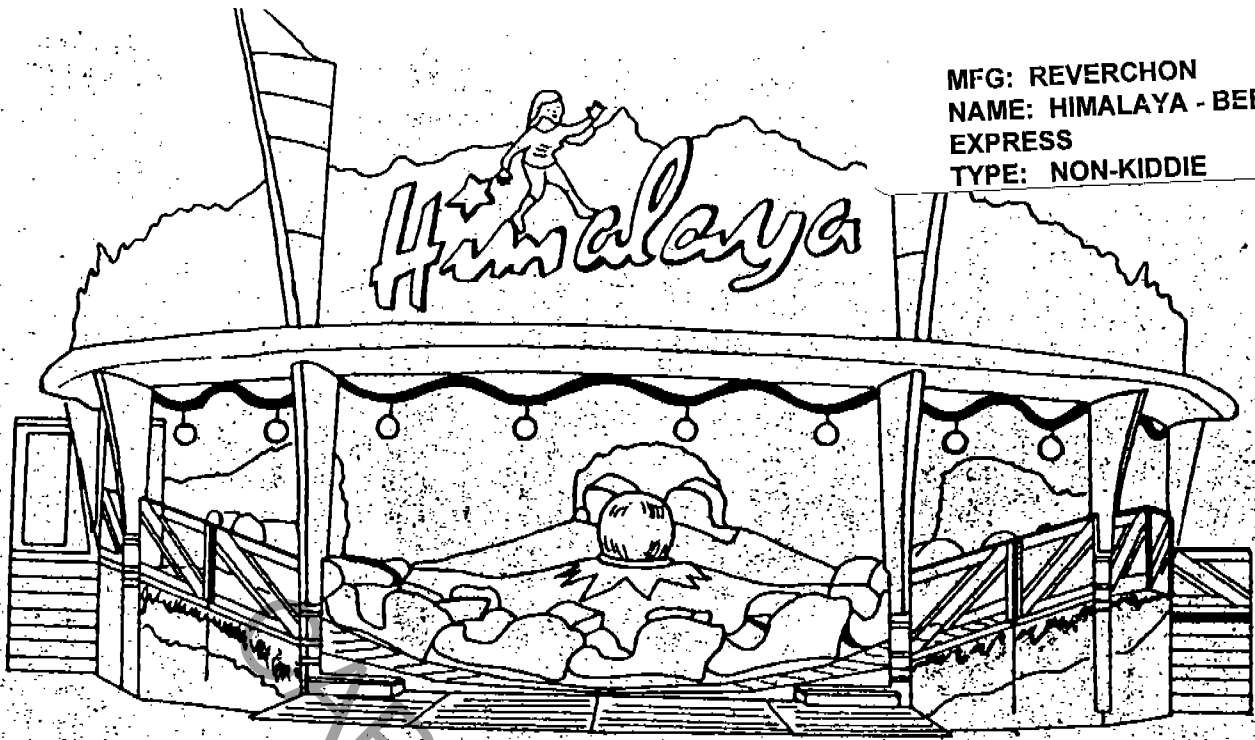


MFG: REVERCHON  
NAME: HIMALAYA - BEE BOP  
EXPRESS  
TYPE: NON-KIDDIE



# HIMALAYA

DESCRIPTION and MAINTENANCE



SPECIFICATIONS:

Capacity: : 24 cars each 3 persons  
: 72 seats

Speed : : 10 Rpm  
: 22 km/h.

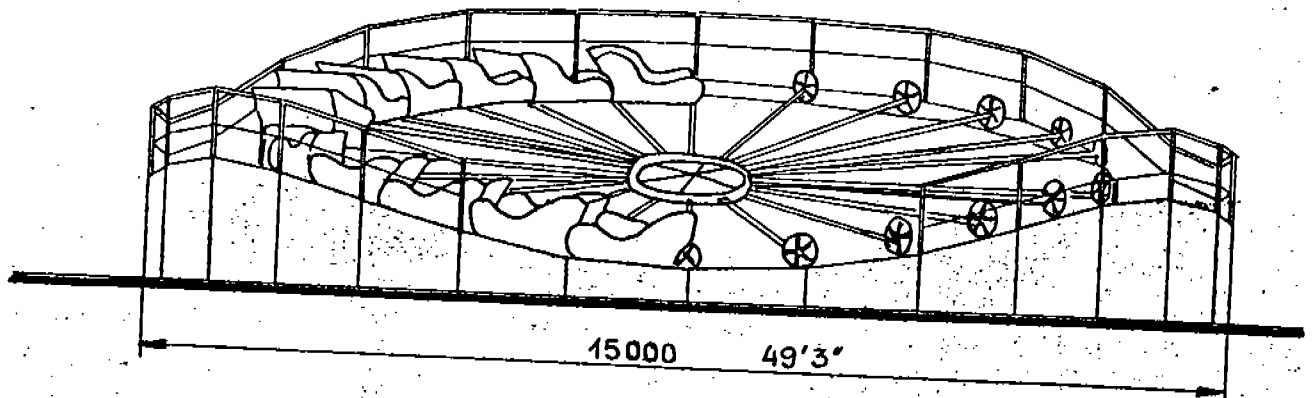
Voltage: : 208 V - 3phases - 60 Hz

Power: : 25 KW

Weight: } For Plain Version : 21 tons

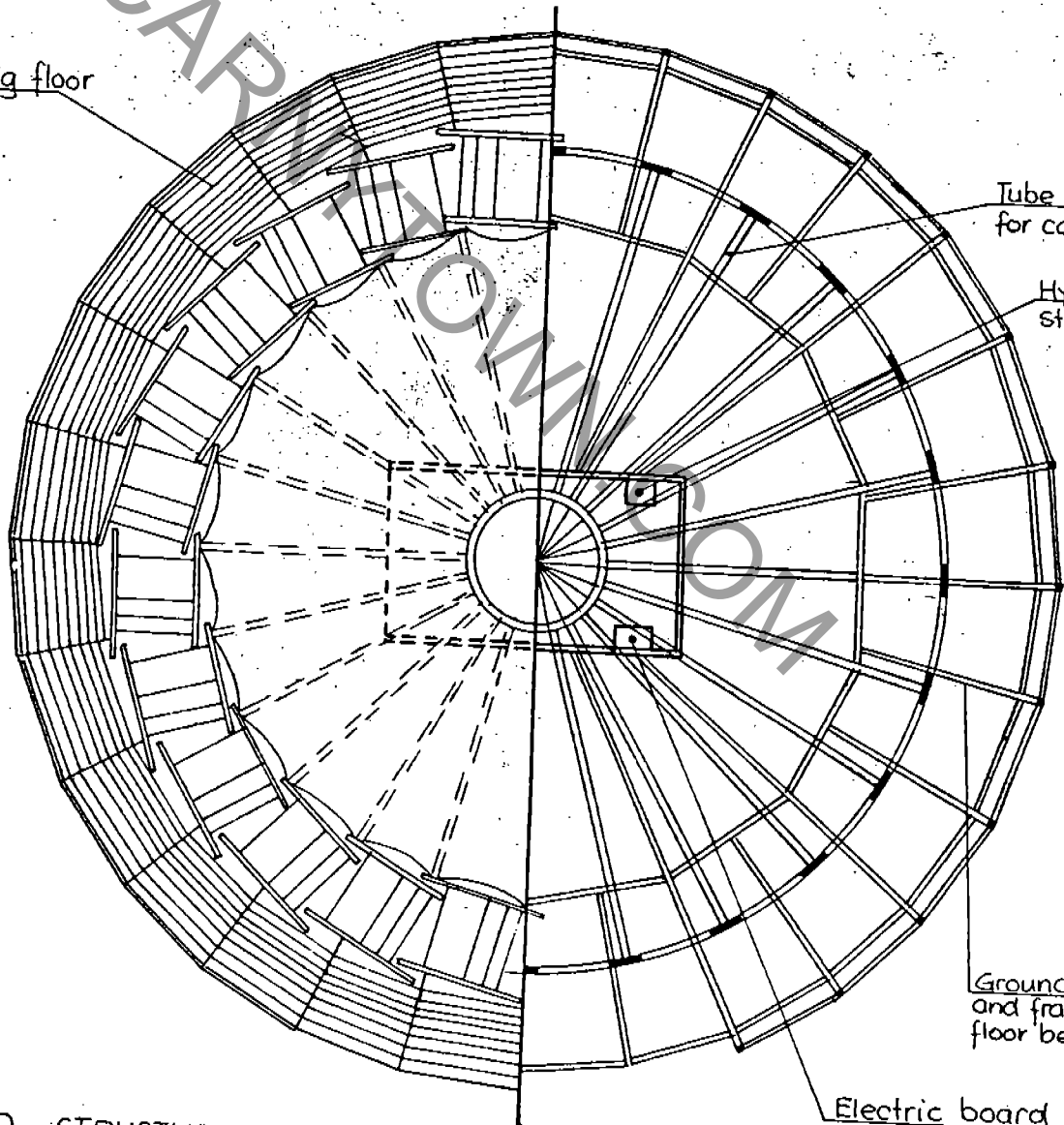
Cubic: } : 32 m<sup>3</sup> - 1130 cub feet

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FRONT VIEW

Surroundig floor



Tube supporters for cars

Hydraulic station

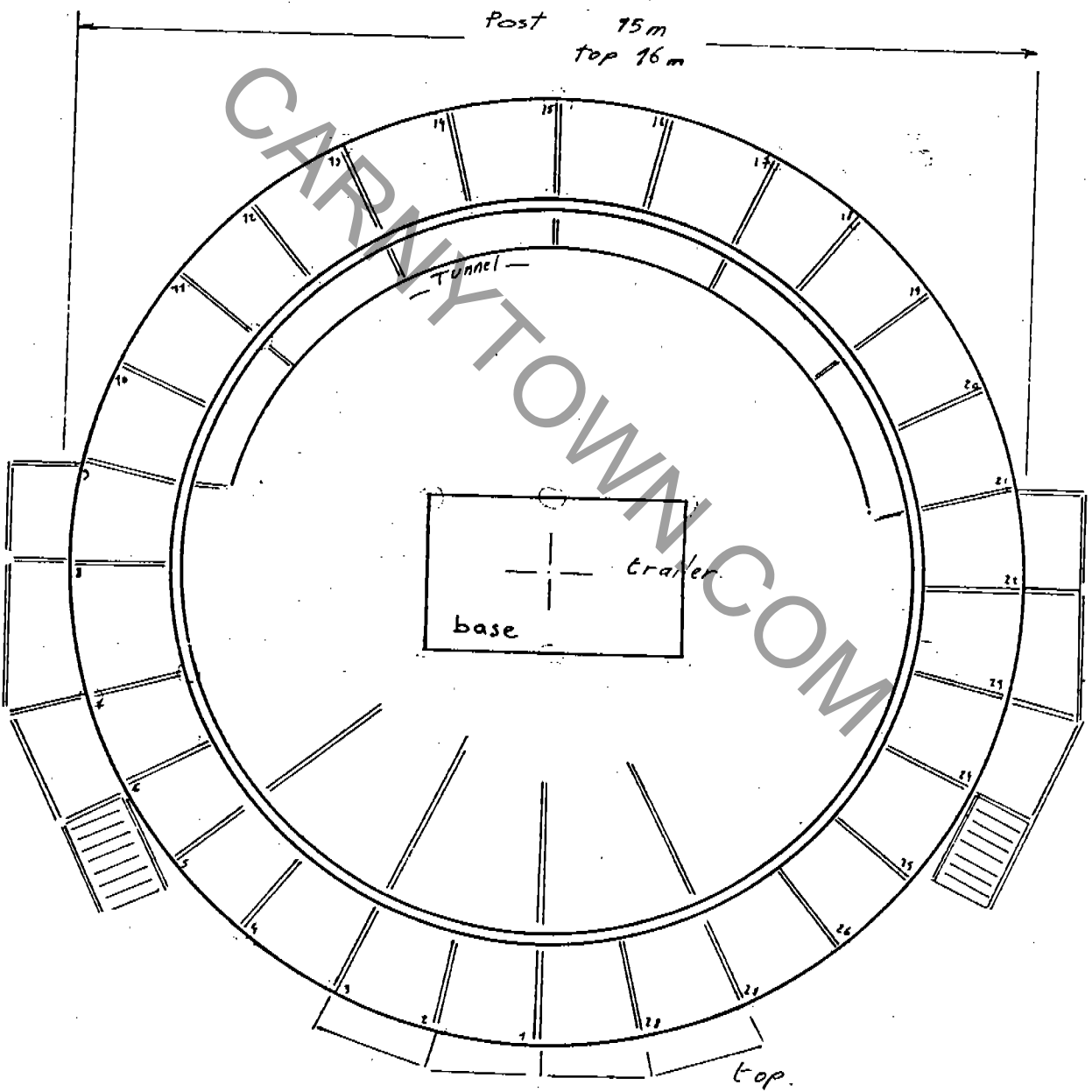
Ground layers and framing to floor bearers

Electric board

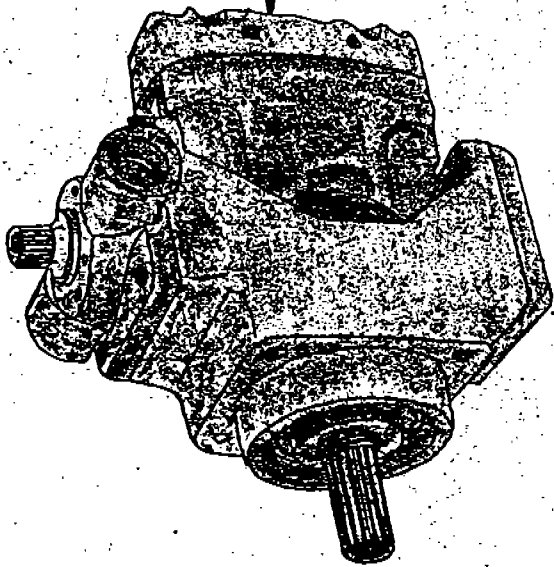
GROUND STRUCTURE

HIMALAYA.

Floor-space.



