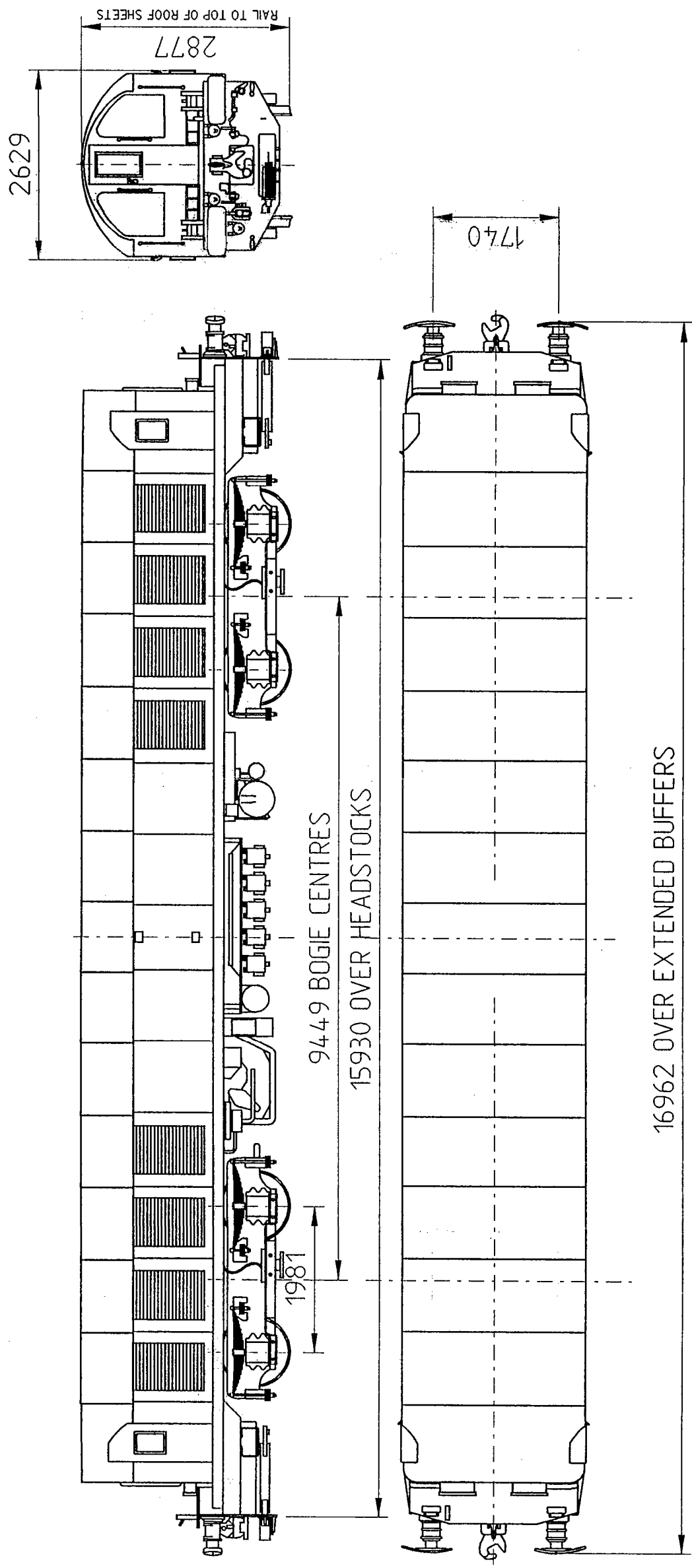


1969 BATTERY LOCOMOTIVE



NO. RANGE: L15 - L19

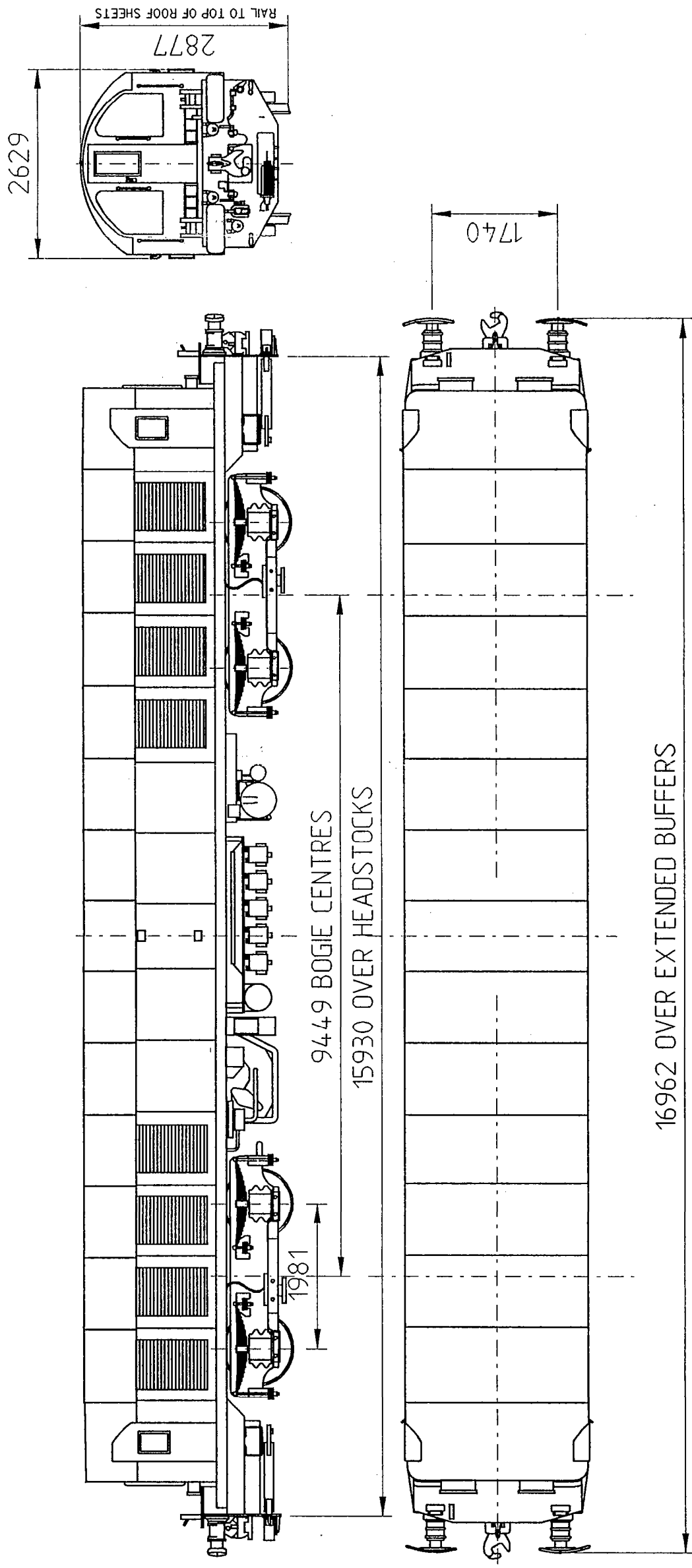
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LULI

1969 BATTERY LOCOMOTIVE

TITLE BATTERY LOCOMOTIVE
FUNCTION HAULING WAGONS
NUMBER RANGE L 15 - L 19
DELIVERY DATE 1970
MANUFACTURERS NAME METRO - GAMMELL LTD
DESIGN LIFE EXPIRES (TAKEN AT 40 YEARS) 2010
MODIFICATION DETAILS SEE APPENDIX
LENGTH IN TRAIN FORMATION - BUCKEYE - RCH 16930 mm APPROX
 16780 mm APPROX
GROSS WEIGHT 62 TONNES APPROX
TRACTION BATTERY TYPE L15, L16, L18, L19 - XTLF39
CAPACITY L17 HTLF39
 L15, L16, L18, L19 - 1197TP
 L17 1026TP
BRAKING SYSTEM AIR BRAKED TWO PIPE
 DAVIES AND METCALFE
 TWO COMPRESSORS
COUPLINGS TYPE BUCKEYE + RCH + EMERG. WEDGELOCK
HEIGHT FROM RAIL 41.57/1055mm
SERVICE AND MAXIMUM SPEEDS PERMITTED 30 MPH (48 kph)
AXLE BOX TYPE PLAIN JOURNAL AXLE BOX OILED
 5.505" Dia x 9"
ROUTE AVAILABILITY NO RESTRICTIONS
SPECIAL FEATURES ABILITY TO HAUL TRAINS OVER
 NON-ELECTRIFIED LINES
 EXTERNAL POWER SUPPLIES
 A) 320V DC 15A SOCKET ON CAB BACK
 FOR CEMENT MIXERS
 B) WHITE BOX (10 PIN SOCKET)
 CONTROL JUMPER FOR LWR TRAINS
 LIGHTS AND COMMUNICATIONS
 C) 320V DC 100A (3 PIN SOCKET)
 FOR WAGON MOUNTED COMPRESSORS
 AND CONCRETE BREAKER

1964 BATTERY LOCOMOTIVE



NO. RANGE: L20 - L32

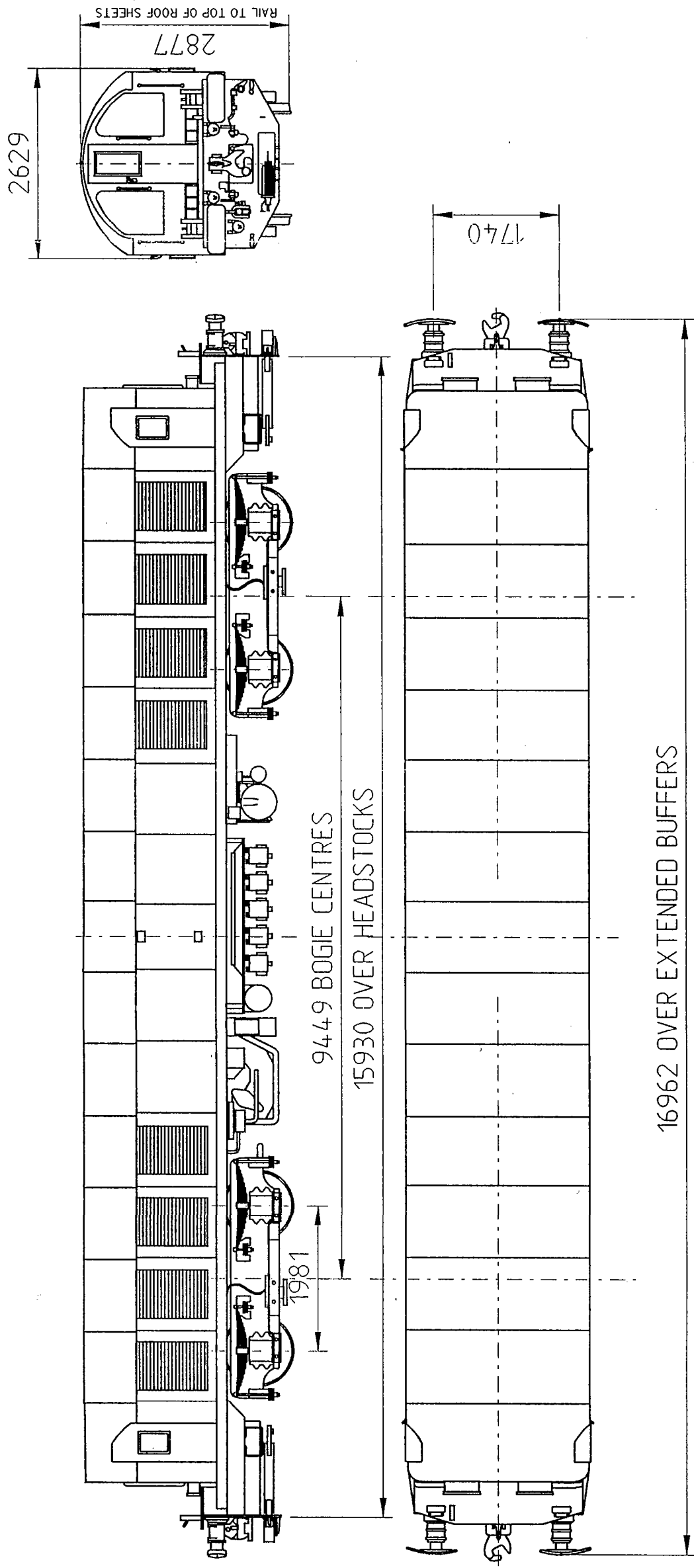
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LUL2

1964 BATTERY LOCOMOTIVE

TITLE BATTERY LOCOMOTIVE
FUNCTION HAULING WAGONS
NUMBER RANGE L 20 - L 32
DELIVERY DATE L 20 - L 21 1964 L 22 - L 32 1965
MANUFACTURERS NAME METRO CAMMELL LTD
DESIGN LIFE EXPIRES (TAKEN AT 40 YEARS) 2005
MODIFICATION DETAILS SEE APPENDIX
LENGTH IN TRAIN FORMATION - BUCKEYE - RCH 16930 mm APPROX
 16780 mm APPROX
GROSS WEIGHT 62 TONNES APPROX
TRACTION BATTERY TYPE L20 - L25)
 L27 - L29) - XTLF39
 L31 - L32)
 L26, L30 HTLF39
CAPACITY L20 - L25)
 L27 - L29) - 1197TP
 L31 - L32)
 L26, L30 1026TP
BRAKING SYSTEM AIR BRAKED TWO PIPE
 DAVIES AND METCALFE
 TWO COMPRESSORS
COUPLINGS TYPE BUCKEYE + RCH + EMERG. WEDGELOCK
HEIGHT FROM RAIL 41.57/1055mm
SERVICE AND MAXIMUM SPEEDS PERMITTED 30 mph (48 kph)
AXLE BOX TYPE PLAIN JOURNAL, AXLE BOX OILED
 5.505" Dia x 9"
ROUTE AVAILABILITY NO RESTRICTIONS
SPECIAL FEATURES ABILITY TO HAUL TRAINS OVER
 NON-ELECTRIFIED LINES
 EXTERNAL POWER SUPPLIES
 A) 320V DC 15A SOCKET ON CAB BACK
 FOR CEMENT MIXERS
 B) WHITE BOX (10 PIN SOCKET)
 CONTROL JUMPER FOR LWR TRAINS
 LIGHTS AND COMMUNICATIONS
 C) 320V DC 100A (3 PIN SOCKET)
 FOR WAGON MOUNTED COMPRESSORS
 AND CONCRETE BREAKER

1973 BATTERY LOCOMOTIVE



NO. RANGE: L44 - L54

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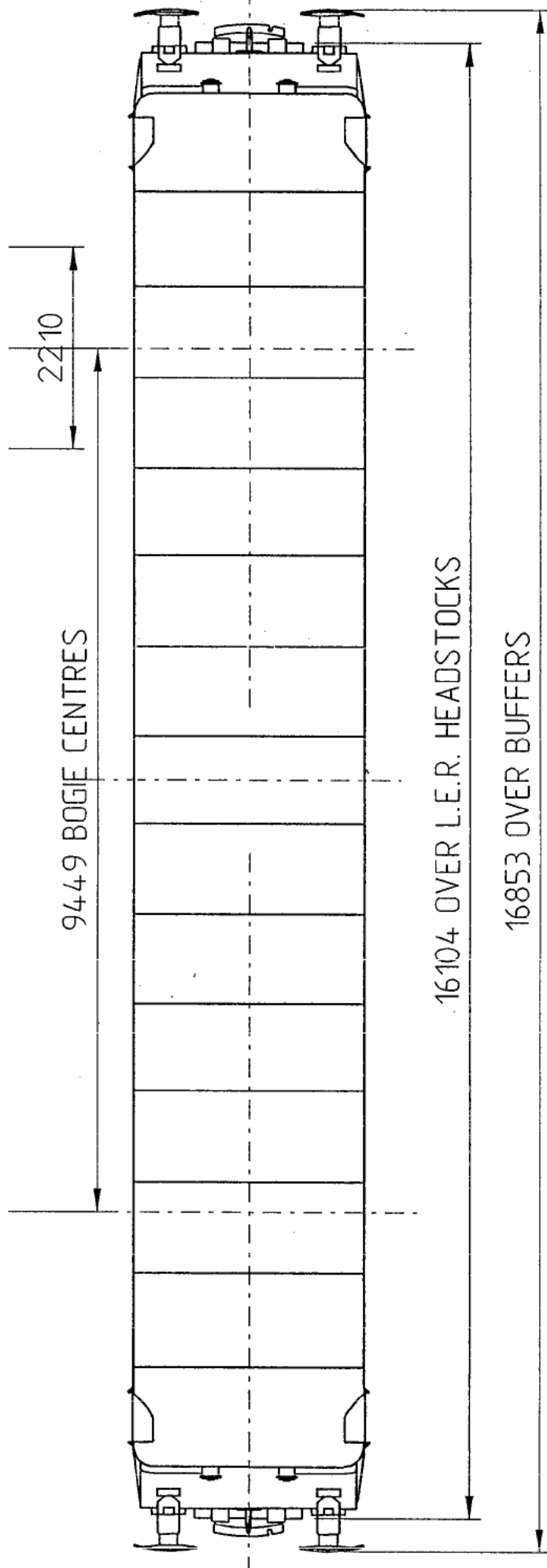
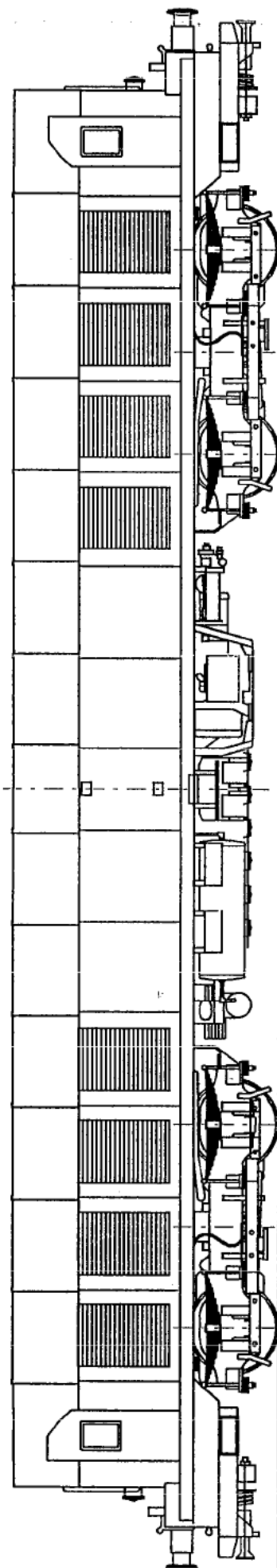
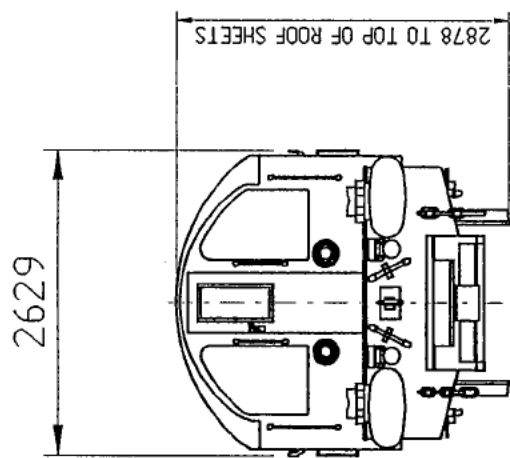
LUL3

1973 BATTERY LOCOMOTIVE

TITLE	BATTERY LOCOMOTIVES
FUNCTION	HAULING WAGONS
NUMBER RANGE	L 44 - L 54
DELIVERY DATE - MANUFACTURERS NAME	1974 BREL DONCASTER
DESIGN LIFE EXPIRES	(TAKEN AT 40 YEARS) 2014
MODIFICATION DETAILS	SEE APPENDIX
LENGTH IN TRAIN FORMATION - BUCKEYE	16930 mm APPROX
	16780 mm APPROX
GROSS WEIGHT	62 TONNES APPROX
TRACTION BATTERY	L44, L46, L47, L52 - HTLF39
TYPE	L45, L48, L51, L54 - XTLF39
CAPACITY	L49, L50, L53 - ND39
	L44, L46, L47, L52 - 1026TP
	L45, L48, L51, L54 - 1197TP
	L49, L50, L53 - 1027FP
BRAKING SYSTEM	AIR BRAKED TWO PIPE DAVIES AND METCALFE TWO COMPRESSORS
COUPLINGS	BUCKEYE + RCH + EMERG. WEDGELOCK 41.5"/1055mm
SERVICE AND MAXIMUM SPEEDS PERMITTED	30 MPH (48 kph)
AXLE BOX TYPE	ROLLER BEARING - TIMKEN SP 120
ROUTE AVAILABILITY	NO RESTRICTIONS
SPECIAL FEATURES	ABILITY TO HAUL TRAINS OVER NON-ELECTRIFIED LINES EXTERNAL POWER SUPPLIES A) 320V DC 15A SOCKET ON CAB BACK FOR CEMENT MIXERS B) WHITE BOX (10 PIN SOCKET) CONTROL JUMPER FOR LWR TRAINS LIGHTS AND COMMUNICATIONS C) 320V DC 100A (3 PIN SOCKET) FOR WAGON MOUNTED COMPRESSORS AND CONCRETE BREAKER

1948 BATTERY LOCOMOTIVE

BATTERY LOCO NO. L56 HAS RCH AND WARD
COUPLERS ON A END AND RCH, BUCKEYE AND
EMERGENCY WEDGELOCK COUPLERS ON D END.



