. Passengers		4 a boat	
. Maximal load by boat		4 x 75 = 300 kg	4 x 165 = 660 lbs
. Total weight		85 t	180000 lbs
. Loading volume			6 containers 40' or 4 trailers 45'

PUMPS**Main pump**

Brand	FLYGT PL 7076 63.590 D3
Type	Submersible
Impeller	13°
Flow	1 000 l/s (260 gal/s)
Manometer height	1,70 m (6')
Electric motor	P = 42 Kw V = 590 RPM Protection IP 68 class F Voltage : TRI 208/360 V 60 Hz
Efficiency	70 %

Pumps for cascades

Quantity	2
Brand	GUINARD KSB
Type	ETANORM GPV 100/160 and GPV 100/200
Flow	50 l/s - 180 m ³ /h (13 gal/s)
Manometer height	10 m and 14 m (33' and 46')
Electric motor	P = 7,5 KW and 11 KW V = 1750 RPM Protection IP 55 Voltage : 208/416 V 60 Hz

Electric power requirement

1 main pump	42 KW
5 lift x 5,5 KW	27,5 KW
2 hydraulic units	6 KW
2 pumps for cascades	18 KW
6 top curve motors x 0,75 KW	4,5 KW
	98 KW
Light Max	100 KW
TOTAL	198 KW

ERECTION

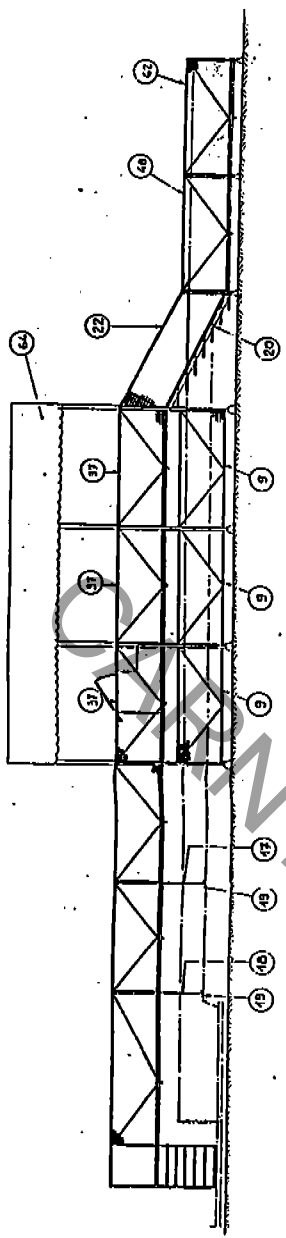
DRAWINGS FOR ERECTION

- Groundlayers - Blocking
- Lake floor - Blocking lake floor - Lake walls
- Up and down throughs - Slippers - Pilings
- Station

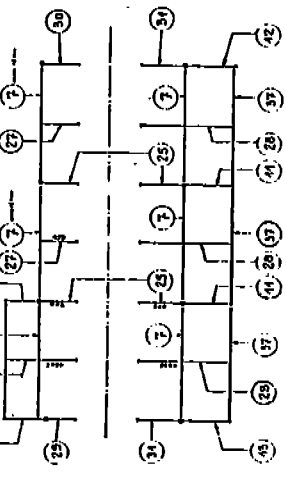
ELECTRICAL INSTALLATION

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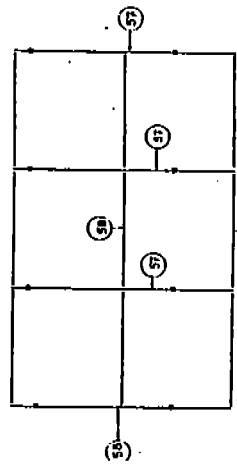
Una sur' CE



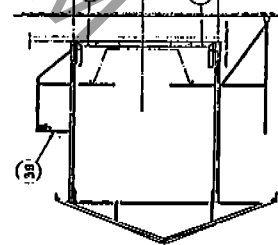
Distancias - metros - longitudinales



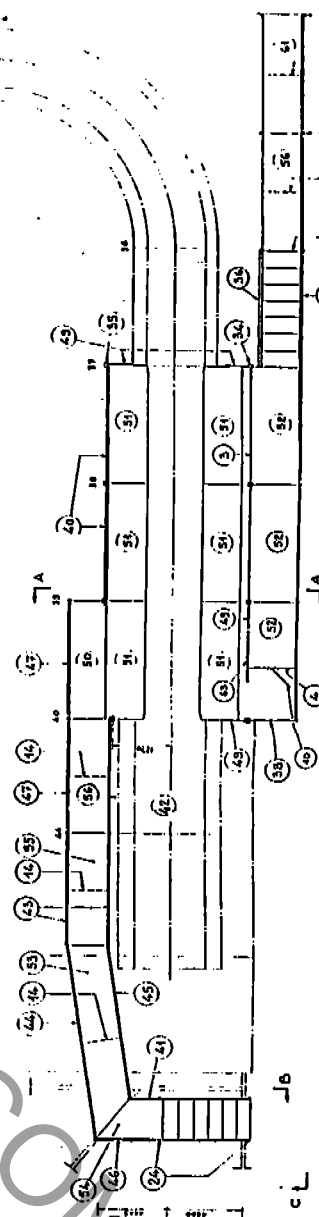
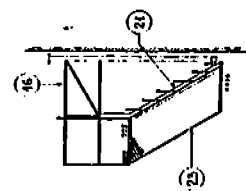
Distancias



Sección AA



Sección BB



No.	DESCRIPCIÓN	UNIDAD	CANTIDAD	VALOR UNITARIO	VALOR TOTAL
1	Materiales para el techo	m ²	100	1000	100000
2	Trusses de acero	kg	5000	100	500000
3	Trusses de aluminio	kg	1000	100	100000
4	Trusses de hierro	kg	2000	100	200000
5	Trusses de cobre	kg	500	100	50000
6	Trusses de zinc	kg	1000	100	100000
7	Trusses de plomo	kg	500	100	50000
8	Trusses de latón	kg	200	100	20000
9	Trusses de níquel	kg	100	100	10000
10	Trusses de titanio	kg	50	100	5000
11	Trusses de magnesio	kg	20	100	2000
12	Trusses de silicio	kg	10	100	1000
13	Trusses de boro	kg	5	100	500
14	Trusses de carbono	kg	2	100	200
15	Trusses de nitrógeno	kg	1	100	100
16	Trusses de oxígeno	kg	0.5	100	50
17	Trusses de hidrógeno	kg	0.2	100	20
18	Trusses de helio	kg	0.1	100	10
19	Trusses de litio	kg	0.05	100	5
20	Trusses de sodio	kg	0.02	100	2
21	Trusses de potasio	kg	0.01	100	1
22	Trusses de calcio	kg	0.005	100	0.5
23	Trusses de magnesio	kg	0.002	100	0.2
24	Trusses de aluminio	kg	0.001	100	0.1
25	Trusses de hierro	kg	0.0005	100	0.05
26	Trusses de cobre	kg	0.0002	100	0.02
27	Trusses de zinc	kg	0.0001	100	0.01
28	Trusses de plomo	kg	0.00005	100	0.005
29	Trusses de latón	kg	0.00002	100	0.002
30	Trusses de níquel	kg	0.00001	100	0.001
31	Trusses de titanio	kg	0.000005	100	0.0005
32	Trusses de magnesio	kg	0.000002	100	0.0002
33	Trusses de silicio	kg	0.000001	100	0.0001
34	Trusses de boro	kg	0.0000005	100	0.00005
35	Trusses de carbono	kg	0.0000002	100	0.00002
36	Trusses de nitrógeno	kg	0.0000001	100	0.00001
37	Trusses de oxígeno	kg	0.00000005	100	0.000005
38	Trusses de hidrógeno	kg	0.00000002	100	0.000002
39	Trusses de helio	kg	0.00000001	100	0.000001
40	Trusses de litio	kg	0.000000005	100	0.0000005
41	Trusses de sodio	kg	0.000000002	100	0.0000002
42	Trusses de potasio	kg	0.000000001	100	0.0000001
43	Trusses de calcio	kg	0.0000000005	100	0.00000005
44	Trusses de magnesio	kg	0.0000000002	100	0.00000002
45	Trusses de aluminio	kg	0.0000000001	100	0.00000001
46	Trusses de hierro	kg	0.00000000005	100	0.000000005
47	Trusses de cobre	kg	0.00000000002	100	0.000000002
48	Trusses de zinc	kg	0.00000000001	100	0.000000001
49	Trusses de plomo	kg	0.000000000005	100	0.0000000005
50	Trusses de latón	kg	0.000000000002	100	0.0000000002
51	Trusses de níquel	kg	0.000000000001	100	0.0000000001
52	Trusses de titanio	kg	0.0000000000005	100	0.00000000005
53	Trusses de magnesio	kg	0.0000000000002	100	0.00000000002
54	Trusses de silicio	kg	0.0000000000001	100	0.00000000001
55	Trusses de boro	kg	0.00000000000005	100	0.000000000005
56	Trusses de carbono	kg	0.00000000000002	100	0.000000000002
57	Trusses de nitrógeno	kg	0.00000000000001	100	0.000000000001
58	Trusses de oxígeno	kg	0.000000000000005	100	0.0000000000005
59	Trusses de hidrógeno	kg	0.000000000000002	100	0.0000000000002
60	Trusses de helio	kg	0.000000000000001	100	0.0000000000001

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1	15/01/2020	1	1	1
2	20/01/2020	2	2	2
3	25/01/2020	3	3	3
4	30/01/2020	4	4	4
5	05/02/2020	5	5	5
6	10/02/2020	6	6	6
7	15/02/2020	7	7	7
8	20/02/2020	8	8	8
9	25/02/2020	9	9	9
10	30/02/2020	10	10	10

CONSTRUCCIONES

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PAGE	DESIGNATION
1	SUMMARY
2	APPLIANCE LOCATION
3	CABLE LOCATION
4	HARDWARE LOCATION
5	POWER CIRCUIT SHARING
6	LIGHTING
7	TOP TURNING POWER
8	LIFT MOTOR POWER
9	HYDRAULIC AND WATERFALL POWER
10	CONTROL 208V AC
11	INTERFACE / INPUT / OUTPUT
12	PILOT LIGHT AND VALVE CONTROL
13/14	TERMINAL / SOCKET POWER CABLE
15	CONTROL DESK TERMINAL
16	CONTROL TERMINAL

G.E.T.I.
 Groupement d'Etudes et Travaux Industriels.
 Electronique - Automatismes.
 ZONE ARTISANALE 1 et 2, Rue des Crocs. 77130, LA GRANDE PAROISSE.
 Telephone: 64.32.45.44 Telecopie: 64.32.97.14

VISA DES SERVICES OFFICIELS

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FLUME

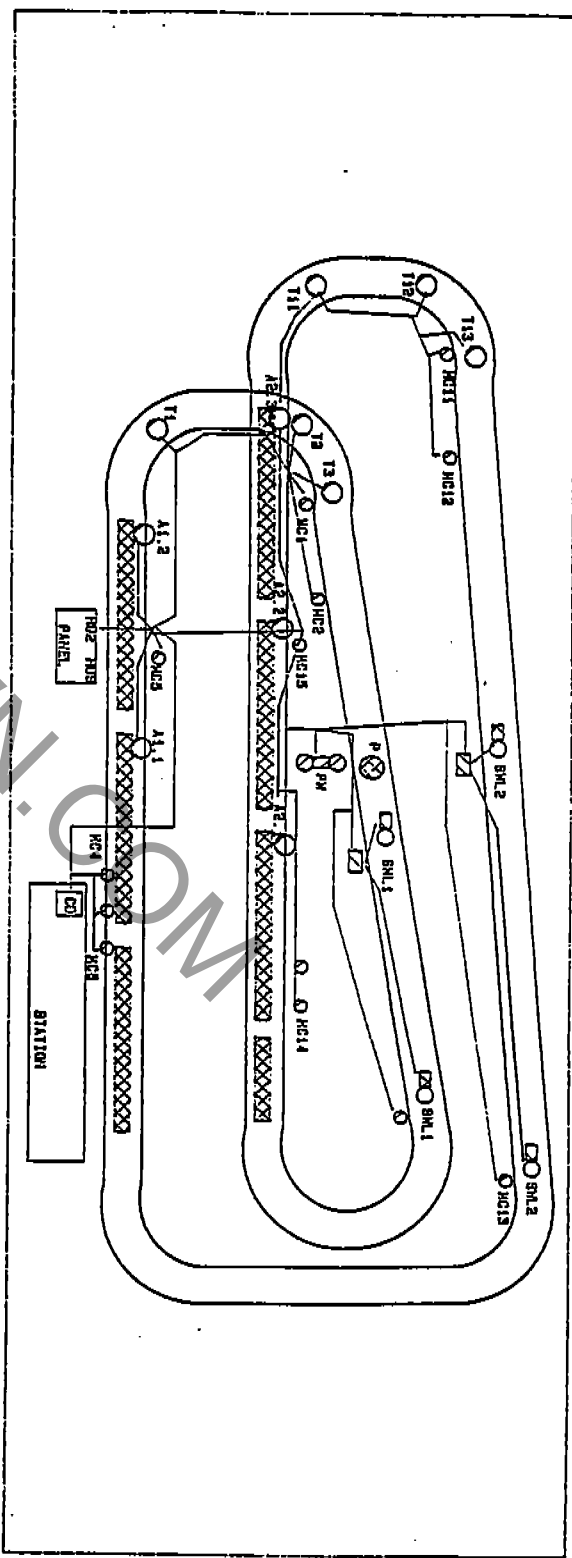
42 X 18

SERIE

MATERIEL

MASSE

DESSINE PAR	T. BOUFFON	EDITION	REVERCHON
VERIFIE PAR	F. CORREIA	PLANCHE	Industries
DATE	19/08/93	FORMAT PLAN:	REV100
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REPERTOIRE		NATURE	



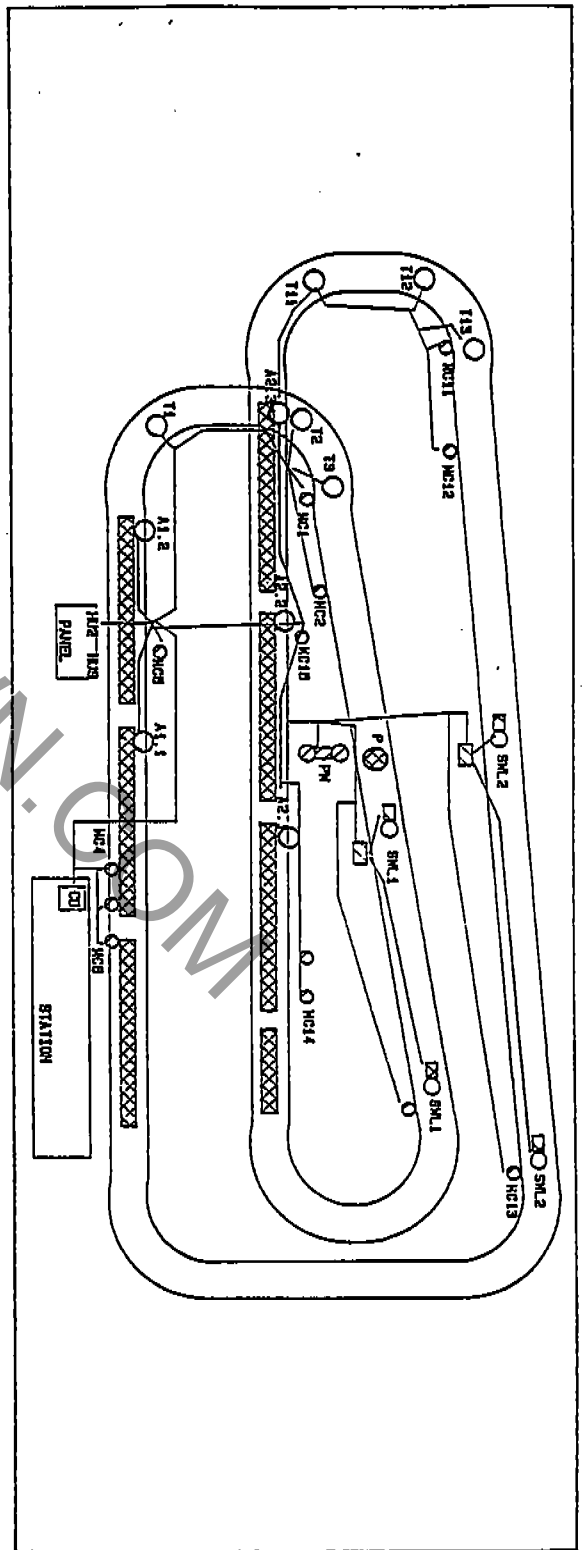
- HCB 0,4 0 WITH END EXTENTIVITY STATION
- HC4.1 0,1 0 WITH DOWN OF TANK E7.1
- HC4.2 0,6 0 WITH DOWN OF TANK E7.1
- HCB 2 0 WITH AXIS OF TANK E7.2
- HC1 1,4 0 WITH BORDER OF BEND TANK
- HC2 3,8 0 WITH BEGINNING WATERFALL
- HC3 0,9 0 WITH BORDER TANK BEFORE BEND
- PROBE 1 0,8 0 WITH START STEEL TANK / STAND 0,18m TANK BORDER
- PROBE 2 2 0 WITH END STEEL TANK BEFORE BEND / STAND 0,18m TANK BORDER
- HC4.1 2,2 0 WITH DOWN OF TANK E11.1
- HC4.2 2,7 0 WITH DOWN OF TANK E11.1
- HCB 2,2 0 WITH AXIS OF TANK E11.2
- HC2 1,4 0 WITH END OF BEND TANK
- HC3 3,9 0 WITH WATERFALL 11 START
- PROBE 2.1 0,95 0 WITH END OF TANK / STAND 0,18m TANK BORDER
- PROBE 2.2 2,4 0 WITH END OF TANK / STAND 0,18m TANK BORDER
- 1,0 0 WITH TANK BORDER / STAND 0,18m TANK BORDER

DATE: 19/06/93
 APPLIANCE LOCATION

Design: T.G
 Verification: F.C

G.E.T.I. 88
 1 et 2 Rue des Croixes
 71170 LA GRANDE PAROISSE
 TEL. 84.38.49.44

PLAN
 REV100



MARK	DESIGNATION	TYPE	NEOPRENE U.L. 2/0	DISTANCE
P	PUMP (SAFETY)		18/4	158
PHL	PUMP WATER LEVEL		18/2	108
HAB	HYDRAULIC UNIT STATION		18/4	4
SVB	SOLENOID VALVE STATION		18/5	4
T1	TOP TURNING 1		14/4	248
T2	TOP TURNING 2		14/4	206
T3	TOP TURNING 3		14/4	328
L1-1	LIFT MOTOR 1-1		10/4	148
L1-2	LIFT MOTOR 1-2		10/4	258
MC3	SPASH WATER LEVEL. 1		18/3	15-8-18
MC4	SAFETY 5		18/3	228
MC5	SAFETY 6		18/3	188
MC6	SAFETY 7		18/3	188
MC7	SAFETY 8		18/3	238
MC8	SAFETY 9		18/3	338
MC9	SAFETY 10		18/3	388
MC10	SAFETY 11		18/3	338

