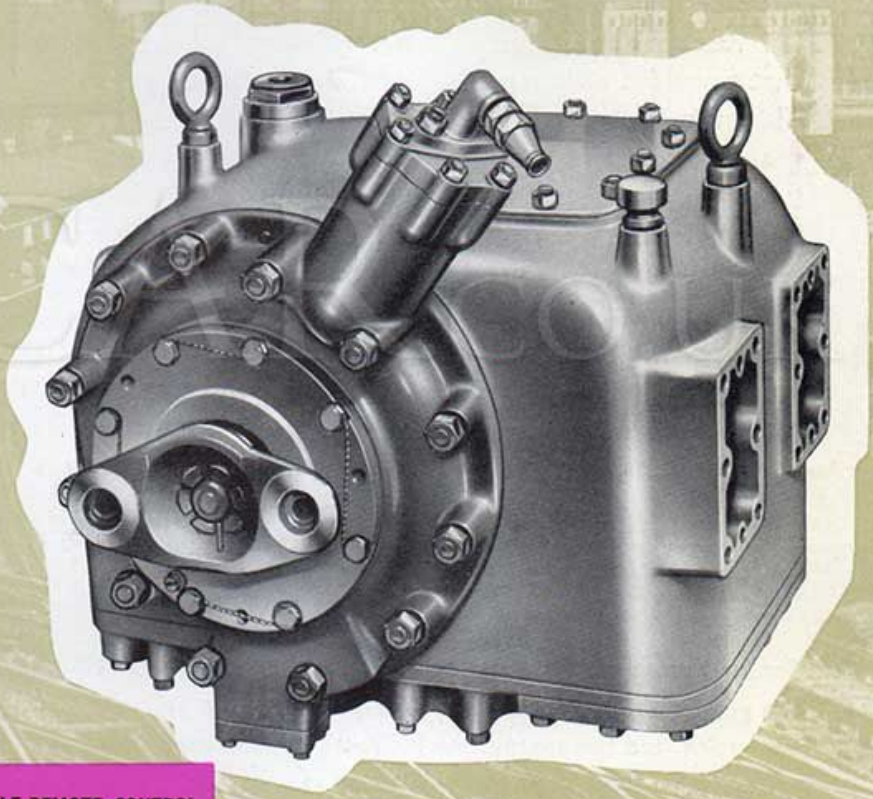
AIR OPERATED

RAIL TRACTION GEARBOXES

TYPE **R11** RANGE

4 & 5 SPEED UNITS

INDEPENDENT
OR UNIT
CONSTRUCTION



- CONSTANT MESH GEARING THROUGHOUT
- SUPER SMOOTH CUSHIONED GEAR CHANGE
- CONTINUOUS TRACTION
- SIMPLE REMOTE CONTROL OF GEARBOX
- MULTIPLE-UNIT OPERATION
- OPTIONAL OIL FILTER
- OPTIONAL AUTOMATIC CONTROL

SELF-CHANGING GEARS LTD

TYPE R11 FOUR SPEED AND FIVE SPEED UNITS

The R11 gearbox in its various forms has been designed for use in railcars and shunting locomotives. It is a change speed gearbox and is used in conjunction with a separate reversing unit. Use of this type of epicyclic gearbox with a fluid flywheel greatly simplifies driving and adds to passenger comfort. Harsh and difficult gear changing is eliminated, giving long life to the engine and transmission, and increased safety.

EASE OF CONTROL

For Railcar applications the driver's control is an electrical switch that provides either manual or fully automatic control. This switch operates Electro-Pneumatic valves mounted close to the gearbox. By this means of remote control it is possible to operate two or more gearboxes simultaneously from one point. For single unit operation an air distributor valve can be used if the transmission layout permits, and this is the form of driver's control normally adopted for Shunting Locomotives. The operation and other interesting features of these gearboxes are dealt with in detail in the following paragraphs, and help to explain the popularity of our epicyclic gearboxes for rail transmissions, and their great reliability under arduous conditions.