NO. RANGE: L56, L58, L59

23/11/93

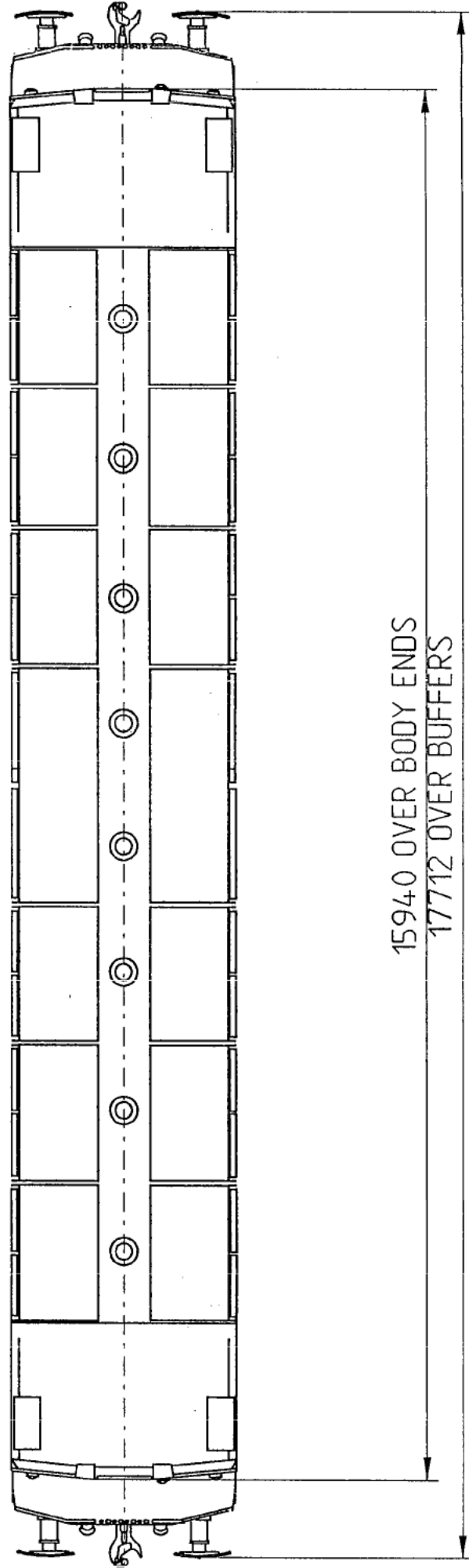
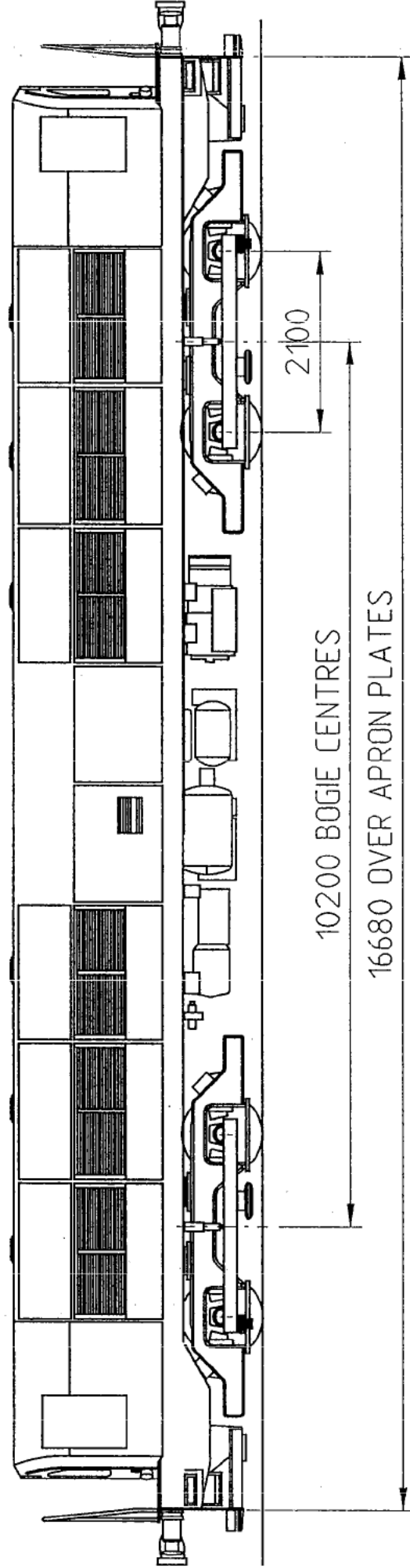
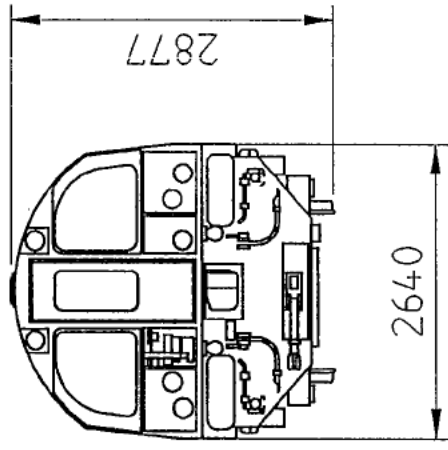
LUL4

1948 BATTERY LOCOMOTIVE

TITLE BATTERY LOCOMOTIVE
FUNCTION HAULING WAGONS
NUMBER RANGE L 56 - L 59
DELIVERY DATE - MANUFACTURERS NAME 1951 - PICKERING & CO LTD GLASGOW
DESIGN LIFE EXPIRES (TAKEN AT 40 YEARS) - 1991
MODIFICATION DETAILS SEE APPENDIX
LENGTH OVER HEADSTOCKS IN TRAIN FORMATION - RCH - WARD 16104 mm
 16954 mm APPROX
 16804 mm APPROX
GROSS WEIGHT 61 TONNES
TRACTION BATTERY TYPE CAPACITY XTLF39
 1197TP
BRAKING SYSTEM AIR BRAKED TWO PIPE
 SINGLE COMPRESSOR
COUPLINGS TYPE HEIGHT FROM RAIL WARD COUPLING + RCH HOOK
 14"/355 mm 41.57/1055 mm
NOTE: L56 IS FITTED WITH THE FOLLOWING:
 A END - WARD + RCH
 D END - RCH + BUCKEYE + EMERGENCY WEDGELOCK
SERVICE AND MAXIMUM SPEEDS PERMITTED 30 MPH (48 kph)
AXLE BOX TYPE PLAIN JOURNAL AXLE BOX OILED
 5.505" Dia x 9"
ROUTE AVAILABILITY RESTRICTED ALL LINES. MUST NOT RUN
 AS SINGLE LOCOMOTIVES AS ONLY ONE
 COMPRESSOR FITTED
SPECIAL FEATURES ABILITY TO HAUL TRAINS OVER
 NON-ELECTRIFIED LINES
 EXTERNAL POWER SUPPLIES
 A) 320 V DC, 15A SOCKET
 ON CAB BACK WALL
 FOR CEMENT MIXERS
 B) WHITE BOX (10 PIN SOCKET)
 CONTROL JUMPER FOR LWR TRAINS
 LIGHTS AND COMMUNICATIONS



1985 BATTERY LOCOMOTIVE



NO. RANGE: L62 - L67

23/II/93

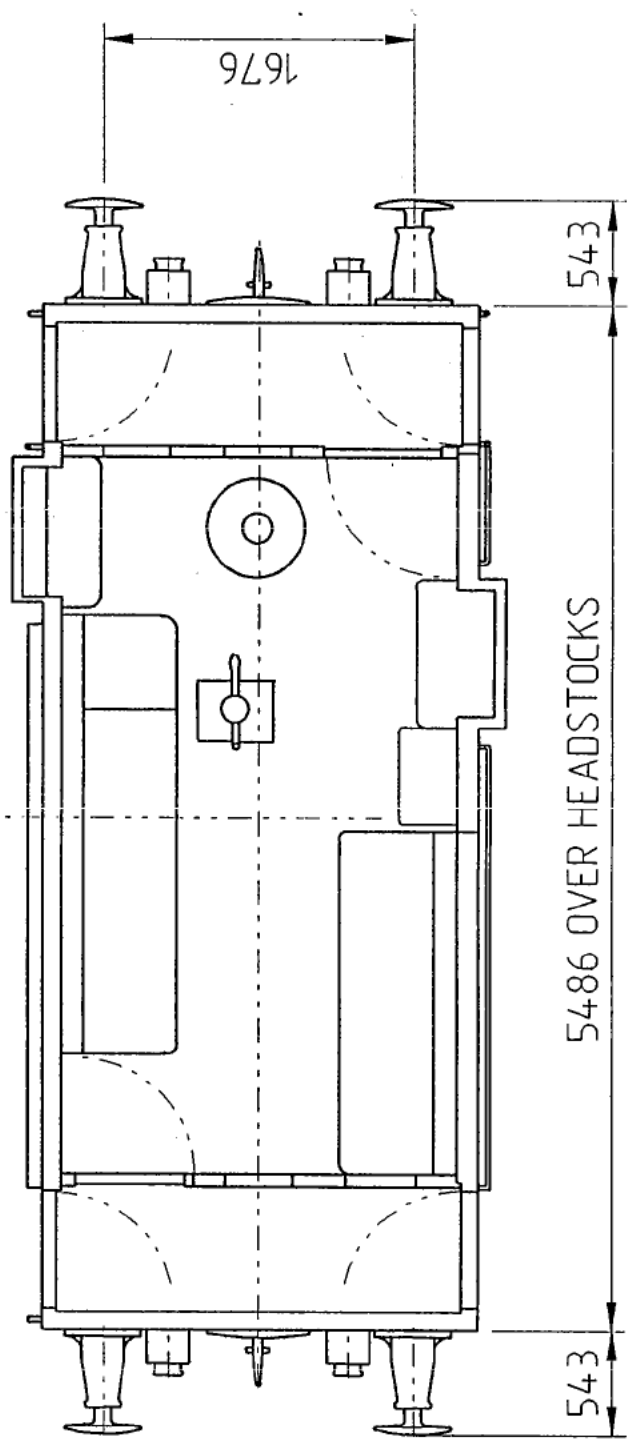
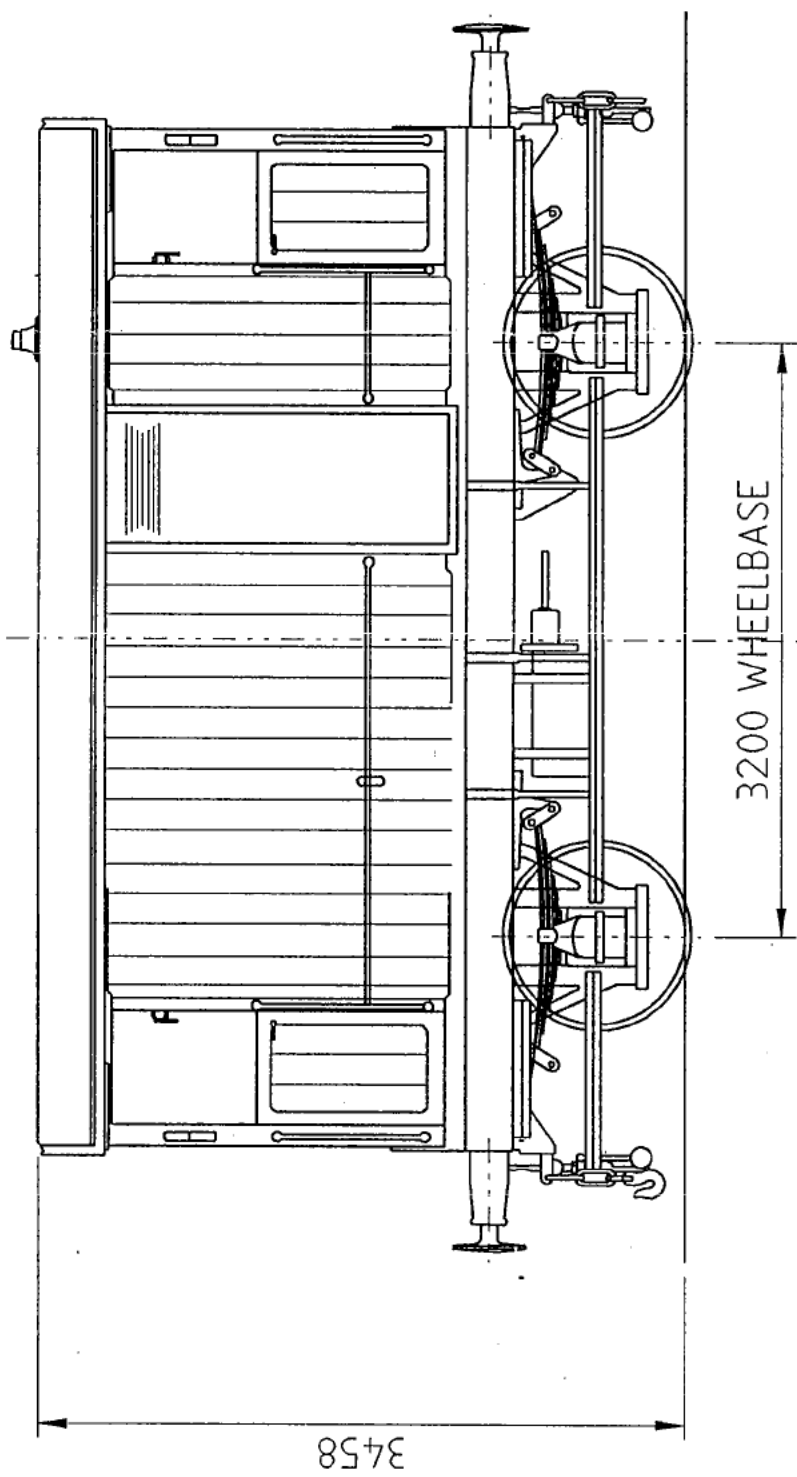
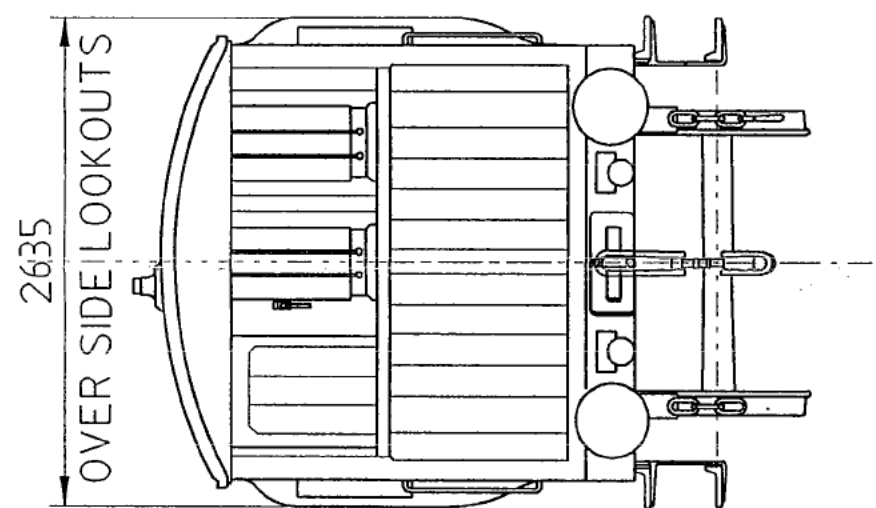
LUL5

1985 BATTERY LOCOMOTIVE

TITLE BATTERY LOCOMOTIVES
FUNCTION HAULING WAGONS
NUMBER RANGE L 62 - L 67
DELIVERY DATE - MANUFACTURERS NAME 1985 (L67 - 1986) METRO - CAMMELL
DESIGN LIFE EXPIRES (TAKEN AT 40 YEARS) 2025
MODIFICATION DETAILS SEE APPENDIX
LENGTH IN TRAIN FORMATION - BUCKEYE 17680 mm APPROX
GROSS WEIGHT 17530 mm APPROX
TRACTION BATTERY 68 TONNES APPROX
TYPE WEF19DA
CAPACITY 900TP
BRAKING SYSTEM AIR BRAKED TWO PIPE DAVIES AND METCALFE TWO COMPRESSORS
COUPLINGS BUCKEYE + RCH + EMERG. WEDGELOCK
HEIGHT FROM RAIL 41.57/1055mm
SERVICE AND MAXIMUM SPEEDS PERMITTED 30 MPH (48 kph)
AXLE BOX TYPE ROLLER BEARING SKF TAPER
ROUTE AVAILABILITY NO RESTRICTIONS
SPECIAL FEATURES ABILITY TO HAUL TRAINS OVER NON ELECTRIFIED LINES
 FITTED WITH SLEET GEAR
 EXTERNAL POWER SUPPLIES
 6 SOCKETS AT EACH END IN OFFSIDE CABINET
 A) 320V DC 40A POWER
 -48V DC 10A CONTROL
 48V DC 5A CAB-TO-CAB PHONE
 FOR RAIL TRAIN EQUIPMENT
 B) 320V DC 100A POWER
 -48V DC 10A CONTROL
 FOR LARGE POWER MACHINES
 C) 320V DC 15A POWER
 FOR RAIL CRANES
 D) 110V AC 3-PH 63A
 E) 110V AC 1-PH 16A
 F) 110V AC 1-PH 16A



1935 20 TONNE BRAKE VAN



NO. RANGE: BV558

23/11/93

LUL60

BRAKE VANS

TITLE
BRAKE VANS

NUMBER RANGE
BV 558 - BV 585

DELIVERY DATE -
MANUFACTURERS NAME
BV 558 1935 HURST-NELSON
BV 580 - BV 585 1965
BR ASHFORD

DÉSIGN LIFE EXPIRES
(TAKEN AT 40 YEARS) BV 558 - 1975
BV 580-585 - 2005

MODIFICATION DETAILS
NONE RECORDED

GROSS WEIGHT
20 TONS

BRAKING SYSTEM
HANDBRAKE ONLY (BV558 - BRAKE
TEST RIG, VARIOUS EQUIPMENT)

COUPLINGS
BV 580 RCH + WARD (TUBE)
BV 583 RCH + WARD (SURFACE)
BV 584 RCH + WARD (SURFACE)
BV 585 RCH + WARD (TUBE)

SERVICE AND MAXIMUM SPEEDS PERMITTED
30 MPH (48 kph)