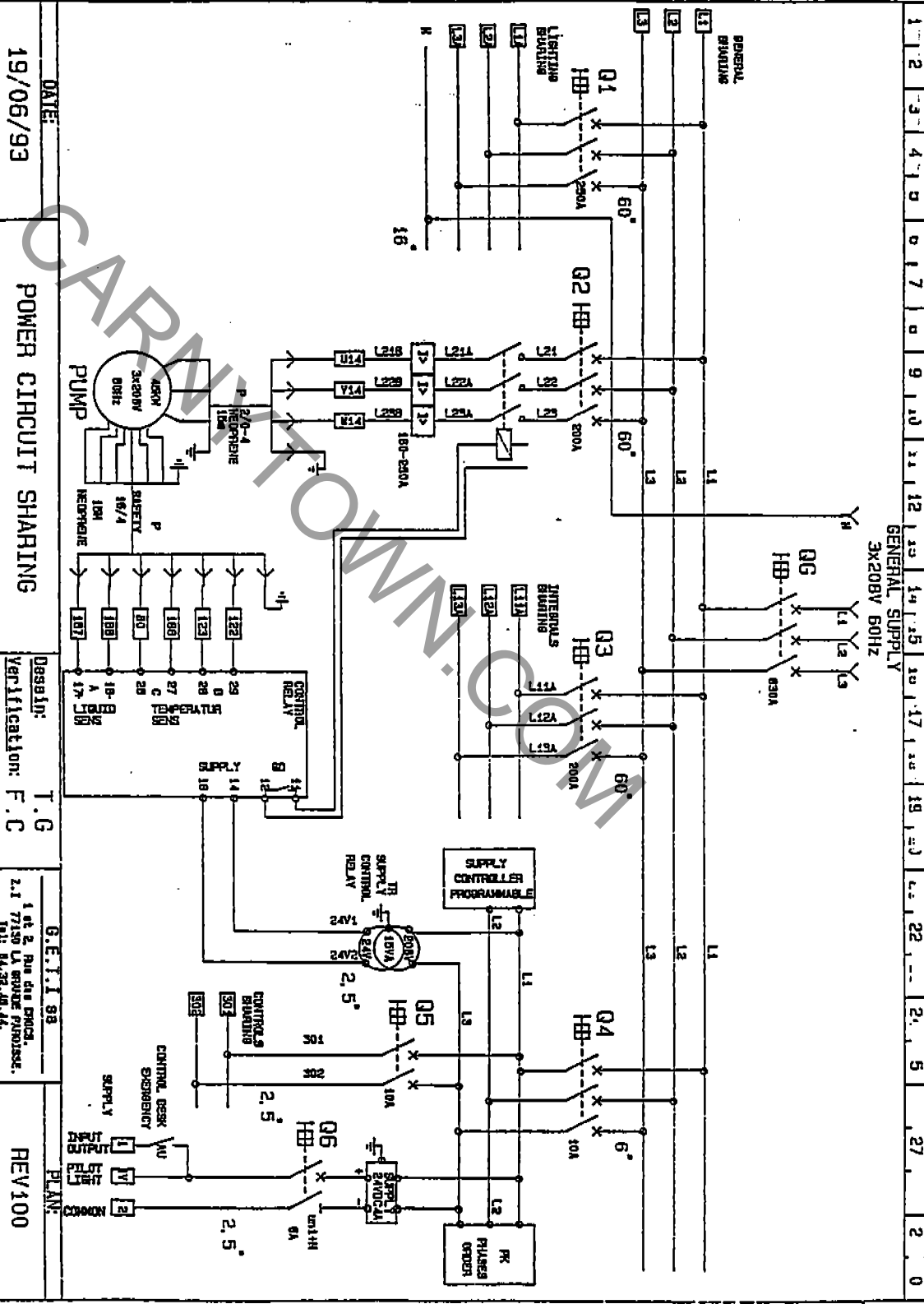
MARK	DESIGNATION	TYPE	NEOPRENE U.L.	DISTANCE
CO	CONTROL DES		8/4	188
CA302	WATERFALL 1		8/4	178
CA302	WATERFALL 2		8/4	178
H2	HYDRAULIC UNIT 2		18/4	4
H2	SOLENOID VALVE LIFT		18/3	4
T11	TOP TURNING 11		14/4	348
T12	TOP TURNING 12		14/4	388
T13	TOP TURNING 13		14/4	488
L2-1	LIFT MOTOR 2-1		10/4	188
L2-2	LIFT MOTOR 2-2		10/4	248
L2-3	LIFT MOTOR 2-3		10/4	248
SM2	SPASH WATER LEVEL. 2		18/2	17-4-178
MC10	SAFETY 10		18/3	228
MC11	SAFETY 11		18/3	228
MC12	SAFETY 12		18/3	228
MC13	SAFETY 13		18/3	228
MC14	SAFETY 14		18/3	228
MC15	SAFETY 15		18/3	228
MC16	SAFETY 16		18/3	228
MC17	SAFETY 17		18/3	228
MC18	SAFETY 18		18/3	228
MC19	SAFETY 19		18/3	228
MC20	SAFETY 20		18/3	228
MC21	SAFETY 21		18/3	228
MC22	SAFETY 22		18/3	228
MC23	SAFETY 23		18/3	228
MC24	SAFETY 24		18/3	228
MC25	SAFETY 25		18/3	228
MC26	SAFETY 26		18/3	228
MC27	SAFETY 27		18/3	228
MC28	SAFETY 28		18/3	228
MC29	SAFETY 29		18/3	228
MC30	SAFETY 30		18/3	228
MC31	SAFETY 31		18/3	228
MC32	SAFETY 32		18/3	228
MC33	SAFETY 33		18/3	228
MC34	SAFETY 34		18/3	228
MC35	SAFETY 35		18/3	228
MC36	SAFETY 36		18/3	228
MC37	SAFETY 37		18/3	228
MC38	SAFETY 38		18/3	228
MC39	SAFETY 39		18/3	228
MC40	SAFETY 40		18/3	228
MC41	SAFETY 41		18/3	228
MC42	SAFETY 42		18/3	228
MC43	SAFETY 43		18/3	228
MC44	SAFETY 44		18/3	228
MC45	SAFETY 45		18/3	228
MC46	SAFETY 46		18/3	228
MC47	SAFETY 47		18/3	228
MC48	SAFETY 48		18/3	228
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MC50	SAFETY 50		18/3	228
MC51	SAFETY 51		18/3	228
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MC53	SAFETY 53		18/3	228
MC54	SAFETY 54		18/3	228
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MC57	SAFETY 57		18/3	228
MC58	SAFETY 58		18/3	228
MC59	SAFETY 59		18/3	228
MC60	SAFETY 60		18/3	228
MC61	SAFETY 61		18/3	228
MC62	SAFETY 62		18/3	228
MC63	SAFETY 63		18/3	228
MC64	SAFETY 64		18/3	228
MC65	SAFETY 65		18/3	228
MC66	SAFETY 66		18/3	228
MC67	SAFETY 67		18/3	228
MC68	SAFETY 68		18/3	228
MC69	SAFETY 69		18/3	228
MC70	SAFETY 70		18/3	228
MC71	SAFETY 71		18/3	228
MC72	SAFETY 72		18/3	228
MC73	SAFETY 73		18/3	228
MC74	SAFETY 74		18/3	228
MC75	SAFETY 75		18/3	228
MC76	SAFETY 76		18/3	228
MC77	SAFETY 77		18/3	228
MC78	SAFETY 78		18/3	228
MC79	SAFETY 79		18/3	228
MC80	SAFETY 80		18/3	228
MC81	SAFETY 81		18/3	228
MC82	SAFETY 82		18/3	228
MC83	SAFETY 83		18/3	228
MC84	SAFETY 84		18/3	228
MC85	SAFETY 85		18/3	228
MC86	SAFETY 86		18/3	228
MC87	SAFETY 87		18/3	228
MC88	SAFETY 88		18/3	228
MC89	SAFETY 89		18/3	228
MC90	SAFETY 90		18/3	228
MC91	SAFETY 91		18/3	228
MC92	SAFETY 92		18/3	228
MC93	SAFETY 93		18/3	228
MC94	SAFETY 94		18/3	228
MC95	SAFETY 95		18/3	228
MC96	SAFETY 96		18/3	228
MC97	SAFETY 97		18/3	228
MC98	SAFETY 98		18/3	228
MC99	SAFETY 99		18/3	228
MC100	SAFETY 100		18/3	228

DATE: 19/06/93
 CABLES LOCATION

DESIGN: T.G
 VERIFICATION: F.C
 G.E.T.I. 98
 1 et 2 Rue des Cordes,
 2,1 77130 LA BRUCE PLOMBISE.
 TEL. 01.52.49.41.

PLAN: REV100

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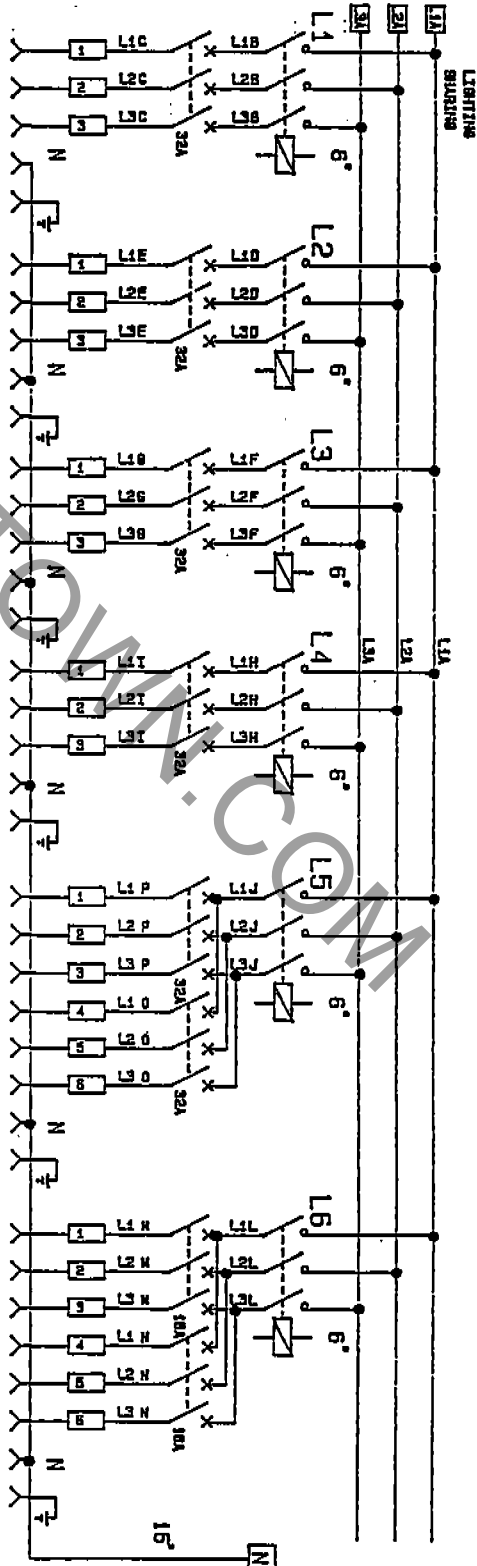
POWER CIRCUIT SHARING

Design: T.G
Verification: F.C

G.E.T.I. 93
1 et 2. Rue de la Pêche,
2.1 77150 U. enroue ponsasse.
Tel. 04.32.49.44.

REV100

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DATE: 19/06/93

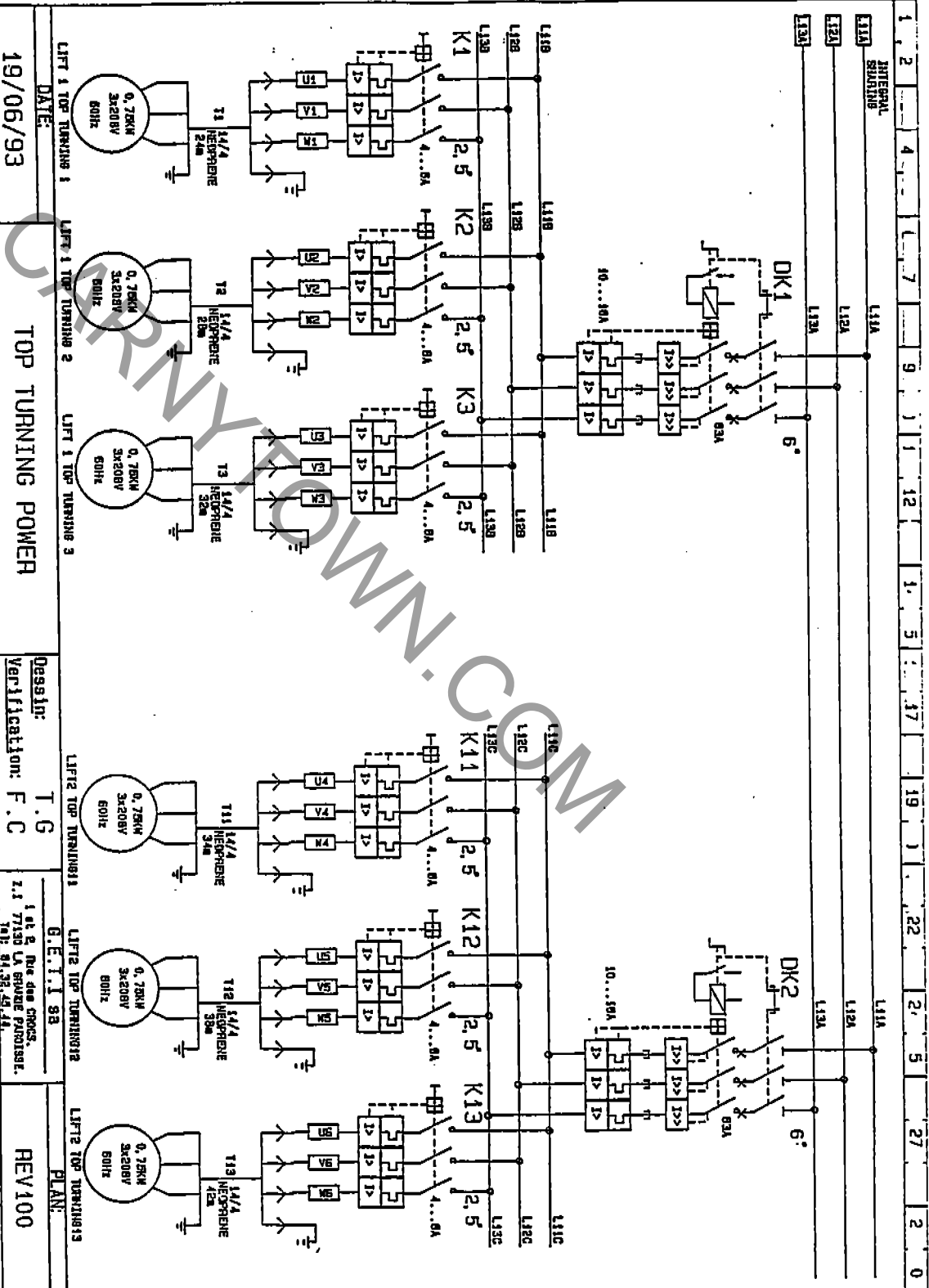
LIGHTING

Designer: T.G
Verification: F.C

G.E.I.T.I SB
1 at 2, Rue des Procs,
L.I 77130 LA BRUYERE PAROISSE,
FR: 84 38 48 44

PLAN: REV100

Les schémas ci-dessous sont à titre d'information et ne doivent pas être utilisés pour la construction. Toute protection contre les courts-circuits doit être assurée.



LIFT 1 TOP TURNING 1
DATE: 19/06/93

LIFT 1 TOP TURNING 2

LIFT 1 TOP TURNING 3

LIFT 2 TOP TURNING 11

LIFT 2 TOP TURNING 12

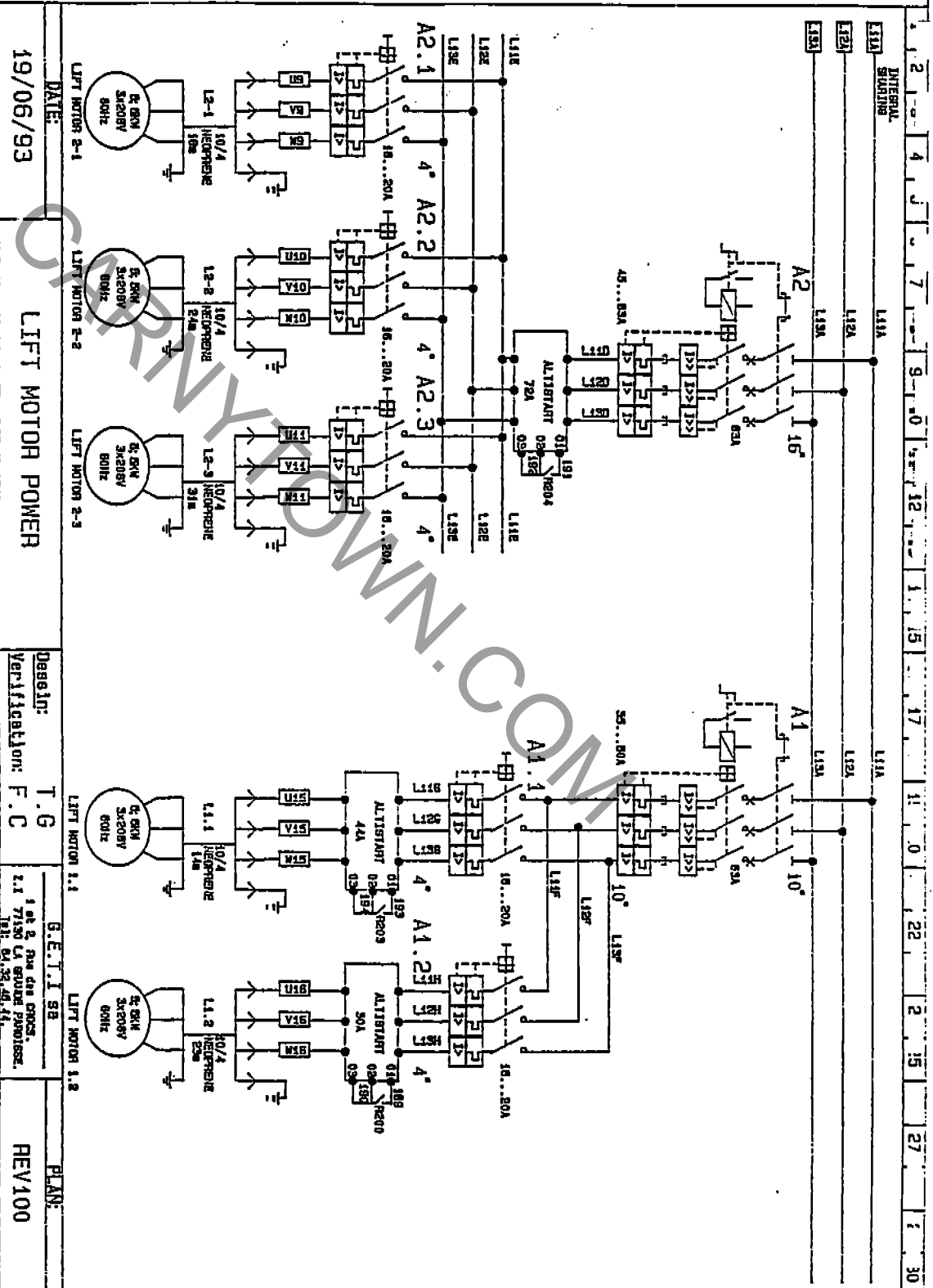
LIFT 2 TOP TURNING 13

PLAN: REV100

Design: T.G
Verification: F.C

G.E.T.I. 93
1 et 2 Rue des Croix,
Z.I. 77130 LA BRUYÈRE PAROISSE,
Tél. 01.32.49.11

TO ORDER OF THE PROJECT, IT IS HEREBY ADVISED THAT THE INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE BY THE DATE AND AUTHORITY INDICATED AT THE BOTTOM OF THIS PAGE.