clamping - points



Y 503

ROTATING HYDRAULIC  
Joint

leak pipe

COUPLING

MOTOR 30 CV  
13 PP 180

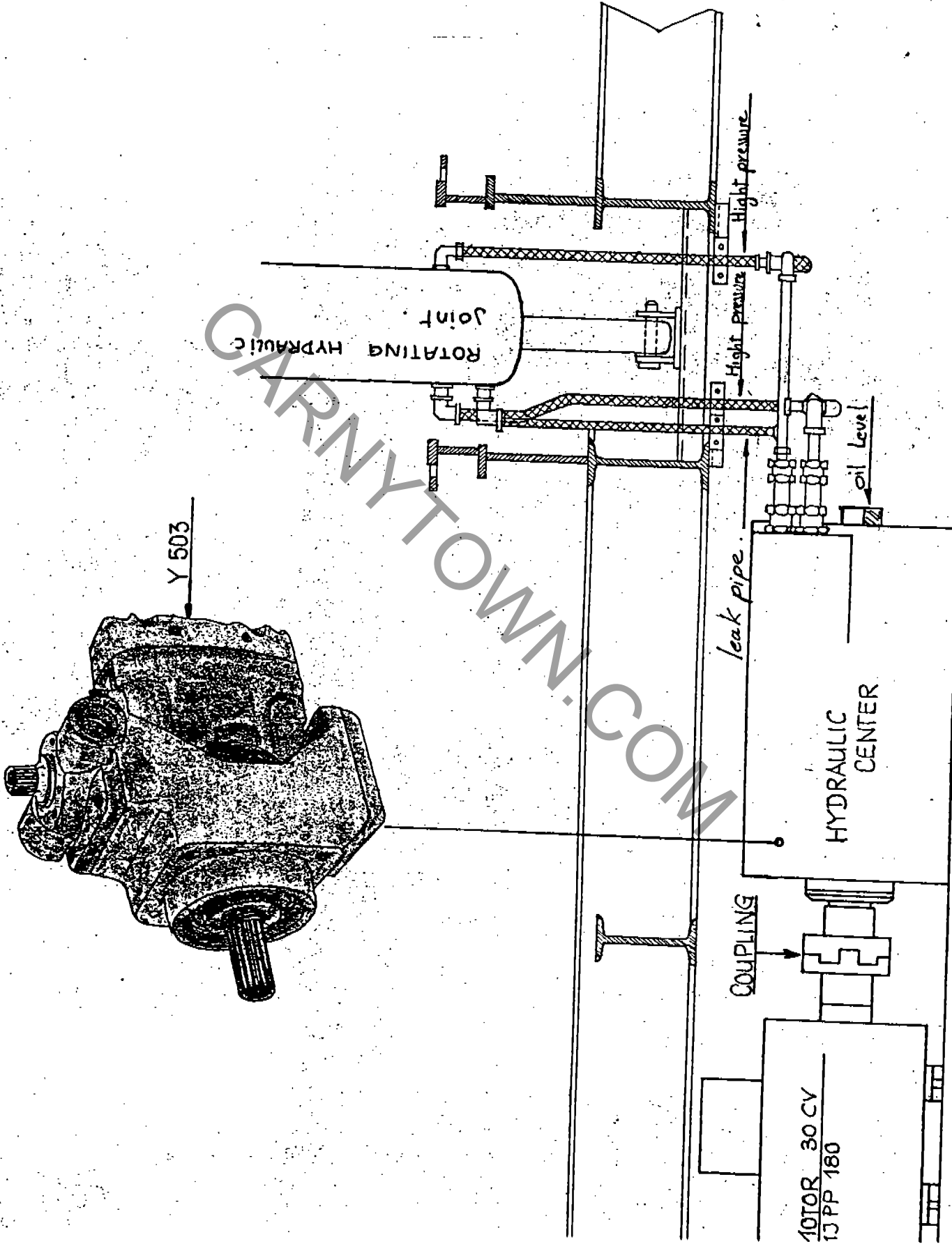
HYDRAULIC  
CENTER

oil level

High pressure

High pressure

High pressure



VARIABLE DISPLACEMENT HYDRAULIC PUMP

Y503

FILTER

PLUG

ITION SWITCH  
MC 21

IR 2 HP

2 30 HP  
180

MESURING POINT FOR THE  
AUXILIARY OIL CIRCUIT  
12/18 BARS

REDUCTION CIRCUIT  
SLIDE - VALVE

OIL-GATE

MANOMETER HIGH PRESSURE

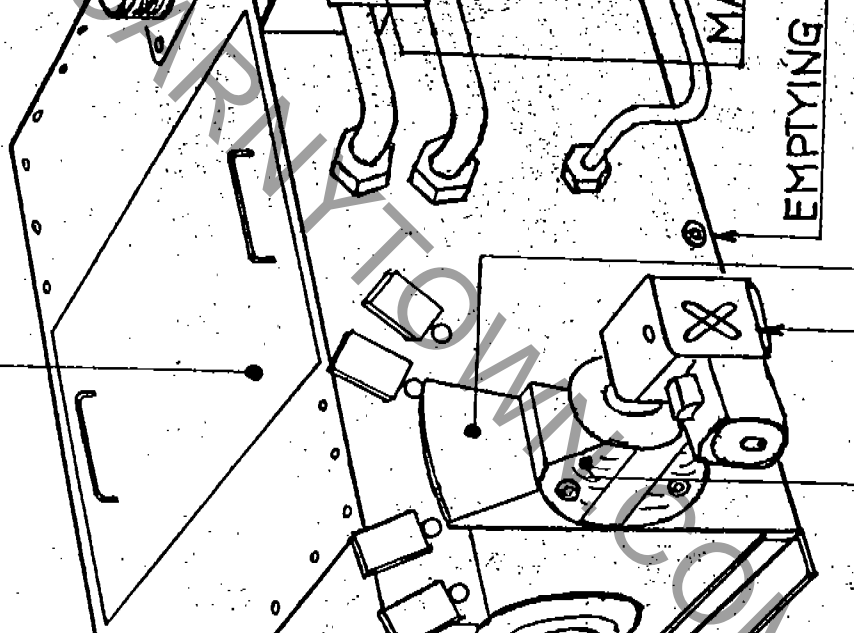
EMPTYING PLUG

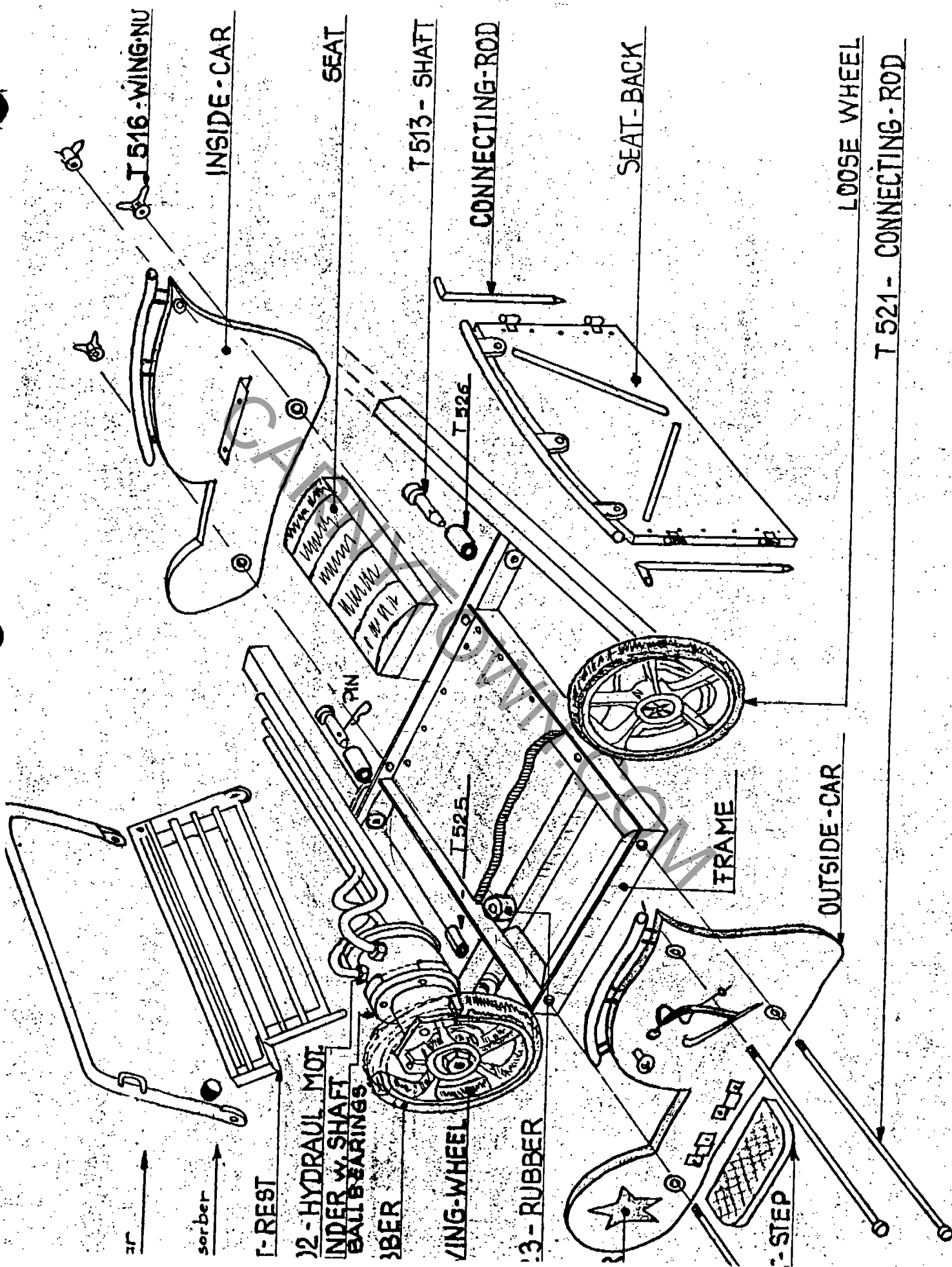
CAM

SPEED CONTROL  
MOTOR REDUCER

RUBBER  
COUPLING

TORQUE LIMITOR





↑

↑ sorber

↑ REST

↑ 12 - HYDRAULIC MOTOR  
UNDER W. SHAFT BALL BEARINGS

↑ RUBBER

↑ WING-WHEEL

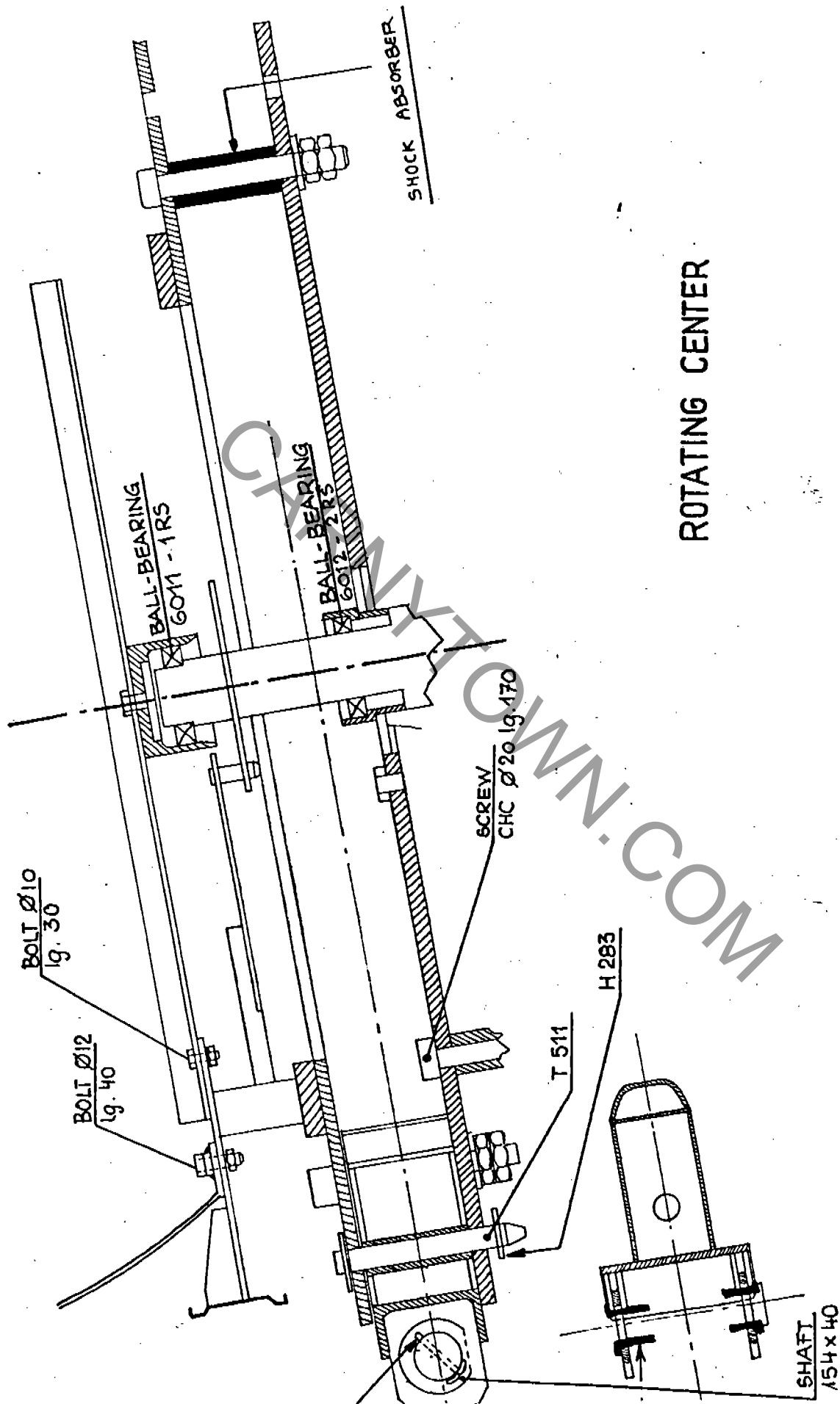
↑ 13 - RUBBER

↑ STEP

↑ OUTSIDE-CAR

↑ LOOSE WHEEL

↑ T 521 - CONNECTING-ROD



ROTATING CENTER

Hydraulic specifications.

oil : use "Hydrelf 34"

or one oil having 3,5 ↔ 4,5 °Engler  
rates at 50 °C (122 °F), change it 1<sup>st</sup> at 500h  
and after, each 3000h.

Filter : clean it once a month.

oil level. watch it always, on the oil tank side  
indicator.

keep it at the indicated value.

Flexible pipe.

must be maintained clean when removed.

Hydraulic circuit.

In three parts.

1) A power circuit or main circuit including:

Main pump.

1 hydraulic wheel engine.

2 pressure limit values. (high value)

2) An auxiliary circuit including.

Auxiliary pump.

2 clapets

1 pressure limit value (low value)

3) A deduction circuit including

- a slide valve (self working)

- the power circuit makes the high pressure required

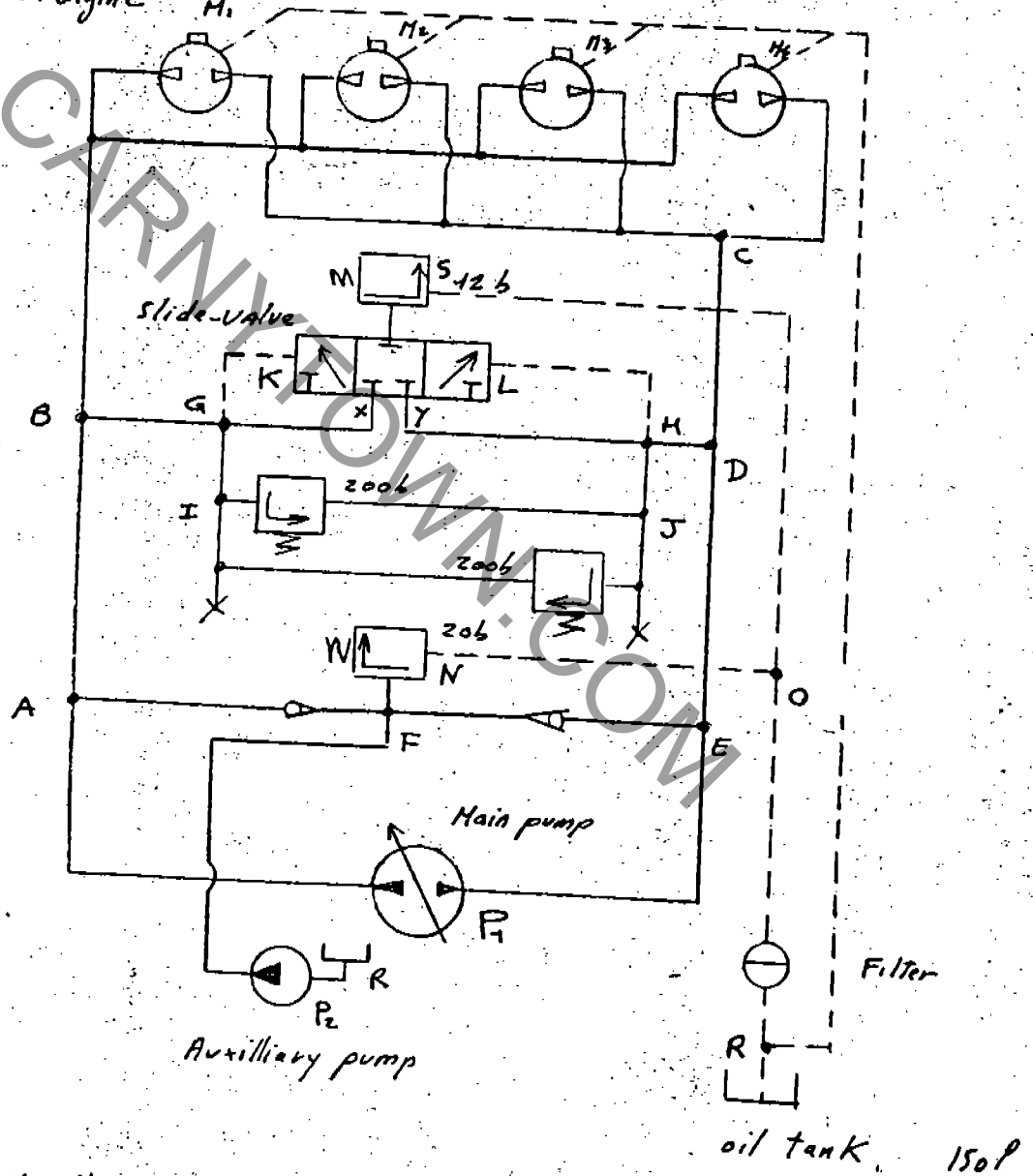
- the auxiliary circuit is used to maintain a necessary low level pressure for the best pump and engine working condition.

- A deduction circuit required to remove automatically the working oil.

See the Hydraulic circuit diagram on next page.

HYDRAULIC DIAGRAM.

Hydraulic wheel engine

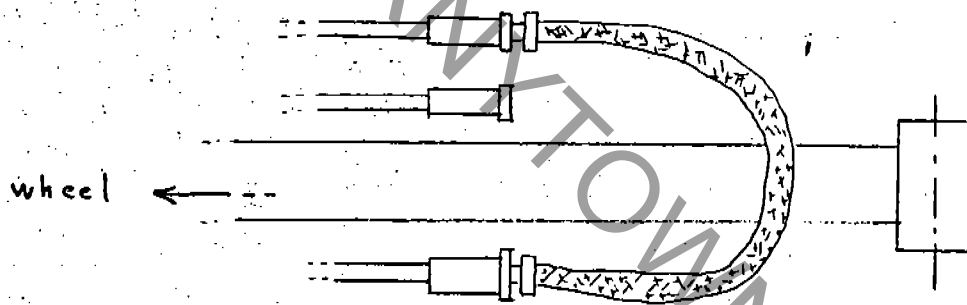


- 1) Main circuit P<sub>1</sub>, A, B, M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, C, D, E, P<sub>1</sub>
- 2) Auxilliary circuit R, P<sub>2</sub>, F, E, P<sub>1</sub>
- 3) deduction circuit FNOR and (BGXLHD or DHYKGB)

Engine break down.