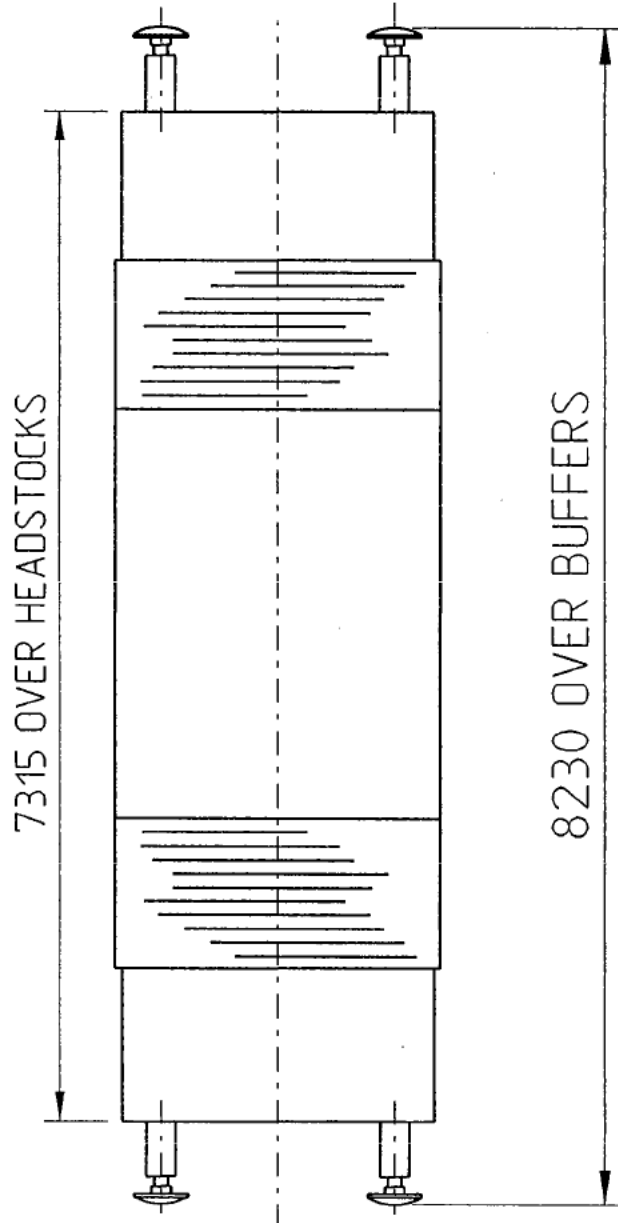
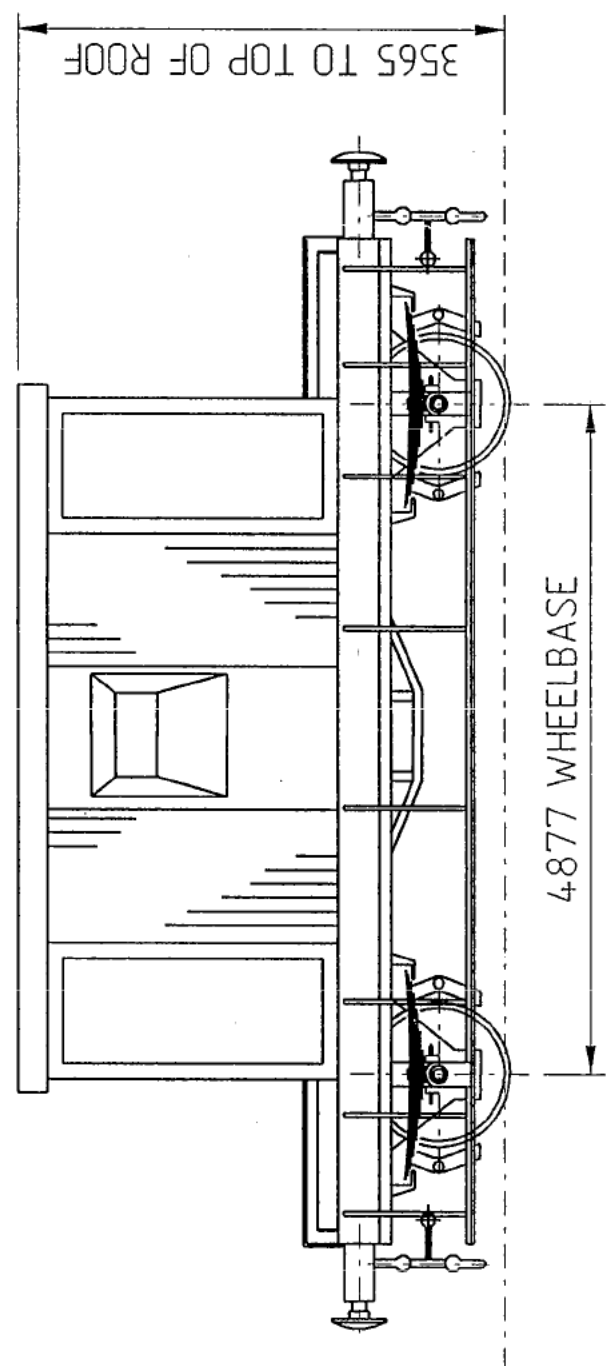
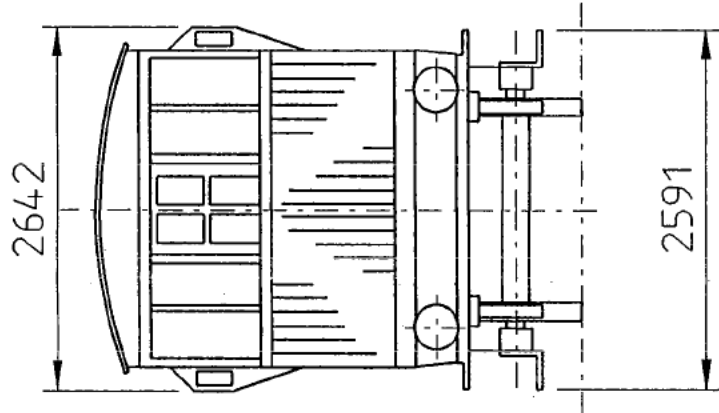
AXLE BOX TYPE
BV558, BV580, BV585 - OIL 9"x4 1/2"
BV583 + BV584 - ROLLER BEARING
TIMKEN 4 3/8"

ROUTE AVAILABILITY
OUT OF GAUGE - JUBILEE LINE -
SOUTH OF FINCHLEY ROAD
NORTHERN AND VICTORIA LINES -
ALL SECTIONS
PICCADILLY LINE - EAST OF BARONS
COURT AND WEST OF BOSTON MANOR
CENTRAL AND BAKERLOO LINES -
ALL SECTIONS

SPECIAL FEATURES
BV558 - BRAKE TEST RIG, VARIOUS
EQUIPMENT (MATCH WAGON FOR L12)



1965 20 TONNE BRAKE VAN



NO. RANGE: BV580, BV583 - BV585

23/11/93

LUL6b

BRAKE VANS

TITLE
BRAKE VANS

NUMBER RANGE
BV 558 - BV 585

DELIVERY DATE -
MANUFACTURERS NAME
BV 558 1935 HURST-NELSON
BV 580 - BV 585 1965
BR ASHFORD

DESIGN LIFE EXPIRES
(TAKEN AT 40 YEARS) BV 558 - 1975
BV 580-585 - 2005

MODIFICATION DETAILS
NONE RECORDED

GROSS WEIGHT
20 TONS

BRAKING SYSTEM
HANDBRAKE ONLY (BV558 - BRAKE
TEST RIG, VARIOUS EQUIPMENT)

COUPLINGS
BV 580 RCH + WARD (TUBE)
BV 583 RCH + WARD (SURFACE)
BV 584 RCH + WARD (SURFACE)
BV 585 RCH + WARD (TUBE)

SERVICE AND MAXIMUM SPEEDS PERMITTED
30 MPH (48 kph)

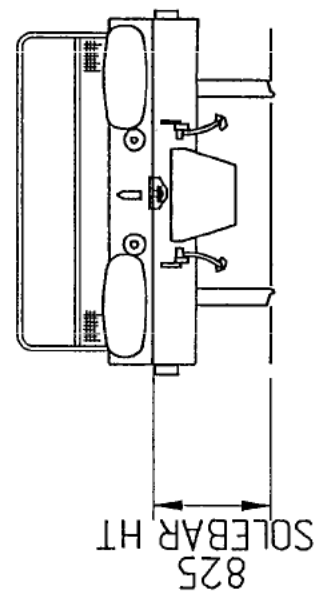
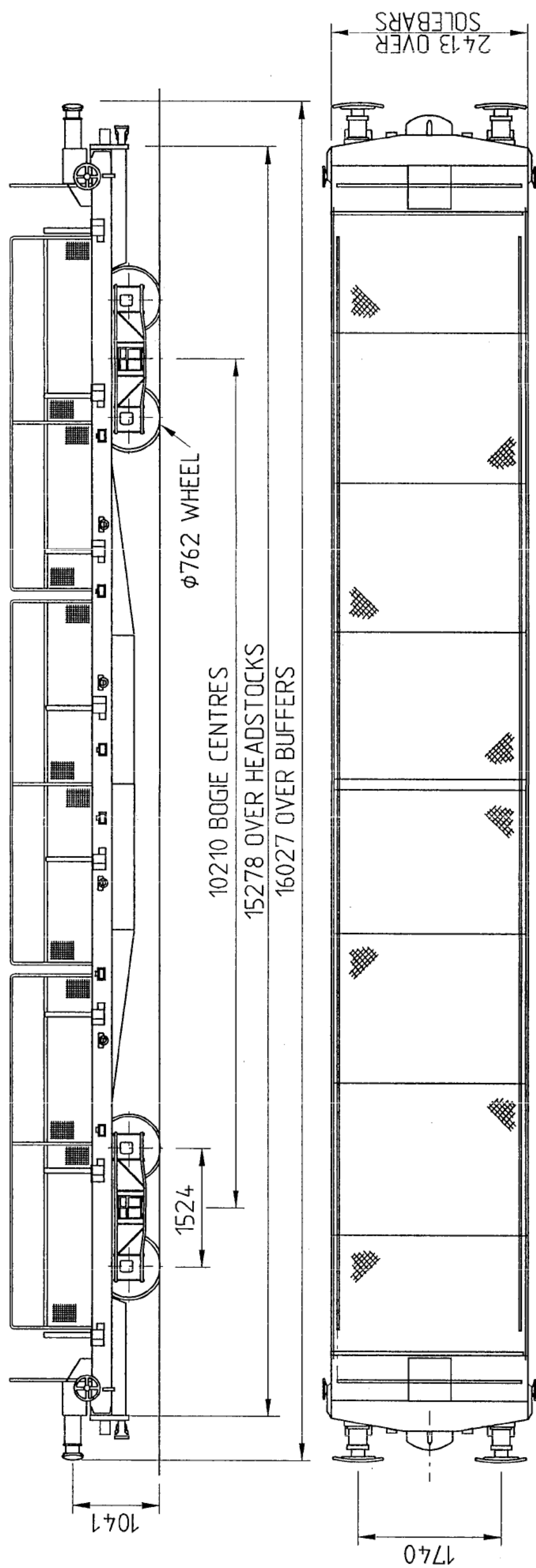
AXLE BOX TYPE
BV558, BV580, BV585 - OIL 9"x4 1/2"
BV583 + BV584 - ROLLER BEARING
TIMKEN 4 3/8"

ROUTE AVAILABILITY
OUT OF GAUGE - JUBILEE LINE -
SOUTH OF FINCHLEY ROAD
NORTHERN AND VICTORIA LINES -
ALL SECTIONS
PICCADILLY LINE - EAST OF BARONS
COURT AND WEST OF BOSTON MANOR
CENTRAL AND BAKERLOO LINES -
ALL SECTIONS

SPECIAL FEATURES
BV558 - BRAKE TEST RIG, VARIOUS
EQUIPMENT (MATCH WAGON FOR L12)



30 TONNE FLAT WAGON



NO. RANGE: FW332, FW333

23/11/93

LUL70

FLAT WAGONS

TITLE
 FLAT WAGONS

FUNCTION
 VARIOUS EQUIPMENT MATERIAL CARRYING

NUMBER RANGE
 FW 332 - FW 394

DELIVERY DATE -
 MANUFACTURERS NAME
 FW 332 - FW 340 GLOUCESTER 1937
 FW 342 - FW 369 GLOUCESTER 1951
 FW 385 - FW 394 BR ASHFORD 1965
 FW 398 - BR ASHFORD 1966

DESIGN LIFE EXPIRES
 (TAKEN AT 40 YEARS) FW 332 - FW 340 1987
 FW 342 - FW 369 1991
 FW 385 - FW 394 2005
 FW 398 - 2006

MODIFICATION DETAILS
 SEE APPENDIX

TARE WEIGHT
 18.35 TONNES

LOAD CAPACITY
 30 TONNES

BRAKING SYSTEM
 AIR BRAKED
 WESTINGHOUSE
 SCREW PARKING BRAKE

COUPLINGS
 TYPE
 HEIGHT FROM RAIL
 WARD OR BUCKEYE
 14'355 mm OR 41.57'1055 mm

SERVICE AND MAXIMUM SPEEDS PERMITTED
 30 MPH (48 kph) SERVICE
 45 MPH (72 kph) MAX

AXLE BOX TYPE
 OIL 9 x 4 1/2" - FW333/335
 HOFFMAN ROLLER - FW344/351/358/369
 SKF ROLLER - ALL OTHERS

ROUTE AVAILABILITY
 NO RESTRICTIONS



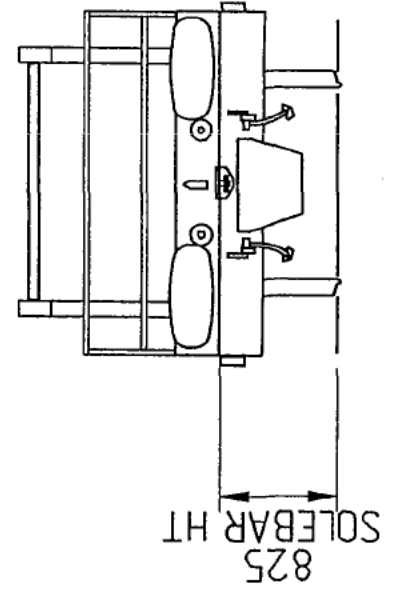
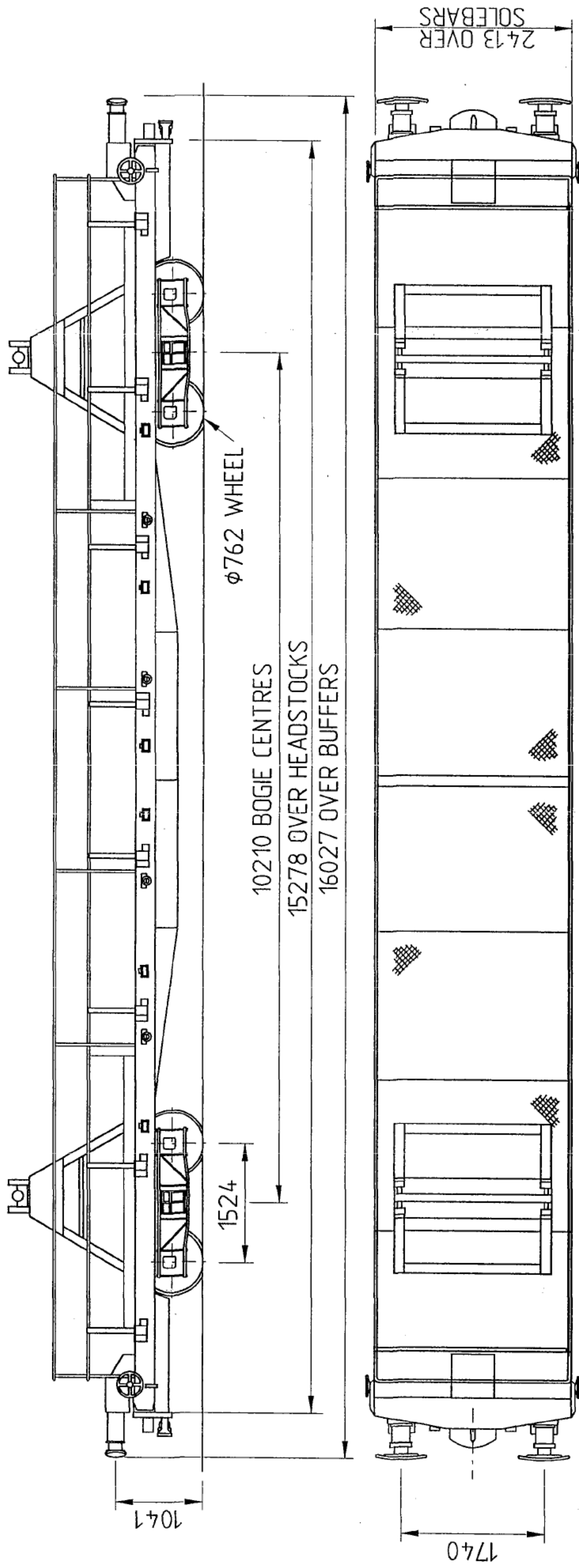
FLAT WAGONS (CONTINUED)

SPECIAL FEATURES
 'D' IN TABLE INDICATES BUCKEYES
 FW342/345 AND FW351/355 ARE
 EX-CONCRETE MIXER MATCHED PAIRS
 WITH EXTENDED WARD COUPLERS

FLEET NUMBER	VEHICLE DESCRIPTION	FUNCTION
FW 332	FUTURE POWER SUPPLIES (FPS)	PICKING UP MATERIAL
FW 338	FUTURE POWER SUPPLIES (FPS)	PICKING UP MATERIAL
FW 335	CABLE DRUM STAND WAGON (FPS)	REELING OFF CABLE
FW 336	CABLE DRUM STAND WAGON (FPS)	REELING OFF CABLE
FW 340	CONCRETE BREAKER WAGON	BREAKING CONCRETE
FW 342	IMPLEMENT WAGON H/STOCK A END	CARRYING EXCAVATORS
FW 344 D	GENERAL PURPOSE WAGON	CARRYING MATERIAL
FW 345	IMPLEMENT WAGON H/STOCK A END	CARRYING EXCAVATORS
FW 351	IMPLEMENT WAGON H/STOCK A END	CARRYING EXCAVATORS
FW 352 (SOPAP)	IMPLEMENT WAGON H/STOCK A END	CARRYING EXCAVATORS
FW 359 D	TURN TABLE WAGON 2 DRUM TYPE	REELING OFF CABLE
FW 355	IMPLEMENT WAGON H/STOCK A END	CARRYING EXCAVATORS
FW 357 D	WATER TANK WAGON	WATER SPRAYING
FW 359 D	TURN TABLE WAGON 4 DRUM TYPE	REELING OFF CABLE
FW 364 D	TURN TABLE WAGON 4 DRUM TYPE	REELING OFF CABLE
FW 369 D	TURN TABLE WAGON 6 DRUM TYPE	REELING OFF CABLE
FW 369 D	GENERAL PURPOSE WAGON	CARRYING MATERIAL
FW 365 D	TURN TABLE WAGON 4 DRUM TYPE	REELING OFF CABLE
FW 366 D	TURN TABLE WAGON 4 DRUM TYPE	REELING OFF CABLE
FW 364 D	TURN TABLE WAGON 2 DRUM TYPE	REELING OFF CABLE
FW 398	FLAT WAGON (MATCH WAGON FOR FW 340)	CARRYING MATERIALS



30 TONNE FLAT WAGON



NO. RANGE: FW335, FW336

23/11/93

LUL7b

FLAT WAGONS

TITLE
 FUNCTION
 NUMBER RANGE
 DELIVERY DATE -
 MANUFACTURERS NAME
 DESIGN LIFE EXPIRES
 MODIFICATION DETAILS
 TARE WEIGHT
 LOAD CAPACITY
 BRAKING SYSTEM
 COUPLINGS
 SERVICE AND MAXIMUM SPEEDS PERMITTED
 AXLE BOX TYPE
 ROUTE AVAILABILITY