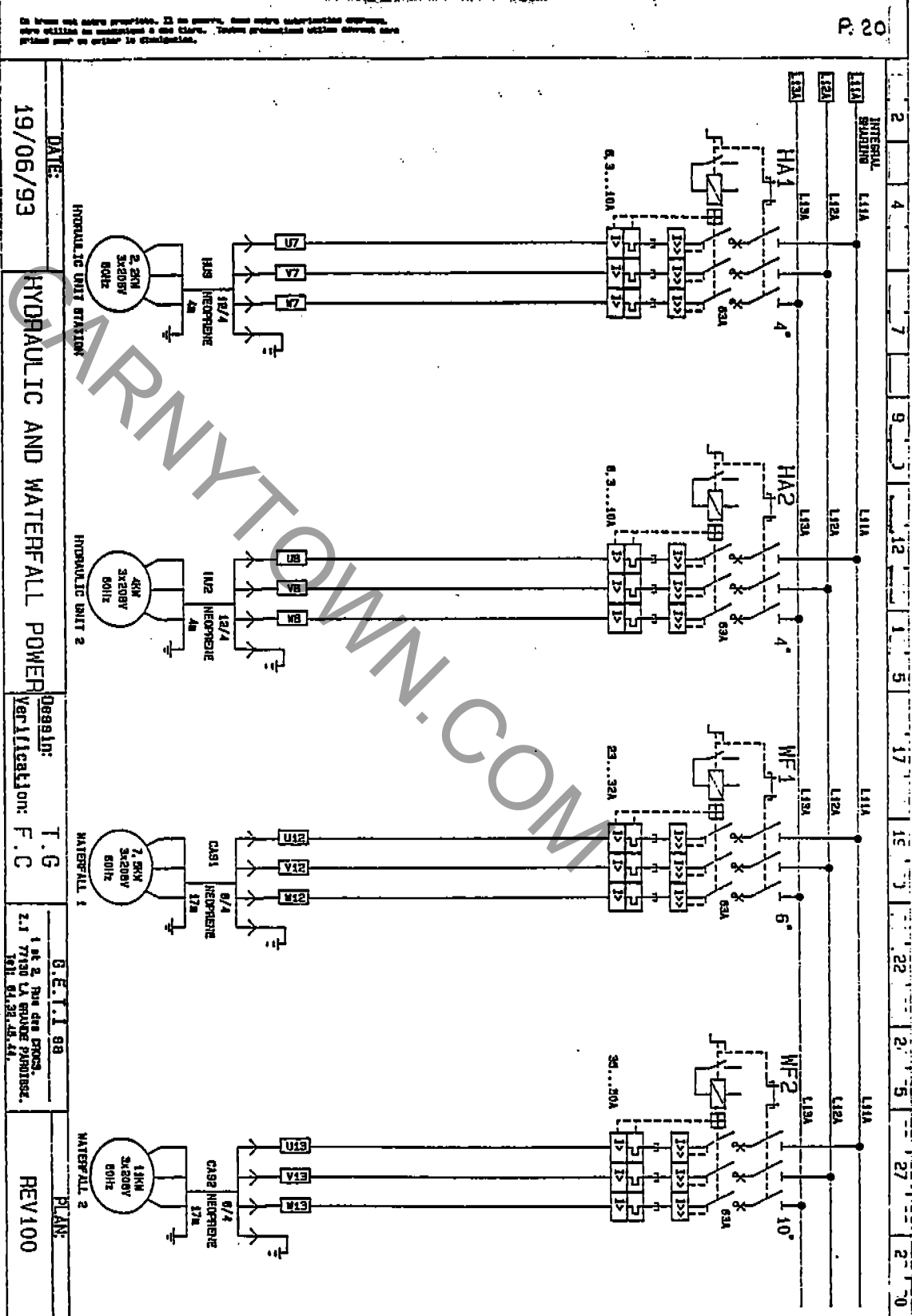
DATE: 19/06/93

LIFT MOTOR POWER

Design: T.G
Verifikation: F.C

G.E.T.I. 98
1.1 77150 CA GROUPE PNEUMAT.
1.1. 01.25.06.14.

PLAN: REV100



DATE: 19/06/93

HYDRAULIC AND WATERFALL POWER

DESIGNER: T.G

VERIFICATION: F.C

G.E.T.1 98
1st & 2nd FLOOR PROCS.
217730 CA GROUVE PARADISE.
1911 81.28.48.41.

REV100

Si vous ne savez pas lire, il ne faut pas aller travailler. Si vous ne savez pas lire, vous ne pouvez pas aller travailler. Si vous ne savez pas lire, vous ne pouvez pas aller travailler. Si vous ne savez pas lire, vous ne pouvez pas aller travailler.

DATE: 19/06/93

CONTROL 208V AC

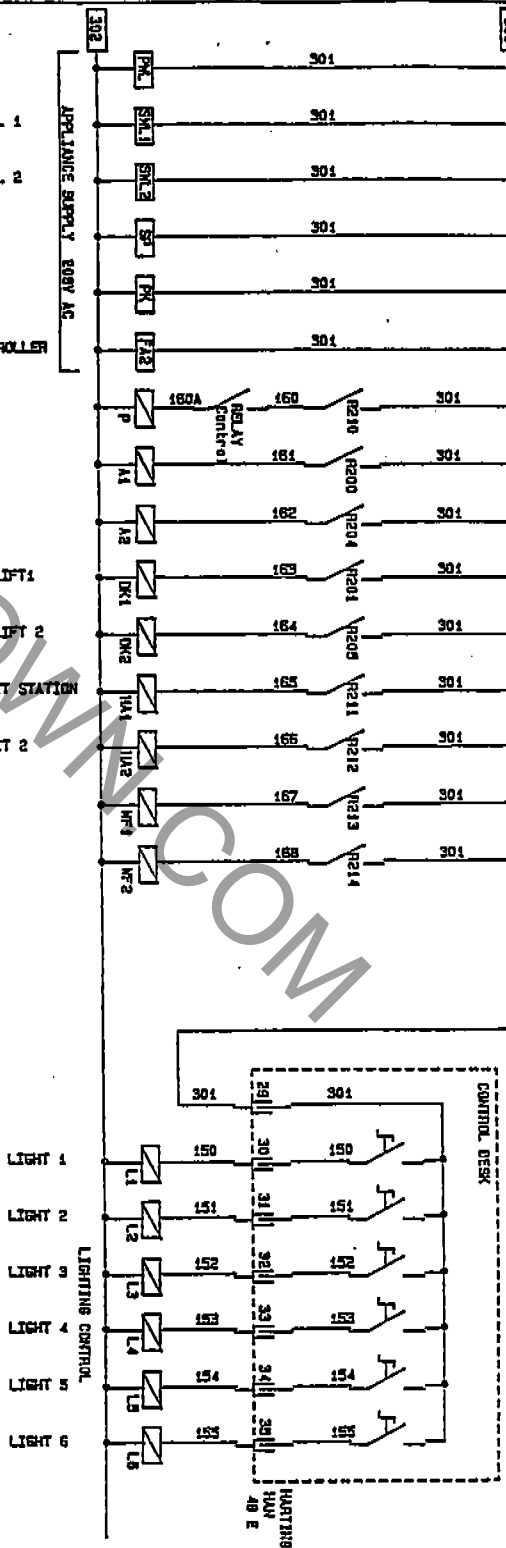
Design: T.G
 Verification: F.C

G.E.I. 93
 1 et 2, Rue du Progrès,
 11 7700 LA GRANDE PÉROUSE,
 Tél: 84.32.45.44.

PLAN: REV100

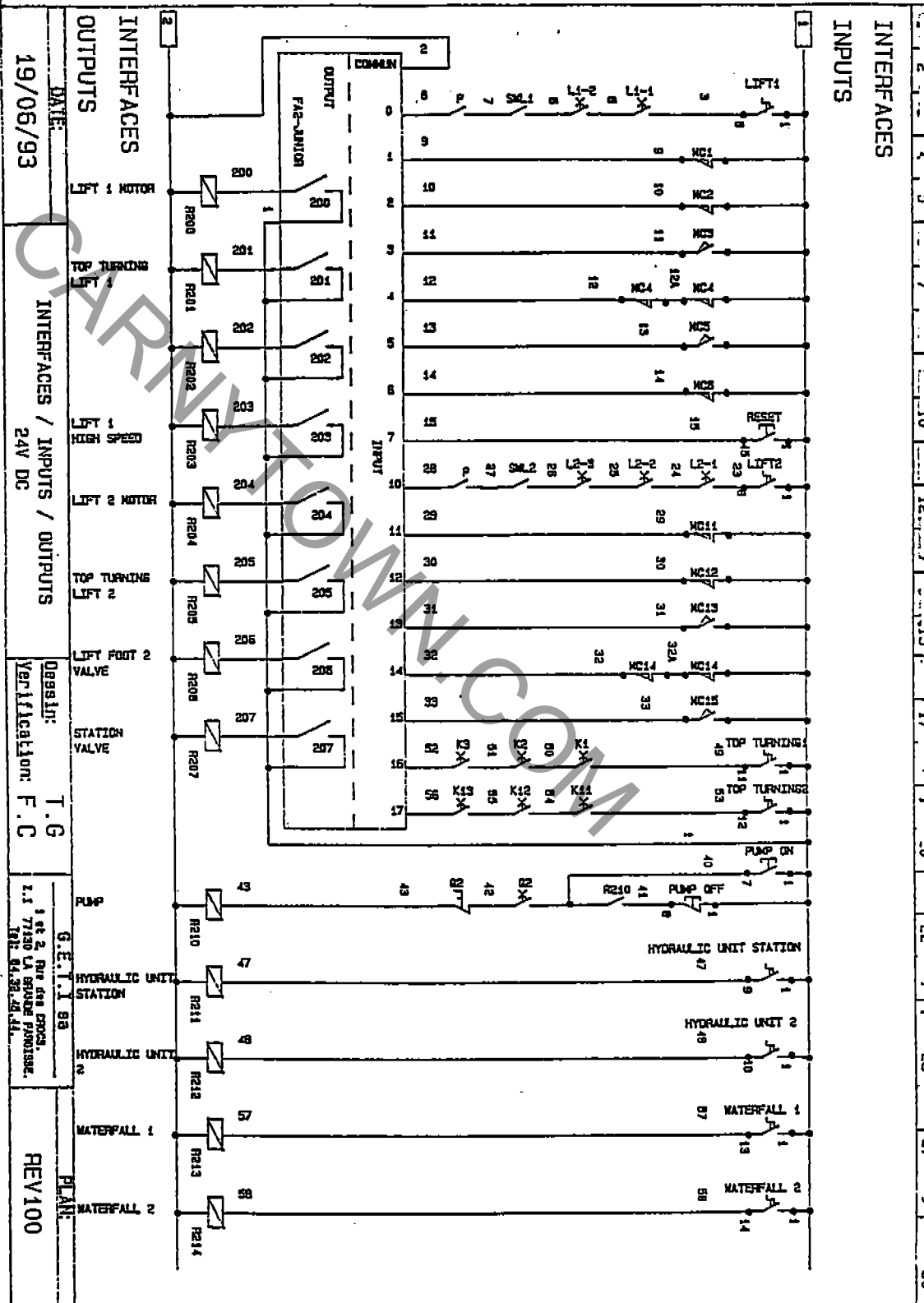
- PUMP WATER LEVEL
- SPLASH WATER LEVEL 1
- SPLASH WATER LEVEL 2
- CONTROL RELAY
- PHASES ORDER
- PROGRAMMABLE CONTROLLER

- PUMP
- LIFT1 MOTORS
- LIFT2 MOTORS
- TOP TURNING LIFT1
- TOP TURNING LIFT 2
- HYDRAULIC UNIT STATION
- HYDRAULIC UNIT 2
- WATERFALL 1
- WATERFALL 2



2
4
7
5
0
12
1
5
17
11
0
22
2
15
27
1
30

THIS IS NOT A WIRE DIAGRAM. IT IS A SCHEMATIC. THE WIRE CONNECTIONS ARE SHOWN IN THE WIRE LIST. THESE CONNECTIONS WILL BE MADE BY THE WIREMAN AT THE TIME OF INSTALLATION.



DATE: 19/06/93

INTERFACES / INPUTS / OUTPUTS 24V DC

DESIGN: T.G

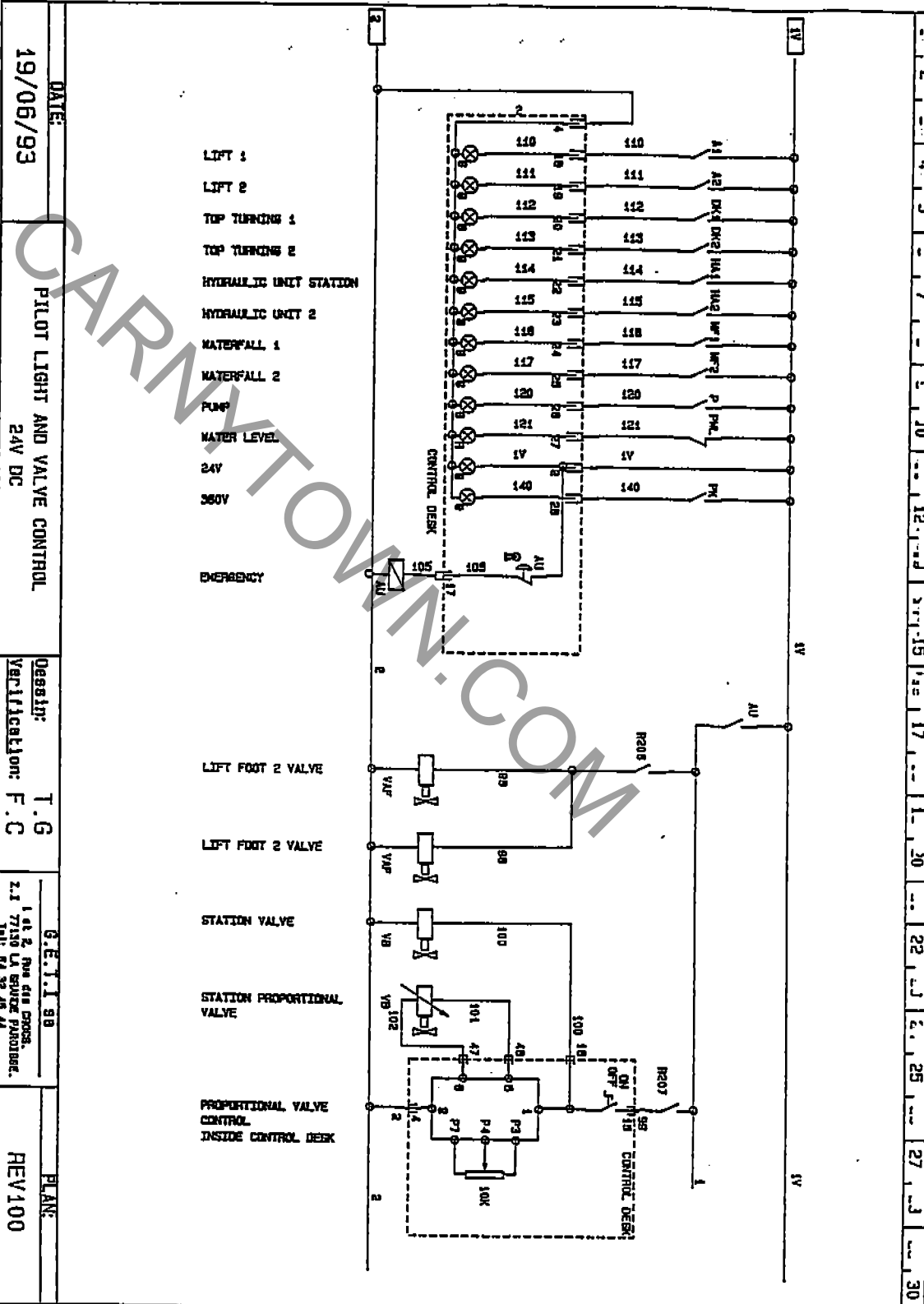
VERIFICATION: F.C

G.E.T. 98

1 of 2. For the CROSS. 77130 LA. SERVICE PROVIDER. 1991. 04. 20. 20. 41.

PLAN: REV100

It is the user's responsibility to ensure that all wiring is done in accordance with the National Electrical Code (NEC) and all applicable local codes. The manufacturer shall not be held responsible for any damage or injury resulting from the use of this product.



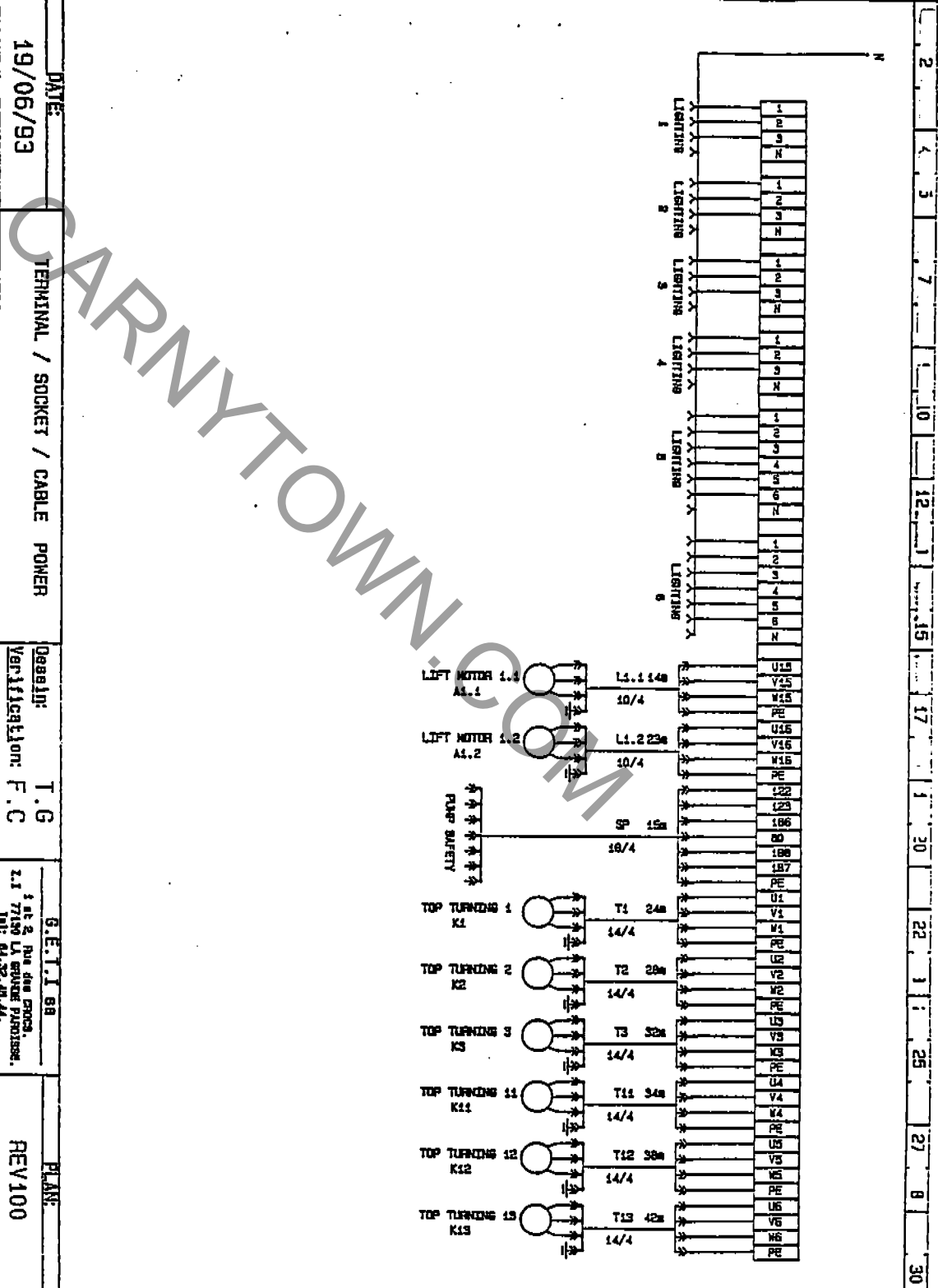
DATE: 19/06/93

PILOT LIGHT AND VALVE CONTROL
24V DC

Design: T.G
Verification: F.C
1 of 2 Rev 018 CROSS
2 of 2 77130 LA SERVICE PAROISSIÈRE
Tél: 84.33.48.44

PLAN: REV100

Si vous ne savez pas, il est préférable de demander conseil à un professionnel qualifié.
 If you are not sure, it is better to ask for advice from a qualified professional.
 Wenn Sie nicht wissen, fragen Sie einen Fachmann.