OPERATION

Constant mesh epicyclic gearing is used throughout the gearbox. The gear ratios are obtained by 'compounding' the epicyclic gear trains, and the appropriate indirect gear is engaged by applying a band brake to the reaction member for that gear. The band brakes are operated by air pressure acting on a piston, which applies the brake through toggle mechanism. The brakes have balanced application so that no reaction loads are carried by the shaft bearings. Wear on the brake linings is taken up by an automatic adjusting device. The top gear clutch (or fourth for the overdrive unit) locks together two of the running gear elements and causes all the gearing to rotate as one unit. Thus in this gear there is no wear in the intermediate gear trains. The drive is then direct from input to output and a very high overall efficiency is obtained.

LAYOUT OF R11A GEARBOX

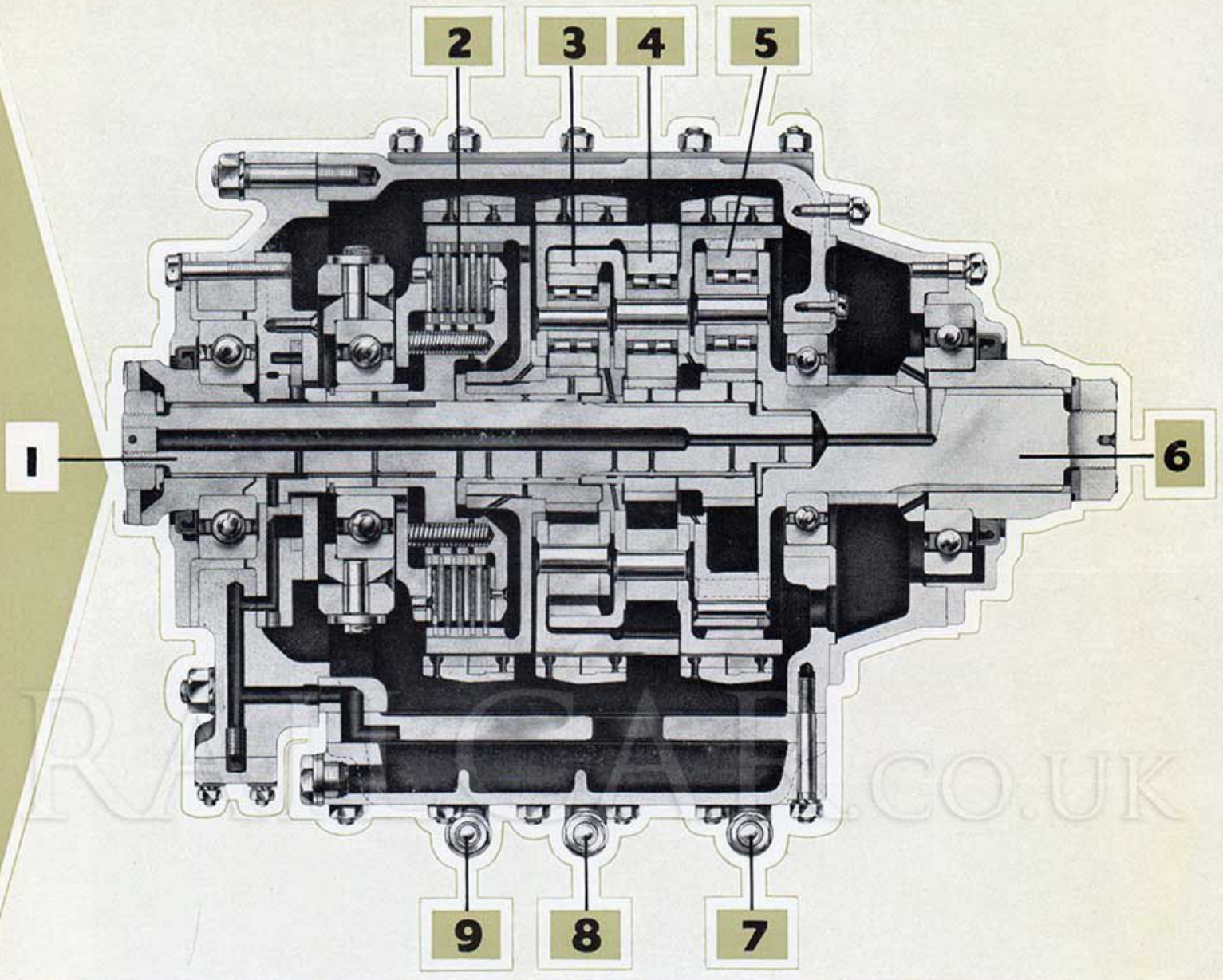
1. INPUT SHAFT
2. 4th SPEED DIRECT DRIVE CLUTCH
3. 3rd SPEED GEAR TRAIN
4. 2nd SPEED GEAR TRAIN
5. 1st SPEED GEAR TRAIN
6. OUTPUT SHAFT
7. 1st SPEED AIR INLET
8. 2nd SPEED AIR INLET
9. 3rd SPEED AIR INLET