- Isolate the failing wheel hydraulic engine  
from others

shut its hydraulic circuit on itself, joining  
input and output with a hose



- To make the manual rotation easier  
putting the cars on, use the same  
man on each engine circuit.

WARNING

- ① When the ride works with 3 engines  
instead of the 4 required, watch the speed.  
Don't let it to reach its top. value.  
use the slow accelerator position.
- ② Never try to work without the auxilliary  
pump on. (green light on)

## HIMALAYA

### Electric instructions

### DESCRIPTION

The electric installation consists of :

- an electric board
- a remote control board
- a hydraulic station.

The electric board contains mainly

- an isolating switch
- a differential circuit-breaker assuming people's protection (300 mA)
- a change over switch
- the others apparatus for the electric engines automatic command; relays, contactors, ect..

The remote control board wears all the usefull parts for signalisations and command.

The Hydraulic station has

- one main pump electric motor (30 HP)
- one auxiliary pump motor (2 HP)
- one Servo-motor for regulation.

The HIMALAYA must be supplied with 220 V 3 phases, without neutral conductor.

OPERATING RULES

- First
- the remote control board connected with the electric board.
  - The earth connected (earthvalue = 60Ω)
  - The main voltage supply
  - the thermic-protection relays on ;
  - the isolating switch on
  - the circuit-breaker on.

then it's a first necessity to verify the main pump electric engine right rotation.

In this order.

use the push button number 39 on the electric diagram 406214.23

(the black one on the remote control board left upper corner) push it and stop immediately the electric engine supply with the push button 40 (larger black one next beside)

you must watch if the main pump electric engine rotation is in accordance or not with the arrow pointed on the oil tank side.

In case it is, the supply connection is right. if it's not, you just need to reverse the phases using only the change over switch number 3, putting it on its other position. that's all but.

this operation must be done every time the main voltage supply will be removed.

the orange light can be on or not; anyway press on the black push button (number 42) on the right side.

is button works the Servo-motor

if the orange light was off, that means not in its zero position; both 24 and 25 position-switches are off; the Servo-motor will now the cam until that position is reached.)

N  
o.  
li. the orange light is on. pushing again 39 (left) you have both, green and blue on.

From now, on using the piloting level switch (31) you can move the Himalaya ride forward or backward !

Releasing the level, the servo-motor keeps the Himalaya turning at the speed it has reached.

pushing the level the speed will increase to 10 RPM (Speed allowed through position switches 23 and 26)

Red or yellow light on.

there are also 2 bolts which limit the cam movement according to this speed.

To reverse the rotation, use the level

To stop the Himalaya you can either use the level reversing it and releasing it when the light orange is on, or it's easier to push the red button down (33) the Himalaya will stop itself.

the red selector switch gives you the possibility to choose either a 40" accelerating time or 20" as required.

Failure voltage:

- wait until ride comes to complete stop and only then
- push number 42 (on the right)
- wait the orange light
- start the sumos

## Maintenance of the slewing ring

the slewing ring does not need any maintenance, other than a periodic lubrication (once a month)

with a good bearing grease

(Mobilux Grease N:2)

- there is 6 lubricators, give them ten shots.

Hydraulic rotating joint Lubricate once a month

with a Poclair grease EP or Texaco Holutex grease?

(3 lubricators) fill them up.

wheels should be relubricated when they are mounted (bearing grease)

beams relubricate the pins used to mount the beams once a month for a settled ride or every mounting.

Electric Engine. relubricate once a year.

# MAINTENANCE

The following operations must be done :

- inspection of cars :- Safety bars
  - WING-NUTS T516
  - SHAFT and pins T513 - T525
  - shock absorber T523
  - Hydraulic motor Y502
- inspection of beams.
  - pins T511 at the beginning of each beam.
- inspection of hydraulic station :
  - check the oil level
  - watch any oil leak
  - watch the pressure on manometer

EVERY DAY.

General inspection of bolts and pipes

EVERY 15 DAYS

- General inspection of weldings
- Lubrication of the slewing ring with a good bearing grease.
- Lubrication of the 6 Lubricators (ten shots)
- Lubrication of the 3 Lubricators on the rotating joint with POCLAIN GREASE EP OR TEXACO MOLYTEX N°2.
- wheels should be relubricated when they are mounted or every month.
- relubrication of the pins T511 when settled or every month.
- watch the oil level in the speed control motor reduced.
- Relubrication of the electric engine
- Complete inspection of bolts, welding, pipes, motors, nuts

EVERY MONTH.

ONCE A YEAR.



Constructeurs  
77. Samois /s/ Seine  
France

Cde.:

Page: 1

Poste:

**HIMALAYA**

**NOTE DE CALCUL**

CALCULATION



Characteristics

① Generalities

- Number of cars - Nombre de voit. : 24
- Number of seats - Nombre de places : 72
- Rotation p. minute - Nombre tours/min: 10
- Speed - vitesse d. voit. : ca. 22 km/h

② Base of calculation 'TEST'

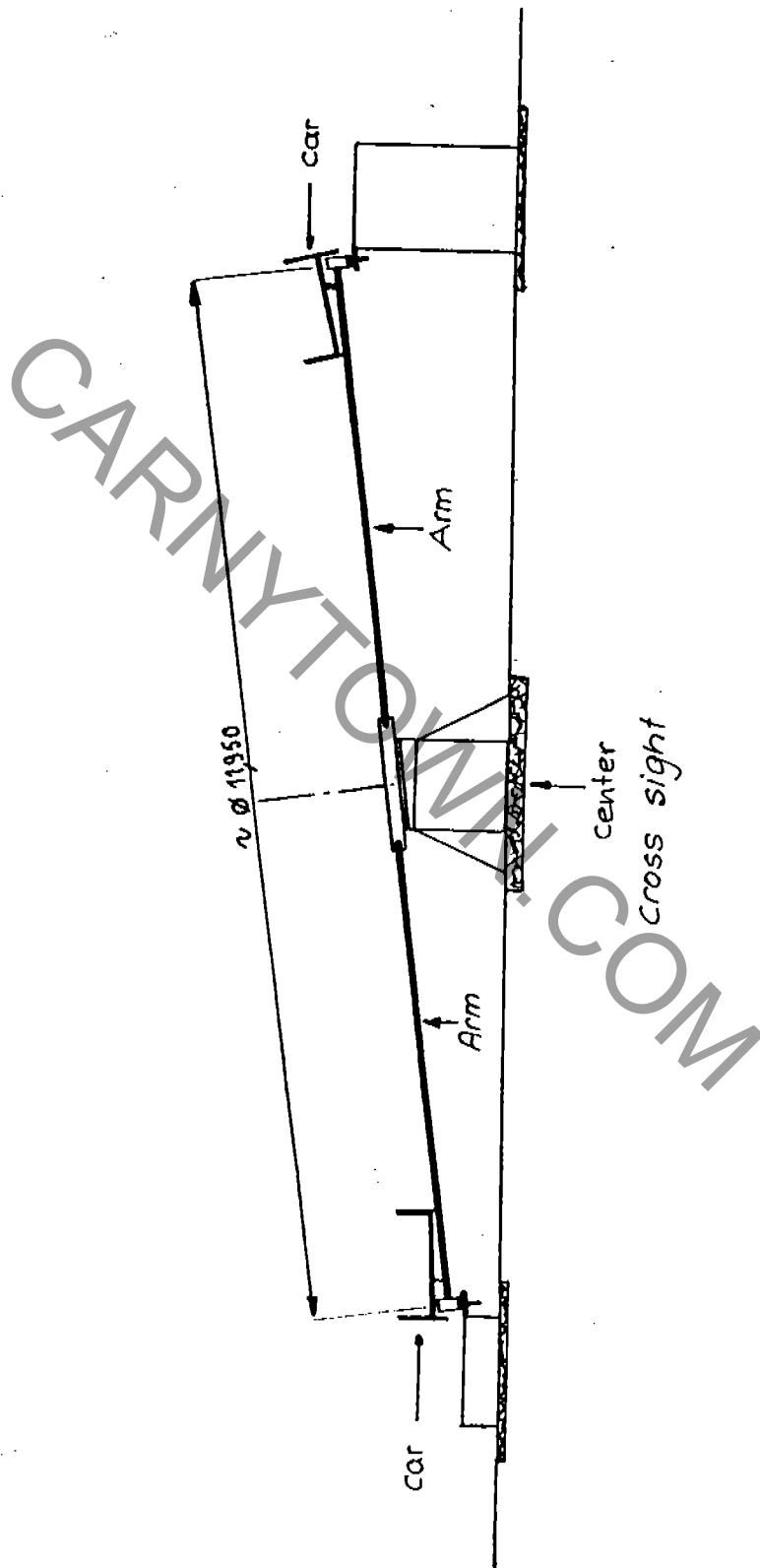
- Weight p. person - poids p. pers.: 270 pds. is 122 Kg
- Weight of 3 persons (one car) p. voit. : 810 pds. is 367 Kg
- weight of 72 persons (full load) : 19440 pds is 8806 kg  
(pleine charge)
- Starting time - temps d'accélération: 33 sec.
- Max. speed - vitesse maximum : 10 Rpm
- Braking time - temps de décélération: 33 sec.
- Time of fatigue of the metal : minimum  
(temps de fatigue de la matière)
- Rate of work of the material A37 for the testing period following the norms. (Taux de travail de la matière A. 37 pour période d'essais suivant normes) : 18 kg/mm<sup>2</sup> ≈ 49%
- Hydraulic pressure corresponding by test with full load, uniformly distributed. (pression du circuit hydraulique: < 200 b correspondant aux essais pleine charge uniformément répartie)
- Highest authorized pressure (pression de pointe admissible) : 350 b
- Authorized pressure by continual working. (Pression continue admissible) : 315 b

350 b ★

③ Normal working

- Weight p. person - poids par personne : 75 - 100 kg
- Starting time - temps d'accélération : 17 sec.
- Highest speed - vitesse maximum : 10 Rpm
- Braking time - temps de décélération : 17 sec.
- Time of fatigue of the metal : 20 000 hours  
(temps de fatigue de la matière)
- Rate of work corresponding : 14 kg/mm<sup>2</sup> ≈ 38%  
(taux de travail correspondant)
- Pressure of the hydraulic circuit : < 260 b  
(Pression du circuit hydraulique)

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**Testing characteristics**  
(caracteristiques d'essai)Ride in stop-position  
(manege a l'arret)Paving load  
(charge payante)

1 person = 270 livres is 270 · 0,453 = 122,31 kg

Weight of one unloaded car : 130 kg  
(Poids d'une voiture vide)

3 person = 122,31 · 3 = 366,93 kg is 367 kg

Weight of one loaded car : 367 + 130 = 497 kg  
(Poids d'une voiture chargée)Ride in running position  
(Manege tournant)

Régime n = 10 rpm

$$W = \frac{\pi n}{30} = 1,05 \quad W^2 = 1,1$$

Centrifugal power

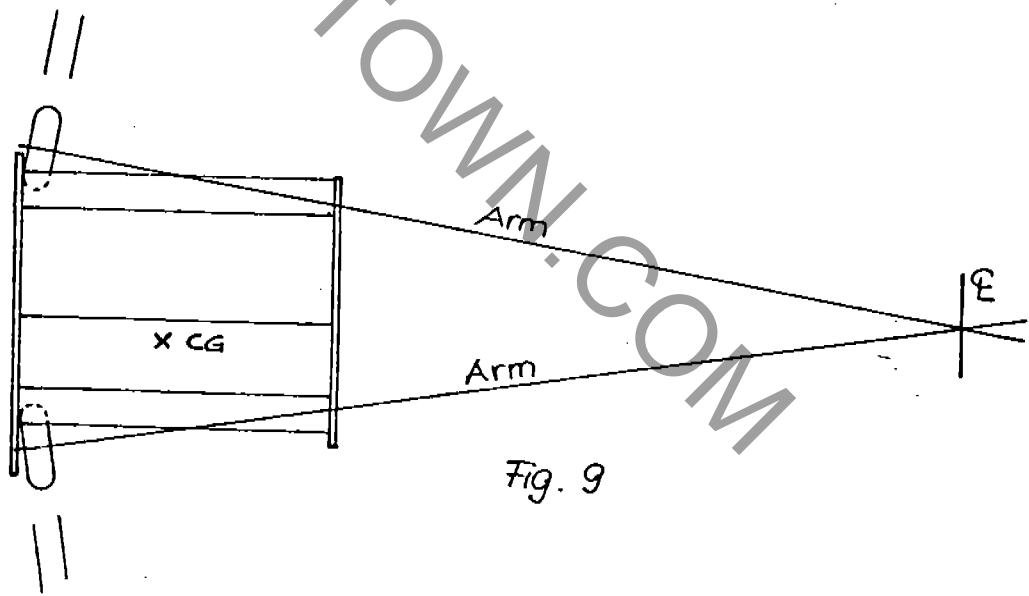
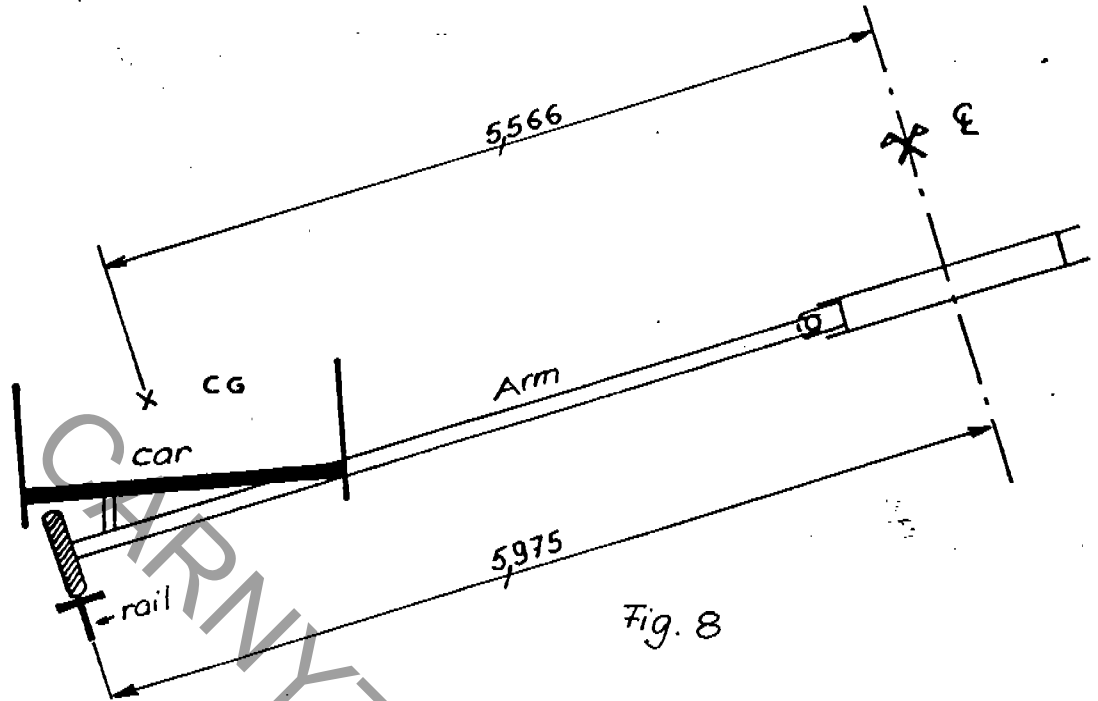
$$c = m \cdot W^2 \cdot r$$

Coefficient of centrifugal acceleration of the cars  
(Coef. d'accélération centrifuge des voitures)

$$\frac{1}{9,81} \cdot 1,1 \cdot 5,566 = \boxed{0,62}$$

Cross section  
(section transversale)

voir fig. 8 and 9 page 6



Equalizing of the force on the frames of the cars  
(Repartition des efforts sur chassis de voitures)

$$R_A = \frac{497 \cdot 325}{925} = 175 \text{ kg} \quad \text{voir Fig. 1 page 8}$$

$$R_B = 497 - 175 = 322 \text{ kg}$$

$$R_{A1} = \frac{175 \cdot 150}{750} = 35 \text{ kg} \quad \text{voir Fig. 2 page 8}$$

$$R_{A2} = 175 - 35 = 140 \text{ kg}$$

$$R_{B1} = \frac{322 \cdot 150}{750} = 64 \text{ kg}$$

$$R_{B2} = 322 - 64 = 258 \text{ kg}$$

**Section C**

(Profil C)

voir Fig. 3 page 8

$$L = 60 \cdot 40 \cdot 6 \quad St 37$$

$$F = 5,68 \quad W = 5,03$$

$$M = \frac{64 \cdot 90,5 \cdot 25,5}{116} = 1273 \text{ cmkg}$$

$$T = \frac{64 \cdot 90,5}{116} = 50 \text{ kg}$$

$$\leq \sigma = \frac{1}{2} \left[ \frac{1273}{5,03} + \sqrt{\left(\frac{1273}{5,03}\right)^2 + 4 \left(\frac{50}{5,68}\right)^2} \right] = 253 \text{ kg/cm}^2 \approx 7\%$$