DATE: 19/06/93

TERMINAL / SOCKET / CABLE POWER

DESIGN: T.G

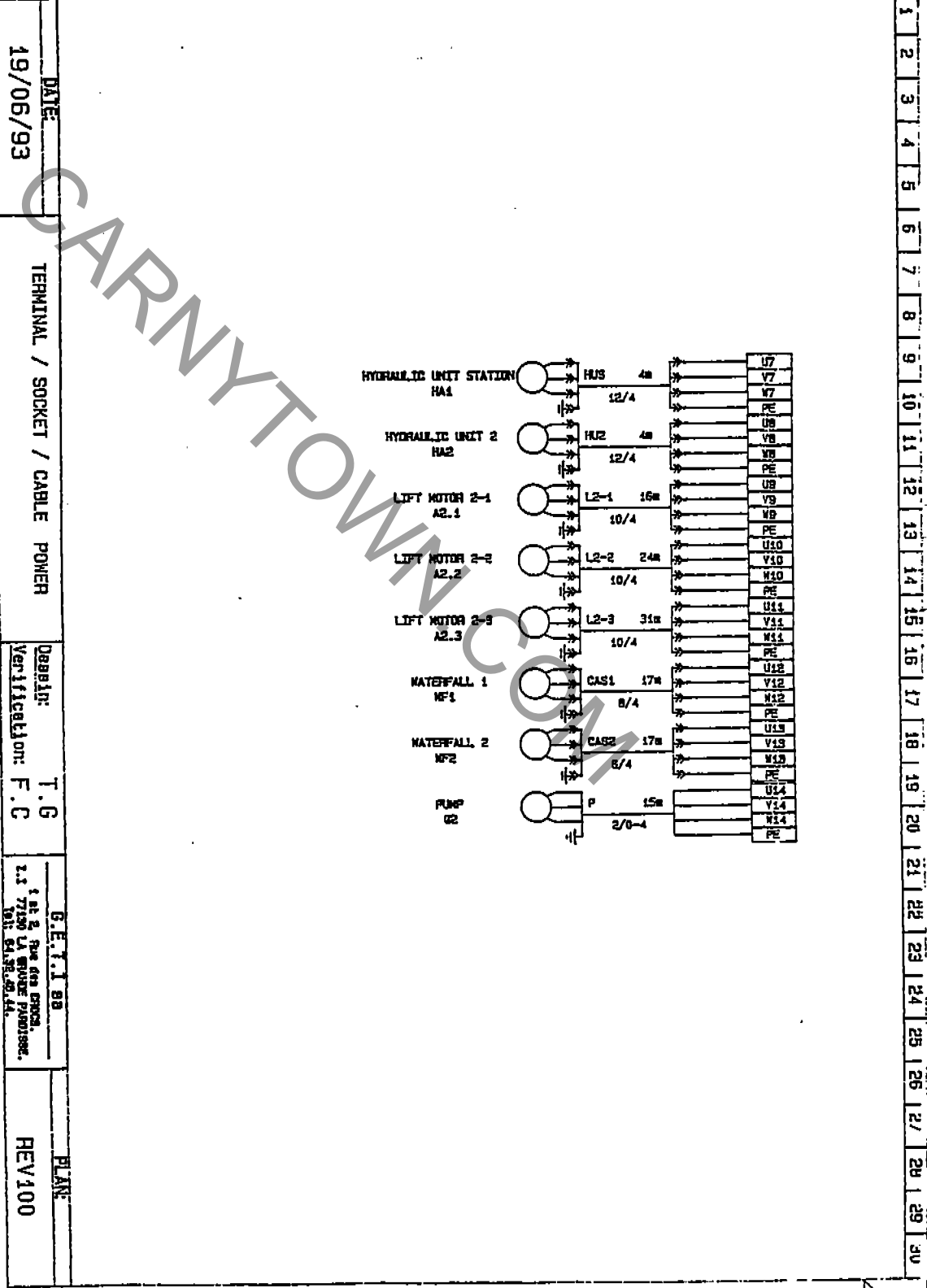
VERIFICATION: F.C

G.E.T.I. 88

1 at 2 Rue des Pêcheurs, 77150 La Ferté sous Jouy, France. Tel: 01.32.49.44.

PLAN: REV100

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DATE
19/06/93

TERMINAL / SOCKET / CABLE POWER

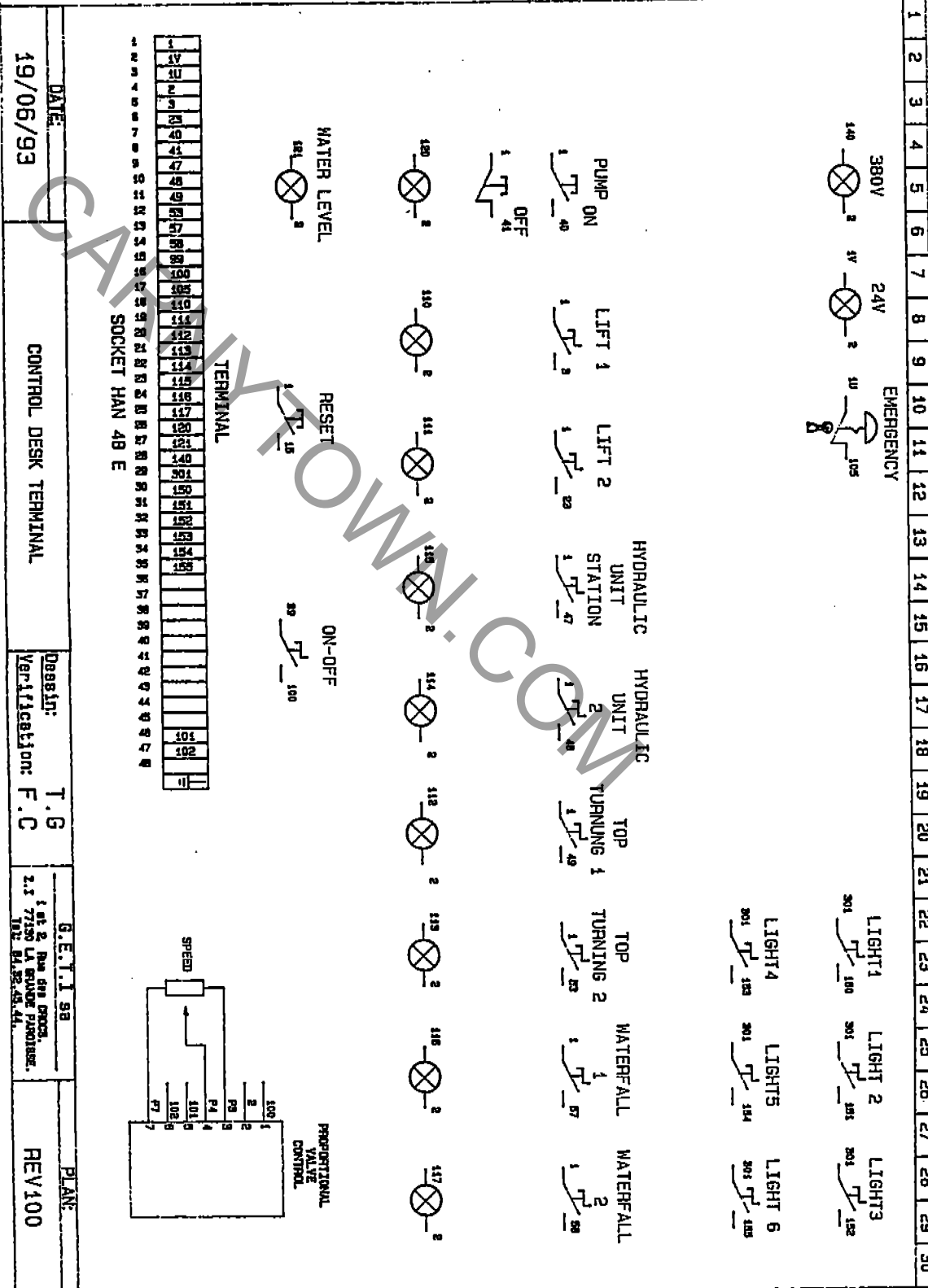
Design: T.G
Verification: F.C

G.E.I. 88
1st Fl. 7750 LA BRUCE PROMISE
1011 81 38 25 44

PLAN
REV100

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

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DATE: 19/06/93

CONTROL DESK TERMINAL

Design: T.G
 Ver: 1.1
 Revision: F.C

G.E. T. 1. 98
 1 OF 2 Rev. 018 SPEC.
 2.1 7730 LA. BOUND. PARALLEL.
 1000 PA. 2. 03. 44.

REV100

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

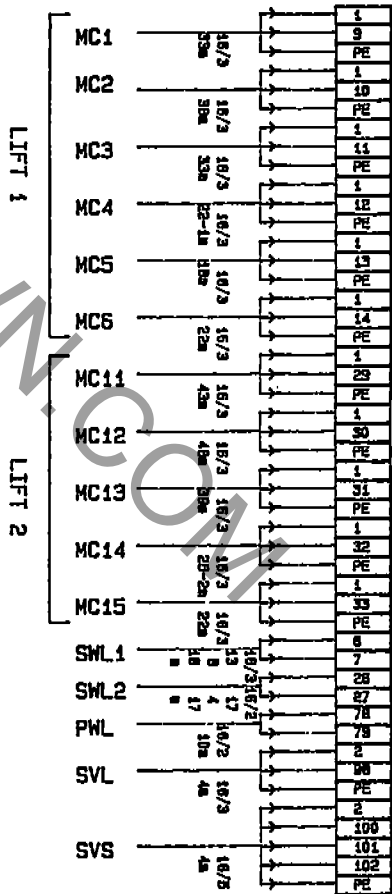
DATE: 19/06/93

CONTROL TERMINAL

Dessain: T.G
Vérification: F.C

G.E.T.I. 98
1 et 2, Rue des Croix,
L1 77150 LA GRASSE PRODIGE,
Tél: 04.38.48.44

PLAN: REV100



COMMISSIONING BEFORE FIRST DAY OF THE FAIR

- 1 Get rid of all foreign particles being able to obstruct water through the lake and the canal. Fill up the lake (39 000 gallons U.S.). Level control (14 inches in the big lake).
- 2 Feed the electrical panel with 3 phases 208 V., 60 cycles, 600 amp. and push ON the main breaker.
The test light must be green.
- 3 Check oil level in the tanks of hydraulic units.
- 4 Check the rotation of the motors
See relay PK at top of the panel

LED indicator 1	Green on : if power ON
LED indicator 2	Red on : correct phase plugging
LED indicator 3	Red on : voltage too low
LED indicator 4	Red on : voltage too high
LED indicator 5	Red on : incorrect phase plugging

Second control

If the phases have been correctly identified, if no motor has been changed from plug, all motors must turn the same. So, only one motor must be tested.

For example : if main pump turns in the wrong direction (no flow), change 2 phases on main feeding line.

Caution : if locations are not correct, other motors could turn the wrong way. Check the other motors.

For example : conveyer n° 1.

5. Check if each microswitch (MC) is in good place and look at the computer (LED).

0	1	2	4	6
10	11	12	14	16

must be on (red), so that "Power" and "Run".

3	5
13	15

must be switched off (black).

6. Check level water relay in the lake.
When the levels are correct / 1 / 2 / 3 / blocks "JOLA", placed on the top of the panel, are red.

- 1 - LED indicator 1 - Level of water in the lake
- 2 - LED indicator 2 - Level splash A
- 3 - LED indicator 3 - Level splash B

Unlock emergency stop button (with the key). Led indicator 24 V is on.
Press ON the main pump . After 2 minutes, check level 2 and 3.
Red on : the levels are OK in the two splashes.

- 7 If OK, place one boat in the circuit and control the functions (empty boat).

On the control board, push "ON" each button one by one :

- LIFT 1 ; 2 ; HU STATION ; HU 2 ; TOP TURNING 1 ; 2 ; WATERFALL 1 ; 2.

Station conveyer is under your command. Button ON OFF
Speed is adjustable with the potentiometer SPEED

A reset button / 1 / may restart programm of security when the other functions are jamed.

(Be careful : before pressing "RESET", make sure that all the boats can go down into the splash, that the splash is filled up with water, etc)

If OK :

- 8 Place the 7 other boats and control the functions. (Empty boats).

If OK, the ride is in good working order.

- 9 Control the illuminations.
-

OPERATION

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OPERATION

Starting up every day.

- grease the 2 bearings of the bottom conveyer.
- walk all along the circuit and check the good shape of :
 - . MC 4 : operates
 - . MC 5 : operates
 - . Troughs pins
 - . Carpets 1 and 2 : alignment and adherence between carpet and drum motor.
 - . Top motor : spring works by hand
 - . Top wheels (free and in good place)
 - . MC 1 : operates
 - . MC 2 : operates
 - . Pin of supports between the elements
 - . Rail and guide of splash
 - 2 bolts
 - pins
 - . MC 3 : operates
 - . MC 14 : idem
 - . MC 15 : "
 - . Troughs pins : "
 - . Carpets 3, 4, 5 : "
 - . Top motor : "
 - . Top wheels : "
 - . MC 11 : "
 - . MC 12 : "
 - . Pins : "
 - . Rail : "
 - . MC 13 : "
- Check water level in the lake : 350 mm mini (14")
- Set in motion main pump for circulation of water
- Launch the empty boats one at a time.
- Stop each boat on the conveyer for control of :
 - . 8 wheels : free and without resistance
 - . anti roll back "clickers"

- . seats and protection : ok
- . empty the back on the boats with the drain plug located at the back of the right hand side and draw attention to the responsible for all important quantity of water flowing out of the drain plug (more than a glass of water is important)
- . carpets holding points under the boat
- . front and rear bumpers

- stop the ride when all the boats are in the station.

- control the water :

- . trails of oil : motor leaking
- . unexpected materials : take them out.

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BREAKDOWN AND REMEDIES

CARINYTOWN.COM

BREAKDOWN AND REMEDIES

BREAKDOWN	CAUSE	REMEDY
- The station carpet doesn't run -	- The hydraulic unit doesn't work - Potentiometer - Sliding carpet / drum - The hydraulic motor doesn't turn	- Check electrical feed - Check it - Stretch the carpet - See : "Hydrotechnic" page 70
- The first carpet of T7 doesn't start	- Water level in the splash - Circuit-breaker OFF - Fault on altistart - Fault on motor drum	- Check the pump -See page 83
- The carpet runs and the boat doesn't raise	- Sliding boat / carpet	- Change the boat carpet - Change the conveyer carpet
- The carpet slides on the drum motor	- Slacked carpet - Over load on the boat - Boat is filled with water	- Slack it - Discharge passengers - Empty the boat
- The boat stops on the top curve : * Temporary stoppage (< 15 s) * Total stoppage	Normal - The preceding boat hasn't run past MC 3 - MC 3 hasn't worked - Fault on moto-reducer - Top wheel is clamped	- Remove the boat and check it - Check it - Circuit-breaker - Connection - Brake is clamped - Repair it

BREAKDOWN	CAUSE	REMEDY
<ul style="list-style-type: none"> - The boat stops on the bottom conveyer : 	Normal	<ul style="list-style-type: none"> - Check electrical feed - See " Hydrotechnic " page 70 - Check it
<ul style="list-style-type: none"> * Temporary stoppage 	<ul style="list-style-type: none"> - The hydraulic unit doesn't work 	
<ul style="list-style-type: none"> (< 15 s) 	<ul style="list-style-type: none"> - The hydraulic motor doesn't turn 	
<ul style="list-style-type: none"> * Total stoppage 	<ul style="list-style-type: none"> - Fault on MC 15 	

GARINYTOWN.COM

MAINTENANCE

CARNYTOWN.COM

GENERAL MAINTENANCE

All noisy mechanism should be reported to the supervisor.

During the inspections, be sure that there is no boat on top of the lifts, neither mechanisms in motion.

Every day

See " OPERATION "

Every week

Check good conditions of :

- rollers
- roller springs
- rubber belts
- hydraulic material watertightness, flexible hoses and tanks
- oil level in hydraulic units
- good stress resistance of rails and lateral guides of splash

Every year (before winter)

- replace hydraulic oil
- control hydraulic hoses erosion
- change oil filters cartridges
- remove electric panel and isolate it, in a dry place
- idem for the micro-switches
- bring the boats in, empty them and shelter them

GENERALLY

BE SURE OF THE PROTECTION OF THE WHOLE RIDE.

SPARE PARTS

CARNYTOWN.COM

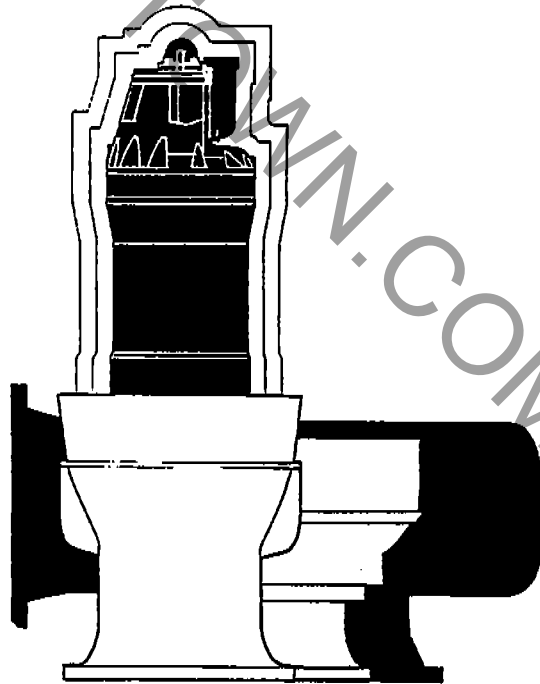


Flygt Low Head Propeller Pumps

P7045, P7055, P7076, P7115

INSTALLATION, CARE AND MAINTENANCE

CARNYTRAIN.COM



GUARANTEE

Flygt undertakes to remedy faults in products sold by Flygt provided:

- that the fault is due to defects in design, materials or workmanship;
- that the fault is reported to Flygt or Flygt's representative during the guarantee period;
- that the product is used only under conditions described in the care and maintenance instructions and in applications for which it is intended;
- that the monitoring equipment incorporated in the product is used and correctly connected;
- that installation and start-up is done by Flygt authorized personell;
- that the start-up form (Start-up report 85) is filled in and a copy sent to Central Quality Department;
- that all service and repair work is done by a workshop authorized by Flygt;
- that genuine Flygt parts are used.

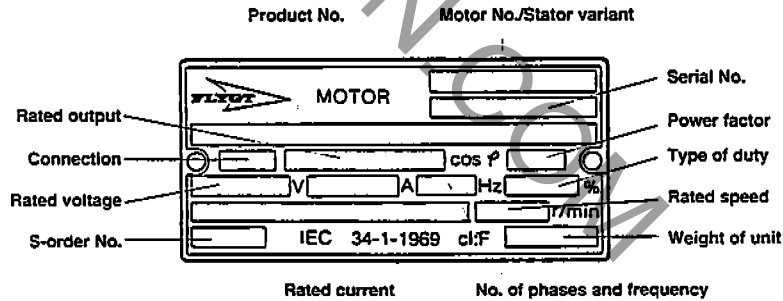
Hence, the guarantee does not cover faults caused by deficient maintenance, improper installation, incorrectly executed repair work or normal wear and tear. Flygt assumes no liability for either bodily injuries, material damages or economic losses beyond what is stated above.

Flygt guarantees that a spare parts stock will be kept for 20 years after the manufacture of this product has been discontinued.

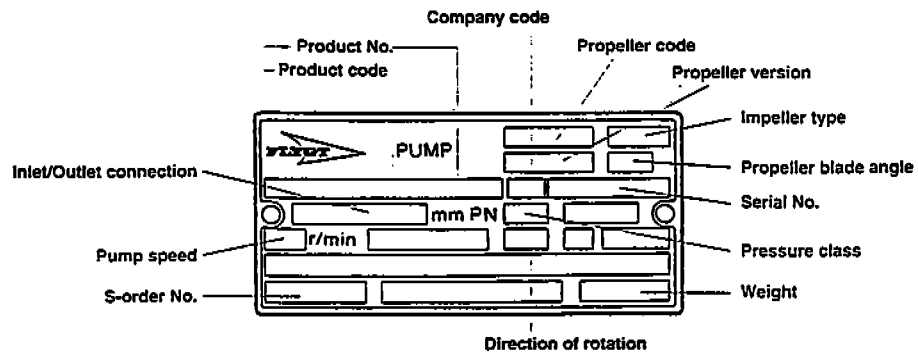
The manufacturer reserves the right to alter performance, specification or design without notice.

DATA PLATES INTERPRETATION

DRIVE UNIT



HYDRAULIC UNIT



CONTENTS

Transportation and storage _____	4	Care and maintenance _____	13
Installation and start-up _____	5	Safety precautions _____	13
Safety precautions _____	5	Inspection _____	13
Handling equipment _____	5	Service instructions, interval A _____	14
Installation _____	7	Service card _____	20
Electrical connections _____	9	Check List 85 _____	21

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TRANSPORTATION AND STORAGE

The pump may be transported and stored in a vertical or horizontal position. Make sure that it is securely fastened and cannot roll or fall over.

Warning!

Always lift the pump by its lifting link and/or by the attached lifting eye brackets, never by the motor cable or other parts. Make sure that it cannot roll or fall over.

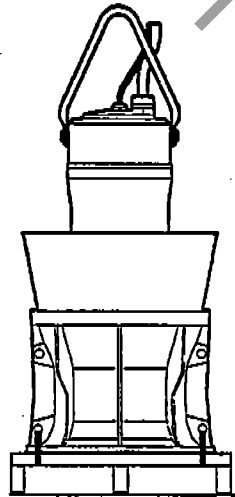
During storage, the pump must be protected against moisture and heat. The propeller should be rotated by hand every other month to prevent the seals from sticking together. If the pump is stored for more than 6 months, this rotation is mandatory.