FLAT WAGONS
 VARIOUS EQUIPMENT MATERIAL CARRYING
 FW 332 - FW 394
 FW 332 - FW 340 GLOUCESTER 1937
 FW 342 - FW 369 GLOUCESTER 1951
 FW 385 - FW 394 BR ASHFORD 1965
 FW 398 - BR ASHFORD 1966
 (TAKEN AT 40 YEARS) FW 332 - FW 340 1987
 FW 342 - FW 369 1991
 FW 385 - FW 394 2005
 FW 398 - 2006
 SEE APPENDIX
 18.35 TONNES
 30 TONNES
 AIR BRAKED
 WESTINGHOUSE
 SCREW PARKING BRAKE
 WARD OR BUCKEYE
 14'3/55 mm OR 41.5'1055 mm
 30 MPH (48 kph) SERVICE
 45 MPH (72 kph) MAX
 OIL 9 x 4 1/2" - FW333/335
 HOFFMAN ROLLER - FW344/351/358/369
 SKF ROLLER - ALL OTHERS
 NO RESTRICTIONS

FLAT WAGONS (CONTINUED)

SPECIAL FEATURES
 'D' IN TABLE INDICATES BUCKEYES
 FW342/345 AND FW351/355 ARE
 EX-CONCRETE MIXER MATCHED PAIRS
 WITH EXTENDED WARD COUPLERS

FLEET NUMBER
 VEHICLE DESCRIPTION
 FUNCTION

FW 332
 FUTURE POWER SUPPLIES (FPS)
 PICKING UP MATERIAL

FW 333
 FUTURE POWER SUPPLIES (FPS)
 PICKING UP MATERIAL

FW 335
 CABLE DRUM STAND WAGON (FPS)
 REELING OFF CABLE

FW 336
 CABLE DRUM STAND WAGON (FPS)
 REELING OFF CABLE

FW 340
 CONCRETE BREAKER WAGON
 BREAKING CONCRETE

FW 342
 IMPLEMENT WAGON H/STOCK A END
 CARRYING EXCAVATORS

FW 344 D
 GENERAL PURPOSE WAGON
 CARRYING MATERIAL

FW 345
 IMPLEMENT WAGON H/STOCK A END
 CARRYING EXCAVATORS

FW 351
 IMPLEMENT WAGON H/STOCK A END
 CARRYING EXCAVATORS

FW 352 (SCRAP)
 IMPLEMENT WAGON H/STOCK A END
 CARRYING EXCAVATORS

FW 353 D
 TURN-TABLE WAGON 2 DRUM TYPE
 REELING OFF CABLE

FW 355
 IMPLEMENT WAGON H/STOCK A END
 CARRYING EXCAVATORS

FW 357 D
 WATER TANK WAGON
 WATER SPRAYING

FW 358 D
 TURN-TABLE WAGON 4 DRUM TYPE
 REELING OFF CABLE

FW 364 D
 TURN-TABLE WAGON 4 DRUM TYPE
 REELING OFF CABLE

FW 366 D
 TURN-TABLE WAGON 6 DRUM TYPE
 REELING OFF CABLE

FW 369 D
 GENERAL PURPOSE WAGON
 CARRYING MATERIAL

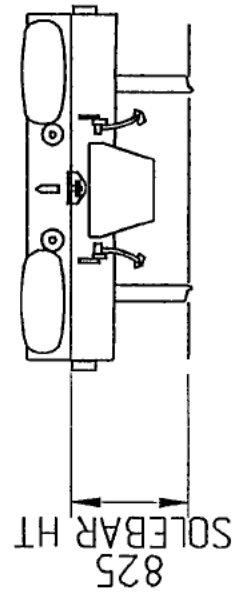
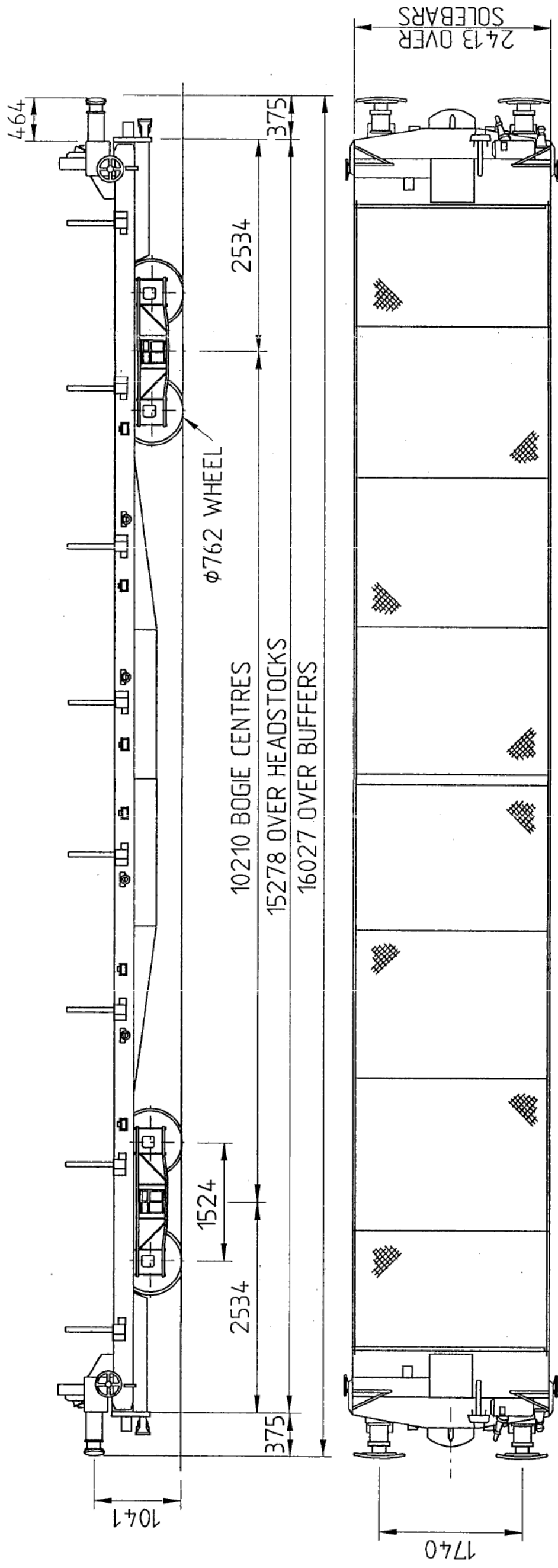
FW 385 D
 TURN-TABLE WAGON 4 DRUM TYPE
 REELING OFF CABLE

FW 386 D
 TURN-TABLE WAGON 4 DRUM TYPE
 REELING OFF CABLE

FW 394 D
 TURN-TABLE WAGON 2 DRUM TYPE
 REELING OFF CABLE

FW 398
 FLAT WAGON (MATCH WAGON FOR FW 340)
 CARRYING MATERIALS

30 TONNE FLAT WAGON



NO. RANGE: FW342 - FW394

23/11/93

LUL7C

FLAT WAGONS

TITLE
 FUNCTION
 NUMBER RANGE
 DELIVERY DATE -
 MANUFACTURERS NAME
 DESIGN LIFE EXPIRES
 MODIFICATION DETAILS
 TARE WEIGHT
 LOAD CAPACITY
 BRAKING SYSTEM
 COUPLINGS
 SERVICE AND MAXIMUM SPEEDS PERMITTED
 AXLE BOX TYPE
 ROUTE AVAILABILITY

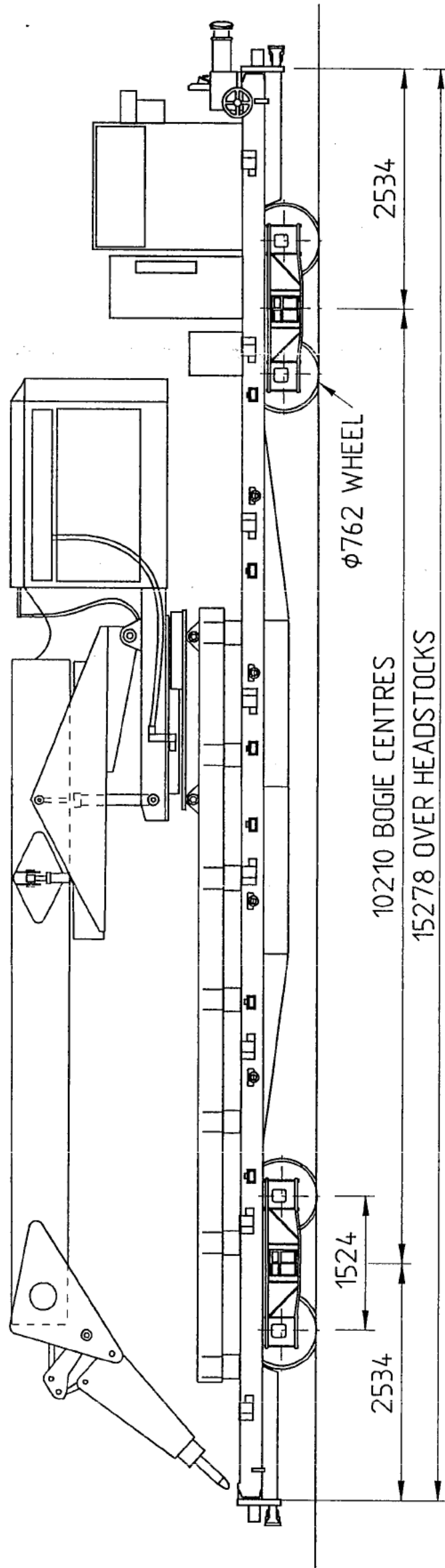
FLAT WAGONS
 VARIOUS EQUIPMENT MATERIAL CARRYING
 FW 332 - FW 394
 FW 332 - FW 340 GLOUCESTER 1937
 FW 342 - FW 369 GLOUCESTER 1951
 FW 385 - FW 394 BR ASHFORD 1965
 FW 398 - BR ASHFORD 1966
 (TAKEN AT 40 YEARS) FW 332 - FW 340 1987
 FW 342 - FW 369 1991
 FW 385 - FW 394 2005
 FW 398 - 2006
 SEE APPENDIX
 18.35 TONNES
 30 TONNES
 AIR BRAKED
 WESTINGHOUSE
 SCREW PARKING BRAKE
 WARD OR BUCKEYE
 14"355 mm OR 41.57"1055 mm
 30 MPH (48 kph) SERVICE
 45 MPH (72 kph) MAX
 OIL 9 x 4 1/2" - FW333/335
 HOFFMAN ROLLER - FW344/351/358/369
 SKF ROLLER - ALL OTHERS
 NO RESTRICTIONS

FLAT WAGONS (CONTINUED)

SPECIAL FEATURES
 'D' IN TABLE INDICATES BUCKEYES
 FW342/345 AND FW351/355 ARE
 EX-CONCRETE MIXER MATCHED PAIRS
 WITH EXTENDED WARD COUPLERS

FLEET NUMBER	VEHICLE DESCRIPTION	FUNCTION
FW 332	FUTURE POWER SUPPLIES (FPS)	PICKING UP MATERIAL
FW 333	FUTURE POWER SUPPLIES (FPS)	PICKING UP MATERIAL
FW 335	CABLE DRUM STAND WAGON (FPS)	REELING OFF CABLE
FW 336	CABLE DRUM STAND WAGON (FPS)	REELING OFF CABLE
FW 340	CONCRETE BREAKER WAGON	BREAKING CONCRETE
FW 342	IMPLEMENT WAGON H/STOCK A END	CARRYING EXCAVATORS
FW 344 D	GENERAL PURPOSE WAGON	CARRYING MATERIAL
FW 345	IMPLEMENT WAGON H/STOCK A END	CARRYING EXCAVATORS
FW 351	IMPLEMENT WAGON H/STOCK A END	CARRYING EXCAVATORS
FW 352 (SCRAP)	IMPLEMENT WAGON H/STOCK A END	CARRYING EXCAVATORS
FW 353 D	TURN-TABLE WAGON 2 DRUM TYPE	REELING OFF CABLE
FW 355	IMPLEMENT WAGON H/STOCK A END	CARRYING EXCAVATORS
FW 357 D	WATER TANK WAGON	WATER SPRAYING
FW 358 D	TURN-TABLE WAGON 4 DRUM TYPE	REELING OFF CABLE
FW 364 D	TURN-TABLE WAGON 4 DRUM TYPE	REELING OFF CABLE
FW 366 D	TURN-TABLE WAGON 6 DRUM TYPE	REELING OFF CABLE
FW 369 D	GENERAL PURPOSE WAGON	CARRYING MATERIAL
FW 385 D	TURN-TABLE WAGON 4 DRUM TYPE	REELING OFF CABLE
FW 386 D	TURN-TABLE WAGON 4 DRUM TYPE	REELING OFF CABLE
FW 394 D	TURN-TABLE WAGON 2 DRUM TYPE	REELING OFF CABLE
FW 398	FLAT WAGON (MATCH WAGON FOR FW 340)	CARRYING MATERIALS

CONCRETE BREAKER WAGON



NO. RANGE: FW340

23/11/93

LUL7d

CONCRETE BREAKER/MATCH WAGON

TITLE
CONCRETE BREAKING HAMMER

FUNCTION
TO BREAK THE CONCRETE SLEEPER
RETAINING BEDS TUBE AND SUB-
SURFACE RUNNING TUNNELS AS PART
OF TUNNEL TRACK RECONDITIONING WORK

OPERATION DESCRIPTION
THE CONCRETE BREAKING HAMMER IS
MOUNTED ON A 30 TON FLAT WAGON
(WAGON N° FW340). THE CONCRETE
BREAKING UNIT IS A 'MONTABERT'
BRH125 HYDRAULIC ROCK BREAKER.
THE UNIT IS MOUNTED AT THE
END OF AN APPROXIMATELY 6 METRE
LONG MOUNTING BEAM. THE
MOUNTING BEAM IS SUPPORTED BY
A CARRIAGEWAY WHICH IN TURN IS
FIXED TO THE WAGON DECK. THE
CONCRETE BREAKING HAMMER WILL
ONLY BREAK CONCRETE BEYOND
ONE END OF THE WAGON ON WHICH IT
IS MOUNTED; THE HEADSTOCK OF
WHICH HAS BEEN REMOVED

POWERED BY 'MAUDSLEY' 25HP 320V DC
ELECTRIC MOTOR

PRIMARY POWER SOURCE: BATTERY
LOCOMOTIVE

THE CONCRETE BREAKER'S WAGON IS
ALWAYS COUPLED TO FLAT WAGON N°
FW398 AT THE CONCRETE BREAKING
UNIT END OF THE WAGON, FOR TRAVEL
ON THE RAILWAY

THE OUTER ENDS OF FW340 AND FW398
ARE FITTED WITH 'WARD' COUPLERS

MANUFACTURED 1981
RICHARD SMALLLEY ENGINEERING LTD
(TAKEN AT 20 YEARS) 2001

DELIVERY DATE -
MANUFACTURERS NAME
DESIGN LIFE EXPIRES
MODIFICATION DETAILS

SEE APPENDIX FOR FLAT WAGONS
ALSO MODIFIED FRONT WHEEL BOGIE
SUSPENSION BLOCK

CONCRETE BREAKER/MATCH WAGON (CONTINUED)

LIMITATIONS IN OPERATION
IN ITS FULLY AND CORRECTLY STOWED
CONDITION, THE CONCRETE BREAKER
ON ITS WAGON CONFORMS TO LUL
'TUBE' VEHICLE LOAD GAUGE
REQUIREMENTS

FULL ROUTE AVAILABILITY

PRE-1985 BATTERY LOCOMOTIVE WITH
100 AMP SOCKET IS REQUIRED TO
OPERATE THIS EQUIPMENT

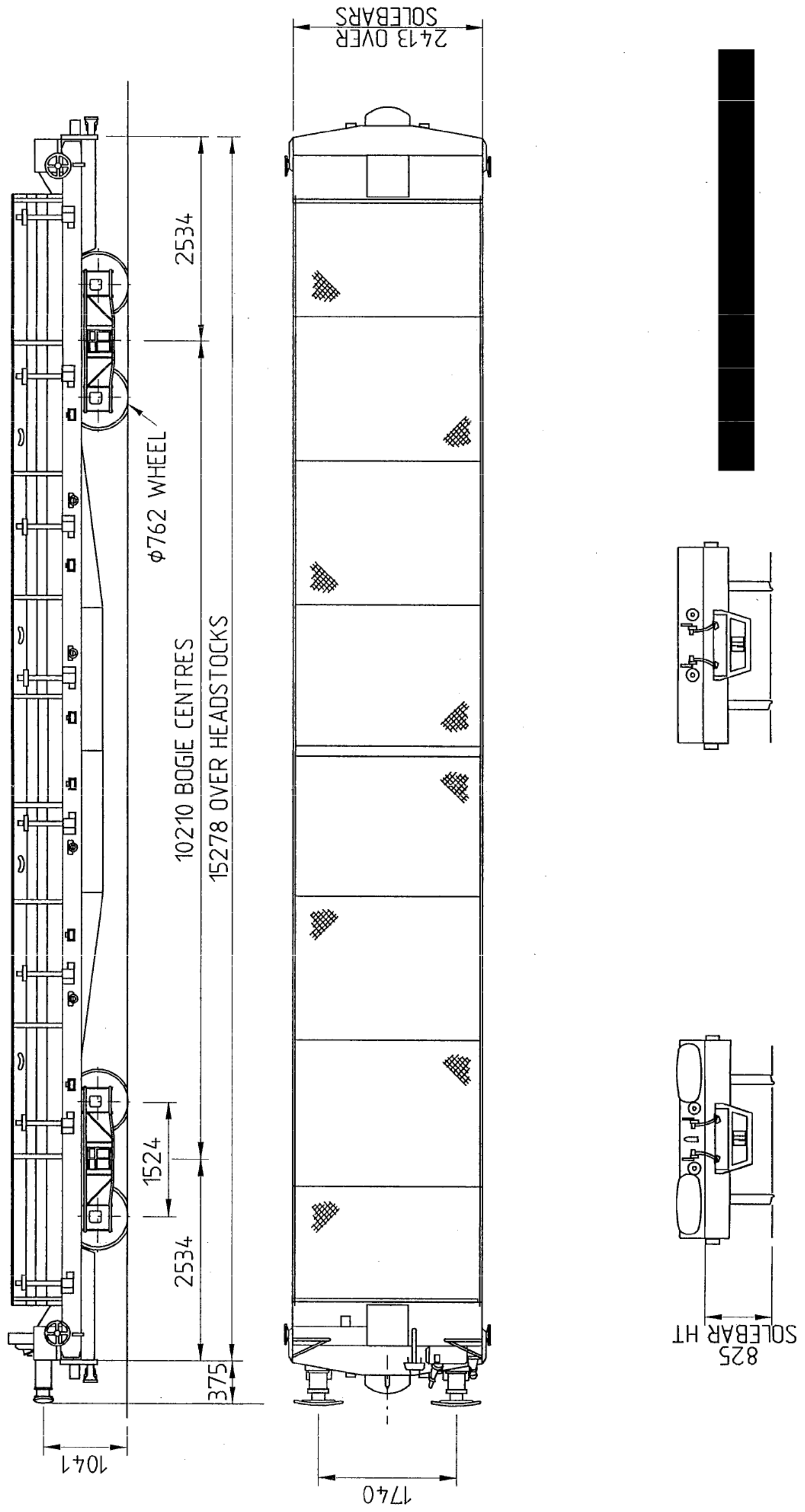
MUST ONLY WORK WHEN OPERATED BY A
FULLY TRAINED, CERTIFIED OPERATOR

EAR DEFENDERS, SAFETY GLASSES AND
FACE MASK MUST BE WORN BY
OPERATOR AND STAFF WORKING WITH
THIS MACHINE

SPECIAL FEATURES
DESIGNED FOR REMOTE OPERATION BY
AN OPERATOR AT GROUND LEVEL USING
A BODY HELD CONTROL PANEL,
CONNECTED TO THE MAIN CONTROL UNIT
BY USE OF AN UMBILICAL CORD