Fig. 1

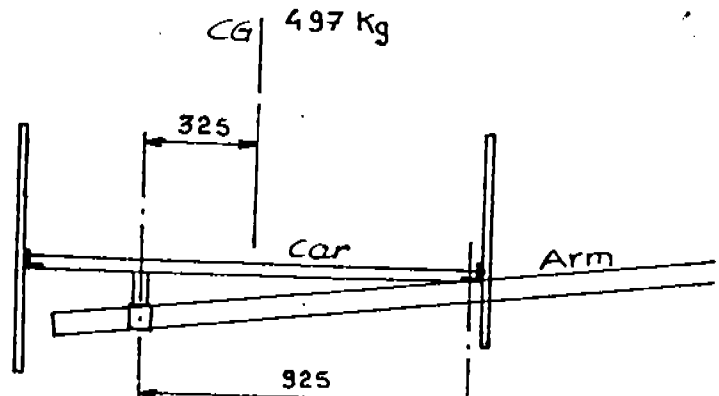


Fig. 2

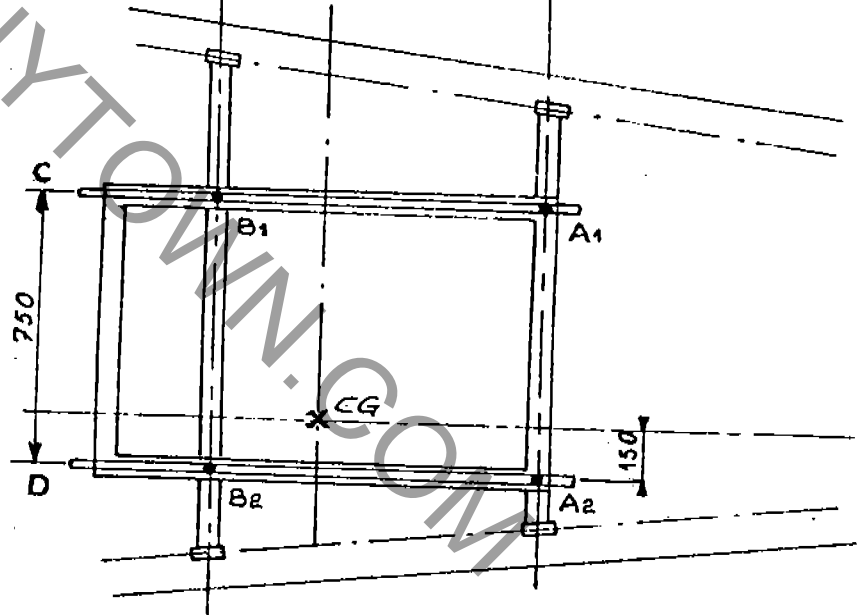
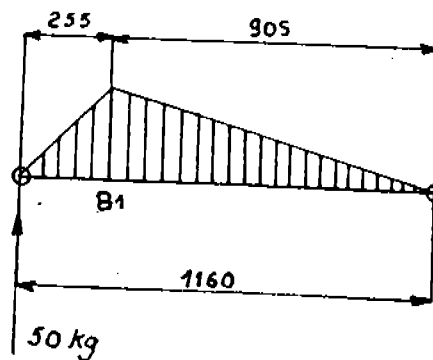


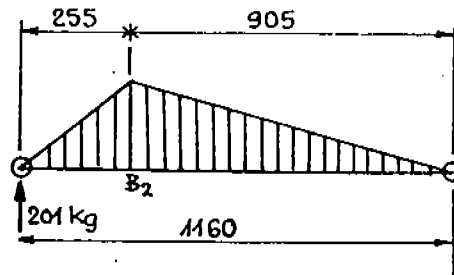
Fig. 3



Section D L 60.40.6 St 37  
F = 5,68 W = 5,03

$$M = \frac{258 \cdot 90,5 \cdot 25,5}{116} = 5133 \text{ cmkg}$$

$$T = \frac{258 \cdot 90,5}{116} = 201 \text{ Kg}$$



$$\leq T = \frac{1}{2} \left[ \frac{5133}{5,03} + \sqrt{\left(\frac{5133}{5,03}\right)^2 + 4 \left(\frac{201}{5,68}\right)^2} \right] = 1022 \text{ Kg/cm}^2 \approx 28 \%$$

Section A L 60.40.6 St 37  
F = 5,68 W = 5,03

Due of A<sub>1</sub>

$$M_{A_1} = \frac{35 \times 88,5 \cdot 25}{113,5} = 682 \text{ cmkg}$$

$$M_{A_2} = \frac{682 \cdot 13,5}{88,5} = 104 \text{ cmkg}$$

Due of A<sub>2</sub>

$$M_{A_2} = \frac{140 \cdot 100 \cdot 13,5}{113,5} = 1665 \text{ cmkg}$$

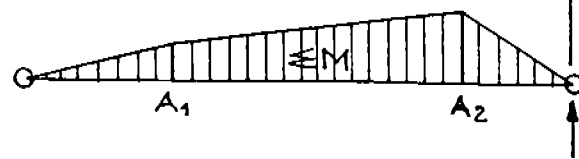
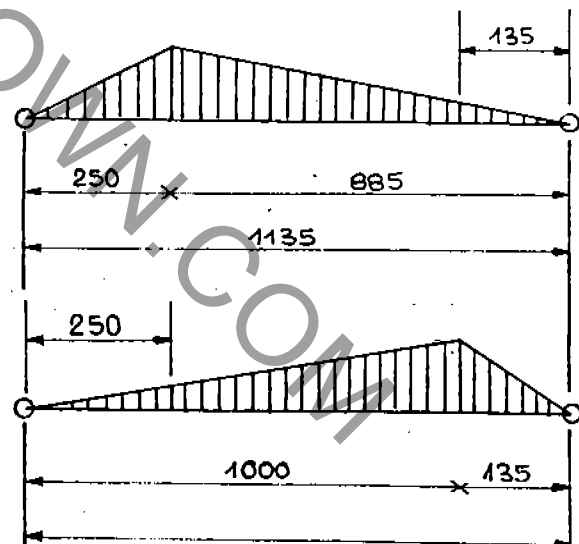
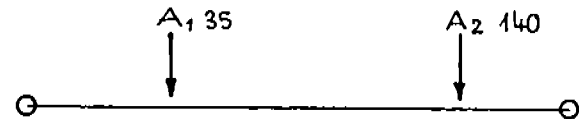
$$M_{A_1} = \frac{1665 \cdot 25}{100} = 416 \text{ cmkg}$$

$$\leq M_{A_1} = 682 + 416 = 1098 \text{ cmkg}$$

$$\leq M_{A_2} = 104 + 1665 = 1769 \text{ cmkg}$$

$$T = \frac{35 \cdot 25 + 140 \cdot 100}{113,5} = 131 \text{ Kg}$$

$$\leq T = \frac{1}{2} \left[ \frac{1769}{5,03} + \sqrt{\left(\frac{1769}{5,03}\right)^2 + 4 \left(\frac{131}{5,68}\right)^2} \right] = 353 \text{ Kg/cm}^2 \approx 10 \%$$



**Section B**  
(Profil B)

□ 65 · 3,25 ST 37

F = 6,81 W = 10,04

Due in B<sub>1</sub>

$$M_{B_1} = \frac{64 \cdot 102,3 \cdot 38}{140,3} = 1773 \text{ cmkg}$$

$$M_{B_2} = \frac{1773 \cdot 25,9}{102,3} = 449 \text{ cmkg}$$

Due in B<sub>2</sub>

$$M_{B_2} = \frac{258 \cdot 114,4 \cdot 25,9}{140,3} = 5449 \text{ cmkg}$$

$$M_{B_1} = \frac{5449 \cdot 38}{114,4} = 1810 \text{ cmkg}$$

$$\Sigma M_{B_1} = 1773 + 1810 = 3583 \text{ cmkg}$$

$$\Sigma M_{B_2} = 449 + 5449 = 5898 \text{ cmkg}$$

$$T = \frac{64 \cdot 38 + 258 \cdot 114,4}{140,3} = 228 \text{ kg}$$

$$\sigma = \frac{1}{2} \left[ \frac{5898}{10,04} + \sqrt{\left(\frac{5898}{10,04}\right)^2 + 4 \left(\frac{228}{6,81}\right)^2} \right] = 589 \text{ kg/cm}^2 = 16\%$$

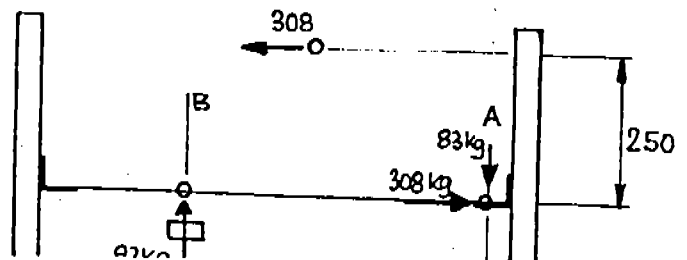
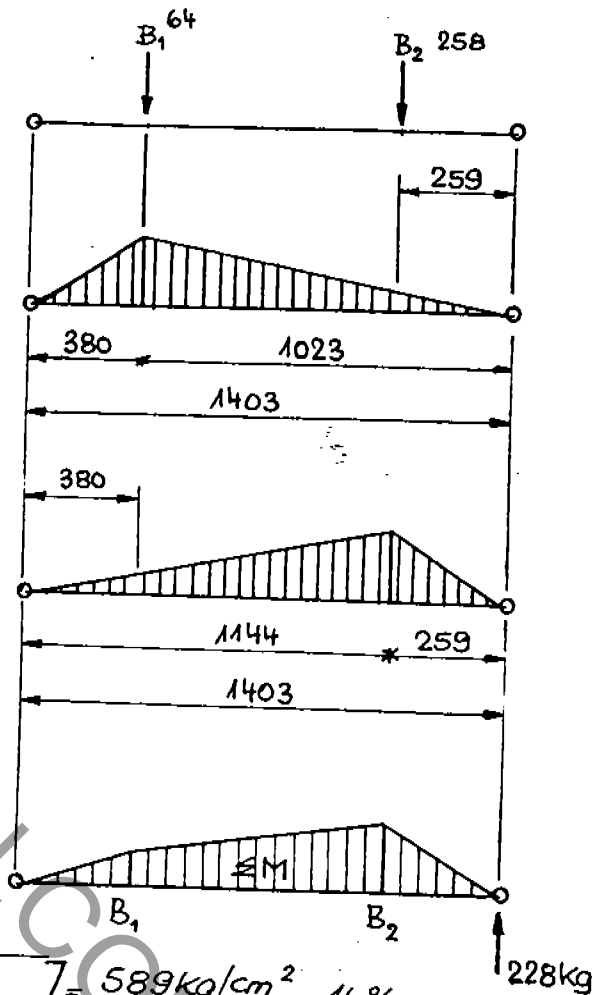
Coefficient of centrifugal acceleration of the cars

$$\frac{1,1 \cdot 5,566}{9,81} = \boxed{0,62}$$

$$C = 497 \cdot 0,62 = 308 \text{ kg}$$

$$\Sigma M = 308 \cdot 25 = 7703 \text{ cmkg}$$

$$R_A = R_B = \frac{7703}{92,5} = 83 \text{ kg}$$



Equalizing of the centrifugal force on the frame of the cars  
(Répartition de la force centrifuge sur chassis de voiture)

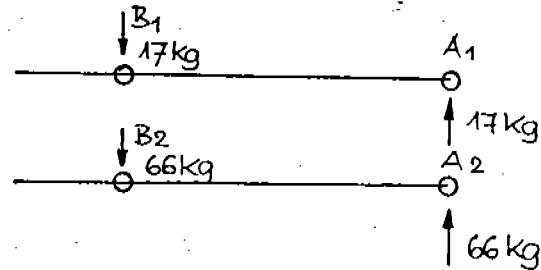
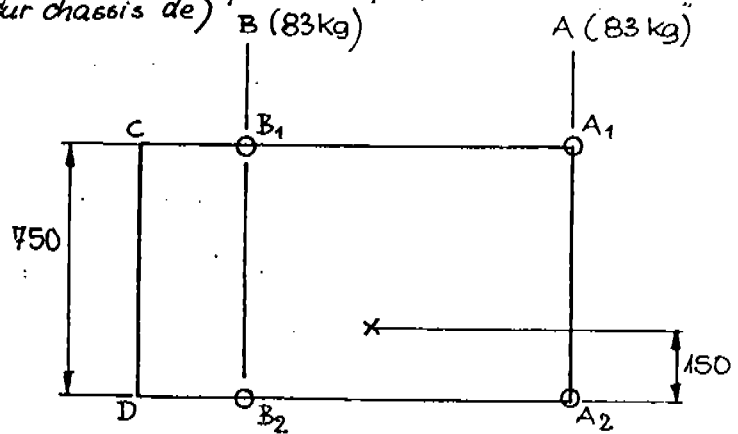
Due of the couple

$$R_{A1} = \frac{83 \cdot 150}{750} = 17 \text{ kg}$$

$$R_{A2} = 83 - 17 = 66 \text{ kg}$$

$$R_{B1} = R_{A1}$$

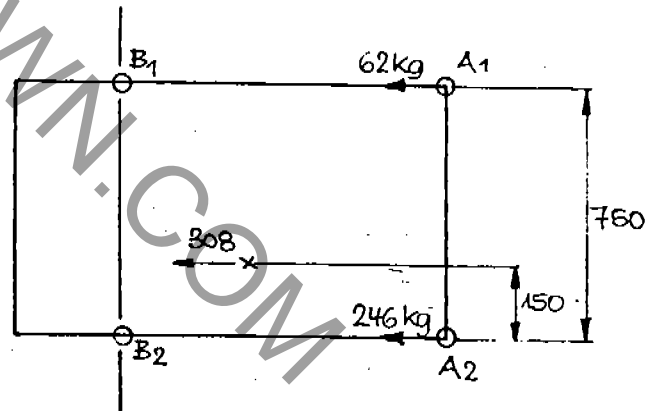
$$R_{B2} = R_{A2}$$



Due of the force  
(Dû à la force)

$$R_{A1} = \frac{308 \cdot 150}{750} = 62 \text{ kg}$$

$$R_{A2} = 308 - 62 = 246 \text{ kg}$$



Length of the rail  $\approx 41m$   
(Longeur du rail)

voir Fig. 4 page 13

$$V_{max} = 10 \text{ Rpm} = 41 \cdot 10 = 410 \text{ m/mn.}$$

Geometry of the lowest point from the rail  
(Géométrie d'un creux de rail)

$$\text{Circ.} = 2 \pi R = 61,58m$$

$$N = \frac{410}{61,58} = 6,66 \text{ t/mn.}$$

$$W = \frac{\pi N}{30} = 0,7$$

Curve of the wheel hub  
(courbe d'écrite par l'axe d'une roue)

voir Fig. 5 page 13

$$9,800 - 0,246 = 9,554$$

Curve of the CG of one car  
(Courbe decrit par la CG d'une voiture)