The pump is frostproof as long as it is operating or is immersed in the liquid. If the pump is taken up when the temperature is below freezing, the propeller may freeze.

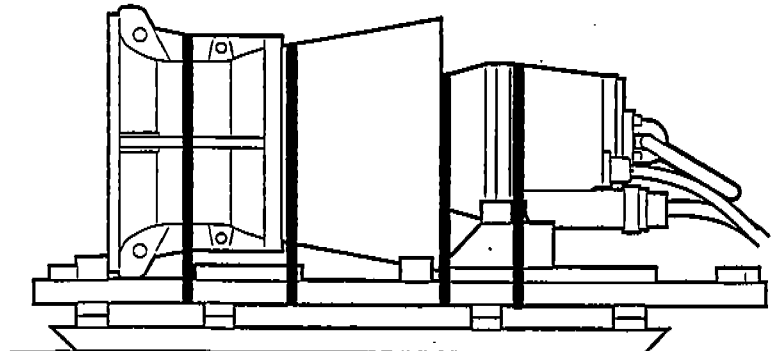
A frozen propeller can be thawed by allowing the pump to stand immersed in the liquid for a short period before it is started. Never use a naked flame to thaw the pump.

Follow the instructions and the procedure described in start-up report 85.

P7045
P7055
P7076/680



P7076/705
P7115



INSTALLATION AND START-UP

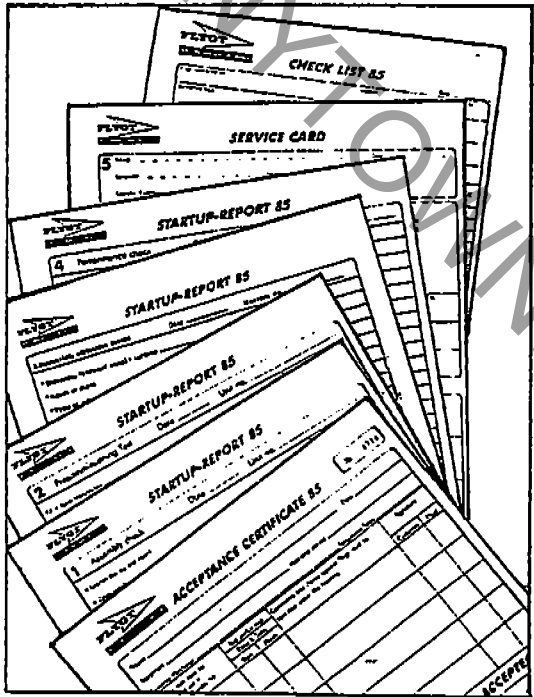
Safety precautions

Follow the procedure described in start-up report 85.

Follow all health and safety rules and local codes and ordinances.

For extra safety and in order to minimize the risk of accidents in connection with the service and installation work, the following rules should also be followed:

1. Bear in mind the risk of electrical accidents.
2. Make sure that the lifting equipment is approved and in good condition.



Handling equipment

Lifting equipment is required for handling the pump. The lifting equipment shall be able to hoist the pump straight up and down in the sump, preferably without necessitating resetting the lifting hook.

The minimum height between the lifting hook and the access frame/cover/floor is individual for every installation. For further information, please contact your Flygt representative.

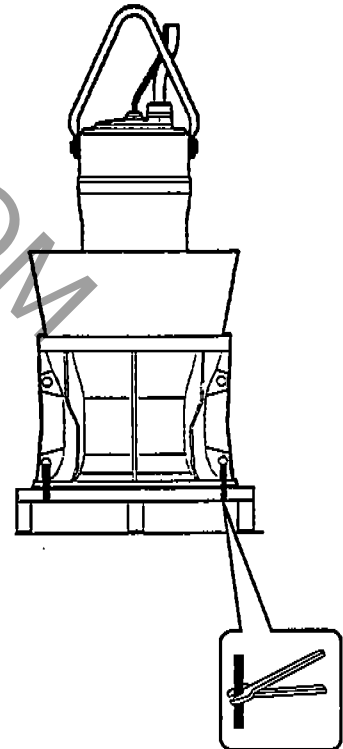
Make sure that the lifting equipment is securely anchored.

Two sets of lifting equipment are required to handle the pump for repair work.

The total weight of the pump is stated on the data plate of the hydraulic unit.

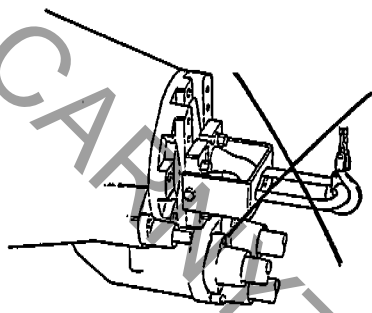
Removing the transport pallet:

- P7045
- P7055
- P7076/680

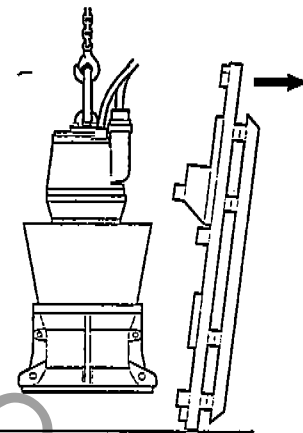
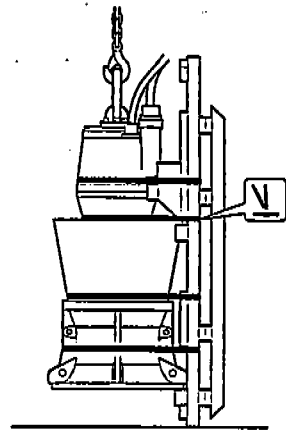
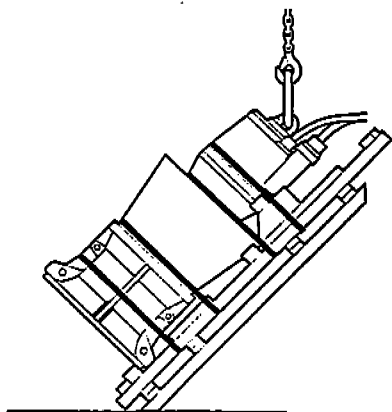
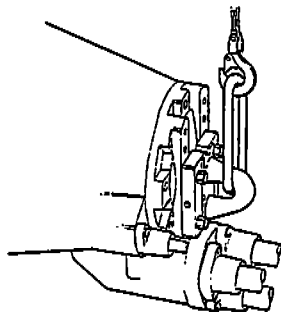


Removing the transport pallet:
P7076/705
P7115
With single hook lifting equipment

Note!
When handling the pump from and to horizontal position, the pump should always be lifted by the lifting link with the support plate removed.



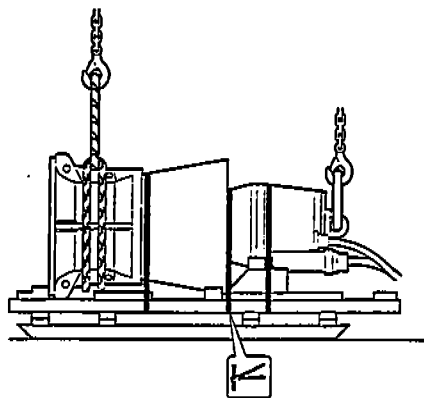
Raise the pump to upright position.



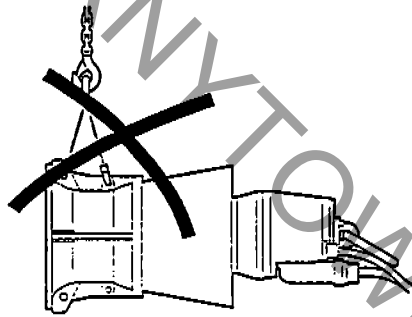
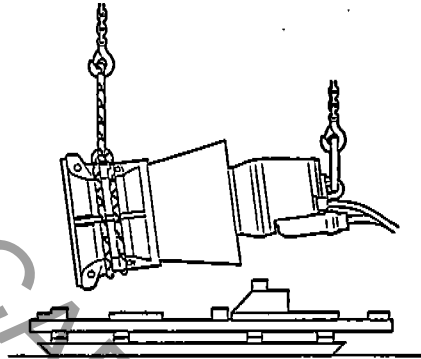
Remove the transport pallet after placing the pump in upright position.

WARNING!
Keep out from under suspended loads.

With two hook lifting equipment

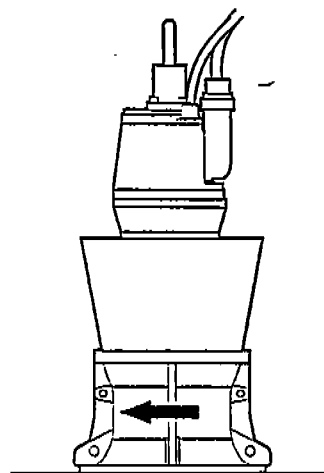


Fasten a sling around the hydraulic unit.



NOTE!
An assembled pump must never be lifted by the holes in the hydraulic unit.

NOTE!
Place the pump on a rigid horizontal surface and make sure that the pump cannot fall.



Direction of rotation

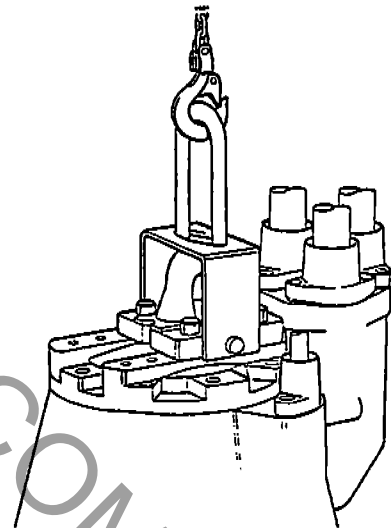
Installation

The pump should always be inspected before it is put into operation. Pay special attention to the seals and the cable entry. Rotate the propeller by hand with the pump isolated from power supply before final installation.

During a longer period out of operation, the pump shall be test started every other month to prevent the mechanical seals from sticking together.

NOTE!
The pump may not run dry longer than 30 seconds.

The pump is lowered into position in the finished station.



Note! (For P7076/705 and P7115)
When hoisting the pump down or up in the pump station the lifting link support plate should be mounted.

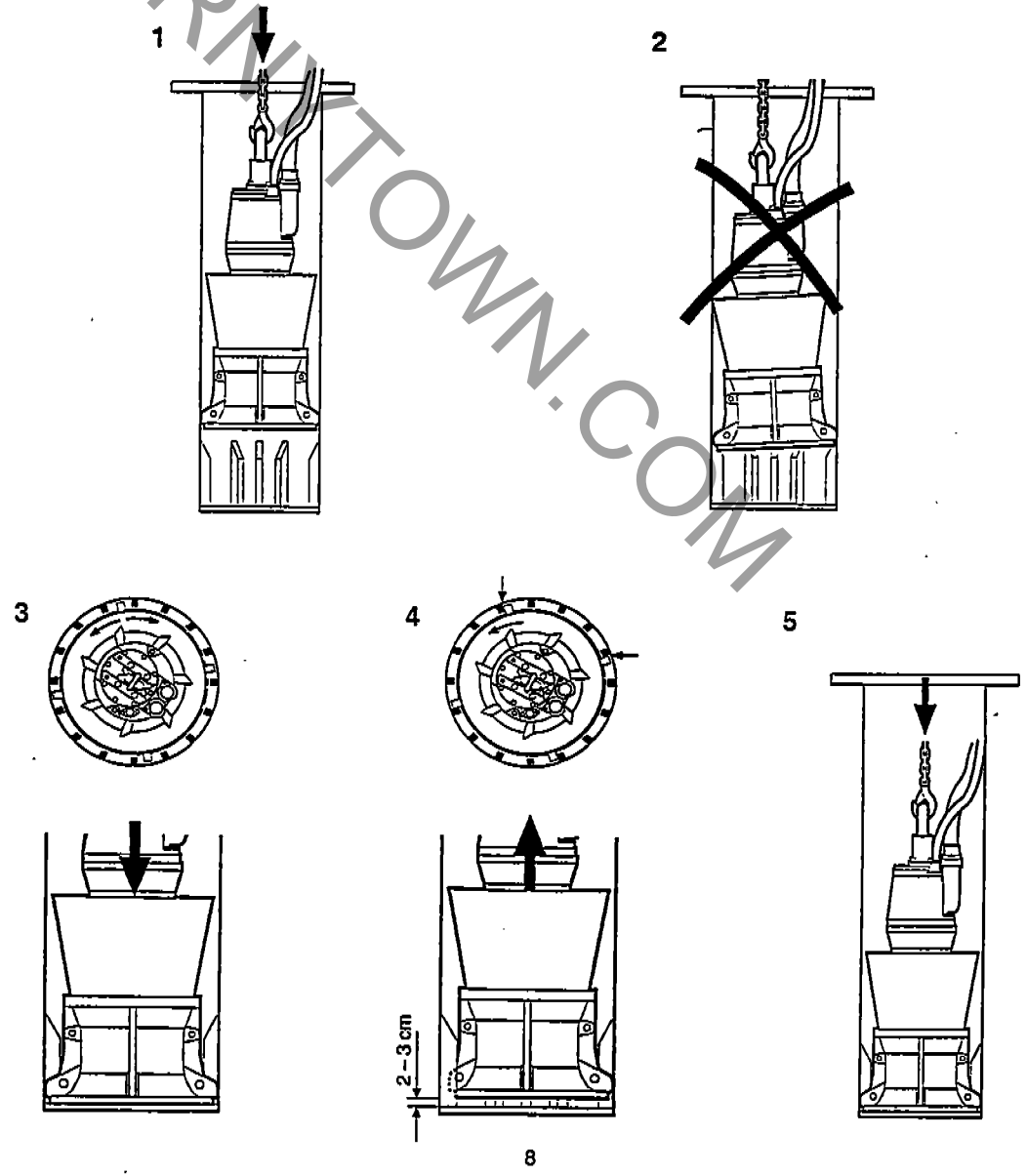
Install the pump in the following way:

- Lower the pump into the pump column.
NOTE! Making sure that the pump does not tilt on the stop vanes at the bottom of the column. (Fig. 1 and 2)
- Lower the pump to its bottom position, at the same time carefully moving it back and forth between the nearest stop vanes. (Fig. 3)
- Lift the pump slightly again, approx. 2-3 cm, and turn it anti-clockwise until the anti-rotation stops on the hydraulic end land against the nearest adjacent vanes. (Fig. 4)
- Lower the pump to its final bottom position. (Fig. 5)

No additional anchoring of the pump is required. Fasten the motor cables on the cable holder and run them to the electric control box. Run the cables so that they have no sharp bends, are not pinched and not disturb the water flow.

NOTE!
The end of the cable must not be submerged. Leads have to be above flood level, as water may penetrate through the cable into the junction box.

The pump can easily be hoisted for inspection without any connections having to be undone.



ELECTRICAL CONNECTIONS

All electrical work shall be carried out under the supervision of an authorized electrician.
Local codes and regulations shall be complied with.

WARNING!

All main electrical equipment must be earthed.
Failure to heed this warning may cause a lethal accident. Make sure that the earth lead is correctly connected by testing it.

Under no circumstances may the starter equipment be installed in the pump pit.

Connection of auxiliary cable Drive units 600 and 680

The pump is delivered with the auxiliary cable mounted.

Depending on which monitoring equipment the pump is equipped with, there are three types of auxiliary cable (SUBCAB®) available:

- 2 x 1,5 mm² (conductors numbered T1-T2)
- 7 x 1,5 mm² (conductors numbered 1-7)
- 12 x 1,5 mm² (conductors numbered 1-12)

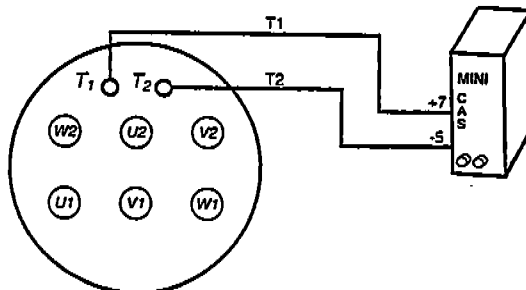
The number of conductors required to connect the sensors to the monitoring system is dependent on the number as well as the type of sensors being used.

All versions equipped with thermal switches in stator windings as standard.

Following alternative monitoring versions are used:

- I Monitoring unit: MiniCAS (600, 680)
- II Monitoring unit: MiniCAS with float switch in the junction box (600, 680)
- III Monitoring unit: 2 pcs MiniCAS (680)
- IV Monitoring unit: CAS in applications with Pt 100 in main bearing (680)
- V Monitoring unit: CAS in applications with Pt 100 in main bearing and float switch in junction box only (680)

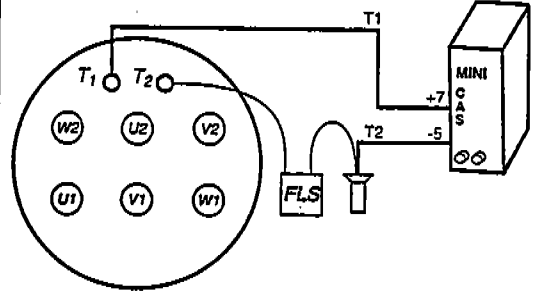
Alternative I



Standard sensor

- Thermal switches in stator windings (std)

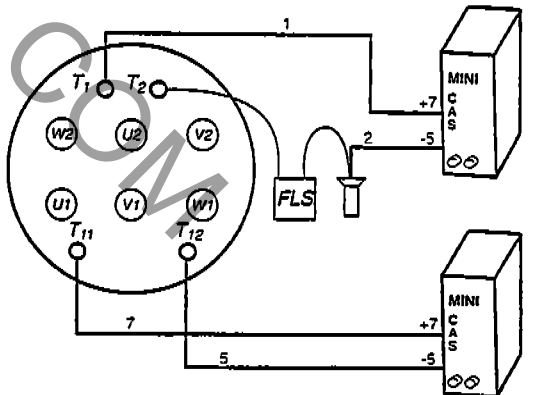
Alternative II



Standard and additional sensors

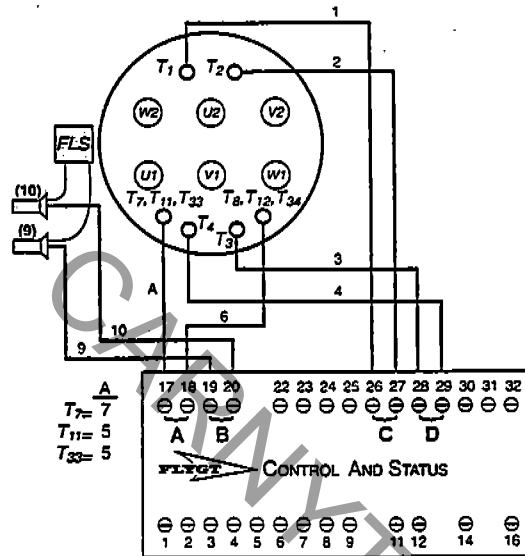
- Standard sensor and Float switch in the stator housing
- Standard sensor and CLS 30 water in oil housing
- Standard sensor and Float switch in the junction box
- Standard sensor, Float switch in the stator housing and CLS 30 water in oil housing
- Standard sensor, Float switch in the stator housing and Float switch in the junction box
- Standard sensor, CLS 30 water in oil housing and Float switch in the junction box

Alternative III



- Thermal switches in stator windings (std) incl. Float switch in the stator housing, Float switch in the junction box and CLS 30 water in oil housing

Alternative IV

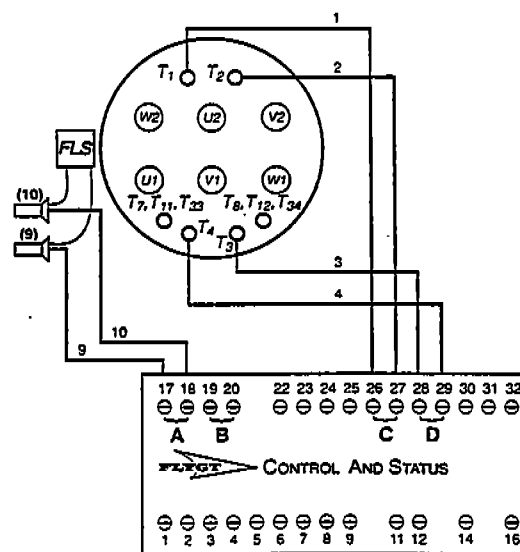


- Thermal switches in stator windings (std) T_1, T_2
- Pt 100 in the main bearing T_3, T_4

Additional sensors

- Float switch in the stator housing T_7, T_8 (9), (10)
- Float switch in the junction box T_{33}, T_{34}
- CLS 30 water in oil housing T_{11}, T_{12}
- CLS 30 water in oil housing and float switch in the stator housing

Alternative V



- Thermal switches in stator windings (std) T_1, T_2
- Pt 100 in the main bearing T_3, T_4
- Float switch in the junction box (9), (10)

Drive units 705, 805, 835, 865 and 905

The pump is delivered with the auxiliary cable mounted.