ELECTRICAL SUPPLY IS TAKEN FROM
THE 100 AMP SOCKET ON A BATTERY
LOCOMOTIVE AT A NOMINAL VOLTAGE
OF 320 VOLTS DC

CONCRETE BREAKER MATCH WAGON



NO. RANGE: FW398

23/11/93

LUL7e

CONCRETE BREAKER/MATCH WAGON

TITLE
CONCRETE BREAKING HAMMER

FUNCTION
TO BREAK THE CONCRETE SLEEPER
RETAINING BEDS TUBE AND SUB-
SURFACE RUNNING TUNNELS AS PART
OF TUNNEL TRACK RECONDITIONING WORK

OPERATION DESCRIPTION
THE CONCRETE BREAKING HAMMER IS
MOUNTED ON A 30 TON FLAT WAGON
(WAGON N° FW340). THE CONCRETE
BREAKING UNIT IS A 'MONTABERT'
BRH125 HYDRAULIC ROCK BREAKER.
THE UNIT IS MOUNTED AT THE
END OF AN APPROXIMATELY 6 METRE
LONG MOUNTING BEAM. THE
MOUNTING BEAM IS SUPPORTED BY
A CARRIAGEWAY WHICH IN TURN IS
FIXED TO THE WAGON DECK. THE
CONCRETE BREAKING HAMMER WILL
ONLY BREAK CONCRETE BEYOND
ONE END OF THE WAGON ON WHICH IT
IS MOUNTED; THE HEADSTOCK OF
WHICH HAS BEEN REMOVED

POWERED BY 'MAUDSLEY' 25HP 320V DC
ELECTRIC MOTOR

PRIMARY POWER SOURCE: BATTERY
LOCOMOTIVE

THE CONCRETE BREAKER'S WAGON IS
ALWAYS COUPLED TO FLAT WAGON N°
FW398 AT THE CONCRETE BREAKING
UNIT END OF THE WAGON, FOR TRAVEL
ON THE RAILWAY

THE OUTER ENDS OF FW340 AND FW398
ARE FITTED WITH 'WARD' COUPLERS

MANUFACTURED 1981
RICHARD SMALLEY ENGINEERING LTD
(TAKEN AT 20 YEARS) 2001

SEE APPENDIX FOR FLAT WAGONS
ALSO MODIFIED FRONT 'WHEEL BOGIE
SUSPENSION BLOCK

CONCRETE BREAKER/MATCH WAGON (CONTINUED)

LIMITATIONS IN OPERATION

IN ITS FULLY AND CORRECTLY STOWED
CONDITION, THE CONCRETE BREAKER
ON ITS WAGON CONFORMS TO LUL
'TUBE' VEHICLE LOAD GAUGE
REQUIREMENTS

FULL ROUTE AVAILABILITY

PRE-1985 BATTERY LOCOMOTIVE WITH
100 AMP SOCKET IS REQUIRED TO
OPERATE THIS EQUIPMENT

MUST ONLY WORK WHEN OPERATED BY A
FULLY TRAINED, CERTIFIED OPERATOR

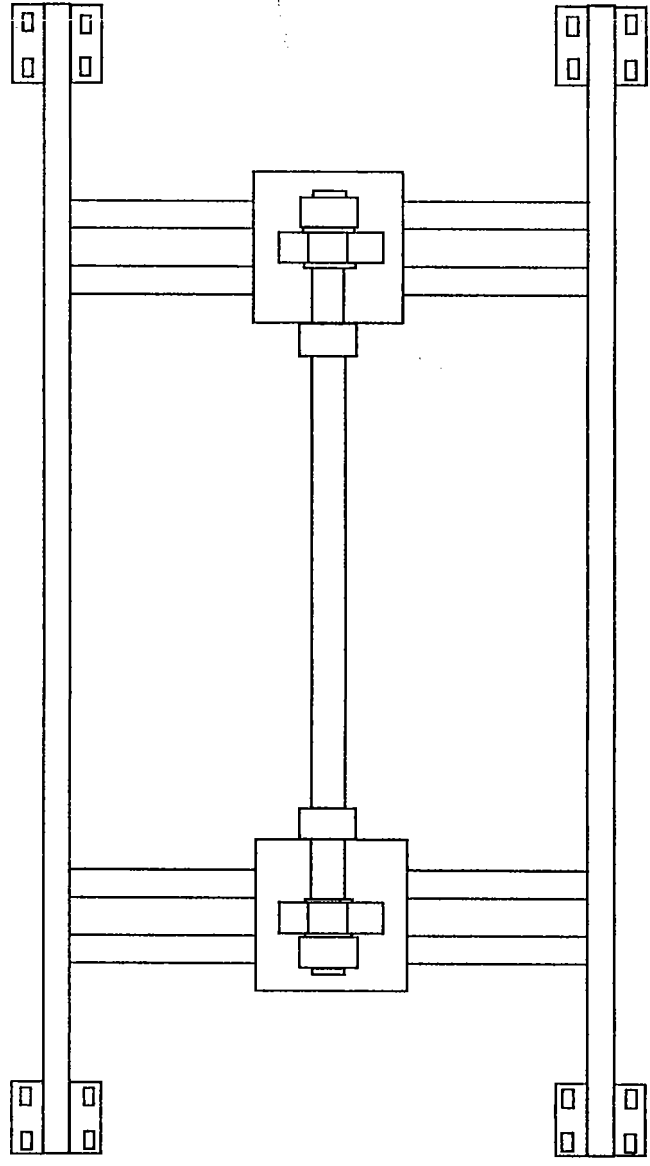
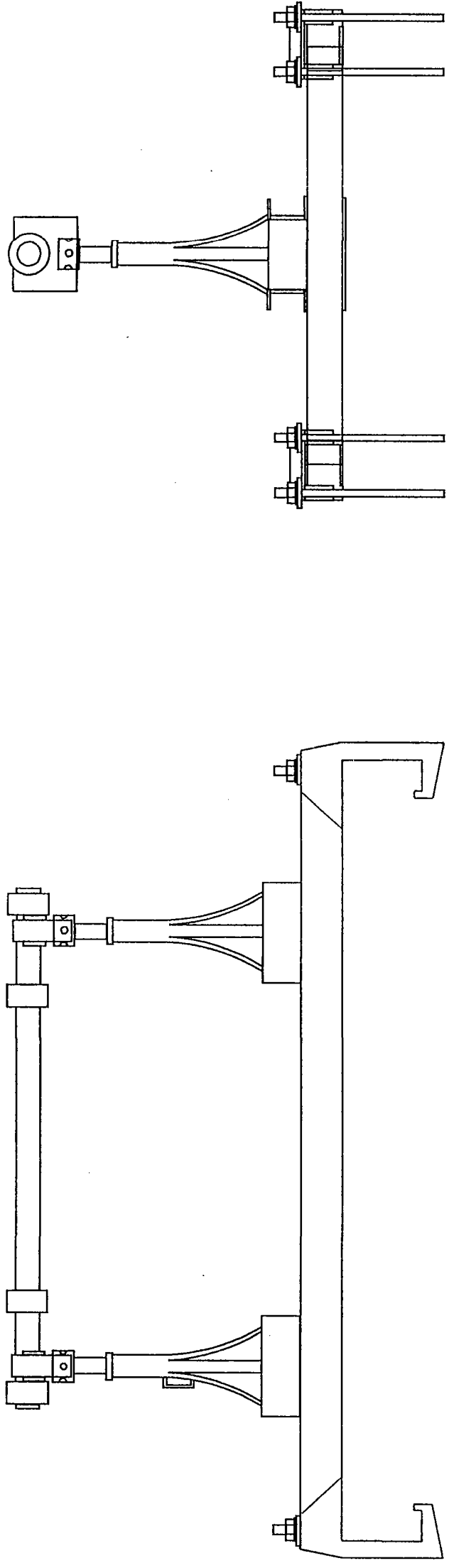
EAR DEFENDERS, SAFETY GLASSES AND
FACE MASK MUST BE WORN BY
OPERATOR AND STAFF WORKING WITH
THIS MACHINE

SPECIAL FEATURES

DESIGNED FOR REMOTE OPERATION BY
AN OPERATOR AT GROUND LEVEL USING
A BODY HELD CONTROL PANEL,
CONNECTED TO THE MAIN CONTROL UNIT
BY USED OF AN UMBILICAL CORD

ELECTRICAL SUPPLY IS TAKEN FROM
THE 100 AMP SOCKET ON A BATTERY
LOCOMOTIVE AT A NOMINAL VOLTAGE
OF 320 VOLTS DC

WAGON MOUNTED CABLE DRUM STANDS



NO. RANGE: MOUNTED ON FLAT WAGONS

23/11/93

LUL7f

WAGON MOUNTED CABLE DRUM STANDS

TITLE WAGON MOUNTED CABLE DRUM STANDS

FUNCTION REELING OFF CABLE

NUMBER RANGE FITTED TO FLAT WAGONS FW335/FW336

DELIVERY DATE - 1967

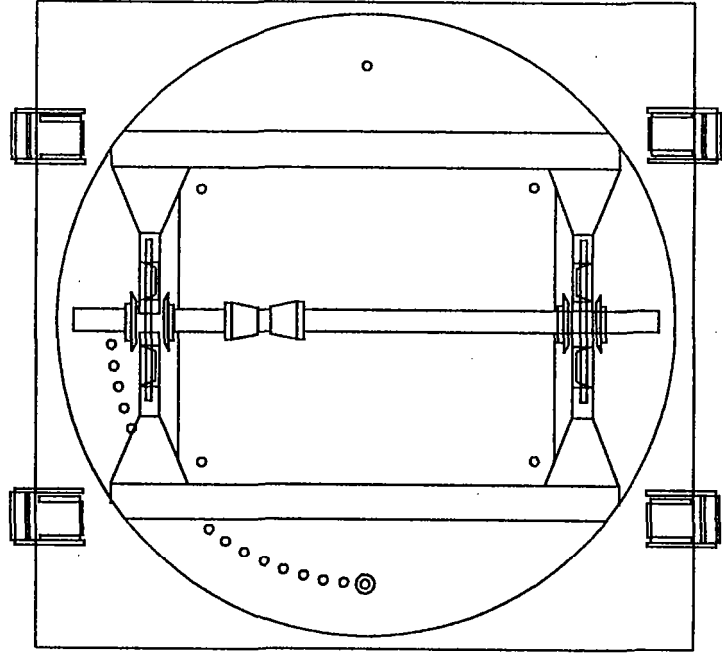
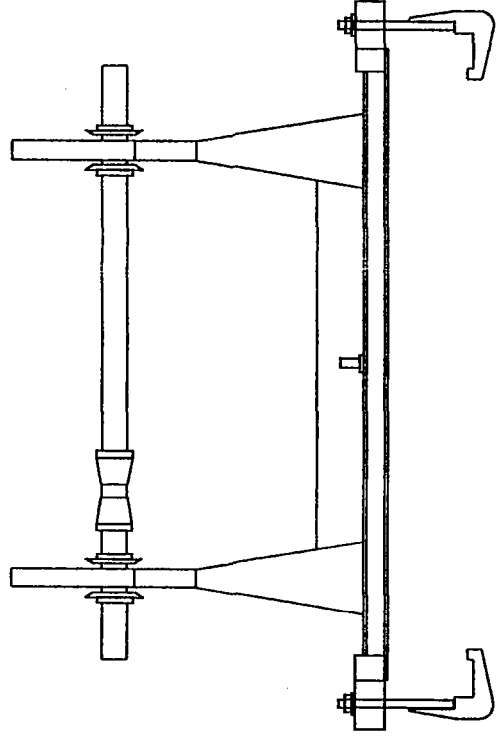
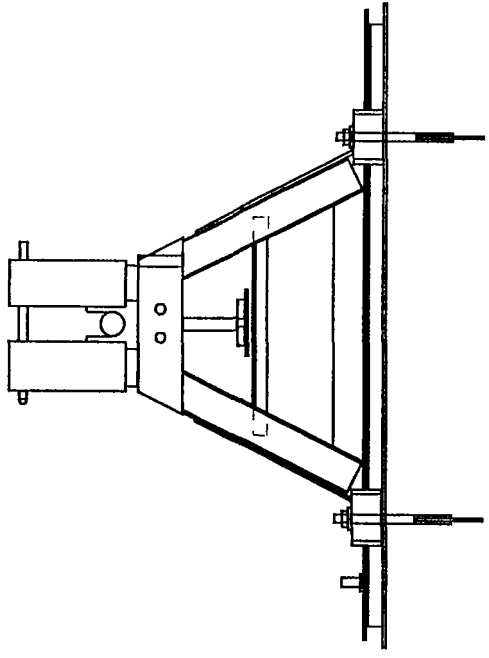
MANUFACTURERS NAME JOHNSON & PHILLIPS LTD

DESIGN LIFE EXPIRES (TAKEN AT 15 YEARS) 1982

MODIFICATION DETAILS NONE RECORDED

SPECIAL FEATURES MAX DRUM SIZE 1830mm DIA
NORMAL DRUM SIZE 1700mm DIA
NORMAL DRUM TYPE ANY UP TO TYPE L
MAX DRUM WEIGHT 7.5 TONNES
WEIGHT OF L TYPE DRUM 2.3 TONNES
WEIGHT OF TURN TABLE 1280 kg

WAGON MOUNTED CABLE DRUM TURNTABLES



NO. RANGE: MOUNTED ON FLAT WAGONS

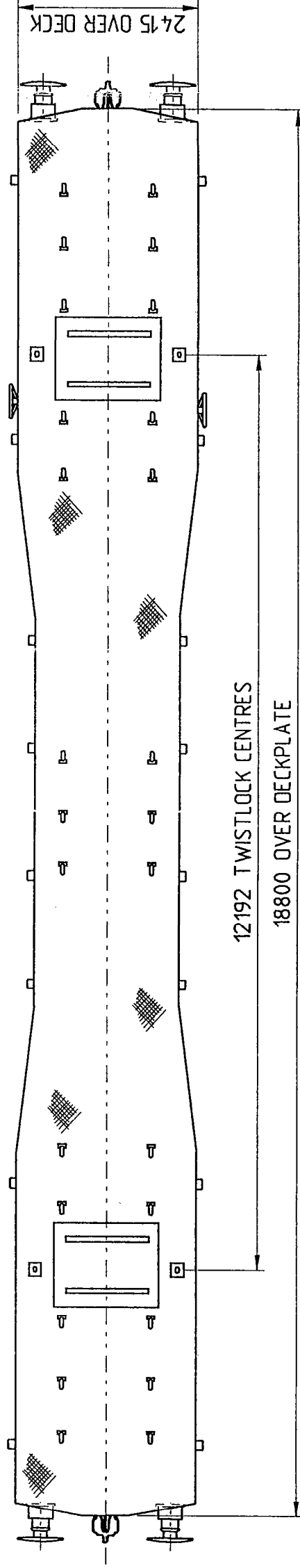
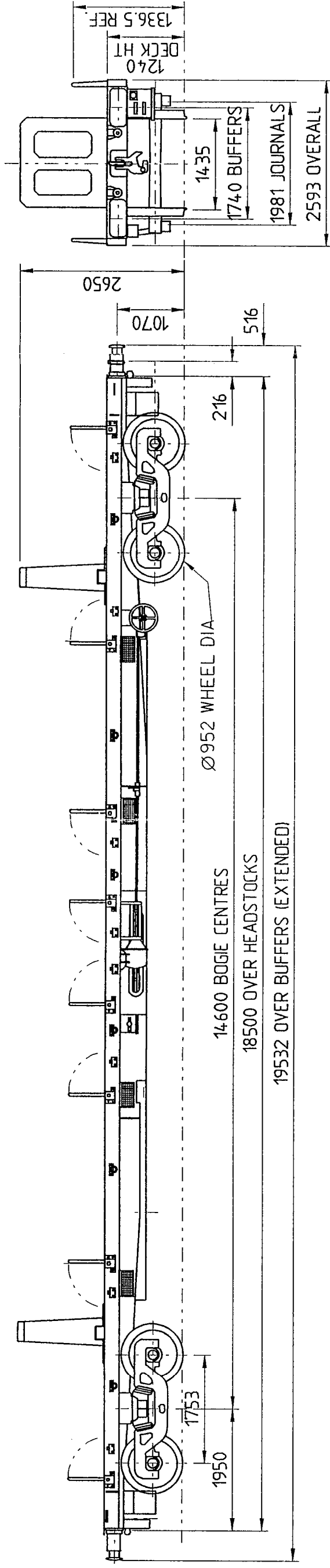
23/11/93

LUL7g

WAGON MOUNTED CABLE DRUM TURN TABLES

TITLE	WAGON MOUNTED CABLE DRUM TURN TABLES
FUNCTION	REELING OFF CABLE
NUMBER RANGE	OLD TYPE 1 - 10 NEW TYPE 1 - 18
DELIVERY DATE - MANUFACTURERS NAME	OLD TYPE 1 - 4 SHIRE STEEL MFG.CO.LTD 1985 (ESTIMATED) OLD TYPE 5 - 10 AUTO MOWER ENG.CO.LTD. DELIVERY DATE NOT KNOWN NEW TYPE 1 - 18 PROCOR ENGINEERING 1990 (ESTIMATED)
DESIGN LIFE EXPIRES	(TAKEN AT 15 YEARS) OLD TYPE 1 - 4 2000 (ESTIMATED) OLD TYPE 5 - 10 LIFE EXPIRED NEW TYPE 1 - 18 2005 (ESTIMATED)
MODIFICATION DETAILS	NONE RECORDED
SPECIAL FEATURES	OLD TYPE 1 - 4 FITTED TO FW 358 OLD TYPE 5 - 10 FITTED TO FW 366 NEW TYPE 1 - 4 FITTED TO FW 385 NEW TYPE 5 - 8 FITTED TO FW 394 NEW TYPE 9 - 12 FITTED TO FW 364 NEW TYPE 13 - 16 FITTED TO FW 386 NEW TYPE 17 - 18 FITTED TO FW 353 MAX DRUM SIZE 1830mm DIA NORMAL DRUM SIZE 1700mm DIA NORMAL DRUM TYPE ANY UP TO TYPE L MAX DRUM WEIGHT 7.5 TONNES WEIGHT OF L TYPE DRUM 2.3 TONNES WEIGHT OF TURN TABLE 1280 kg

35 TONNE HEAVY DUTY WAGON (HIGH DECK)



NO. RANGE: HD871 - HD876

23/11/93

LUL8

HIGH DECK WAGONS

TITLE HIGH DECK BOGIE RAIL WAGON
FUNCTION TRANSPORTING TRACK PANELS TO AND FROM RELAY SITES
NUMBER RANGE HD 871 - HD 876
DELIVERY DATE - MANUFACTURERS NAME 1987 PROCOR
DESIGN LIFE EXPIRES (TAKEN AT 40 YEARS) 2027
MODIFICATION DETAILS SEE APPENDIX
TARE WEIGHT 22.4 TONNES
LOAD CAPACITY 35 TONNES
BRAKING SYSTEM AIR BRAKED DAVIES AND METCALFE AUTOMATIC EMPTY/LOAD VALVE SCREW PARKING BRAKE
COUPLINGS TYPE BUCKEYE HEIGHT FROM RAIL 427/1070 mm
SERVICE AND MAXIMUM SPEEDS PERMITTED SERVICE SPEED 30 mph (48 kph) MAXIMUM SPEED 45 mph (72 kph)
AXLE BOX TYPE ROLLER BEARING TIMKEN SP120
ROUTE AVAILABILITY LOADED - OUT OF GAUGE ON THE FOLLOWING:
 JUBILEE LINE SOUTH OF FINCHLEY ROAD
 NORTHERN LINE ALL SECTIONS
 VICTORIA LINE ALL SECTIONS
 PICCADILLY LINE EAST OF BARONS COURT SIDING AND WEST OF NORTHFIELDS
 CENTRAL LINE EAST OF NORTH ACTON
 BAKERLOO LINE ALL SECTIONS
 EMPTY - SEE LUL RULE BOOK APPENDIX 13 PAGE 87 TABLE 8