LUBRICATION

Pressure lubrication of all rotating members is ensured by a rotary pump that delivers oil from the gearbox sump. (Oil filter provided if required).

MAINTENANCE

The only maintenance normally required between overhauls is that of topping up and draining the oil. The air seals for the brake operating pistons have a long life and access to them is quite simple when replacement is necessary.



DATA

RIIA

Rotation:
Clockwise looking on input.

Gear Ratios:
4.07 : 1
2.42 : 1
1.6 : 1
1 : 1

Power Capacity:
500/550 lbs./ft.
(69/76 Kg.M)

Air Pressure:
70/75 lb. p.s.i.

Mounting:
Independent.

Weight:
341 lb.
(155 Kg.).

RIIB

Rotation:
Clockwise looking on input.

Gear Ratios:
4.07 : 1
2.42 : 1
1.6 : 1
1 : 1
.767 : 1

Power Capacity:
500/550 lbs./ft.
(69/76 Kg.M).

Air Pressure:
70/75 lb. p.s.i.

Mounting:
Independent or
Unit Construction.

Weight:
400 lb. (Independent).
(182 Kg.).

RIIC

Rotation:
Clockwise looking on input.

Gear Ratios:
4.07 : 1
2.42 : 1
1.6 : 1
1 : 1

Power Capacity:
500/550 lbs./ft.
(69/76 Kg.M).

Air pressure:
70/75 lb. p.s.i.

Mounting:
Unit Construction.

Weight:
360 lb.
(163 Kg.).

RIID

Rotation:
Clockwise looking on input.

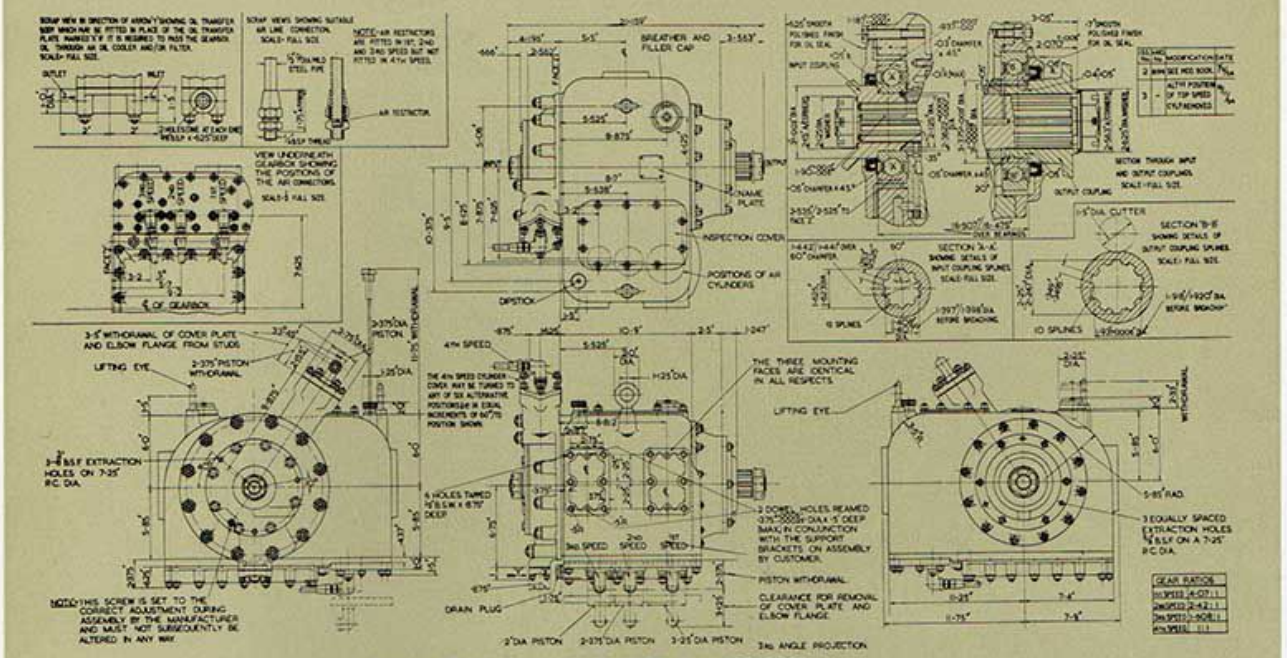
Gear Ratios:
5.79 : 1
4.07 : 1
2.42 : 1
1.60 : 1
1 : 1