Depending on which monitoring equipment the pump is equipped with, there are three types of auxiliary cable (SUBCAB®) available:

- 7 x 1,5 mm² (conductors numbered 1-7)
- 12 x 1,5 mm² (conductors numbered 1-12)
- 24 x 1,5 mm² (conductors numbered 1-24)

The number of conductors required to connect the sensors to the monitoring system is dependent on the number as well as the type of sensors being used.

Four alternative versions are used:

- I Standard version (Thermal switch or thermistors in stator).
- II Standard version acc. to I and one or more additional sensors with exception of Pt 100 in stator.
- III Standard version (Pt 100 in stator).
- IV Standard version acc. to III and one or more additional sensors.

The different sensors (as applicable) are connected to the conductors as shown in the table below:

Sensors	Conn. No.	Conductor No.			
		I (7-lead)	II (12-lead)	III (12-lead)	IV (24-lead)
Float switch in the stator housing	1	1	1	1	1
	2	2	2	2	2
Pt 100 in the main bearing arrangem.	3	3	3	3	3
	4	4	4	4	4
Thermal switches or thermistors in the stator	5	5	5	—	—
	6	6	6	—	—
Pt 100 in the support bearing	7	7	—	7	7
	8	8	—	8	8
Float switch in the junction box	9	9	—	9	9
	10	10	—	10	10
CLS 30 water in oil housing	33	11	—	11	11
	34	12	—	12	12
Pt 100 in the stator	19	—	7	19	19
	20	—	8	20	20
	21	—	9	21	21
	22	—	10	22	22
	23	—	11	23	23
	24	—	12	24	24

Note! Important
As the cable ends are sealed to eliminate moisture entrainment during transport and storage, the wire markings for the sensors at the outlet end of the cable will not be carried out at the factory. Marking must therefore be carried out during installation of the pump.

Connection of motor leads

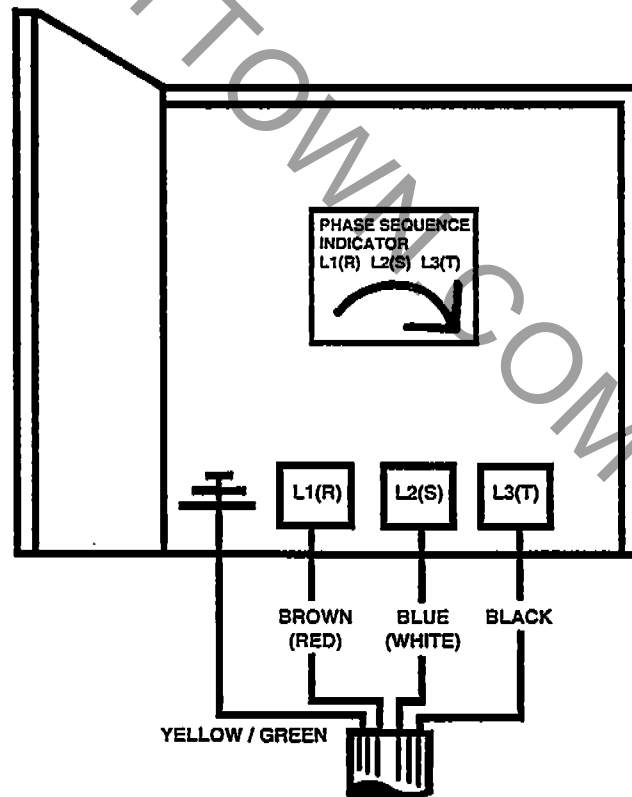
The pump is delivered with the power cable mounted. Check that the mains voltage and frequency agree with the specifications on the pump data plate.

Remember that the starting surge with the direct-on-line start can be up to six-seven times higher than the rated current. Make sure that the fuses or circuit breakers are of the proper amperage.

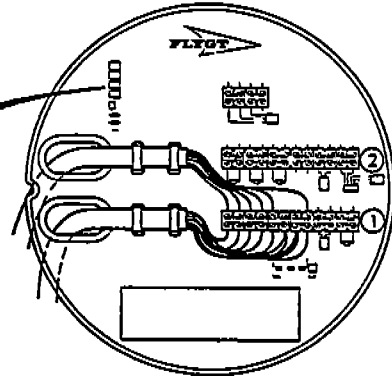
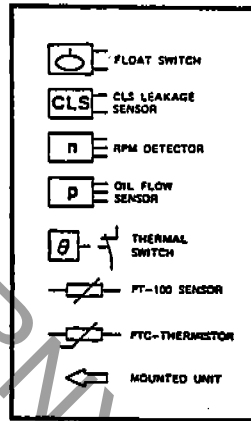
The overload protection (motor protection breaker) shall, for direct-on-line start be set to the motor's rated current as given on the data plate.

Check the phase sequence in the mains with a phase sequence indicator.

Connect the motor cable and the auxiliary cable to the starter equipment. Check the direction of rotation, see "Installation and start-up".

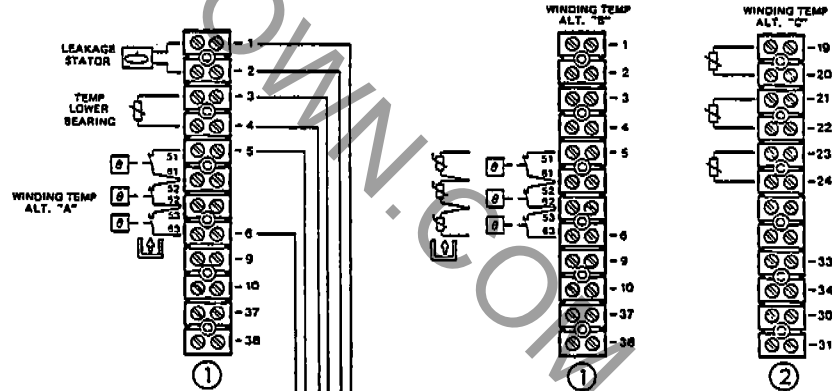


Connection of monitoring equipment, drive units 705, 805, 835, 865 and 905

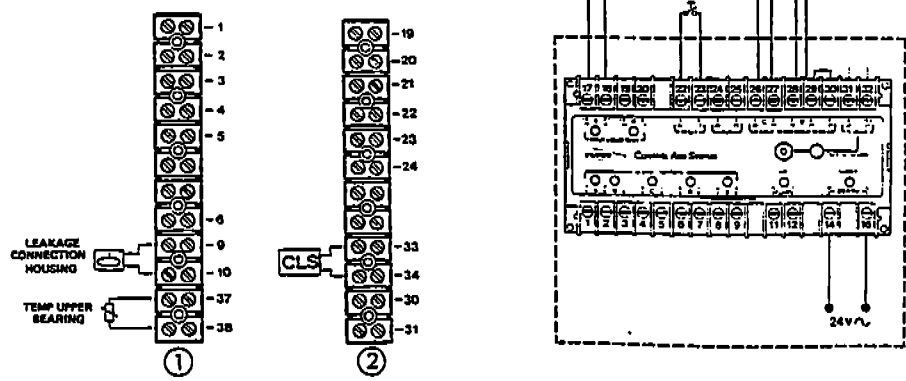


View "A" see page 15 and 16

Standard sensors



Optional sensors



ONE VOLTAGE - THREE PHASES MOTOR

FLYING LEADS - COLOUR AND NUMBER INDICATIONS

4 - Leads Cable:

connections	colour	nbr.
U1	blue	1
V1	black	2
W1	brown	3
	yellow/green	earth

7 - Leads Cable:

connections	colour	nbr.
U1	blue	1
V1	black	2
W1	brown	3
..	yellow	4
protector	green	5
protector	red	6
	yellow/green	earth

TABLES

T 1 Tightening torques in Nm

Type	pos. 31		pos. 33	
	steel	stainless	steel	stainless
TM 127.25	10	4.5	-	-
TM 160A25	6.5	4.5	-	-
TM 160.30	6.5	4.5	10	4.5
TM 215A30	11	7.5	10	4.5
TM 215.40	11	7.5	17	7.5
TM 315A40	11	7.5	17	7.5
→ TM 315.50	11	7.5	41	18
TM 400A50	41	18	41	18
TM 400.60	41	18	83	37
TM 500A60	83	37	83	37
TM 500A75	83	37	140	63

T 2		Oil types
Make	Type	(ISO VG 100)
BP	Energol GR-XP 100	
Black Point	Synthetic Lubricant 46	
Castrol	Alpha SP 100	
Chevron	NL Gear Compound 100	
Elf	Reductelf SP 100	
Esso	Esso Gear Oil GX 80 W 90	
Kuwait	Q8 Goya 100	
Mobil Oil	Mobilgear 627	
OK	TWS 100	
Shell	Omala 100	
Sunoco	Sunep 1055	
Texaco	Meropa 100	
Unil	Sp 100	04.91

Oil capacity in dm³ ↓

T 3	TM	L	250	275	300	325	350	400	425	450	500	550	600	650	700	750	800	850	+
	127.25		0.30	0.35	0.45	0.50	0.55	0.70	0.75	0.80	0.95	1.05	1.20	1.30	1.45	1.55	1.70	1.80	0.25/100 mm
	160A25		1.00	1.10	1.20	1.35	1.45	1.70	1.85	1.97	2.22	2.48	2.73	2.99	3.25	3.50	3.76	4.02	0.53/100 mm
	160.30		-	-	-	-	1.30	1.60	1.70	1.80	2.00	2.20	2.40	2.60	2.80	3.00	3.20	3.40	0.40/100 mm
	215A30		-	-	-	-	2.90	3.60	4.00	4.40	5.10	5.90	6.60	7.40	8.10	8.90	9.60	10.40	1.50/100 mm
	215.40		-	-	-	-	-	-	2.50	2.70	3.10	3.50	4.00	4.40	4.80	5.20	5.60	6.00	0.80/100 mm
	315A40		-	-	-	-	-	-	9.00	9.50	10.50	11.50	12.50	13.50	14.50	15.50	16.50	17.50	2.00/100 mm
	315.50		-	-	-	-	-	-	-	-	5.80	6.60	7.50	8.30	9.20	10.00	10.90	11.70	1.70/100 mm
	400A50		-	-	-	-	-	-	-	-	12.30	13.80	15.30	16.80	18.30	19.80	21.30	22.80	3.00/100 mm
	400.60		-	-	-	-	-	-	-	-	-	-	15.00	16.00	17.00	18.00	19.00	20.00	2.00/100 mm
	500A60		-	-	-	-	-	-	-	-	-	-	27.00	29.00	31.00	33.00	35.00	37.00	4.00/100 mm
	500A75		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30.00	3.00/100 mm

↑

CARTRIDGE

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| Australia | Israel |
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| Germany | South Africa |
| Great Britain | Spain |
| Greece | Sweden |
| Holland | Switzerland |
| Iceland | Thailand |
| Ireland | U.S.A. |

Multibloc 2000

LUBRIFICATION

Pour fonctionnement entre -10 et +40°C, le réducteur Multibloc est livré, en standard, lubrifié avec une huile synthétique de type PAO (Poly-alpha-oléfine) ISO VG 460 (Mobil SHC 634 homologuée par nos services techniques).

Options

Facteur de service K≥1, fonctionnement entre:

- -30 et +10°C: huile synthétique (Mobil SHC 629) ISO VG 150;
- -50 et +30°C: huile synthétique (Mobil SHC 624) ISO VG 32.

Lubrification à la graisse extrême pression, grade NLGI 00 (Total Multis EP 200):

- fonctionnement entre -10 et +40°C, pour un facteur de service K>1.5 et réducteur peu chargé, la température de la graisse ne dépassant pas 70°C.

Entretien, vidange.

- Les huiles synthétiques SHC... ne nécessitent pas de changement d'huile.

Capacité en huile

Les quantités d'huile indiquées (voir le tableau page 5) doivent être respectées à ± 5% quelque soit la position de fonctionnement.

COMMANDE DE PIECES

Pour toute commande, indiquer s'il vous plaît:

- type du réducteur;
- forme (S, BS, BD ...);
- position de montage;
- réduction exacte;
- numéro de fabrication;
- numéro, désignation de la pièce (pour l'arbre lent, préciser les dimensions);
- le type, la polarité et la puissance du moteur (voir plaques signalétiques).

LUBRICATION

For operation between -10 and +40°C, the Multibloc reducer is shipped, as standard, with synthetic oil type SHC (Synthetic-hydrocarbon) ISO VG 460 (Mobil SHC 634 according to Leroy Somer technical specifications).

Options

Service factor K≥1, for operation between:

- -30 and +10°C: synthetic oil ISO VG 150 (Mobil SHC 629);
- -50 and +30°C: synthetic oil ISO VG 32 (Mobil SHC 624).

Grease lubrication: extreme pressure type NLGI 00 (Total Multis EP 200):

- operation between -10 and +40°C, with service factor K>1.5, gearbox low loaded and a grease temperature less than 70°C.

Maintenance, oil change

- Synthetic oil SHC...: do not require oil change.

Oil capacities

The oil capacities shown in table (page 5) are given at ± 5% whatever the mounting position.

SPARES ORDERS

When ordering, please indicate:

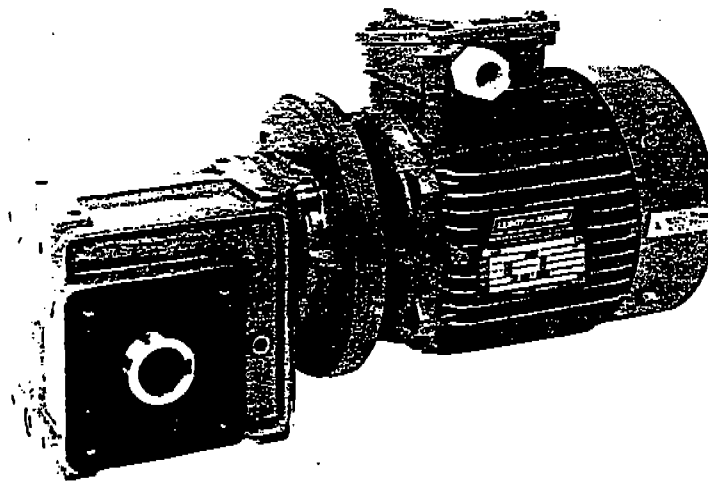
- reducer type;
- design (S, BS, BD ...);
- mounting position;
- exact ratio;
- serial number;
- number and designation of spare part (for output shaft, please give dimensions);
- type, polarity and power of motor (refer to nameplates).

IMPORTANT

Avant mise en service :
monter le bouchon reniflard
en partie haute à la place
d'un bouchon de fermeture.

WARNING

Before first running
fit breather plug at the highest
point in place of an oil
retention plug.

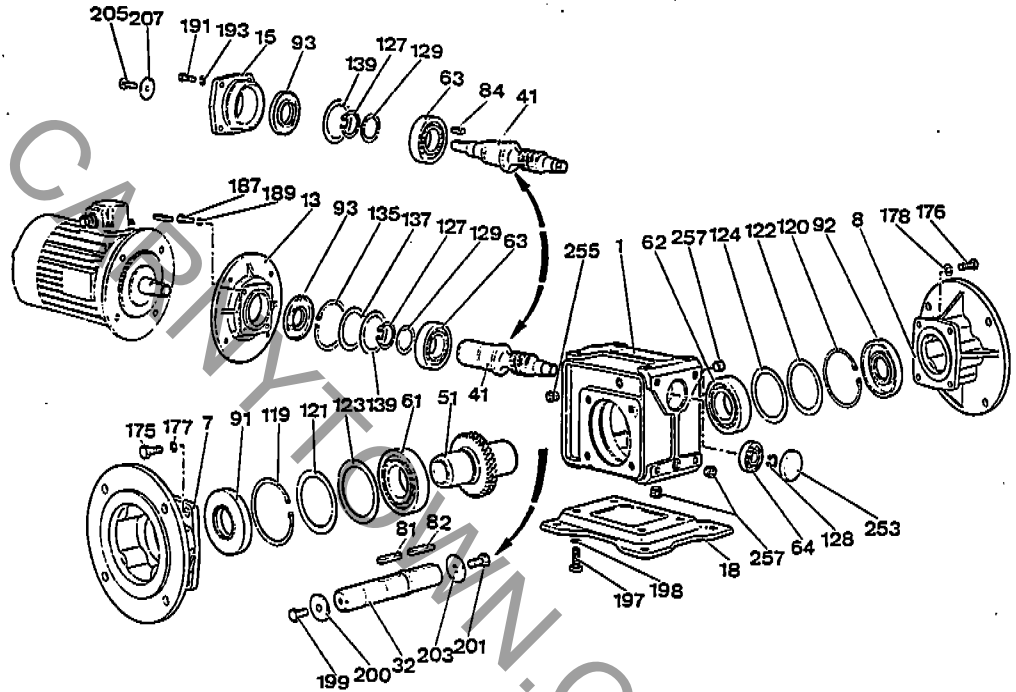


P&F: 670 - 033 / d - 6 82

Malgré tout le soin apporté à la fabrication et au contrôle de ce matériel, Leroy Somer ne peut garantir à 100% l'absence de fuite de lubrifiant. Au cas où ces fuites pourraient avoir des conséquences graves mettant en jeu la sécurité des biens et des personnes, il appartient à l'installateur de prendre toutes les précautions nécessaires pour éviter ces conséquences.

Despite all the care taken in the manufacturing and inspection processes of our products, Leroy Somer cannot guarantee 100% against lubricant leakage. In cases where these leaks should be serious, putting at risk the safety and well-being of persons, it is the installers' responsibility to take all necessary precautions to avoid these eventualities occurring.

Multibloc 2000



Nomenclature Multibloc

Rep.	Désignation	Qté	Rep.	Désignation	Qté	Rep.	Désignation	Qté
001	carter	1	092	joint droit	1	128	circlips E	1
041	vis sans fin	1	093	joint en entrée	1	129	rondelle d'appui	1
051	roue en bronze	1	119	circlips I gauche	1	135	circlips I	1
061	roulement gauche	1	120	circlips I droit	1	137	rondelle	1
062	roulement droit	1	121	rondelle gauche	1	139	cales de réglage	1 jeu
063	roulement d'entrée de vis	1	122	rondelle droite	1	253	bouchon obturateur	1
064	roulement avant	1	123 & 4	cales de réglage	2 jeux	255	bouchon reniflard	1
091	joint gauche	1	127	circlips E	1	257	bouchon huile	4

Multibloc part list

Rep.	Designation	Qty	Rep.	Designation	Qty	Rep.	Designation	Qty
001	housing	1	092	seal (right side)	1	128	retaining ring	1
041	worm	1	093	input seal	1	129	ring	1
051	wheel	1	119	retaining ring (left side)	1	135	retaining ring	1
061	bearing (left side)	1	120	retaining ring (right side)	1	137	washer	1
062	bearing (right side)	1	121	washer (left side)	1	139	adjustment shims	1 set
063	worm input bearing	1	122	washer (right side)	1	253	cap	1
064	worm front bearing	1	123, 4	adjustment shims	2 sets	255	breather plug	1
091	seal (left side)	1	127	retaining ring	1	257	oil plug	4

Pièces d'usure

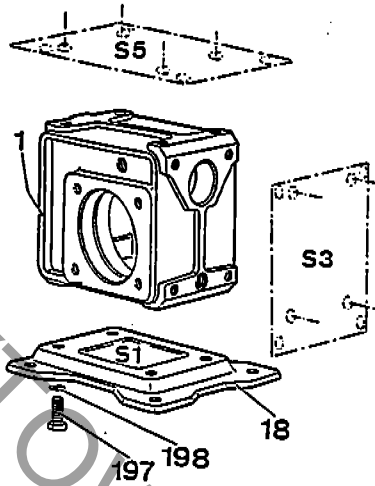
Taille Mb Mb size	standard			AP			1st maintenance parts		
	061-062	063	064	063	064	093	093	091-092	
2501	6018	3210*	6304	2x7210	6304	50x90x10 A	30x42x8 AS	90x140x13 AS	
3401	6212	6209	6303	3209*	6303	45x85x10/8 B	30x42x8 AS	60x110x13 AS	
2301	6012	6207	6203	3207*	6203	35x72x12 A	20x38x8 AS	60x95x10 AS	
2201	6208	6206	6301	3206*	6301	30x62x7 AS	20x38x8 AS	40x80x10 AS	

*: sans encoche de remplissage.