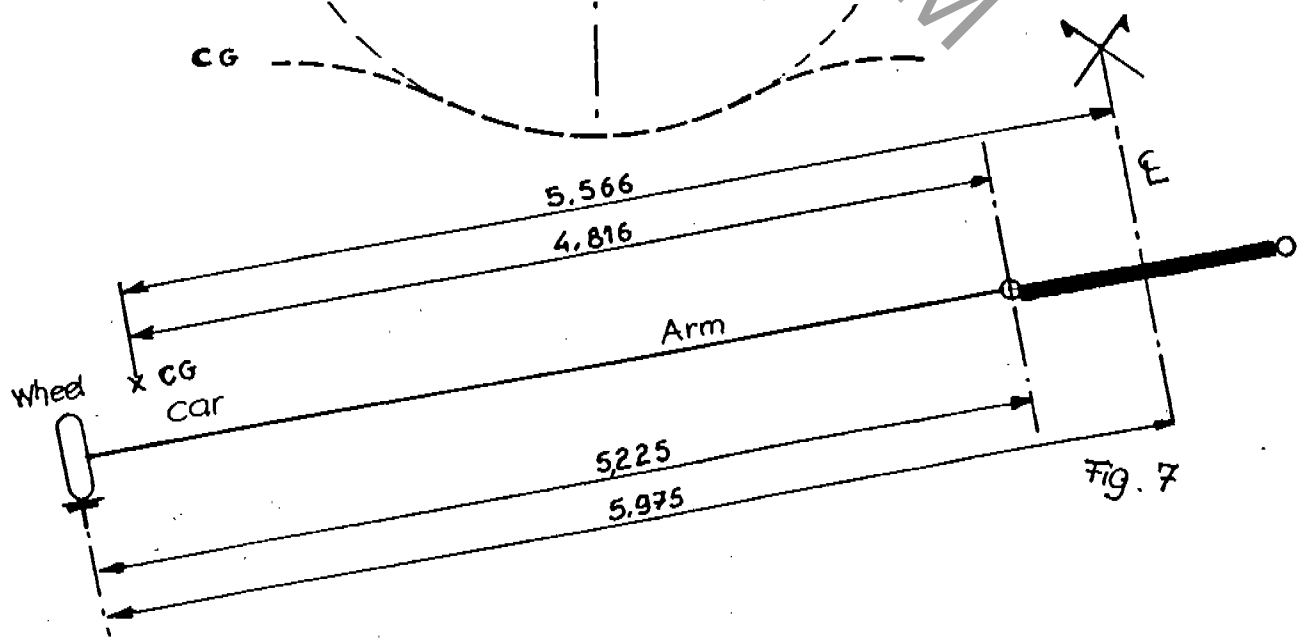
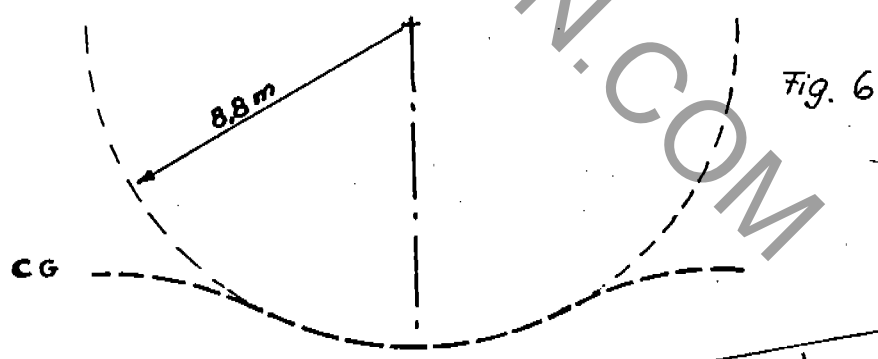
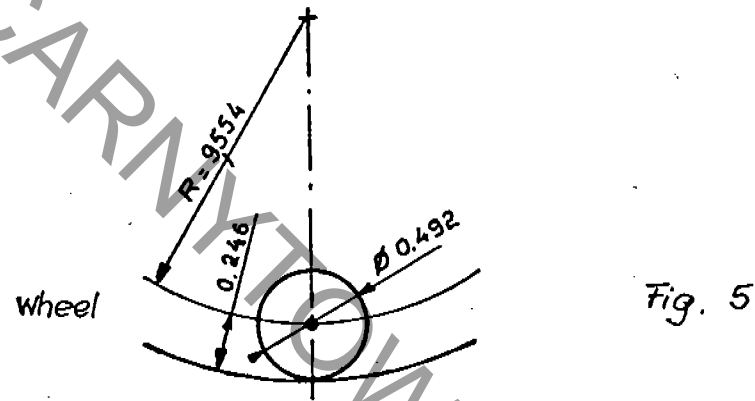
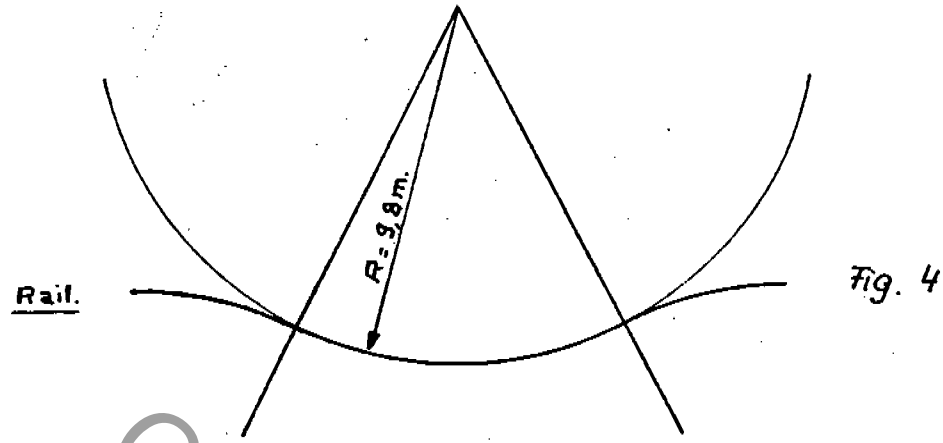
$$R = \frac{4,816}{5,225} \cdot 9,554 = 8,8m$$

voir Fig. 6 et 7 page 13

$$C = m W^2 R = \frac{497}{9,81} \cdot 0,7^2 \cdot 8,8 = 218,5kg$$

Coefficient of the vertical acceleration of the CG of the cars  
(Coeff. d'accélération verticale du CG des voitures)

$$\frac{218,5}{497} = \boxed{0,44}$$

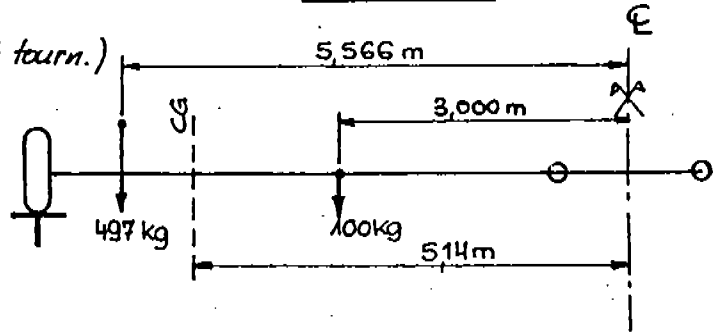


Driving power by rotation  
(Puissance d'entraînement en rotation)  
CG full load on each rotary  
element.

$N = 104 \text{ mm}$   
 $\omega = 1,05 \text{ rd/s}$   
Acc. Déc. = 33 s. Test

(CG pleine charge par élément tourn.)

Arm = 100 kg



$$PE = 497 + 100 = 597 \text{ kg}$$

$$M = 497 \cdot 5,566 + 100 \cdot 3,000 = 3066 \text{ mkg}$$

$$\text{CG is } \frac{3066}{597} = 5,14 \text{ m}$$

Inertia of rotation on each element

$$I = mr^2 = \frac{597}{9,81} \cdot 5,14^2 = 1608 \text{ mkg/s}^2$$

Rotation moment on each element

$$M = J \cdot \omega = 1608 \cdot 1,05 = 1688 \text{ mkg}$$

Absolute power on each element

$$\frac{1688}{33} = 51,2 \text{ kgm/s.}$$

Total power

$$51,2 \cdot 24 = 1228 \text{ kgm/s. or } 16,4 \text{ Ch for } \eta = 1$$

Installed power = 30 Ch.

Power of one hydraulic motor

$$\frac{16,4}{4} = 4,1 \text{ Ch.}$$

Couple of one driving-wheel

$$N = \frac{4 \cdot 10}{\pi \cdot 0,492} = 265 \text{ t/mn.}$$



Constructeurs  
77. Samois /s/ Seine  
France

Cde.:

Page: 15

Poste:

Motor HYDROLAND Ref. 5050 A<sub>1</sub>

Couple for 100 b = 7,9 mkg

Working pressure by starting and stopping  
(Pression de fonctionnement au démarrage et freinage)

$$\frac{100 \cdot 11}{7,9} = 153 \text{ b for } \epsilon \eta = 1$$

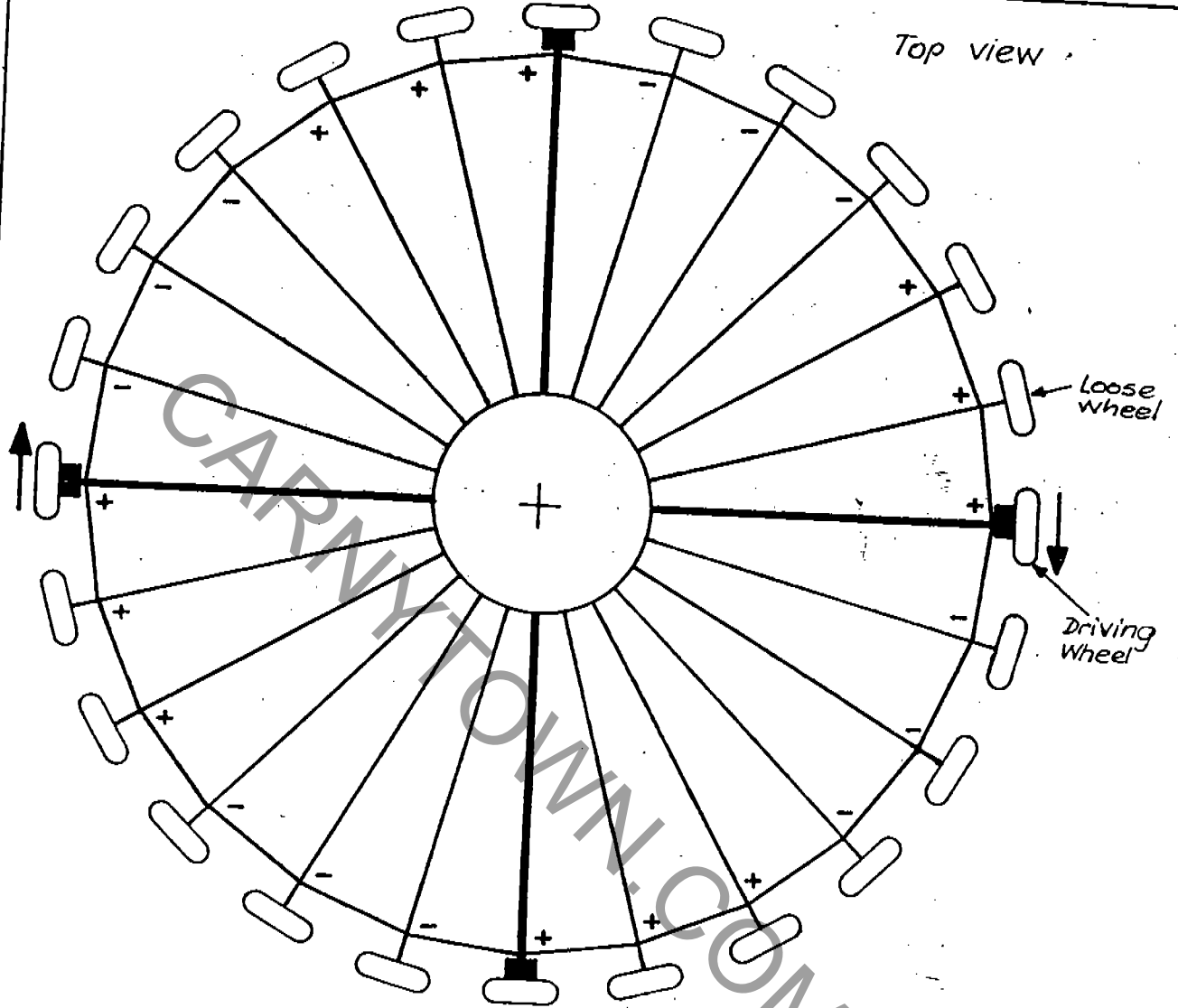
$$\text{For } \epsilon \eta = 0,8 \quad P = \frac{153}{0,8} = \boxed{191 \text{ b}} \approx 55\%$$

Technical peg  
(Fiche technique)

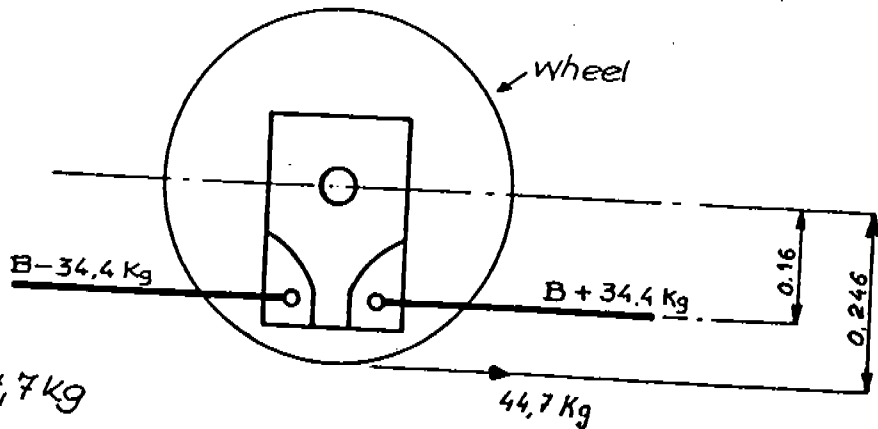
Highest authorized pressure: 350 b  
(Pression admissible en pointe)

Authorized pressure by continual working: 315 b  
(Pression admissible en utilisation continue)

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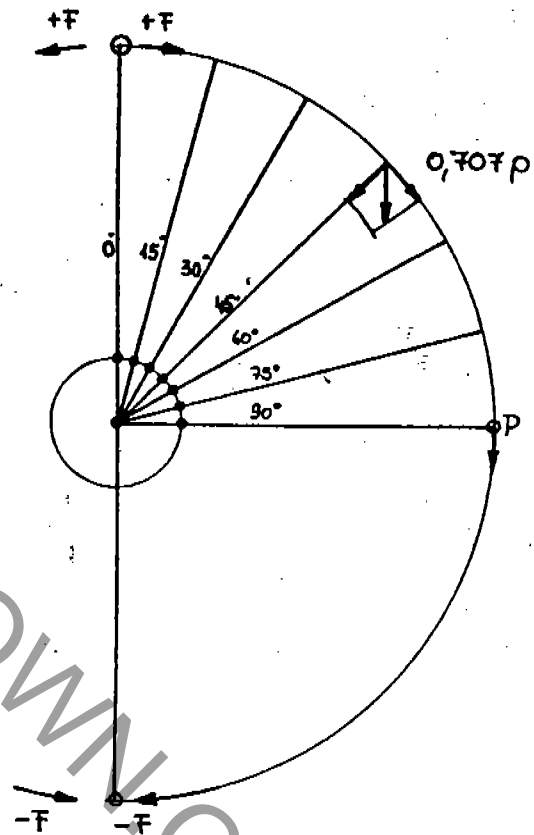


Equalizing of the motor-power of one driving-arm  
(Repartition des forces motrices d'un bras moteur)



$$F_{tg} = \frac{11}{0,246} = 44,7 \text{ Kg}$$

Hyperstatic fatigue on the felloe-section  
(Contrainte hyperstatique sur profil de jante)



Analysis

Vertical position of wheel

$$\epsilon F = \pm \left[ \frac{P + 2(0,25882P + 0,5P + 0,70711P + 0,86603P + 0,96593)}{2} \right]$$

$$\epsilon F = \pm 3,79789 P$$

Horizontal position of wheel

$$\epsilon F = 0$$

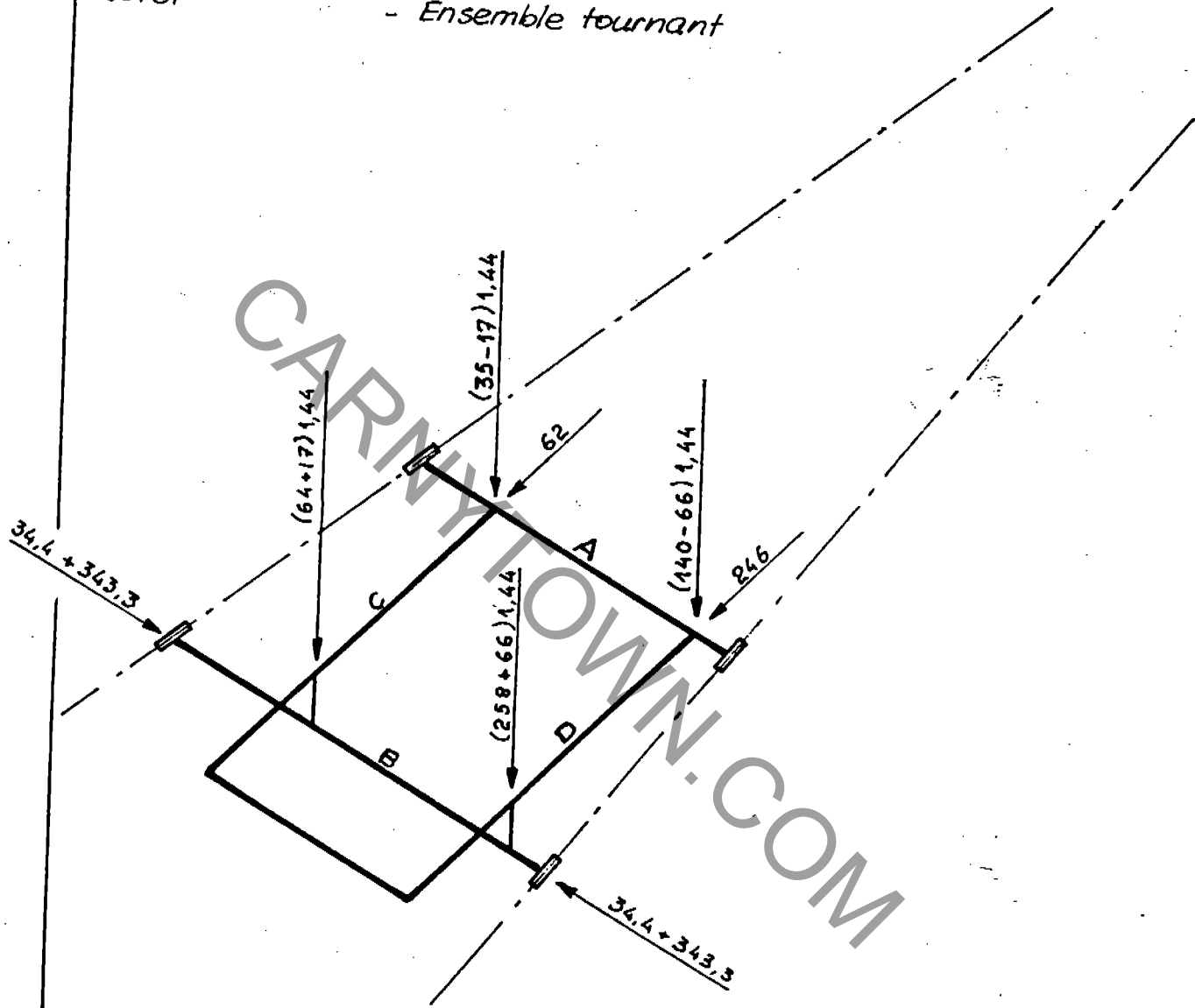
Position 10° of wheel

$$\text{max. } \epsilon F = \pm 3,79789 P \cdot 0,17365$$

$$\text{max. } \epsilon F = \pm 0,6595 P$$

$$P = \frac{494 \cdot 5,566 + 100 \cdot 3,00}{0,6595} = 520,5 \text{ kg}$$

Frame of the car - Chassis de voiture  
 Forces maximum - Efforts maxi  
 Rotor - Ensemble tournant