Power Capacity:
500/550 lbs./ft.
(69/76 Kg.M).

Air Pressure:
70/75 lb. p.s.i.

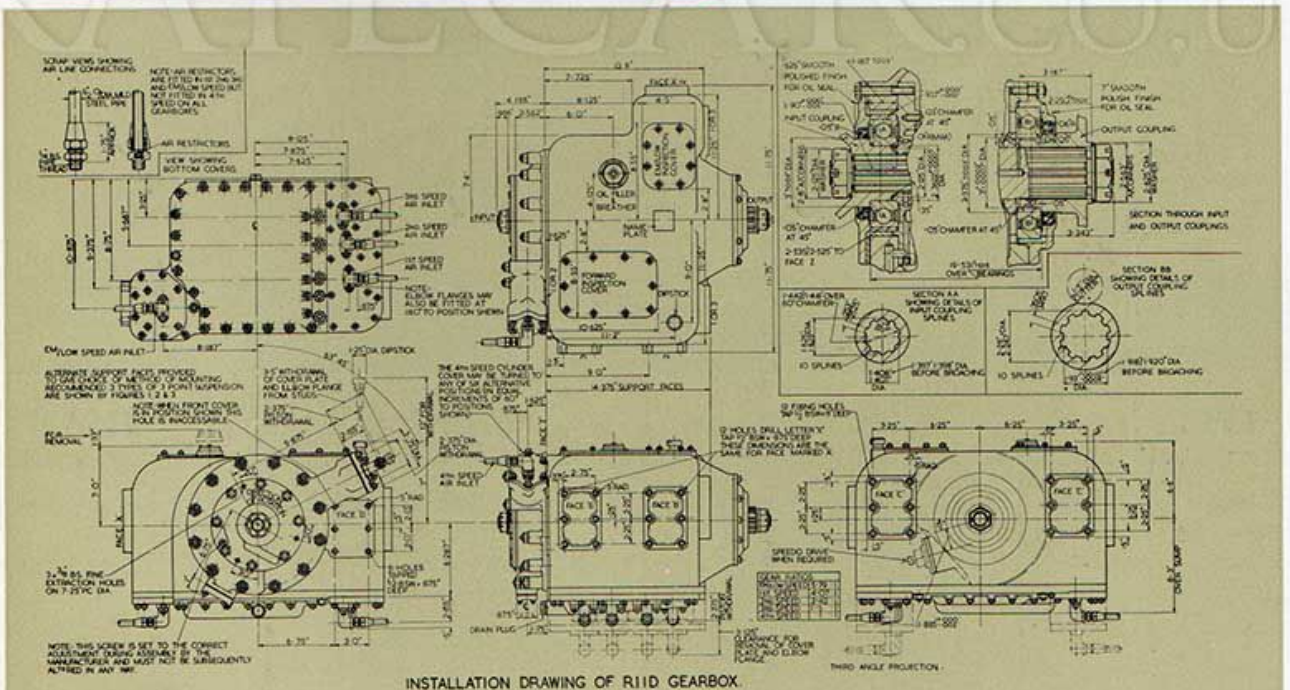
Mounting:
Independent or
Unit Construction.

Weight:
480 lb. (Independent).
(218 Kg.).



INSTALLATION DRAWING OF TYPE R.11.A. GEARBOX.

USED BY BRITISH RAILWAYS



INSTALLATION DRAWING OF R11D GEARBOX.

SELF-CHANGING GEARS LTD

LYTHALLS LANE . COVENTRY . ENGLAND

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