*: without filling slot.

Multibloc 2000

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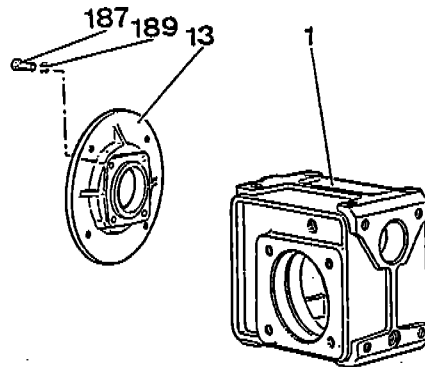


Kit socle à pattes

Rep.	Désignation	Qté
018	soacle à pattes	1
197	vis de fixation	4
198	rondelles plates	4

Foot mounting kit

Rep.	Designation	Qty
018	feet	1
197	bolt	4
198	washer	4



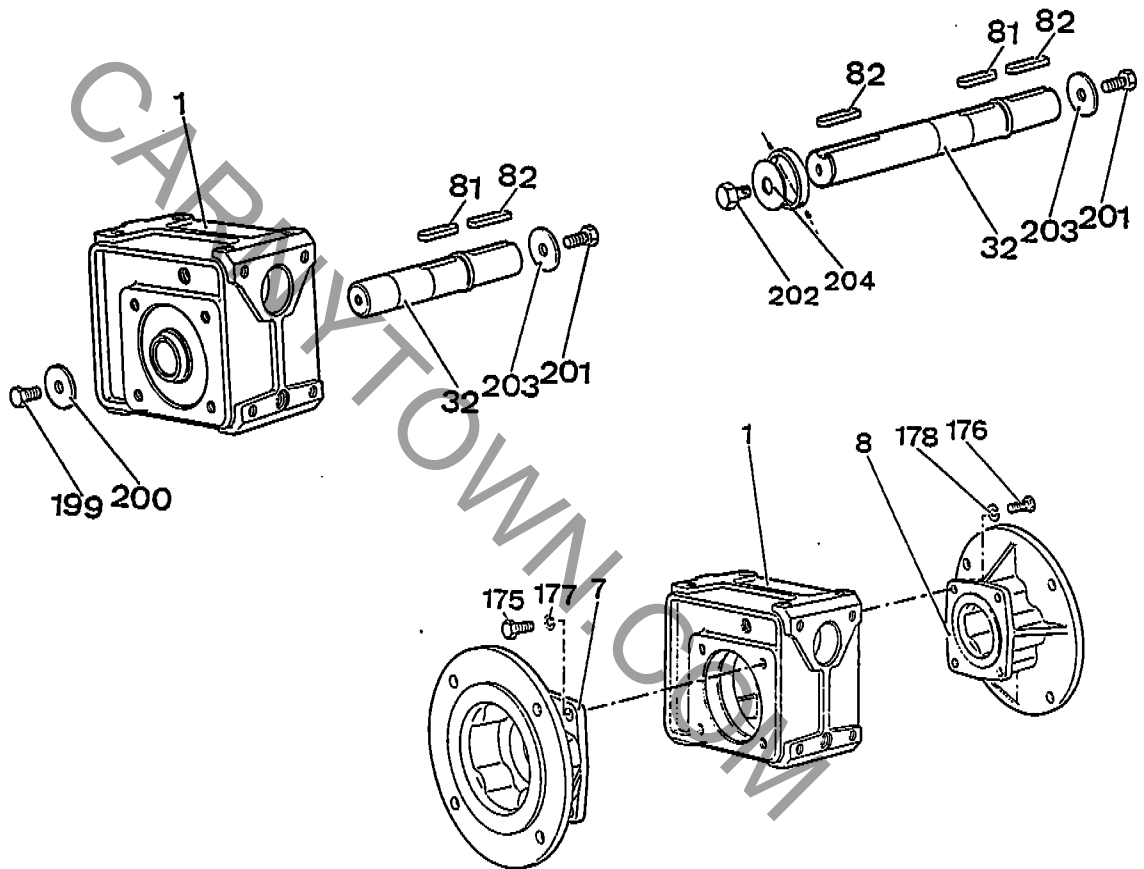
Kit bride d'entrée

Rep.	Désignation	Qté
013	bride pour moteur	1
187	vis de fixation	4
189	rondelle frein	4

Gearbox input flange kit

Rep.	Designation	Qty
013	input gearbox flange for motor	1
187	bolt	4
189	stop washer	4

Multibloc 2000



Kit arbre de sortie G ou D

Rep.	Désignation	Qté
032	arbre lent	1
081	clavette de moyeu	1
082	clavette client	1
199	vis de maintien de l'arbre	1
200	rondelle plate	1
201	vis de bout d'arbre	1
203	rondelle plate	1

Kit arbre de sortie X

Rep.	Désignation	Qté
032	arbre lent	1
081	clavette de moyeu	1
082	clavettes client	2
201-2	vis de bout d'arbre	2
203-4	rondelle plate	2
199	vis d'arrêt	2
200	bague d'arrêt	1

Kit bride de sortie

Rep.	Désignation	Qté
007	bride gauche	1
008	bride droite	1
175	vis de fixation	4
176	vis de fixation	4
177	rondelle frein	4
178	rondelle frein	4

Output shaft kit (G or D)

Rep.	Designation	Qty
032	output shaft	1
081	hollow shaft key	1
082	driven shaft key	1
199	bolt	1
200	washer	1
201	bolt	1
203	washer	1

Output shaft kit (X)

Rep.	Designation	Qty
032	output shaft	1
081	hollow shaft key	1
082	driven shaft key	2
201-2	shaft end screw	2
203-4	washer	2
199	bolt	2
200	ring	1

Output flange kit

Rep.	Designation	Qty
007	output flange (left side)	1
008	output flange (right side)	1
175	bolt	4
176	bolt	4
177	stop washer	4
178	stop washer	4

Multibloc 2000

MONTAGE DU BRAS DE COUPLE

Le bras de couple (17) sera fixé sur le carter par les 4 trous de la face latérale choisis au moyen de vis (195) type CHc de classe 8-8 minimum (selon NFE 27-005).

Ces quatre vis doivent être freinées par un adhésif anaérobie (Loctite Freinfillet normal 243 par exemple) qui devra résister aux sollicitations vibratoires tout en permettant le démontage des vis si nécessaire.

Moment de serrage des vis de fixation

Le serrage se fera progressivement et simultanément sur les quatre vis (serrage en croix) avec un moment de serrage selon le tableau ci-dessous.

Taille Mb	2501	2401	2301	2201
Mini (N.m)	60	38	22	15
Maxi (N.m)	63	39.9	23.1	15.8

TORQUE ARM MOUNTING

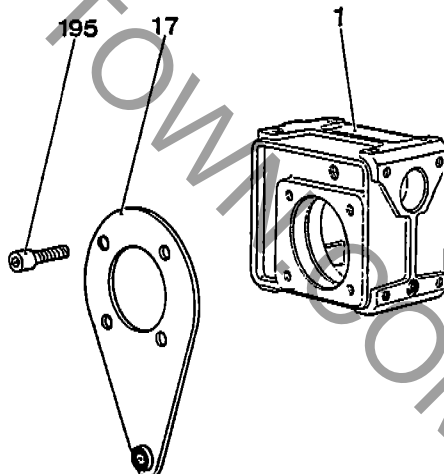
Screw the torque arm (17) on the fixing side by using four screws (195) CHc type (class 8-8 minimum according to NFE 27-006).

The screws must be stopped by an anaerobic adhesive (Loctite Freinfillet normal 243 for example). This adhesive must be able to withstand vibrations and yet allow dismantling of torque arm if necessary.

Tightening torque of fixing screws

Tighten four screws simultaneously and progressively with a tightening torque as per following table.

Mb size	2501	2401	2301	2201
Mini (N.m)	60	38	22	15
Maxi (N.m)	63	39.9	23.1	15.8



Lubrification

Volume d'huile Quantity of oil	Taille Mb - Mb size				Vitesse d'entrée Inout speed
	2501	2401	2301	2201	
litres	1	0.7	0.35	0.25	n > 500 min ⁻¹
litres	1.3	0.91	0.455	0.325	n < 500 min ⁻¹

Lubrification table

Tableau de correspondance des lubrifiants

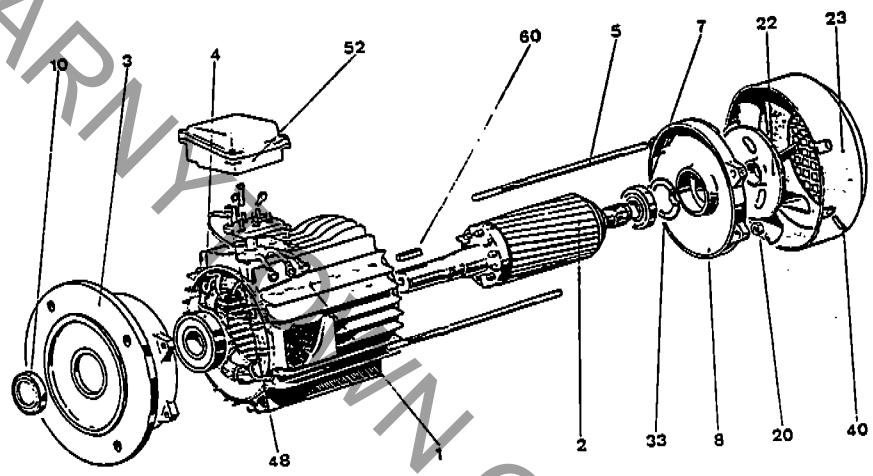
Marques Brands	HUILES (PAO) ISO VG - OILS						Graisses - Greases
	460	320	220	150	68	32	
ELF	REDUCTELF Synthèse 460 (-45°C)		REDUCTELF Synthèse 220 (-45°C)				EPEXELF 00* (-30°C)
HAFSA		SYNTEC 340 (-32°C)					SUPER GREASE 6 EP 00
MOBIL	SHC 634* (-37°C)			SHC 629* (-48°C)		SHC 634* (-37°C)	MOBILITH SHC 007 (-45°C)
MOTUL	SUPRACO S16E (-27°C)	SUPRACO S15E (-27°C)	SUPRACO S14E (-30°C)	SUPRACO S13E (-39°C)	SUPRACO S71E (-51°C)		
TOTAL		CARTER EP/ES 320		CARTER EP/ES 150			MULTIS EP 200 (-30°C)

Corresponding tables of lubricants

*: lubrifiant de 1^{er} monte.

*: lubricant according to Leroy Somer technical specifications.

Multibloc 2000



Rep.	Désignation	Qté	Rep.	Désignation	Qté	Rep.	Désignation	Qté
1	stator bobiné	1	10	joint d'étanchéité	1	52	boîte à bornes équipée	1
2	rotor	1	20	écrous et rondelles	4	60	clavette	1
3	flasque bride	1	22	ventilateur	1			
4	roulement avant	1	23	capot de ventilateur	1			
5	tiges de montage	4	33	rondelle Borrelly	1			
7	roulement arrière	1	40	vis de fixation capot	4			
8	flasque arrière	1	48	planchette	1			

Rep.	Designation	Qty	Rep.	Designation	Qty	Rep.	Designation	Qty
1	wound stator	1	10	oil seal	1	52	terminal box	1
2	rotor	1	20	screws and washers	4	60	key	1
3	flange	1	22	fan	1			
4	drive end bearing	1	23	fan cover	1			
5	tierods	4	33	wavy washer	1			
7	non drive end bearing	1	40	fixing screws	4			
8	non drive endshield	1	48	terminal block	1			

FAST

Les moteurs frein FAST sont des ensembles monoblocs compacts constitués d'un moteur asynchrone et d'un système de freinage à commande de repos (frein de sécurité) sans bobine.

Installation

Pour l'installation des moteurs frein, suivre les recommandations du § MISE EN SERVICE de la notice générale.

Alimentation

Les moteurs frein FAST se branchent comme des moteurs standards et ne nécessitent aucun appareillage supplémentaire. **Attention:** ces moteurs frein n'acceptent pas le démarrage étoile triangle.

Desserrage manuel

L'arbre des moteurs frein FAST est équipé côté ventilateur d'un trou "6 pans". Bien qu'il n'y ai pas de desserrage manuel ou électrique, l'arbre peut être tourné manuellement pour réglage de la machine.

FAST brake motors are compact units made of an asynchronous motor and a coilless brake system operating when supply is off (fail safe brake).

Starting up

For installation, follow STARTING UP procedure detailed in general manual.

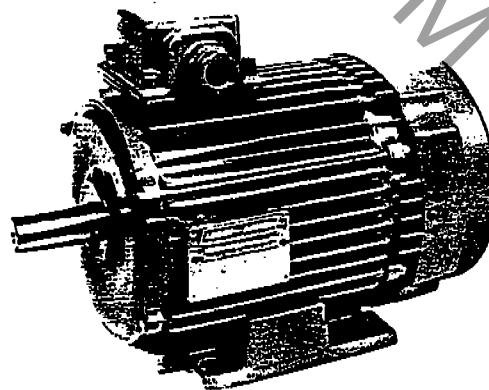
Power supply

FAST brake motors are connected as standard motors and do not require any other equipment.

Warning: this brake motor does not allow star - delta connection starting.

Manual release

The non drive end shaft is supplied with an Allen screw take off. Although there is no manual (mechanical or electrical) release on the FAST brake motor, it is possible to crank the shaft by hand to adjust the machine.



Attention: avant toute opération sur le frein il est indispensable de déconnecter le moteur frein.

Réglage de l'entrefer

Ce moteur frein ne nécessite pas de réglage. Après 1 million de manœuvres, il est nécessaire de changer les garnitures.

Démontage

- Couper l'alimentation.
- Ouvrir la boîte à bornes, repérer les fils et leur position (moteur, sondes ...).
- Débrancher les fils d'alimentation.
- Démonter le moueur frein avec des outils appropriés (arrache moyeu, arrache roulement, maillets en plastique, clefs calibrées, pinces à circlips...).
- Déposer le capot 23 et le ventilateur 22.
- Dévisser les tiges d'assemblage 5.
- Extraire le rotor 2 et l'ensemble frein en tapant à l'aide d'un maillet sur le bout d'arbre (attention aux chignons du stator).
- Oter le circlips 30, extraire le flasque 8.
- Introduire l'ensemble rotor dans un étau, garnitures 12 face à l'opérateur.
- Comprimer l'ensemble en tapant à l'aide d'un maillet sur le disque 15 de manière à éviter le coincement des disques sur les cannelures.
- Enlever le circlips 17 et les cales 18.
- Desserrer l'étau et démonter l'empilage disques 15, garnitures 12, armature 11 et ressort 28.
- Nettoyer les pièces:
 - à la soufflette uniquement pour les parties électriques (ni solvants ni produits humides);
 - au white spirit ou similaire pour les parties mécaniques;
 - au grattoir pour les emboitements.
- Changer les joints et vérifier l'état des roulements.
- Vérifier l'isolement du stator (>100 mégohms).
- Repérer toutes les pièces défectueuses pour commande de pièces de rechange.

Remontage

- Lubrifier légèrement les arbres et cages de roulement.
- Garnir de graisse les lèvres des joints d'étanchéité qui seront remontés avec précautions (utiliser des douilles de protection de rainure de clavette).
- Les emboitements devant assurer une étanchéité seront enduits d'une mince couche de pâte à joint.
- Empiler dans l'ordre le ressort 28, l'armature 11, les garnitures 12 et disques 15.
- ATTENTION: ne pas changer le ressort ni ajouter de cales pour le comprimer davantage, vous empêcheriez le desserrage du frein.
- Centrer les garnitures et aligner leurs crans.
- Comprimer l'ensemble à la main et l'introduire dans un étau.
- Serrer tout en tapant sur le disque 15 de manière à éviter le coincement du disque dans les cannelures.
- Introduire les cales de réglage et la cale d'appui 18; mettre le circlips 17 (épaisseur 1,75 mm pour FAST "71 & 80", 2 mm pour "90"). Utiliser exclusivement les circlips fournis dans le kit de maintenance.
- Ajuster l'entrefer moyen à 0,3 mm à l'aide des cales de réglage: le réglage est correct lorsqu'une cale de 0,2 peut être introduite librement mais pas deux.
- Introduire le flasque frein 8 en s'assurant que les crans se placent comme il faut entre ceux des garnitures.
- Mettre le circlips 30.
- Placer l'ensemble rotor + flasque dans le stator, les deux tétons de fixation du capot étant perpendiculaires à l'axe de la boîte à bornes.
- Monter le flasque avant 3 avec la rondelle élastique 33; visser les tiges d'assemblage 5.
- Emmancher le ventilateur et encliqueter le capot.
- Reconnecter en s'assurant que l'ordre des fils est correct.

Warning: always disconnect brake motor before working on it.

Air-gap adjustment

FAST brake motor does not require any adjustment. The brake linings must be replaced after 1 million of operations.

Disassembly

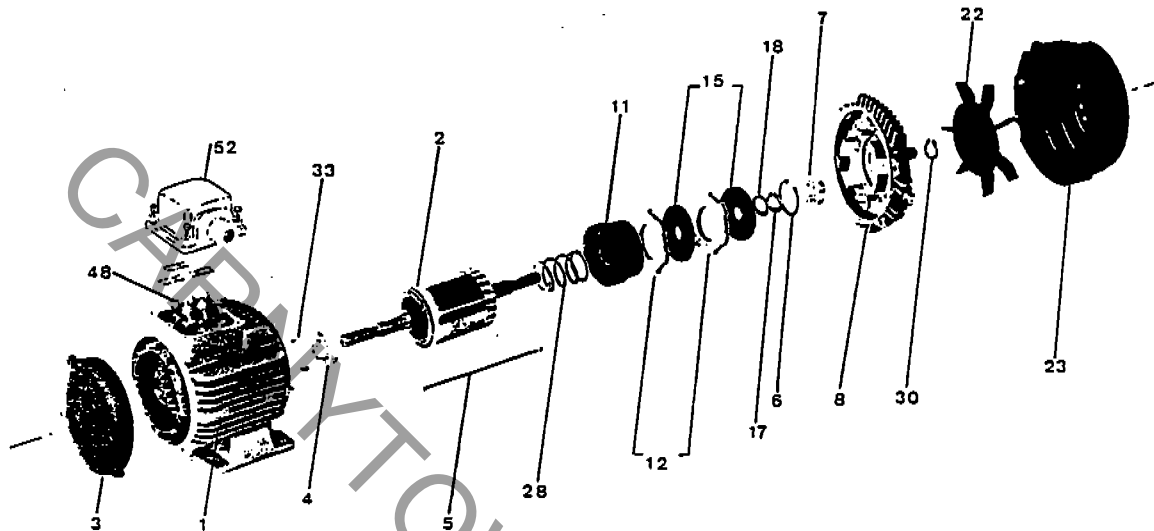
- Switch off supply.
- Remove terminal box cover; locate wires (motor, thermal protections ...).
- Disconnect supply wires.
- Remove brake motor from the machine.
- Dis-assemble brake motors with adapted tools (bearing-extractor, plastic mallet, spanners, snap ring wrench, ...).
- Remove fan cover 23 and fan 22.
- Unscrew assembly rods 5.
- Withdraw rotor 2 with complete brake assembly by knocking with a mallet on the drive end shaft (be carefully not to damage windings).
- Remove snap ring 30, brake housing 8.
- Press rotor-brake assembly in a vice, linings 12 facing operator. Compress and slightly knock on brake discs 15 with a mallet to prevent brake discs being jammed on splines.
- Remove snap ring 17 and spacers 18.
- Take out of the vice, remove discs 15, linings 12, armature 11 and spring 28.
- Clean all parts thoroughly:
 - blow on electrical parts (never use solvent or watery products);
 - use white spirit or similar for mechanical parts;
 - use scraper for spigot diameters.
- Replace oil seals and check bearings.
- Check stator isolation resistance (> 100 megohms).
- Identify all faulty parts for reordering.