SPECIAL FEATURES

ELECTRICS

THROUGH ELECTRICS ARE PROVIDED ON THE WAGONS COMPRISING OF:

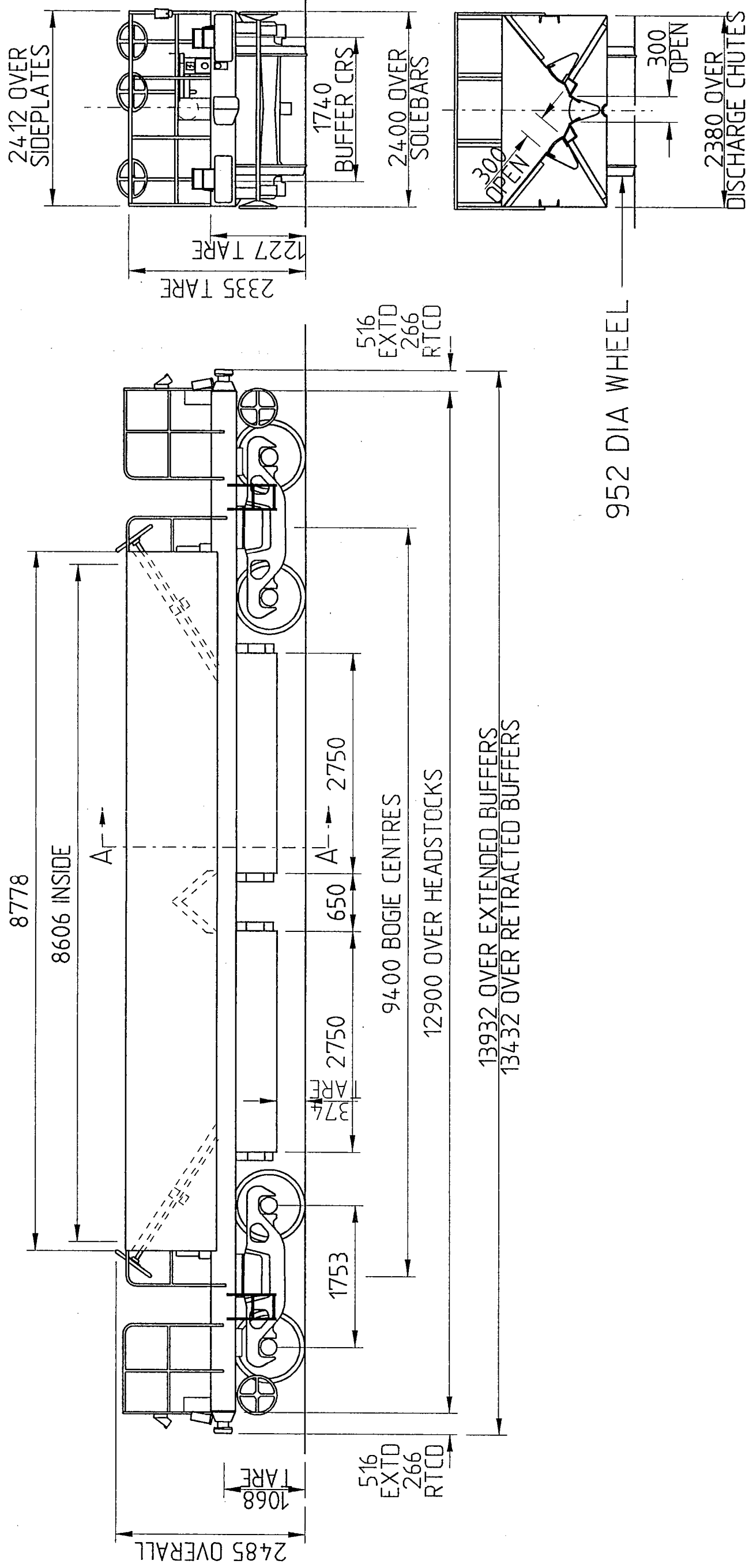
- ONE - THROUGH JUMPER RECEPTACLE - RED
- ONE - THROUGH JUMPER RECEPTACLE - BLUE
- TWO - AC JUMPER BOX SUPPLYING THROUGH AC 3 PHASE AND RECEPTACLE, A THROUGH AC SINGLE PHASE 110V AND RECEPTACLE.

IN ADDITION TWO FURTHER SINGLE PHASE OUTLET SOCKETS ARE PROVIDED, THESE ARE LOCATED ONE AT EACH SIDE OF THE WAGON AT A MID POINT BETWEEN THE HEADSTOCKS.

FOUR FLOOD LIGHTS ARE ALSO PROVIDED ON EACH SIDE OF THE WAGON BELOW THE SOLEBAR.

THE LIGHTING CIRCUIT AND THE SINGLE PHASE SOCKETS ARE ALL PROTECTED BY A DUAL ON-OFF SWITCH AND CIRCUIT BREAKER.

HOPPER WAGON



SECTION AA

NO. RANGE: HW201 - HW222

23/11/93

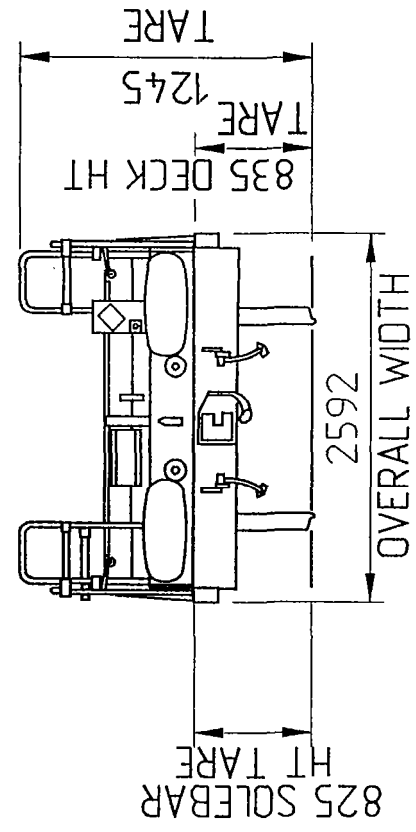
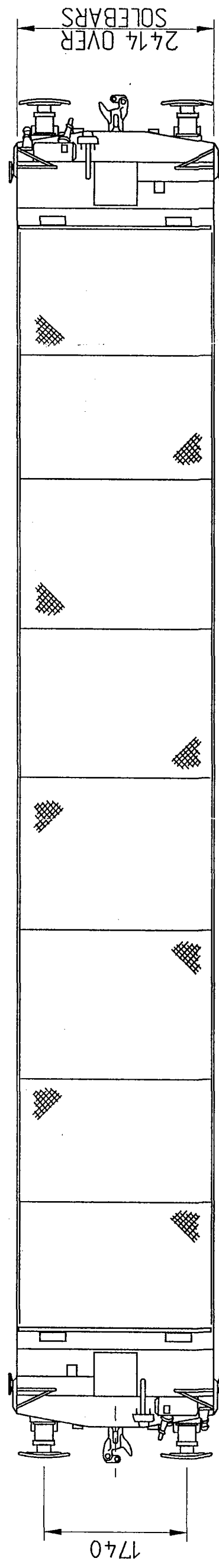
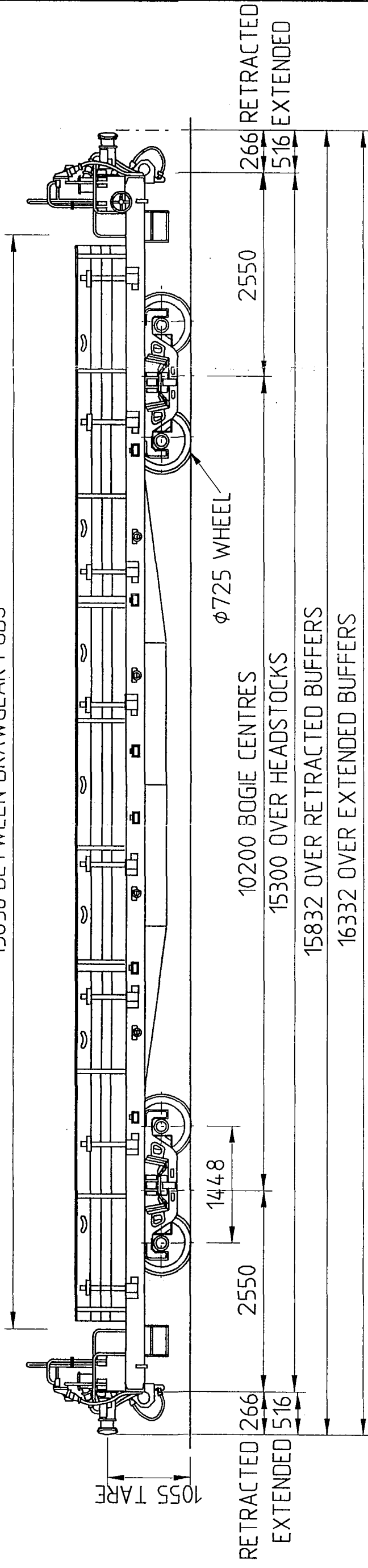
LUL9

HOPPER WAGONS

TITLE	HOPPER WAGONS
FUNCTION	DELIVERING AND POSITIONING OF BALLAST, SHINGLE AND OTHER GRANULAR MATERIALS
NUMBER RANGE	HW 201 - HW 222
DELIVERY DATE - MANUFACTURERS NAME	1981 W H DAVIS
DESIGN LIFE EXPIRES	(TAKEN AT 40 YEARS) 2021
MODIFICATION DETAILS	SEE APPENDIX
TARE WEIGHT	22.600 TONNES
LOAD CAPACITY	30 TONNES / 18.8 CUBIC METRES
BRAKING SYSTEM	AIR BRAKED TWO PIPE WESTINGHOUSE AUTOMATIC EMPTY/LOAD VALVE SCREW PARKING BRAKE
COUPLINGS	BUCKEYE/RCH 41.5"/1055 mm
SERVICE AND MAXIMUM SPEEDS PERMITTED	30 MPH (48 kph) SERVICE 40 MPH (72 kph) MAX
AXLE BOX TYPE	TAPER ROLLER BEARING UNITS 5 1/2 X 10" CLASS 'D' TYPE AAR-23
ROUTE AVAILABILITY	CONFORMS TO LUL TUBE LOAD GAUGE
SPECIAL FEATURES	TRACK LIGHTING FITTED AT SOLEBAR LEVEL

GENERAL PURPOSE WAGON

13836 BETWEEN DRAWGEAR PODS



NO. RANGE: GP901 - GP941

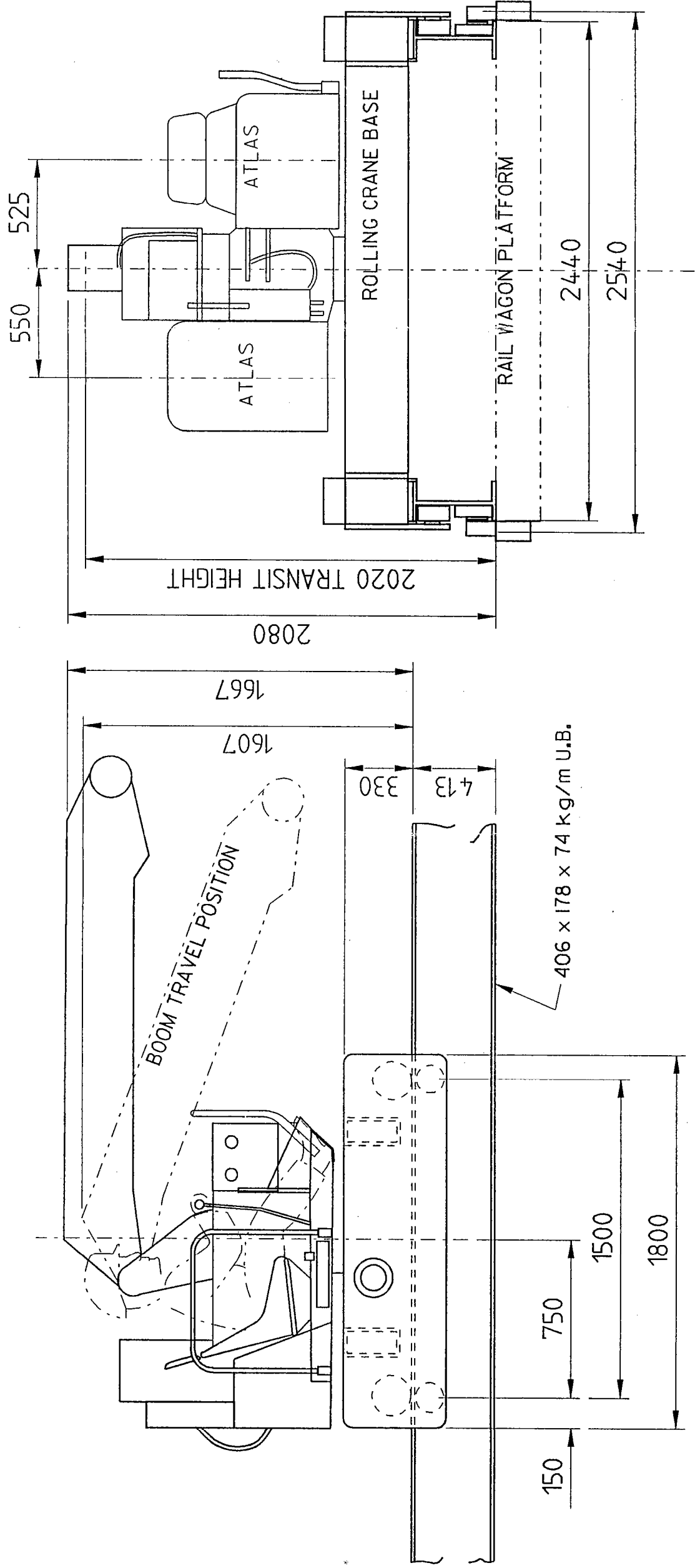
23/11/93

LUL100

GENERAL PURPOSE WAGONS

TITLE	GENERAL PURPOSE WAGONS
FUNCTION	TRANSPORT OF GENERAL ENGINEERING MATERIALS
NUMBER RANGE	GP901 - GP941
DELIVERY DATE - MANUFACTURERS NAME	1985 PROCOR
DESIGN LIFE EXPIRES	(TAKEN AT 40 YEARS) 2025
MODIFICATION DETAILS	SEE APPENDIX
TARE WEIGHT	19 TONNES
LOAD CAPACITY	30 TONNES / 19.5 CUBIC METRES
BRAKING SYSTEM	AIR BRAKED WESTINGHOUSE AUTOMATIC EMPTY/LOAD VALVE SCREW PARKING BRAKE
COUPLINGS	RETRACTABLE BUFFERS, BUCKEYE/RCH 41.57'1055 mm
SERVICE AND MAXIMUM SPEEDS PERMITTED	30 MPH (48 kph) SERVICE 45 MPH (72 kph) MAX
AXLE BOX TYPE	ROLLER BEARING TIMKEN SP 120 OR SKF TBU 120
ROUTE AVAILABILITY	CONFORMS TO LUL TUBE LOAD GAUGE FULL ROUTE AVAILABILITY
SPECIAL FEATURES	GP901 - ATLAS ROLLOADER GP902 - STEINER TRENCH DIGGER

WAGON MOUNTED ATLAS ROLL LOADER



NO. RANGE: MOUNTED ON GP901

23/11/93

LUL10b

ATLAS ROLLOADER - WAGON MOUNTED MULTI PURPOSE JIB

TITLE

ATLAS 100.1 WAGON MOUNTED ROLL
LOADER CRANE

FUNCTION

TO PROVIDE A MEANS OF HANDLING ALL
TYPES OF PLANT, EQUIPMENT,
PALLETISED GOODS AND ALL TYPES OF
MATERIALS USED IN TRACK AND
INFRASTRUCTURE MAINTENANCE UP TO
THE CAPACITY OF THE CRANE.

DELIVERY DATE - MANUFACTURERS NAME

1987 ATLAS HYDRAULIC LOADERS LTD

DESIGN LIFE EXPIRES

(TAKEN AT 40 YEARS) 2027

MODIFICATION DETAILS

FEBRUARY 1993 SEE CONTRACT PH036

LIMITATION IN OPERATION

IN ITS FULLY AND CORRECTLY STOWED
CONDITION THE CRANE ON ITS WAGON
CONFORMS TO LUL 'TUBE' VEHICLE LOAD
GAUGE REQUIREMENTS.

FULL ROUTE AVAILABILITY

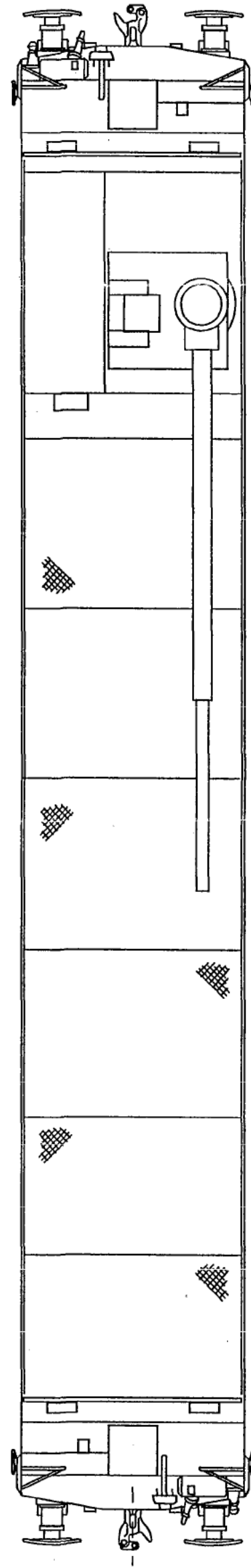
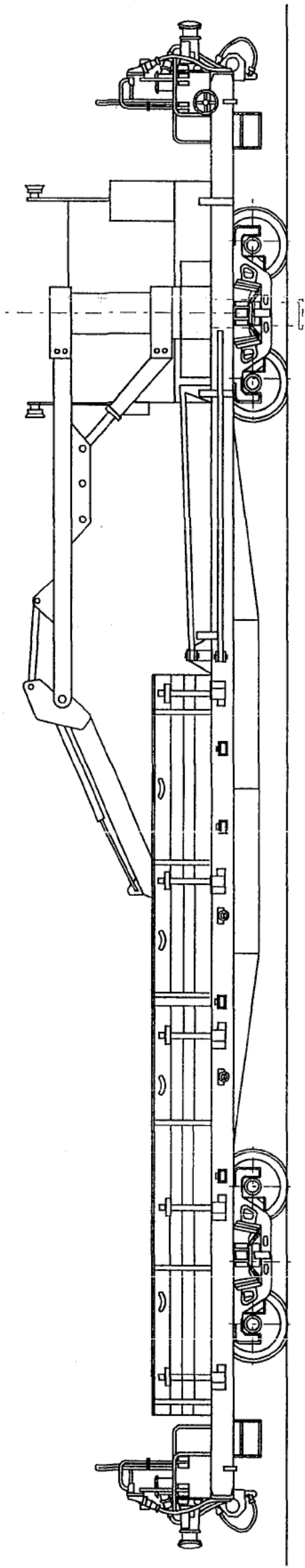
MUST NOT CARRY A LOAD ON ITS JIB
WHEN ITS WAGON IS MOVING

SPECIAL FEATURES

THE CRANE IS MOUNTED ON A 30 TONNE
GENERAL PURPOSE WAGON. THE CRANE
IS MOUNTED ON A CARRIAGE WHICH CAN
BE DRIVEN ALONG THE 13.8M LONG
CARRIAGEWAY THAT IS ATTACHED TO THE
DECK OF THE WAGON. THE CRANE'S JIB
PIVOT POINT IS ON THE LONGITUDINAL
CENTRELINE OF THE WAGON. AT ITS
MAXIMUM RADIUS OF 7.2M THE CRANE
CAN LIFT 2.9 TONNE.