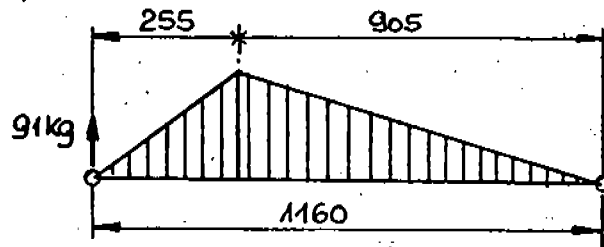


Rotating  
(Tournant)

Section C  
(Profil C)

L 60.40.6 St 37

F = 5,68 W = 5,03



$$M = \frac{(64+17)1,44 \cdot 90,5 \cdot 25,5}{116} = 2320 \text{ cmkg}$$

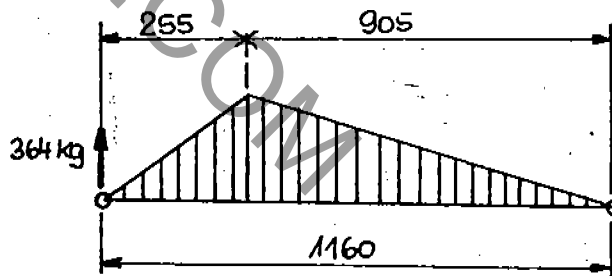
$$T = \frac{(64+17)1,44 \cdot 90,5}{116} = 91 \text{ kg}$$

$$\max. \sigma = \frac{1}{2} \left[ \frac{2320}{5,03} + \sqrt{\left(\frac{2320}{5,03}\right)^2 + 4\left(\frac{91}{5,68}\right)^2} \right] = 472 \text{ kg/cm}^2 = 13\%$$

Section D  
(Profil D)

L 60.40.6 St 37

F = 5,68 W = 5,03



$$M = \frac{(258+66)1,44 \cdot 90,5 \cdot 25,5}{116} = 9282 \text{ cmkg}$$

$$T = \frac{(258+66)1,44 \cdot 90,5}{116} = 364$$

$$\max. \sigma = \frac{1}{2} \left[ \frac{9282}{5,03} + \sqrt{\left(\frac{9282}{5,03}\right)^2 + 4\left(\frac{364}{5,68}\right)^2} \right] = 1848 \text{ kg/cm}^2 \approx 50\%$$

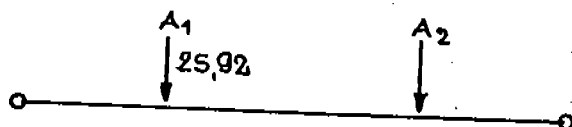
Section A  
(Profil A)

L 60.40.6 — St 37

F = 5,68

W<sub>v</sub> = 5,03

W<sub>H</sub> = 2,38

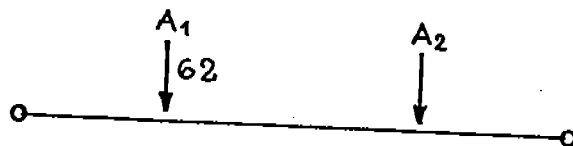


Due in A<sub>1</sub> (vertical)

$$M_{A1} = (35 - 17) 1,44 \cdot 88,5 \cdot 25 = 505 \text{ cmkg}$$

$$M_{A2} = \frac{505 \cdot 13,5}{88,5} = 77 \text{ cmkg}$$

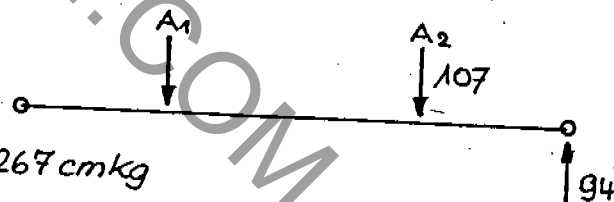
Due in A<sub>1</sub> (Horizontal)



$$M_{A1} = \frac{62 \cdot 88,5 \cdot 25}{113,5} = 1209 \text{ cmkg}$$

$$M_{A2} = \frac{1209 \cdot 13,5}{88,5} = 184 \text{ cmkg}$$

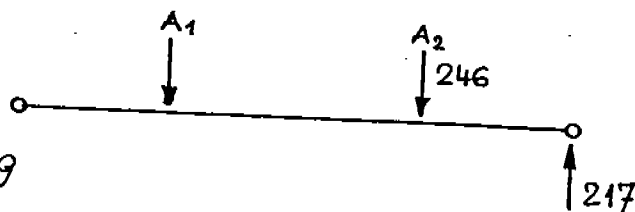
Due in A<sub>2</sub> (vertical)



$$M_{A2} = \frac{(140 - 66) 1,44 \cdot 100 \cdot 13,5}{113,5} = 1267 \text{ cmkg}$$

$$M_{A1} = \frac{1267 \cdot 25}{100} = 317 \text{ cmkg}$$

Due in A<sub>2</sub> (horizontal)



$$M_{A2} = \frac{246 \cdot 100 \cdot 13,5}{113,5} = 2926 \text{ cmkg}$$

$$M_{A1} = \frac{2926 \cdot 25}{100} = 732 \text{ cmkg}$$

ΣM in A<sub>2</sub> (M<sub>v</sub> = 1267 + 77 = 1344 cmkg)

(M<sub>H</sub> = 2926 + 184 = 3110 cmkg)

$$V_v = \frac{1}{2} \left[ \frac{1344}{5,03} + \sqrt{\left(\frac{1344}{5,03}\right)^2 + 4 \left(\frac{94}{5,68}\right)^2} \right] = 268$$

$$V_H = \frac{1}{2} \left[ \frac{3110}{2,38} + \sqrt{\left(\frac{3110}{2,38}\right)^2 + 4 \left(\frac{217}{5,68}\right)^2} \right] = 1308$$

$$\leq V = \sqrt{268^2 + 1308^2} = 1335 \text{ kg/cm}^2 \approx 36\%$$

**Section B**  $\square$  55.3,25 ST 37  
(Profil B)

$$F = 6,81 \quad W = 10,04$$

Due in  $B_1$

$$M_{B_1} = \frac{(64+17) 1,44 \cdot 102,3 \cdot 38}{140,3} = 3232 \text{ cmkg}$$

$$M_{B_2} = \frac{3232 \cdot 25,9}{102,3} = 818 \text{ cmkg}$$

Due in  $B_2$

$$M_{B_2} = \frac{(258+66) 1,44 \cdot 114,4 \cdot 25,9}{140,3} = 9853 \text{ cmkg}$$

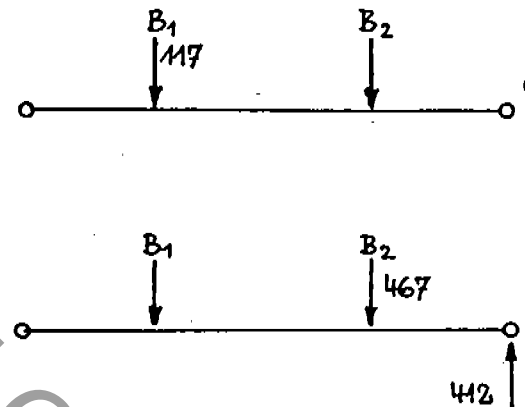
$$M_{B_1} = \frac{9853 \cdot 38}{114,4} = 3273 \text{ cmkg}$$

$$\leq M_{B_1} = 3232 + 3273 = 6505 \text{ cmkg}$$

$$\leq M_{B_2} = 818 + 9853 = 10671 \text{ cmkg}$$

$$T = \frac{117 \cdot 38 + 467 \cdot 114,4}{140,3} = 412 \text{ kg}$$

$$V = \frac{1}{2} \left[ \frac{10671}{10,04} + \sqrt{\left(\frac{10671}{10,04}\right)^2 + 4 \left(\frac{412}{6,81}\right)^2} \right] + \left(\frac{34,4 + 343,3}{6,81}\right) = 1122 \text{ kg/cm}^2 \approx 30\%$$



# HIMALAYA

Spécifications

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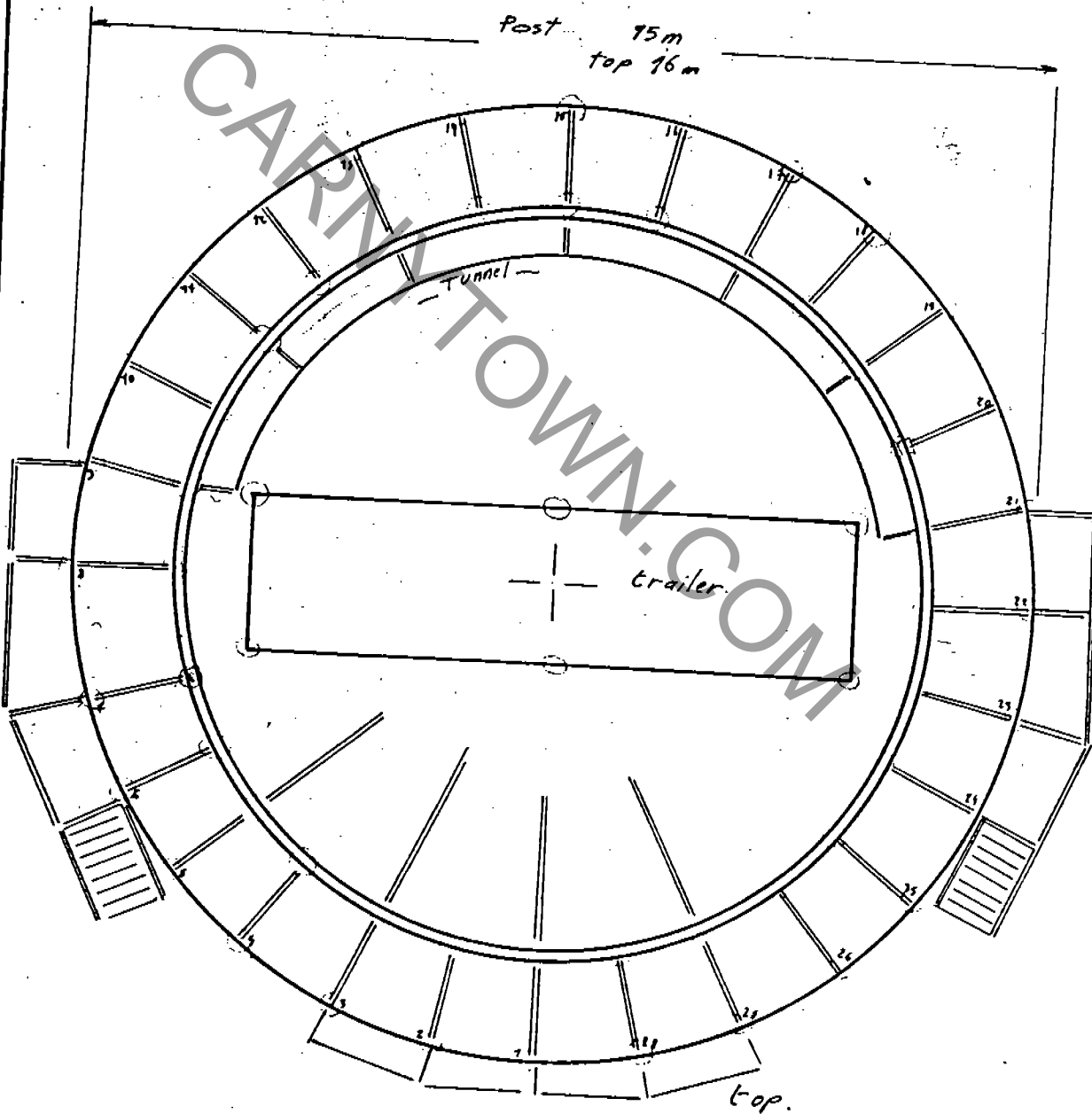
HIMALAYA

Floor Space	P 1
HYDRAULIC SPECIFICATIONS	P 2
HYDRAULIC circuit	P 3
HYDRAULIC DIAGRAM	P 4
WARNING	P 5
Electric Specifications	P 6
Electric description	P 6
OPERATING RULES	P 7
FAILURE VOLTAGE	P 8

Electric diagram N° 40 6214 23.

HIMALAYA .14

Floor-space.



○ clampina - points

Hydraulic specifications.

oil : use "Hydrelf 34"

or one oil having 3,5 ↔ 4,5 °Engler

rates at 50°C (122°F) / change it 1<sup>st</sup> at 500h  
and after, each 3000h.

Filter : clean it once a month.

oil level. watch it always, on the oil tank side  
indicator.

keep it at the indicated value.

Flexible pipe.

must be maintained clean when removed.

Hydraulic circuit.

In three parts.

- 1) A power circuit or main circuit including.

Main pump.

4 hydraulic wheel engine.

2 pressure limit valves. (high value)

- 2) An auxiliary circuit including.

Auxiliary pump.

2 claps

1 pressure limit valve (low value)

- 3) A deduction circuit including

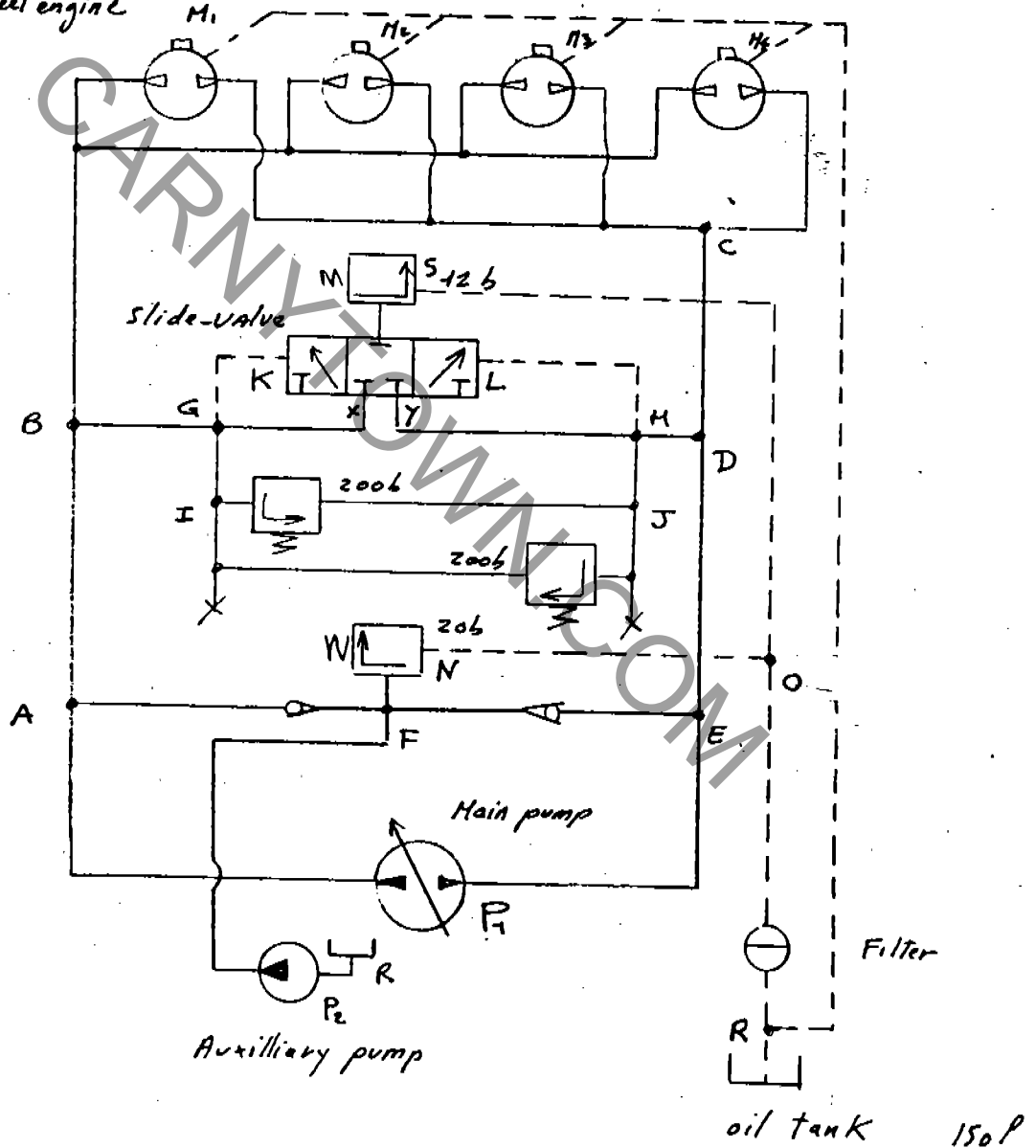
- a slide valve (self working)

- the power circuit makes the right pressure required.
- the auxiliary circuit is used to maintain a necessary low level pressure for the best pump and engine working condition.
- A deduction circuit required to remove automatically the working oil.