Reassembly

- Lightly lubricate shaft and bearing race.
- Coat oil seal(s) with grease, before carefully installing (use protection sleeve over keyway).
- If necessary, coat spigot diameter with sealant.
- First assemble spring 28, then armature 11, linings 12 and discs 15.
- WARNING: do not change spring or add spacers. Brake would not release.
- Center linings and align notches.
- Compress complete assembly by hand and insert into the vice. Tighten while slightly knocking on disc 15.
- Place gauges and spacer 18; mount snap ring 17 (thickness 1.75 mm for type 71 & 80, 2 mm for type 90). Use only Leroy Somer original maintenance kit.
- Adjust air gap at 0,3 mm with spacers; adjustment is correct when one "0,2" spacer freely can be introduced, but not two.
- Mount brake housing 8; make sure notch alignment is correct.
- Place snap ring 30.
- Position rotor assembly into the stator: make sure the two fan cover fixation nibs are perpendicular to the junction box axis.
- Mount drive endshield 3, spring washer 33; tighten assembly rods 5.
- Assemble fan and click cover on.
- Connect the brake motor checking wiring is correct.

Moteur frein FAST

FAST brake motor



Nomenclature FAST

Rep.	Désignation	Qté	Rep.	Désignation	Qté	Rep.	Désignation	Qté
1	carter et stator bobiné	1	10	joint (option)	1	22	ventilateur	1
2	arbre rotor	1	11	armature	1	23	capot de ventilateur	1
3	flasque avant	1	12	garnitures ébrantées	2	28	ressort de pression	1
4	roulement côté arbre	1	15	disques frein	2	30	circlips extérieur	1
5	tiges d'assemblage	4	17	circlips extérieur	1	33	rondelle élastique	1
6	circlips intérieur	1	18	cales de réglage + cale d'appui	x+1	48	planchette à bornes moteur	1
7	roulement côté frein	1	20	écrou de tige	4	52	boîte à bornes moteur	1
8	flasque frein	1						

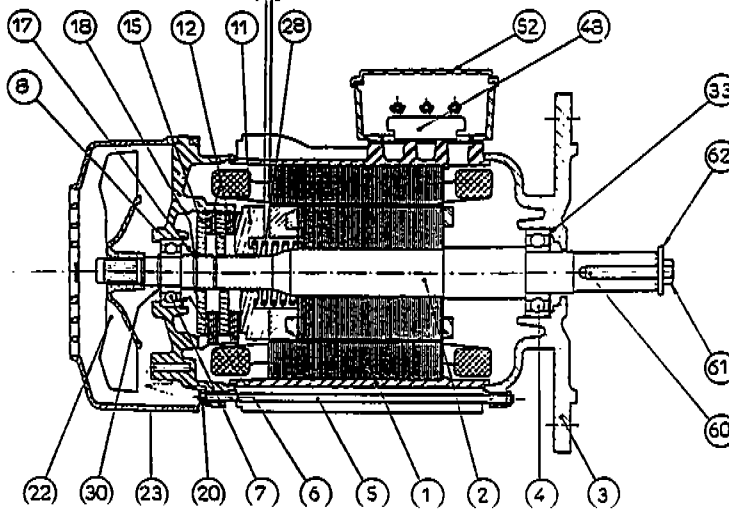
FAST part list

Rep.	Désignation	Qté	Rep.	Désignation	Qté	Rep.	Désignation	Qté
1	housing and wound stator	1	10	seal (option)	1	22	fan	1
2	rotor and shaft	1	11	armature	1	23	fan cover	1
3	drive-end shield	1	12	linings	2	28	compression spring	1
4	bearing	1	15	brake discs	2	30	snap ring	1
5	assembly rods	4	17	snap ring	1	33	spring washer	1
6	snap ring	1	18	gauges + spacer	x+1	48	terminal board	1
7	non drive-end bearing	1	20	bolts	4	52	terminal box frame	1
8	brake housing	1						

entrefer: 0.3 air gap: .3

FREIN SERRE
STOP

FREIN DESSERRE
RELEASED



Moteur frein FAST

FAST brake motor

Guide de dépannage

Le frein ne desserre pas	Vérifier les branchements électriques. L'entrefer est trop grand: remplacer les garnitures (commander le kit de rechange). La tension du réseau est trop basse: revoir l'alimentation.
Moment de freinage insuffisant	Présence de graisse sur les garnitures: Garnitures détériorées: nettoyer ou remplacer les garnitures (commander le kit de rechange). Coulissement armature 11 et disques 15:

Brake trouble shooting chart

Brake does not release	Check that connections are correct. Air gap is too large: replace linings (order maintenance kit). Supply voltage is too low: check supply.
Brake torque too low	Brake linings are greasy: Destroyed linings: clean or replace linings (order maintenance kit). Armature 11 and discs 15 does not slide:

Pièces d'usure

Les pièces de première maintenance, à prévoir pour l'entretien courant des freins, sont les repères 12, 17, 18, 22 et 33 contenus dans le kit maintenance. Commander le joint repère 10 si le moteur en est équipé.

1st maintenance parts

For first maintenance it is recommended to keep in stock the maintenance kit including following items: 12, 17, 18, 22 and 33. Order item 10 if the motor is equipped with oil seal.

Tableau des roulements et joints

Bearings and seals part number

Rep.	Taille / Size			
	7	8	9	10
4	6202 2RS	6004 2RS	6204 2RS	6205 2RS
7	6202 2RS	6202 2RS	6203 2RS	6204 2RS
10	15x26x7	20x38x8	20x38x8	25x40x8

COMMANDE DE PIÈCES

Renseignements indispensables


Relever sur la plaque signalétique:

- Type moteur, hauteur d'axe.
- Type frein (FAST S1 ou S4).
- Vitesse de rotation (min⁻¹).
- Puissance (kW).
- Tension (V).
- N° et année de fabrication.
- Moment de freinage.
- Fixation et position: pour bride indiquer le Ø F et le type de bride (B5 trous lisses ou B14 trous taraudés).
- N° et désignation des pièces (voir nomenclature).
- Particularités éventuelles.

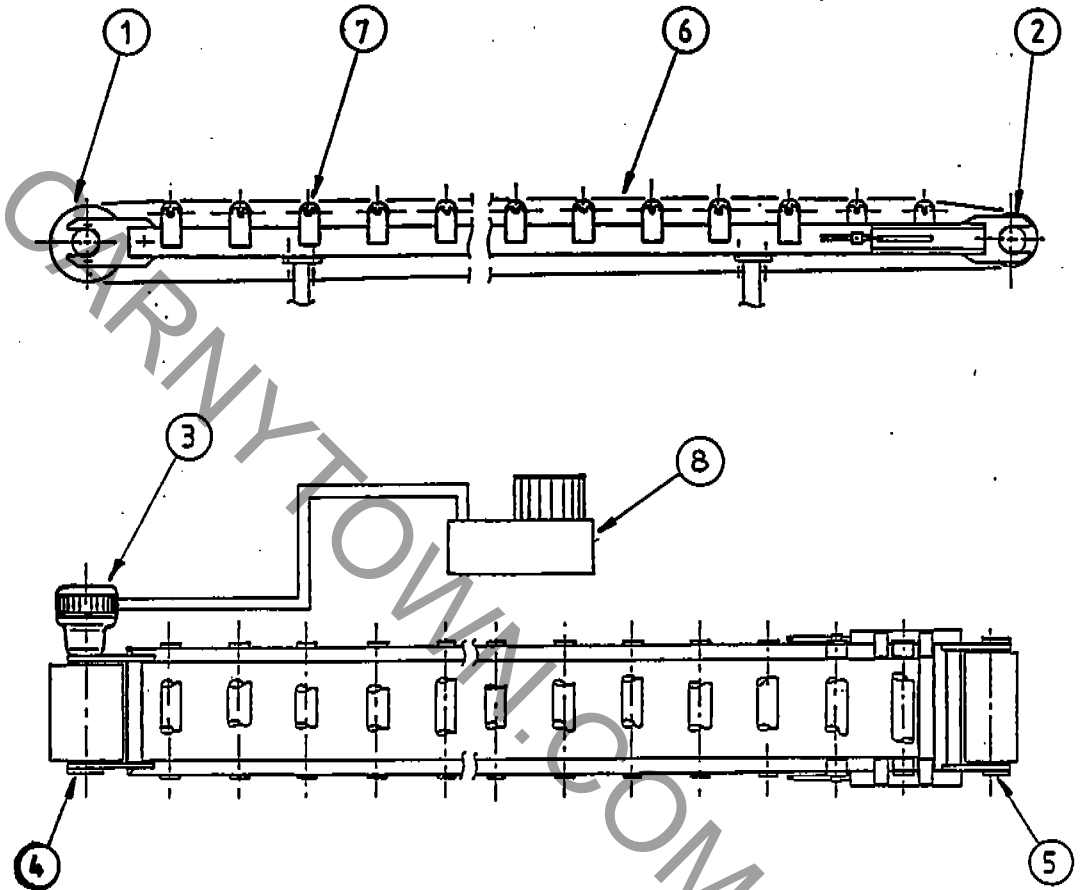
HOW TO ORDER

To order please give all following details indicated on nameplate:

- Motor type and frame.
- Brake type (FAST S1 or S4).
- Speed rotation (min⁻¹).
- Power (kW).
- Voltage (V).
- Manufacture number and year.
- Braking torque.
- Fixing and position: for flange mount, give dimensions and type of flange (B5 or B14).
- N° and designation of spare parts (see part list).
- If necessary other specifications.

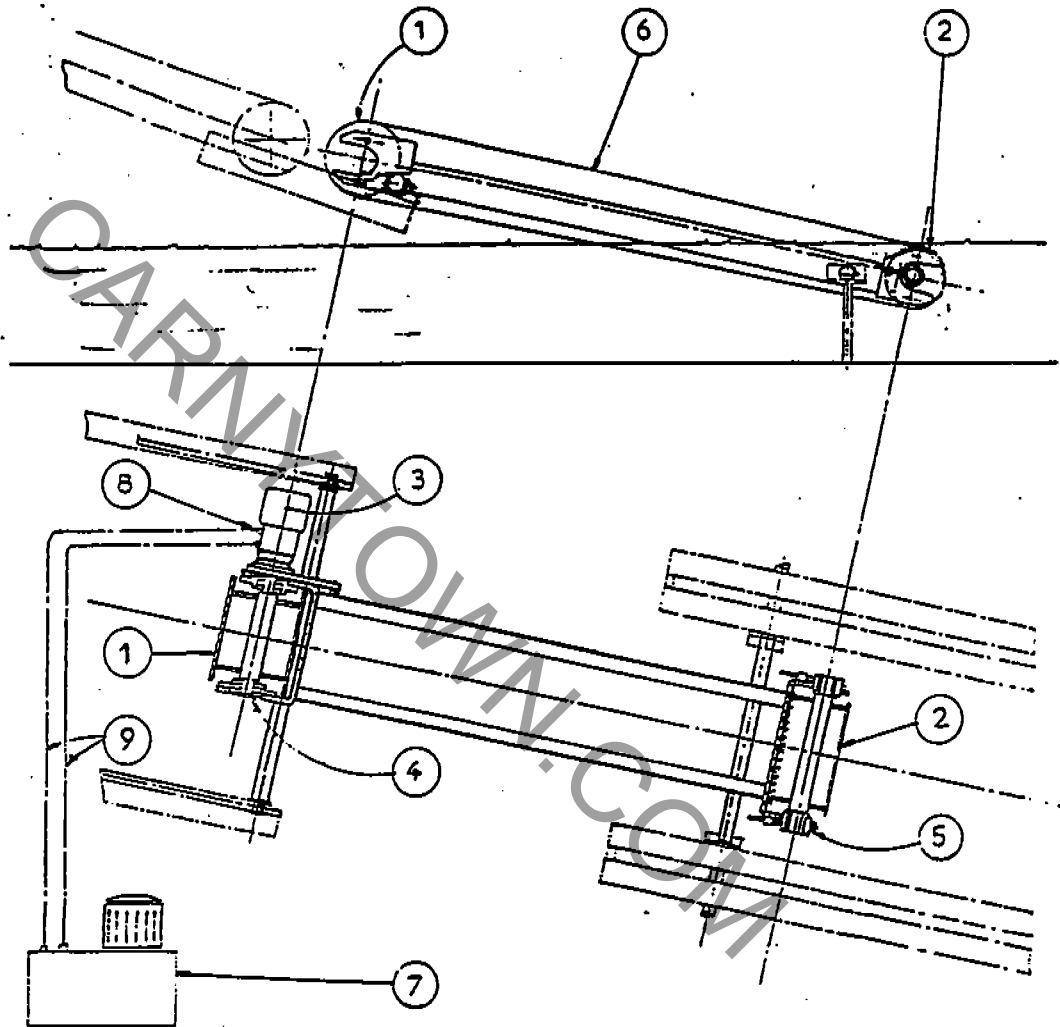
		N°		
		Mot. n°		
IP	CL	UN	V _{nom}	M _f Nm
S	%	c/h	°C	IN A
V		H z	min ⁻¹	kW Cost A
<div style="border: 1px solid black; height: 40px; width: 100%;"></div>				
<small>101 4818</small>		<small>CEI 34 - 1</small>		<small>MADE IN FRANCE</small>

STATION



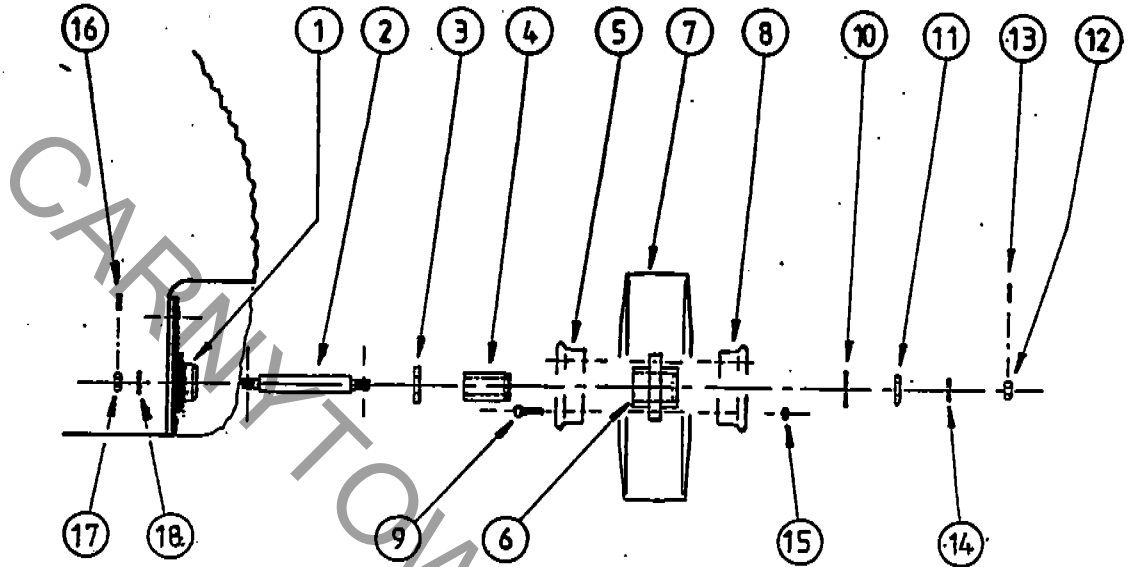
- (1) Drive drum \varnothing 250
- (2) Free drum \varnothing 177
- (3) DANFOSS motor OMR 315
- (4) Bearing motor with plastic bushing
- (5) Free bearing with plastic bushing
- (6) Carpet RUFFTOP Width : 0,4 m - Length : 9,05 m
- (7) Rollers \varnothing 63 Length : 420 mm
- (8) Hydraulic unit

BOTTOM CONVEYER



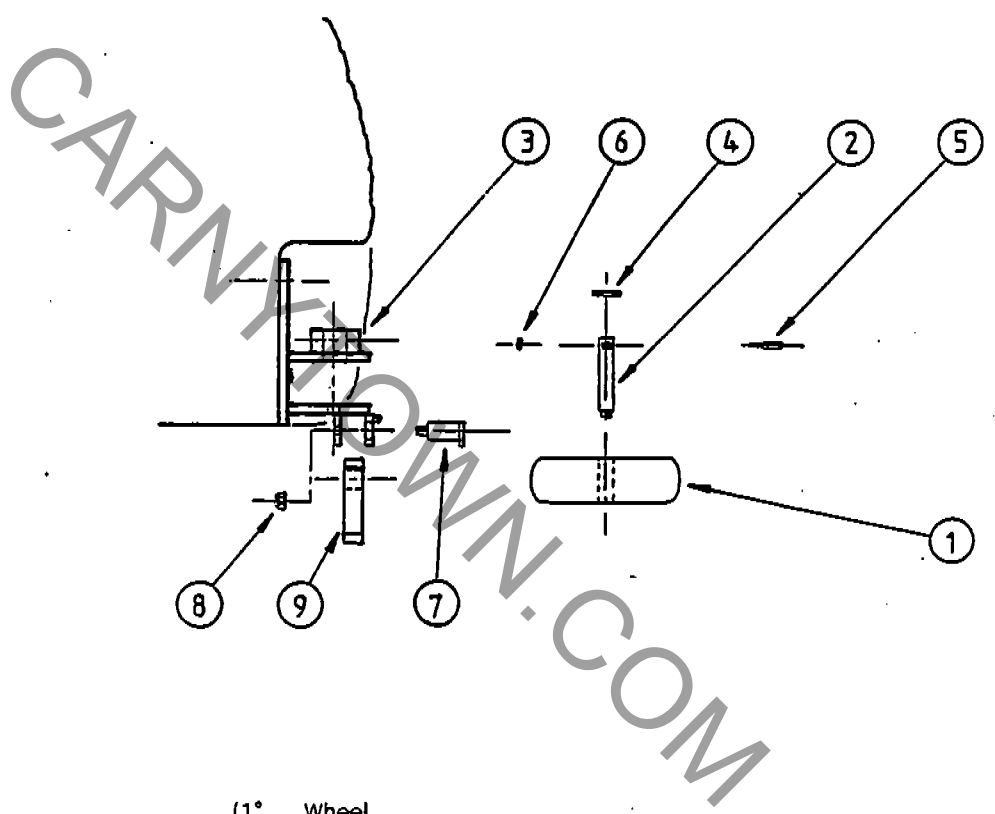
- (1) Drive drum \varnothing 250
- (2) Free drum \varnothing 177
- (3) DANFOSS motor OMR 200
- (4) Ball bearing motor SKF n° 22.210.C
- (5) free bearing with plastic bushing
- (6) Carpet RUFFTOP Width : 0,40 m - Length : 4,435 m
- (7) Hydraulic station
- (8) Hydraulic connection
- (9) Hydraulic hose

BOAT



- (1) Frame support front wheel
- (1 bis) Frame support rear wheel
- (2) Shaftcarrier wheel
- (3) Bronze washer
- (4) Plastic bushing
- (5) 1/2 rim
- (6) Hub of wheel
- (7) Tyre
- (8) 1/2 rim
- (9) Screw HC 8
- (10) Bronze washer
- (11) Chromed washer
- (12) Nut
- (13) Pin Ø 3
- (14) Washer M 14
- (15) Nut H 8
- (16) Pin Ø 3
- (17) Nut H 14
- (18) Washer Ø 14

BOAT



- (1°) Wheel
- (2) Guide wheel axle
- (3) Frame support front wheel
- (4) Cadmium treated washer Ø 9
- (5) Lock key Ø 9 (bike key)
- (6) Nut H 7
- (7) Klicker axle
- (8) Nylstop nut Ø 12
- (9) Klicker

LIST OF CONTACTS IN USA

KSB USA INC

300 Abrodrive
HAUPPAUGENY 11788
Tel : (516) 231 03 03

KSB INC

2555 E Chapman Avenue
Suite 300 FULLERTON
CALI 92631
Tel : (714) 871 32 00

FLYGT ITT Corporation

PO Box 5857
NORWALK
CONN 06 856 58 57

FLYGT ITT Corporation

129 Glover Avenue
Tel : 1 203 846 20 51

LEROY SOMER

US ELECTRICAL MOTORS

8100 W. Florissant Avenue
BLDG L
SAINT LOUIS
M O 63136 1491 USA
Tel : (1) 314 553 85 48

DANFOSS

DANFOSS AUTOMATIC CONTROLS

Division of Danfoss inc
4971 Mercantile Road
BALTIMORE MD 21236
Tel : 410 931 8250

VAN DER GRAAF
335 DEE RHU DRIVE
BREMBTON ONTARIO
CANADA
Tel : 416 793 8100

CARNYTTOWN.COM