POWERED BY: 'DEUTZ' AIR-COOLED
DIESEL ENGINE

TRENCH DIGGER



NO. RANGE: MOUNTED ON GP902

23/11/93

LULIOC

TRENCH DIGGER

TITLE
STEINER HSM 800
MECHANICAL EXCAVATOR

FUNCTION
TO CARRY OUT TRACKSIDE DRAINAGE
EXCAVATIONS
TO PROVIDE A MEANS OF HANDLING
ALL TYPES OF TRACKSIDE DRAINAGE
MATERIALS

DELIVERY DATE -
1981

MANUFACTURERS NAME
H STEINER LTD STOKE-ON-TRENT

DESIGN LIFE EXPIRES
(TAKEN AT 20 YEARS) 2001

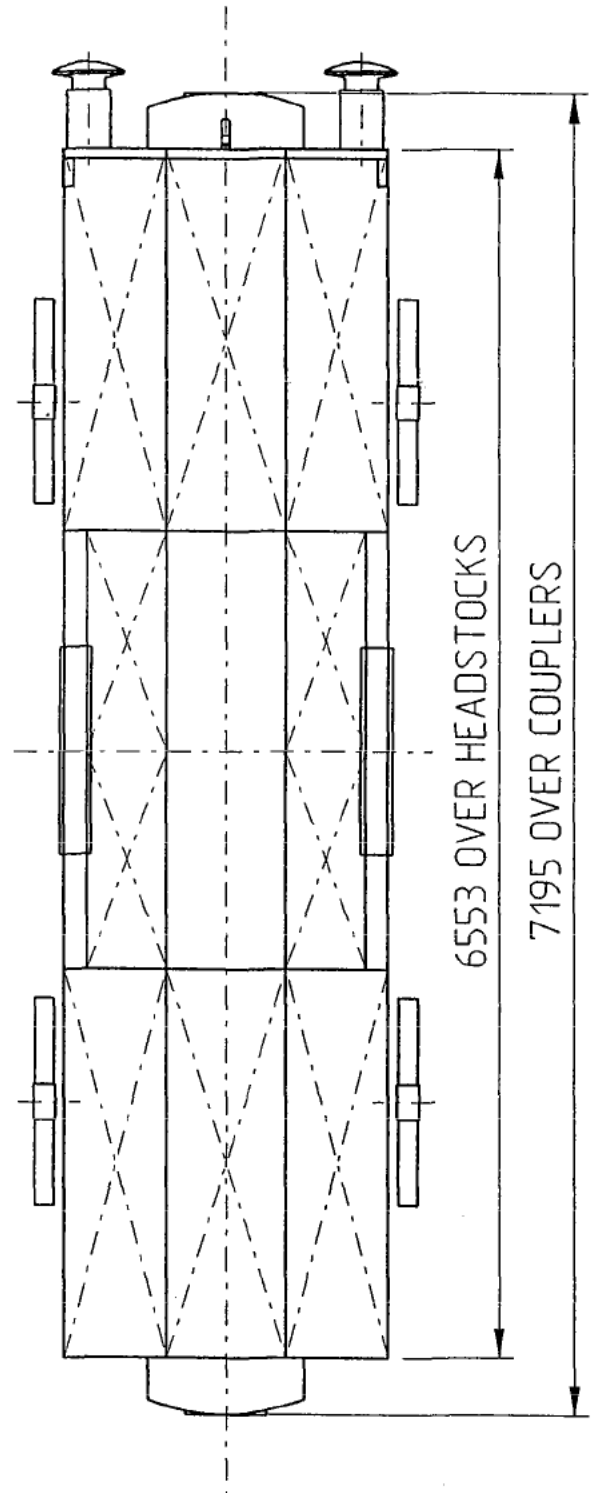
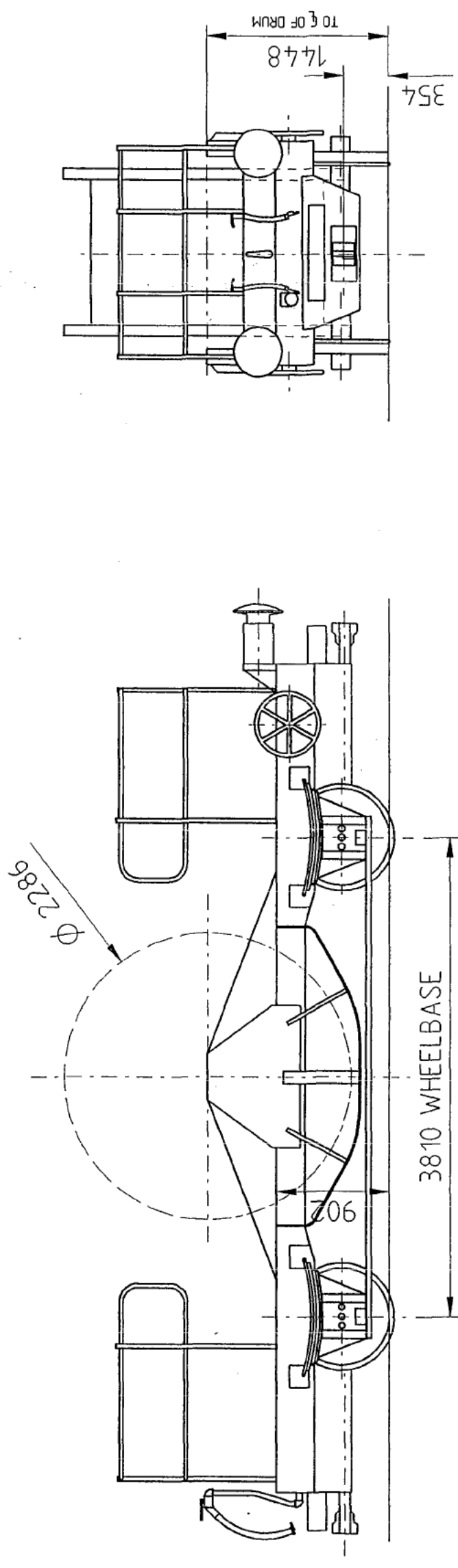
MODIFICATION DETAILS
SEE APPENDIX FOR GP WAGON
MODIFIED ENGINE ACCESS PIPE
MODIFIED EXHAUST SYSTEM
also

LIMITATIONS IN OPERATION
IN ITS FULLY AND CORRECTLY STOWED
CONDITION THE MECHANICAL EXCAVATOR
ON ITS WAGON CONFORMS TO LUL
'TUBE' VEHICLE LOAD GAUGE
REQUIREMENTS
FULL ROUTE AVAILABILITY
MUST NOT CARRY A LOAD ON ITS JIB
WHEN ITS WAGON IS MOVING

SPECIAL FEATURES
THE EXCAVATOR IS MOUNTED ON A
30 TON GENERAL PURPOSE WAGON
THE EXCAVATOR IS CAPABLE OF
EXCAVATING UP TO A MAXIMUM DEPTH
OF APPROXIMATELY 3.5M BELOW RAIL
LEVEL (SEE DRAWING N° ME/PW/D80715)
THE EXCAVATOR IN ITS 'CRANE' MODE
IS CAPABLE OF LIFTING 560KG AT
6.7M RADIUS AND 1000KG AT 3.85M
RADIUS (SEE MACHINE'S SWL CHART)
POWERED BY: 'FORD' WATER COOLED
DIESEL ENGINE



DEEP WELL CABLE DRUM WAGON (END VEHICLE)



NO. RANGE: CW1051, CW1052

23/11/93

LUL110

DEEP WELL CABLE DRUM WAGONS

TITLE DEEP WELL CABLE DRUM WAGONS

FUNCTION REELING OFF CABLE

NUMBER RANGE CW 1050 - CW 1052

DELIVERY DATE - 1940
 MANUFACTURERS NAME GLOUCESTER WAGON CO

DESIGN LIFE EXPIRES (TAKEN AT 40 YEARS) 1980

MODIFICATION DETAILS NONE RECORDED

TARE WEIGHT 10 TONNES

BRAKING SYSTEM AIR BRAKED
 WESTINGHOUSE
 TRIPLE VALVE
 SCREW PARKING BRAKE

COUPLINGS WARD COUPLERS (SPECIAL)
 TYPE 14"/355 mm
 HEIGHT FROM RAIL

SERVICE AND MAXIMUM SPEEDS PERMITTED
 MAX 45MPH (72 mph)
 LAYING CABLE 4 MPH (6.4 kph)

AXLE BOX TYPE OIL

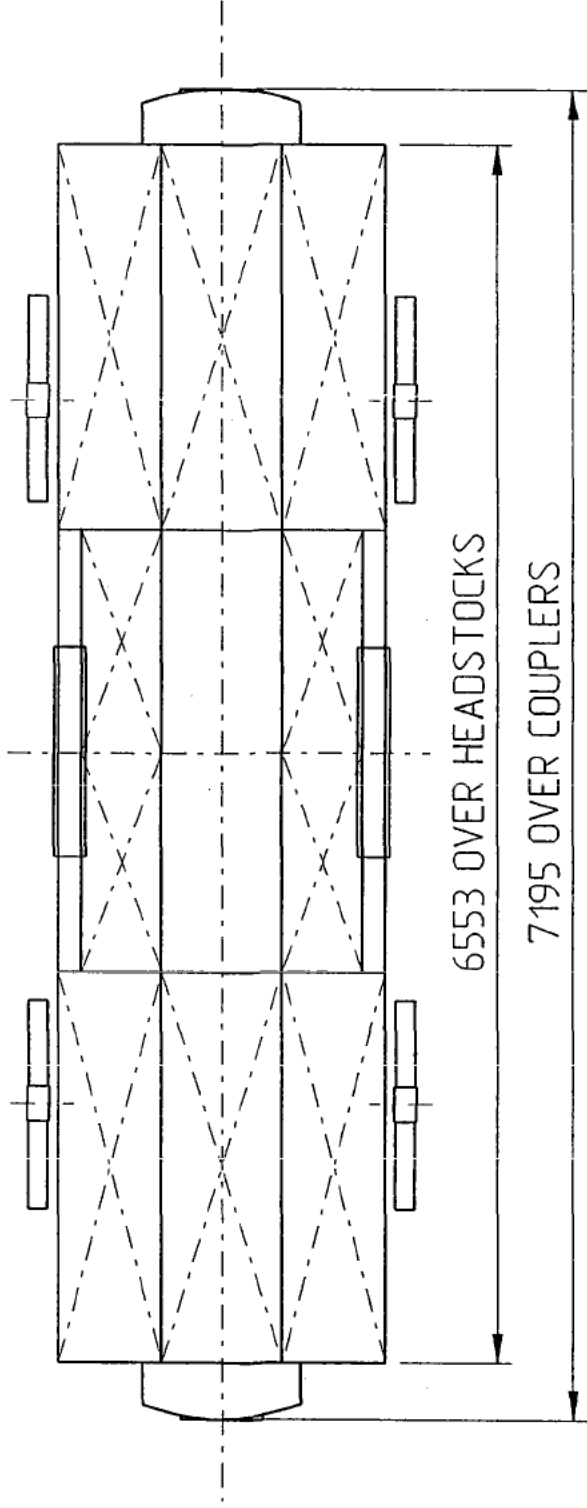
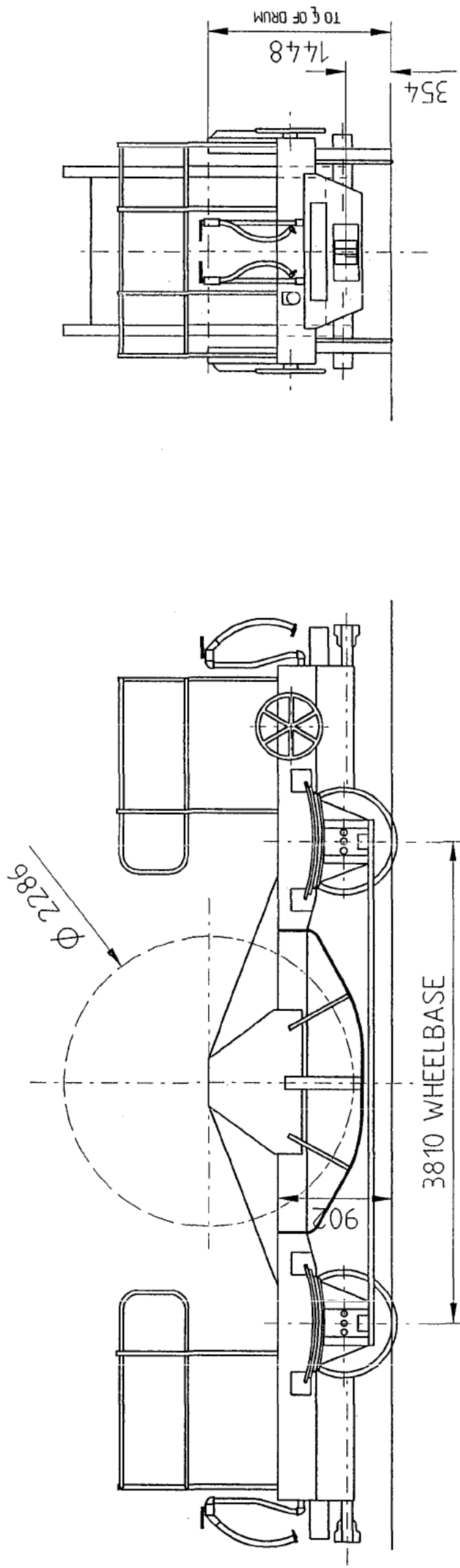
ROUTE AVAILABILITY NO RESTRICTIONS

SPECIAL FEATURES DEEP WELL VEHICLES
 ABILITY TO CARRY CABLES TO SITE

MAX DRUM SIZE 2300mm DIA
 NORMAL DRUM SIZE 2200mm DIA
 NORMAL DRUM TYPE ANY UP TO TYPE N
 MAX DRUM WEIGHT 6.5 TONNES
 WEIGHT OF N TYPE DRUM 3.6 TONNES



DEEP WELL CABLE DRUM WAGON (INNER VEHICLE)



NO. RANGE: CW1050

23/11/93

LUL11b

DEEP WELL CABLE DRUM WAGONS

TITLE DEEP WELL CABLE DRUM WAGONS

FUNCTION REELING OFF CABLE

NUMBER RANGE CW 1050 - CW 1052

DELIVERY DATE - 1940
MANUFACTURERS NAME GLOUCESTER WAGON CO

DESIGN LIFE EXPIRES (TAKEN AT 40 YEARS) 1980

MODIFICATION DETAILS NONE RECORDED

TARE WEIGHT 10 TONNES

BRAKING SYSTEM AIR BRAKED
WESTINGHOUSE
TRIPLE VALVE
SCREW PARKING BRAKE

COUPLINGS WARD COUPLERS (SPECIAL)
HEIGHT FROM RAIL 14'355 mm

SERVICE AND MAXIMUM SPEEDS PERMITTED
MAX 45MPH (72 mph)
LAYING CABLE 4 MPH (6.4 kph)

AXLE BOX TYPE OIL

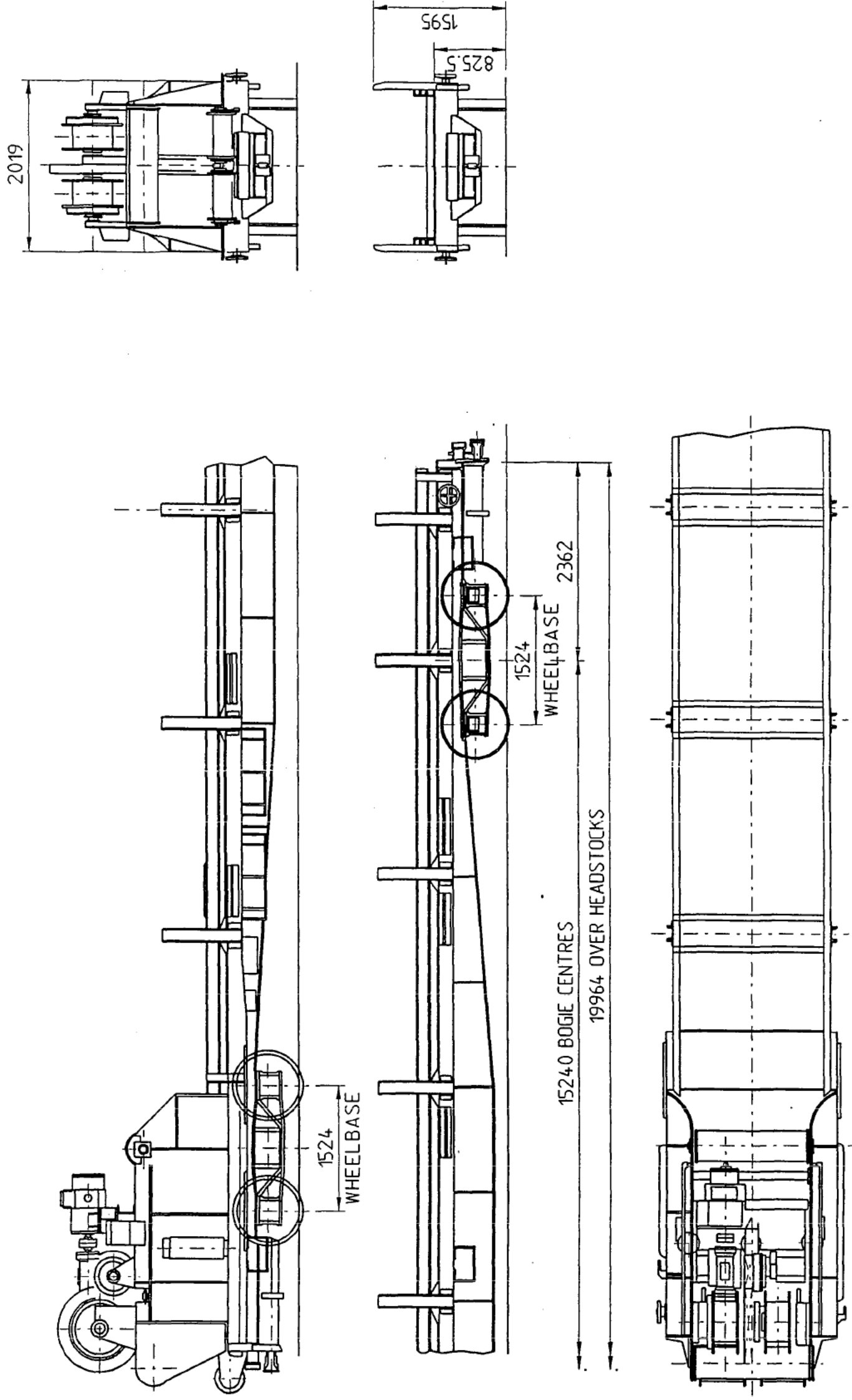
ROUTE AVAILABILITY NO RESTRICTIONS

SPECIAL FEATURES DEEP WELL VEHICLES
ABILITY TO CARRY CABLES TO SITE

MAX DRUM SIZE 2300mm DIA
NORMAL DRUM SIZE 2200mm DIA
NORMAL DRUM TYPE ANY UP TO TYPE N
MAX DRUM WEIGHT 6.5 TONNES
WEIGHT OF N TYPE DRUM 3.6 TONNES



L.W.R. WINCH WAGON



NO. RANGE: RW490

23/11/93

LUL12a

LONG WELDED RAIL TRAINS

TITLE LONG WELDED RAIL TRAINS

FUNCTION TO CARRY, UNLOAD AND LOAD LONG WELDED RAILS

NUMBER RANGE RW 490 - RW 504

OPERATION DESCRIPTION CHUTE UNITS ARE FITTED AT THE EXTREME ENDS OF EACH SET, FOR THE ON - AND OFF - LOADING OF LONG WELDED RAIL. WAGON RW 490 IS FITTED WITH A WINCH UNIT.