See the Hydraulic circuit diagram on next page.

HYDRAULIC DIAGRAM.

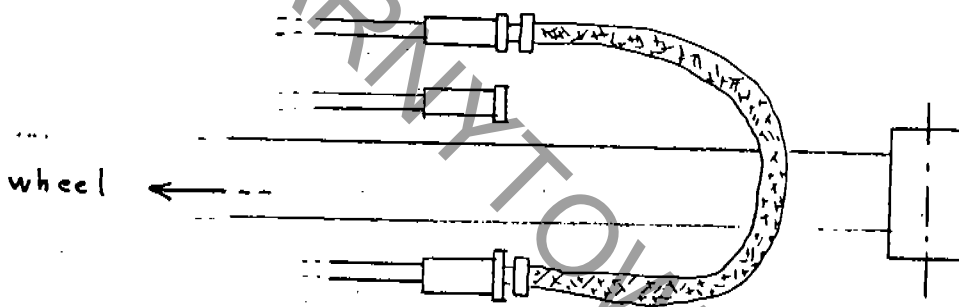
Hydraulic wheel engine



- 1) Main circuit . P<sub>1</sub>, A, B, M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>, M<sub>4</sub>, C, D, E, P<sub>1</sub>
- 2) Auxilliary circuit R, P<sub>2</sub>, F, E, P<sub>1</sub>
- 3) deduction circuit FNOR and (AGV 140)

Engine break down.

- isolate the failing wheel hydraulic engine from others  
shut its hydraulic circuit on itself, joining input and output. with a hose



- To make the manual rotation easier putting the cars on, use the same man on each engine circuit.

WARNING

- ① When the ride works with 3 engines instead of the 4 required, watch the speed. Don't let it to reach its top speed. Use the slow accelerator position.
- ② Never try to work without the auxiliary pump on. (green light on)

## HIMALAYA

### Electric instructions

#### DESCRIPTION

The electric installation consists of :

- an electric board
- a remote control board
- a hydraulic station.

The electric board contains mainly

- an isolating switch
- a differential circuit breaker assuming people's protection (300 mA)
- a change over switch
- the others apparatus for the electric engines automatic command; relays, contactors, ect..

The remote control board wears all the usefull parts for signalisations and command.

The Hydraulic station has.

- one main pump electric motor (30 HP)
- one auxilliary pump motor (2 HP)
- one Servo-motor for regulation.

The HIMALAYA must be supplied with 220 V  
3 phases. , without neutral conductor .

OPERATING RULES

First

- the remote control board connected with the electric board.
- the earth connected (earthvalue  $\approx 6 \Omega$ )
- The main voltage supply
- the thermic-protection relays on,
- the isolating switch on
- the circuit-breaker on.

then it's a first necessity to verify the main pump electric engine right rotation.

In this order.

use the push button number 39 on the electric diagram 406214 23 (the black one on the remote control board left upper corner) push it and stop immediately the electric engine supply with the push button 40 (larger black one next beside) you must watch if the main pump electric engine rotation is in accordance or not with the arrow pointed on the oil tank side. In case it is, the supply connection is right. if it's not, you just need to reverse the phases using only the change over switch number 3, putting it on its other position. that's all but:

this operation must be done every time the main voltage supply will be removed.

the orange light can be on or not; anyway press on the black push button (number 42) on the right side.

this button works the Servo-motor

(if the orange light was off, that means cam not in its zero position; both 24 and 25 position-switches are off; the Servo-motor will now move the cam until that position is reached.)

Now the orange light is on. pushing again on the 39 (left) you have both, green and blue light on.

blue for main pump

From now, on using the piloting level switch (31) you can move the Himalaya ride forward or backward !

Releasing the level, the Servo-motor keeps the Himalaya turning at the speed it has reached.

Pushing the level the speed will increase to 10 RPM (Speed allowed through position switches 23 and 26)

Red or yellow light on.

there are also 2 bolts which limit the cam movement according to this speed.

To reverse the rotation, use the level

To stop the Himalaya you can either use the level reversing it and releasing it when the light orange is on, or it's easier to push the red button down (33) the Himalaya will stop itself.

the red selector switch gives you the possibility to choose either a 40" accelerating time or 20" as required.

### Failure voltage.

- wait until ride comes to complete stop and only then
- push number 42 (on the right).
- wait the orange light.
- start the pumps.

Maintenance of the slewing ring.

the slewing ring does not need any maintenance, others than a periodic lubrication. (once a month)

with a good bearing grease

(Mobilux Grease N:2)

- there is 6 lubricators, give them ten shots.

Hydraulic rotating joint

Lubricate once a month

with a Poclair grease EP or Texaco Polytex grease ?

(3 lubricators) fill them up.

wheels should be relubricated when they are mounted (bearing grease)

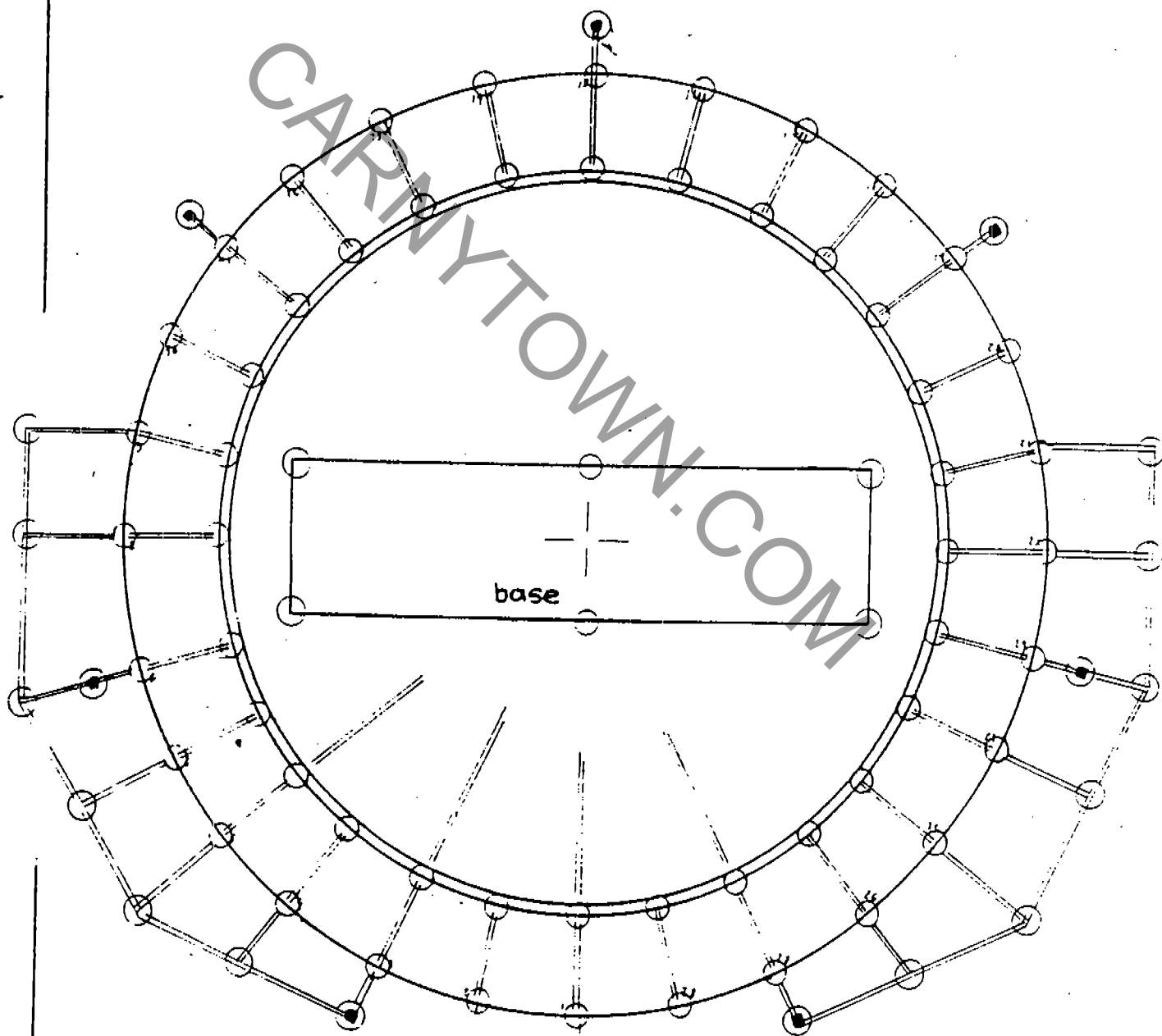
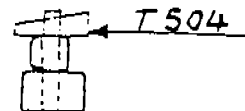
beams relubricate the pins used to mount the beams once a month for a settled ride or every mounting.

Electric Engine. relubricate once a year.

## HIMALAYA

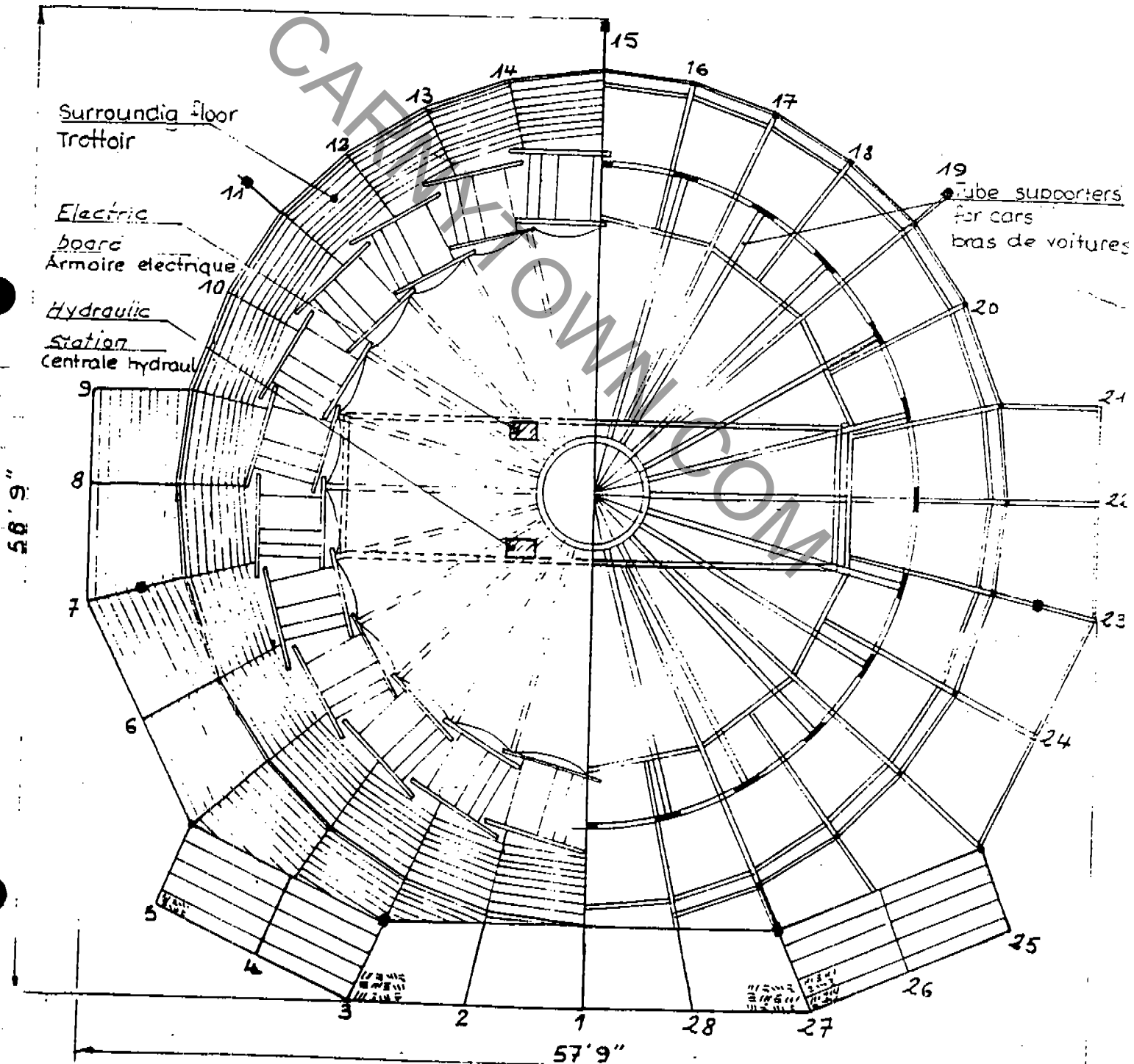
Floor-space

Plan de calage



○ - Clamping points

Floor-space - Dimensions au sol  
Top view - Vue de dessus

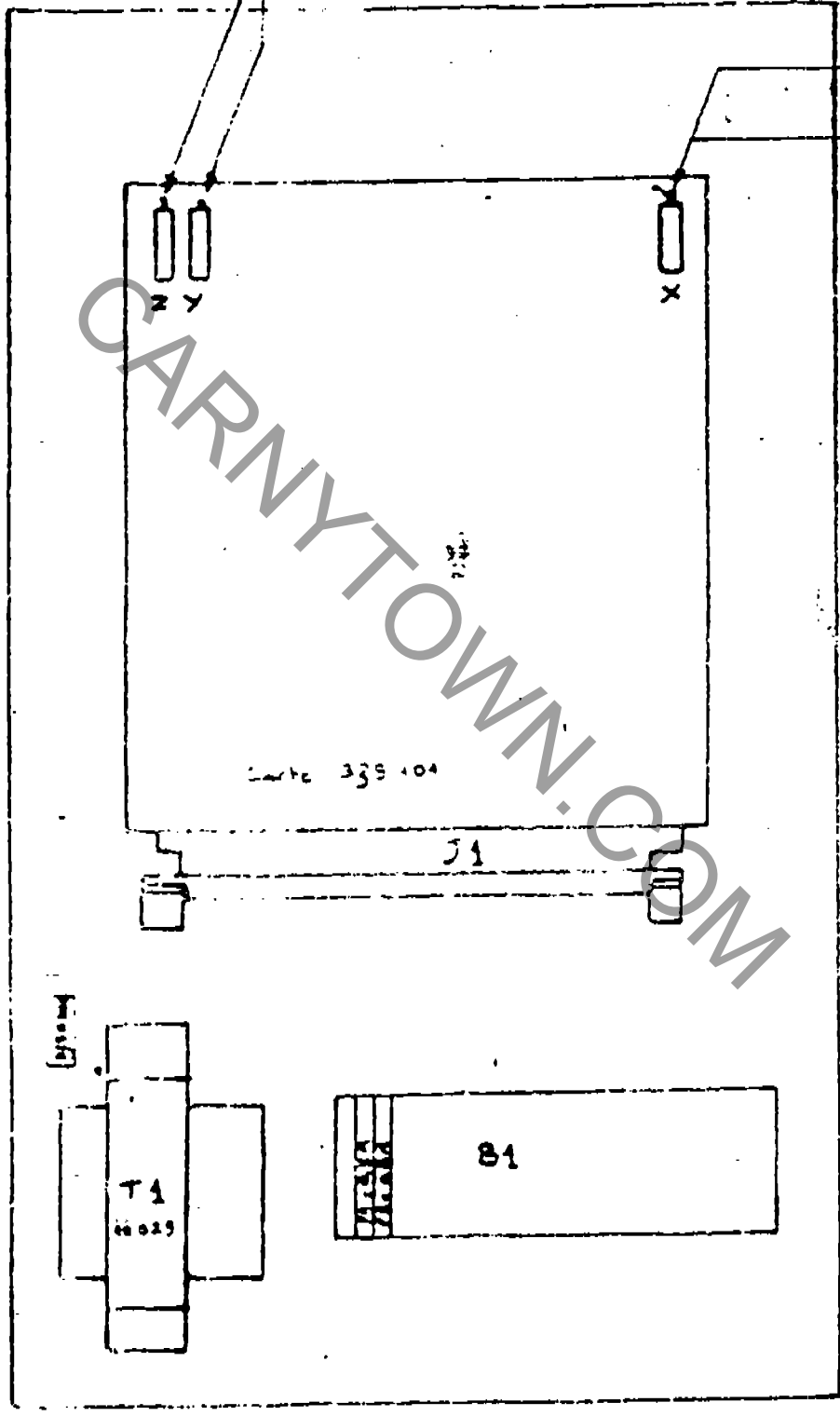


ADJUSTEMENT SPEED - KI/7  
MAX

ADJUSTEMENT SPEED - KI/8  
MAX

SCREW TO DECREASE THE SPEED

ADJUSTEMENT OF  
ACCELERATION  
AND  
DECELERATION



See inside

Carte 329 A 200

LOCATION OF ELEMENTS

				F
				E
				D
				C
				B

**HIMALAYA:****START UP OPERATION:**

Voltmeter between 11-15

Plug in feeding lines 220 or 380 V

Do not start the pump

Potentiometer 3 wires back to zero

Look for 0V with the four wires fader

Turn the 3-wire potentiometer up to the end

The current shall reach 2.7 V within 30 seconds

2.7 V corresponds to the maximum angle of the pump

Turn back to zero. Turn the pump

Adjust the max speed of the ride with the fader y. z

Check the necessary current for max. speed

Stop the pumps. Adjust acceleration time according to the type of ride (about 30 seconds for HIMALAYA).

**VERY IMPORTANT: MAX SPEED MUST NEVER EXCEED 10 RPM**

In case of breakdown on one hydraulic motor you may operate the ride on three motors by taking out the defective motor (do not forget to connect the hoses together to avoid leakage). This operation is OK for a very short period of time however in this configuration the ride operating on three motors will run 33% faster when the control button is on max. speed.

**YOU MUST** adjust the max. speed as described hereabove to reach a maximum of 10 RPM. During all the time the ride is running on three motors, a ride supervisor must stay by the ride and make sure the maximum speed never goes higher than 10 RPM.

*N.B. : When you reinstall the fourth motor you must once again adjust the maximum speed otherwise the ride will run slower than normal (10 RPM).*

### PASSENGER RESTRICTION

The cars are designed for a maximum load of three passengers of 75 Kg each , that is 225 Kg per car (Approximatively 500 pounds per car max.).

- If passengers look heavier than 75 Kg (166 Pounds), YOU MUST reduce the number of passengers to TWO.
- If passengers look heavier than 112 Kg (250 Pounds), YOU MUST reduce the number of passengers in the car to ONE.
- People suffering from heart or back problems must not ride this ride.
- Minimum height to ride this ride is 1,50 m.

It is very important that operators make sure that the lap bars are properly locked and check that all the pins and safety keys are in place. If one key or pin does not seem to be in the right position, you must put it back in its normal position, or not use the car until it has been repaired.

Passengers must remain seated all the time and must keep their hands and feet inside the car. If a passenger stands up you must immediately stop the ride.

Nobody should stay on the platforms while the ride is running.

If a lock on a car shows too much wear or play, you must not operate this car and must replace the lock.

**VERY IMPORTANT : FOR OTHER DAILY INSPECTION SEE MAINTENANCE SCHEDULE PAGE 25 AND OTHERS.**

### HYDRAULIC DIAGRAM FOR POWER STATION

ITEM	QUANTITY	DESCRIPTION
1	1	ELECTRIC MOTOR : 40 HP
2	1	HYDRAULIC PUMP : SPV 23 90R100
3	1	DRIVING SYSTEM : 62.862
4	1	ASPIRATION FILTER : SF . SS . SM . 10
5	1	FILLING CORK WITH FILTER : EN . RG . MI 4080
6	1	DRAINAGE TUBE : Diam. 19
7	1	ASPIRATION TUBE : Diam. 5/8"
8	1	HYDRO VALVE : 051 . W.V.10.P.IN.227.Ao
9	1	STOPPING CORK : RPZ . 6 . Z . CR
10	1	MANOMETER : MP . 0 . 400b STAC 1580
11	1	STOPPING CORK : RPZ . 6 . Z . CR
12	1	MANOMETER : 0 . 400b STAC 1580
13	1	FLEXIBLE DH 45 lq 1020 3/4"
14	1	FLEXIBLE DH 45 lq 1020 3/4"
15	4	FLEXIBLE DH 1 lq 804 1/2"
16	1	LEVEL WITH THERMOMETER STAC 1270
17	1	DRAINAGE TUBE Diam. 19
18	8	FLEXIBLE DH.45 lq 530 3/4"
19	1	TURNING JOINT CPM 11377.75
20	4	HYDRAULIC MOTOR A0075 . POCLAIN
21	8	FLEXIBLE DH 45 lq 905 3/4"
22	4	FLEXIBLE DH 1 lq 600 1/2"

## MAINTENANCE

### EVERY DAY

#### CAR INSPECTION

Cars must be in perfect condition

- Safety bars (hinge and locker)
- Wing nuts T516
- Shaft and pins T512 and T513
- Shock absorber S651
- Hydraulic motor Y504
- Locker (no wear admitted)

#### SWEEP INSPECTION

- Pins T511 at the beginning of each sweep.
- Pins T522

#### INSPECTION OF HYDRAULIC UNIT

- Check the oil level
- Watch for any oil leak
- Watch for manometer pressure

#### ALL SECURITY PINS

Must be in place and in good shape. If not, they must be replaced.

## MAINTENANCE

### EVERY 50 HOURS

#### GENERAL INSPECTION OF BOLTS AND NUTS

All bolts must be in place and tightened. Vibrations might drive some bolts loose. They must be checked every 50 hours and tightened if necessary.

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## MAINTENANCE

### EVERY MONTH

#### GENERAL INSPECTION OF WELDINGS

- Lubrication of the slewing ring
- Lubrication of the 6 lubricators
- Lubrication of the 3 lubricators on the rotating joint with POCLAIN grease EP or TEXACO MOLYTEX NR. 2.
- Wheels should be re-lubricated when they are mounted every month.
- Re-lubrication of the pins T511 when they are settled or every month.
- Watch for the oil level in the servo-motor.

## MAINTENANCE

### **ONCE A YEAR**

- Re-lubrication of the electric engine.
- Complete inspection of bolts, welding, pipes, motors, seats.
- Speed, vibrations, stresses, centrifugal force, alternate loads, induce fatigue.
- Fatigue of metal may cause cracks specially in the dynamic parts of the ride such as, wheels, sweeps, center plates, rail track, track pins, other pins, car chassis, speed bars between sweeps or other components including the cars themselves.

All these parts (specially the dynamic ones but not exclusively) must be completely dismantled and disassembled once a year. They must be carefully inspected. You must not operate your ride if one of these parts either shows the beginning of a crack in the metal or an excessive wear.

If such a case occurs, you must change the part.

## MAINTENANCE

### **EVERY TWO YEARS**

The ride must be completely inspected by an authorised registered office such as VERITAS or TÜV or other.

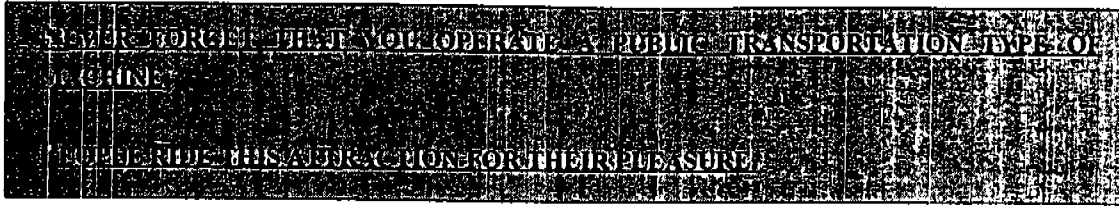
Please call our service for an appointment :

Tel. N° in the USA :

503 694 28 03

or write at the following address :

REVERCHON USA  
7177 LAKE BLUFF COURT  
PORTLAND  
OREGON



CONSEQUENTLY THE RIDE MUST ALWAYS BE CLEAN AND IN A PERFECT MECHANICAL AND STRUCTURAL CONDITION. ALL THE SAFETY DEVICES MUST BE IN PLACE AND IN GOOD WORKING CONDITIONS WITHOUT WEAR. ALL THE PINS, BOLTS, NUTS, AND CONNECTIONS MUST BE CHECKED BEFORE OPERATION.

NEVER OPERATE THE RIDE WITHOUT RESPECTING ALL THE RULES AND ADVISES LISTED IN THIS MANUAL

ALWAYS USE GENUINE PARTS.

ALL THE MAINTENANCE OPERATIONS MUST BE NOTED AT THE END OF THIS BOOK.

ANY CHANGE OF PART OR REPAIR MUST BE NOTED AT THE END OF THIS BOOK.

THE MANUFACTURER WILL NOT BE RESPONSIBLE IN CASE THE OPERATION, SAFETY, MAINTENANCE AND INSPECTION SPECIFICATIONS OR PROCEDURES HAVE NOT BEEN RESPECTED.

Daniel T. Kilinski  
7177 Lake Bluff Court  
Wilsonville, OR 97070 USA

February 27, 1998

To: Rob Jacobs  
From: Dan Kilinski  
Re: Reverchon Himalayas

Dear Mr. Jacobs,

As indicated on the advertisement, the Reverchon Himalaya can operate at 12 RPM.



Dan Kilinski

CARNY TOWN.COM



Florida Department of Agriculture & Consumer Services  
BOB CRAWFORD, Commissioner  
Bureau of Fair Ride Inspections, Division of Standards

BUREAU OF FAIR RIDE INSPECTION  
ADMINISTRATION BUILDING, SUITE N  
3125 CONNER BOULEVARD,  
TALLAHASSEE, FL 32399-1650

OFFICE: (850) 488-9790  
FAX: (850) 488-9023

**BUREAU OF FAIR RIDES INSPECTION - FAX CONFIRMATION**

TO: Mike Williams

FAX NO: 813-757-6837

DATE 27 Feb 98 TIME 5:05 P.M.

THIS IS TO CONFIRM THAT THE BUREAU RECEIVED YOUR FAX REQUEST FOR:

- 1. INSPECTION OF \_\_\_\_\_ RIDES ON \_\_\_\_\_ AT \_\_\_\_\_
- 2. REINSPECTION OF \_\_\_\_\_ RIDES ON \_\_\_\_\_ AT \_\_\_\_\_
- 3. A CHANGE OF YOUR PREVIOUS RIDE INSPECTION REQUEST FOR \_\_\_\_\_ RIDES ON \_\_\_\_\_ AT \_\_\_\_\_
- 4. A CANCELLATION OF YOUR PREVIOUS RIDE INSPECTION REQUEST FOR \_\_\_\_\_ RIDES ON \_\_\_\_\_ AT \_\_\_\_\_

OTHER: This is confirmation that the Bureau has receive appropriate manufacture specifications that the Reverchon Himalaya can operate at 12 RPM.

*Robert H. Jacobs*  
Robert H. Jacobs  
Field Administrator



U.S. CONSUMER PRODUCT SAFETY COMMISSION  
WASHINGTON, D.C. 20207

## AMUSEMENT RIDE SAFETY ALERT

ATTENTION! STATE AMUSEMENT RIDE SAFETY INSPECTORS,  
OFFICIALS, RIDE OWNERS/OPERATORS & INSURERS

REVERCHON, S.A. INDUSTRIES, FRANCE  
"HIMALAYA"  
May 21, 1998

On April 22, 1998, the U.S. Consumer Product Safety Commission (CPSC) issued a safety alert on the Reverchon "Himalaya" mobile amusement ride in an effort to prevent future ride incidents similar to the one which occurred at the Austin-Travis County Livestock Show & Rodeo in Austin, Texas on March 19, 1998. The incident involved the failure of a lap bar restraint in car #19, due to the failure of the cotter pins used to fasten the lap bar to the floor pins. The car's lap bar disconnected from the floor fasteners and was ejected with the car's three riders. One rider was killed and the two others were seriously injured.

CPSC's preliminary investigation into the cause of the failure recommended remedial inspection of critical areas. Since that time the CPSC has further evaluated the ride and has the following recommendations which should be followed by state ride safety inspectors and owners/operators of the Himalaya rides in question.

1. **Stainless steel cotter pins** or R-keys with washers (with a hole diameter that closely fits the car's lower lap bar pin) are to be used as fasteners for car lap bars. These stainless steel fasteners are non-magnetic and can be checked with a magnet. The stronger stainless steel cotter pins have been used on amusement rides where there is a concern of removal by a patron. A 304, 316 or 18-8 stainless steel cotter pin could be more difficult to dislodge than a wired R-Key. Alternately, "rue" pins and "circular cotter pins" may also be appropriate fasteners. A hardened washer that closely fits the lower lap bar pin placed between a stronger cotter pin and lower lap bar should reduce shearing. This area requires inspection, maintenance, and replacement as necessary.

2. **Ride speed should not exceed 12 rpms with all 4 hydraulic motors operable and 10 rpms with 3 hydraulic motors operable. Inoperable hydraulic motors can increase the ride's rpms.**
3. **DO NOT run this ride in reverse.**
4. The prospect of unintentional unlatching shows that a back-up (secondary) latch may be needed as security against unintentional unlatching. From conversations with several state ride inspectors, CPSC technical staff learned of several styles of secondary latching devices being used on various Himalaya-type rides in this country. Some of these rides use a strap device and some use a mechanical device.
5. The ride should not run with more than 2 cars inoperable. This may be an indication of more serious ride problems and a more in-depth ride inspection is warranted.
6. During the test running of the Austin, Texas ride, three latch components separated from their respective cars. These components were flung from the ride. The possibility of injury was there and would increase with spectators present. These component separations suggest that latches need to be checked as a daily inspection item.
7. Check center spindle bushings for wear. Worn bushings can cause possible skips and jumps of cars while in operation. The skips/jumps may contribute to chipping of the car wheels.

For further information or clarification on this Safety Bulletin you may contact one of the following:

U.S. Consumer Product Safety Commission  
Office of Compliance & Recalls  
Jay DeMarco at (301) 504-0608 ext 1353

Division of Mechanical Engineering  
Tom Caton at (301) 504-0494 ext 1305

Reverchon Industries, USA, Wilsonville, OR  
at (503) 694-2803

**FLORIDA LIST OF OWNERS WITH  
HIMALAYAS (BY REVERCHON)**

**Amusements of America  
24301 S.W. 137th Ave.  
Princeton, FL 33032**

**Amusements of Buffalo  
12201 US Highway 301 S.  
Riverview, FL 33569-7615**

**Cumberland Valley Show  
P.O. Box 702  
Lebanon, TN 37088**

**Drew Amusement Operators, Inc.  
P.O. Box 5559  
Augusta, GA 30916**

**Farrow Amusement Co., Inc.  
P.O. Box 211  
South Amboy, NJ 08879**

**Great Southern Midway  
12864 Biscayne Blvd., Ste. 244  
North Miami, FL 33181**

**James Gang Amusements, Inc.  
Rt. 8, Box 61  
Andalusia, AL 36420**

**Luehrs Spectacular Rides  
1920 SW 105th Ave.  
Davie, FL 33324**

**Mighty Blue Grass Shows  
2032 51st Street South  
Tampa, FL 33619**

# MEMORANDUM

DATE: October 2, 1995

TO: All Inspectors and Supervisors

FROM: Ron Safford *RS*

SUBJ: WEAR ON T-511 CENTER PINS ON THE REVERCHON HIMALAYA  
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For your information, enclosed is a copy of a memo from Reverchon Industries specifying the maximum wear on the T-511 center pin for their Himalaya at 10% or approximately 2mm.

RS/sm  
Enclosures



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|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Siège Social :</b><br>18 av. des Champs Elysées<br>75008 PARIS<br>FRANCE | <b>Direction Générale :</b><br>123 route de Courbulsson<br>BP 1-77920 SAMOIS<br>FRANCE<br>Tél. : 33/ (1) 64.24.66.15<br>Fax. : 33/ (1) 64.24.69.22 |
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# TELEFAX MESSAGE

|                                                                                                                                                         |                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>DE/FROM :</b><br><b>DATE :</b><br><b>TO :</b><br><b>SOCIETY/COMPANY :</b><br><b>FAX :</b><br><b>INITIALS :</b><br>Cells completed/total and included | <b>Gilles REVERCHON</b><br>26 September 1995<br><b>REVERCHON</b><br>18 av. des Champs Elysées<br>75008 PARIS<br>FRANCE |
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## MESSAGE :

N/Ré: GR/V15/198

Re : T -511 center pins on Himalaya

Dear Sir,

Further to your request, the maximum wear acceptable on these pins is 10 % (then approx. 2 mm).

Regards.

**REVERCHON INDUSTRIES**  
Gilles REVERCHON