DELIVERY DATE - RW 490 - RW 494
MANUFACTURES NAME - GLUCUCESTER WAGON CO LTD 1958
 RW 495 - RW 504
 BREL ASHFORD 1965

DESIGN LIFE EXPIRES (TAKEN AT 40 YEARS) RW 490 - RW 494 - 1998
 RW 495 - RW 504 - 2005

MODIFICATION DETAILS MODIFIED ROLLER GUIDES FOR 95lb BH RAIL.

TARE WEIGHT 18 TONNES (WITH WINCH UNIT 21 TONNES)

LOAD CAPACITY 20 TONNES

BRAKING SYSTEM AIR BRAKED
 WESTINGHOUSE
 SPRING PARKING BRAKE

COUPLINGS WARD
 TYPE 14"/355 mm

SERVICE AND MAXIMUM SPEEDS PERMITTED 30MPH (48 kph) SERVICE
 45MPH (72 kph) MAX

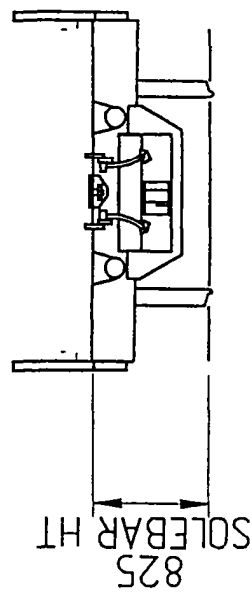
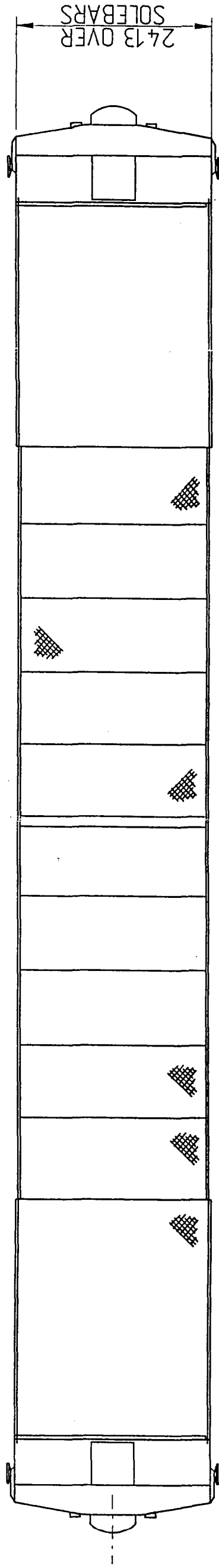
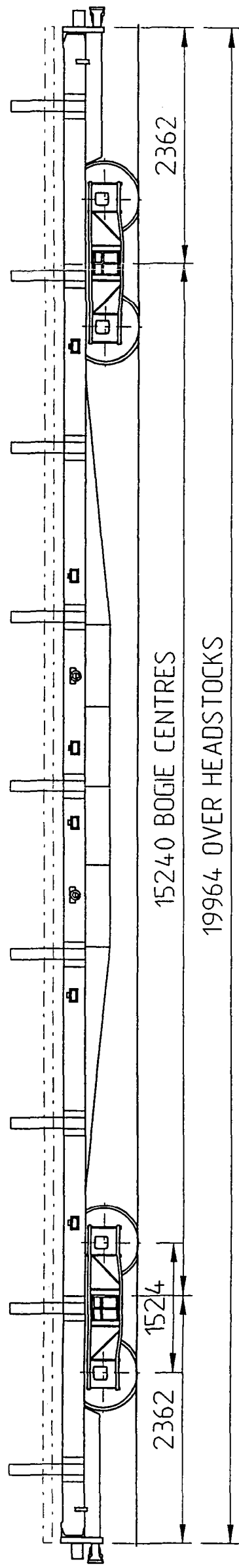
AXLE BOX TYPE SKF ROLLER

LIMITATIONS IN OPERATION CONFORM TO LUL 'TUBE' VEHICLE LOAD GAUGE REQUIREMENTS
 RESTRICTED FROM SOME SIDINGS AND REVERSING BERTHS DUE TO LENGTH. SEE RULE BOOK APPENDIX 13 TABLE 4 PAGES 67 - 30.
 MUST ONLY LOAD/UNLOAD RAIL WHEN TRACTION CURRENT IS 'OFF'

SPECIAL FEATURES RW 490 - WINCH UNIT
 RW 494, 495, 499, 500, 504 - CHUTE UNITS



L.W.R. TRAIN 20 TONNE RAIL WAGON



NO. RANGE: RW491 - 493, 496 - 498, 501 - 503 | 23/11/93 | LUL12b

LONG WELDED RAIL TRAINS

TITLE LONG WELDED RAIL TRAINS

FUNCTION TO CARRY, UNLOAD AND LOAD LONG WELDED RAILS

NUMBER RANGE RW 490 - RW 504

OPERATION DESCRIPTION CHUTE UNITS ARE FITTED AT THE EXTREME ENDS OF EACH SET, FOR THE ON - AND OFF - LOADING OF LONG WELDED RAIL. WAGON RW 490 IS FITTED WITH A WINCH UNIT.

DELIVERY DATE - MANUFACTURERS NAME - RW 490 - RW 494 GLOUCESTER WAGON CO LTD 1958
RW 495 - RW 504 BREL ASHFORD 1965

DESIGN LIFE EXPIRES (TAKEN AT 40 YEARS) RW 490 - RW 494 - 1998
RW 495 - RW 504 - 2005

MODIFICATION DETAILS MODIFIED ROLLER GUIDES FOR 95lb BH RAIL

TARE WEIGHT 18 TONNES (WITH WINCH UNIT 21 TONNES)

LOAD CAPACITY 20 TONNES

BRAKING SYSTEM AIR BRAKED WESTINGHOUSE SPRING PARKING BRAKE

COUPLINGS WARD
TYPE 147/355 mm

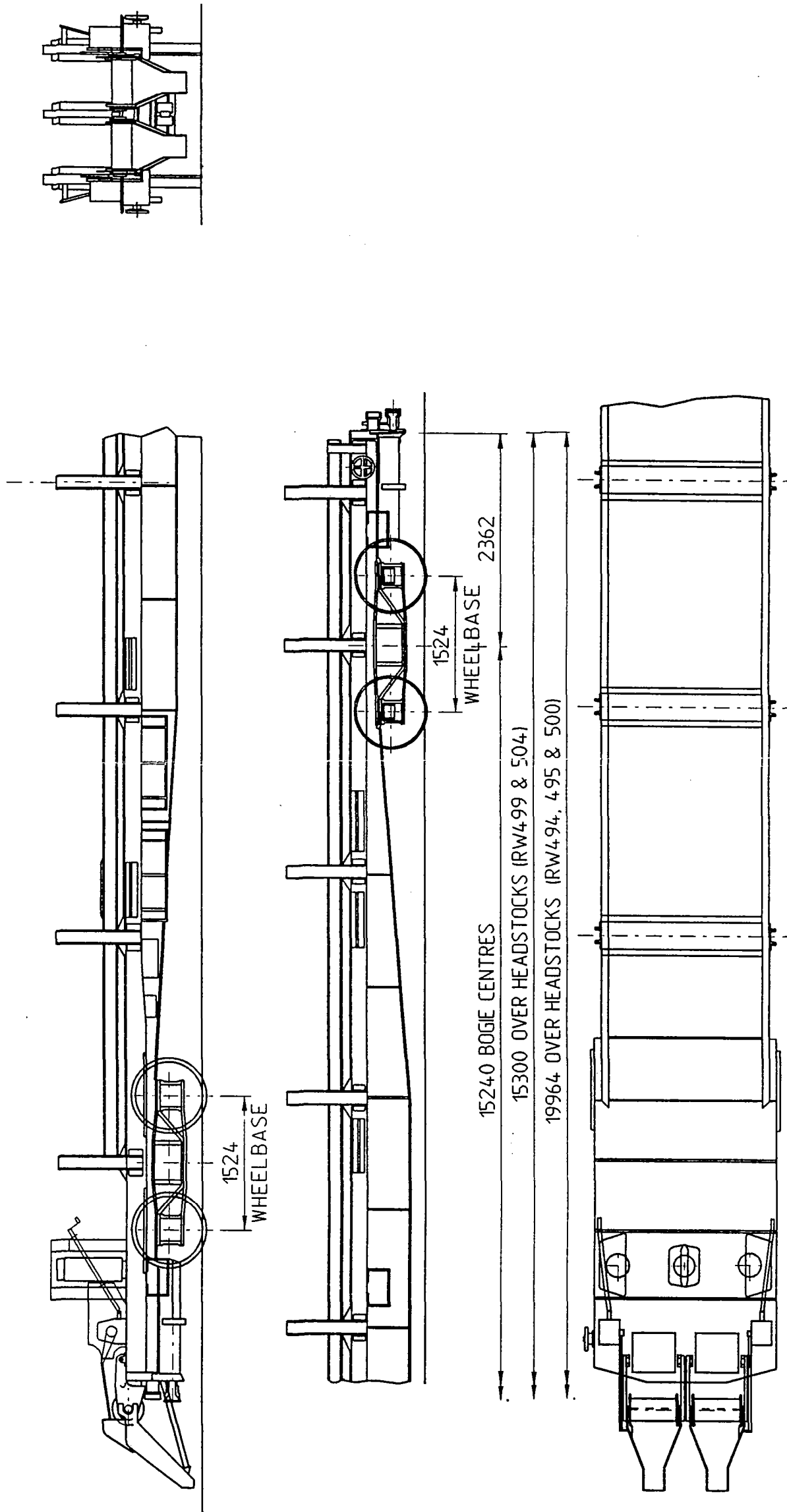
SERVICE AND MAXIMUM SPEEDS PERMITTED 30MPH (48 kph) SERVICE
45MPH (72 kph) MAX

AXLE BOX TYPE SKF ROLLER

LIMITATIONS IN OPERATION CONFORM TO LUL 'TUBE' VEHICLE LOAD GAUGE REQUIREMENTS
RESTRICTED FROM SOME SIDINGS AND REVERSING BERTHS DUE TO LENGTH. SEE RULE BOOK APPENDIX 13 TABLE 4 PAGES 67 - 80.
MUST ONLY LOAD/UNLOAD RAIL WHEN TRACTION CURRENT IS 'OFF'.

SPECIAL FEATURES RW 490 - WINCH UNIT
RW 494, 495, 499, 500, 504 - CHUTE UNITS

L.W.R. CHUTE WAGON



NO. RANGE: RW494, 495, 499, 500, 504

23/11/93

LULI2C

LONG WELDED RAIL TRAINS

TITLE LONG WELDED RAIL TRAINS

FUNCTION TO CARRY, UNLOAD AND LOAD LONG WELDED RAILS

NUMBER RANGE RW 490 - RW 504

OPERATION DESCRIPTION CHUTE UNITS ARE FITTED AT THE EXTREME ENDS OF EACH SET, FOR THE ON - AND OFF - LOADING OF LONG WELDED RAIL. WAGON RW 490 IS FITTED WITH A WINCH UNIT.

DELIVERY DATE - MANUFACTURES NAME - RW 490 - RW 494
GLOUCESTER WAGON CO LTD 1958
RW 495 - RW 504
BREL ASHFORD 1965

DESIGN LIFE EXPIRES (TAKEN AT 40 YEARS) RW 490 - RW 494 - 1998
RW 495 - RW 504 - 2005

MODIFICATION DETAILS MODIFIED ROLLER GUIDES FOR 95lb BH RAIL

TARE WEIGHT 18 TONNES (WITH WINCH UNIT 21 TONNES)

LOAD CAPACITY 20 TONNES

BRAKING SYSTEM AIR BRAKED
WESTINGHOUSE
SPRING PARKING BRAKE

COUPLINGS WARD
TYPE 14"/355 mm

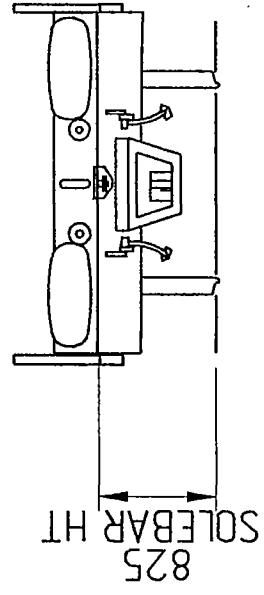
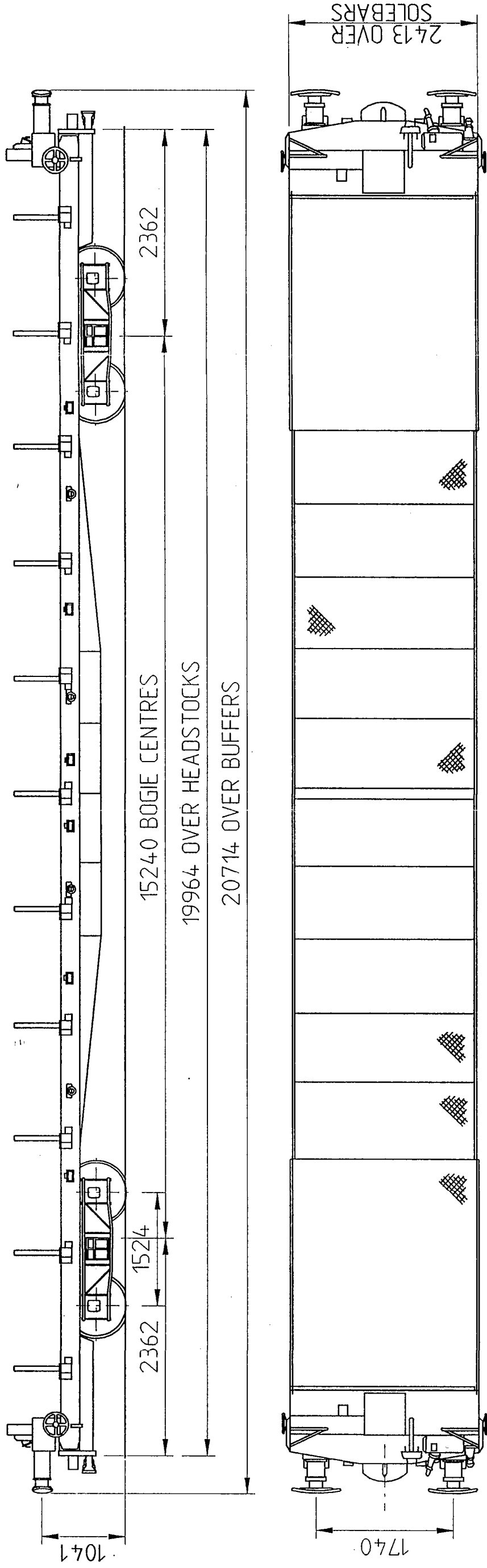
SERVICE AND MAXIMUM SPEEDS PERMITTED 30MPH (48 kph) SERVICE
45MPH (72 kph) MAX

AXLE BOX TYPE SKF ROLLER

LIMITATIONS IN OPERATION CONFORM TO LUL 'TUBE' VEHICLE LOAD GAUGE REQUIREMENTS
RESTRICTED FROM SOME SIDINGS AND REVERSING BERTHS DUE TO LENGTH. SEE RULE BOOK APPENDIX 13 TABLE 4 PAGES 67 - 80.
MUST ONLY LOAD/UNLOAD RAIL WHEN TRACTION CURRENT IS 'OFF'

SPECIAL FEATURES RW 490 - WINCH UNIT
RW 494, 495, 499, 500, 504 - CHUTE UNITS

20 TONNE RAIL WAGON



NO. RANGE: RW505, RW506

23/11/93

LUL13a

RAIL WAGONS

TITLE 20 TONNE CAPACITY BOGIE RAIL WAGON

FUNCTION TRANSPORTING RAILS

NUMBER RANGE RW 505 - RW 506
RW 801 - RW 826

DELIVERY DATE - MANUFACTURERS NAME RW 505 - RW 506 1965 BREL ASHFORD
RW 801 - RW 826 1986 PROCOR LTD

DESIGN LIFE EXPIRES (TAKEN AT 40 YEARS)
RW 505 - RW 506 2005
RW 801 - RW 826 2026

MODIFICATION DETAILS SEE APPENDIX

TARE WEIGHT 18 TONNES

LOAD CAPACITY 20 TONNES
21 x 60ft BULLHEAD RAILS
17 x 60ft FLAT BOTTOM RAILS

BRAKING SYSTEM AIR BRAKED
DAVIES AND METCALFE
AUTOMATIC EMPTY/LOAD VALVE
SCREW PARKING BRAKE

COUPLINGS RW 505 - RW 506 WARD/RCH
TYPE 14"/355mm AND 41.5"/1055mm
HEIGHT FROM RAIL

RW 810 - RW 826 BUCKEYE
41.5"/1055mm

SERVICE AND MAXIMUM SPEEDS PERMITTED 30 mph (48 kph) SERVICE
45 mph (72 kph) MAX

AXLE BOX TYPE ROLLER BEARING
RW 505 - RW 506 SKF
RW 801 - RW 826 TIMKEN SP 120

ROUTE AVAILABILITY CONFORM TO LONDON UNDERGROUND LTD
TUBE VEHICLE LOAD GAUGE
REQUIREMENTS

FULL ROUTE AVAILABILITY

MUST ONLY LOAD/UNLOAD RAIL WHEN
TRACTION CURRENT IS 'OFF'

RAIL WAGONS (CONTINUED)

SPECIAL FEATURES

RW 505 - RW 506

ABILITY TO LOAD/UNLOAD RAIL OVER ENDS IN TUBE SECTIONS

RW 801 - RW 826

EACH WAGON IS SUPPLIED WITH 10 WAY THROUGH CONTROL WIRING, CONNECTING 10 PIN JUMPER RECEPTACLE BOXES, POSITIONED AT THE HEADSTOCKS. ONE RED AND ONE BLUE RECEPTACLE BOX IS FITTED TO EACH HEADSTOCK.

AN AUXILIARY POWER SOCKET IS PROVIDED AT EACH END OF THE WAGON FOR PASSING A 110 VOLT 63 AMP A.C. POWER SUPPLY DOWN THE TRAIN. ADJACENT TO EACH OF THESE THERE IS AN ADDITIONAL SOCKET FOR 110 VOLT 16 AMP SINGLE PHASE POWER SUPPLY CONTROLLED BY AN M.C.B. RATED UP TO 16 AMPS.

AUXILIARY POWER JUMPER CABLES SUITABLE FOR CONNECTING ADJOINING WAGONS ARE ALSO SUPPLIED.

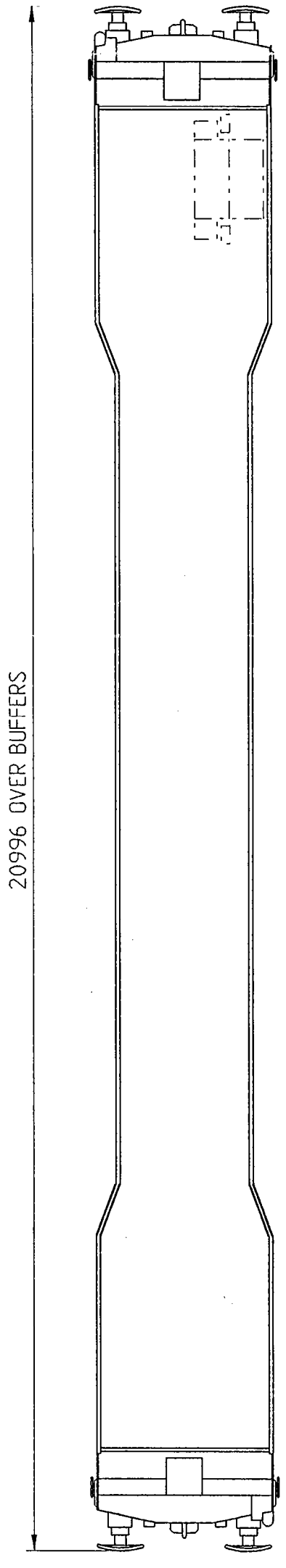
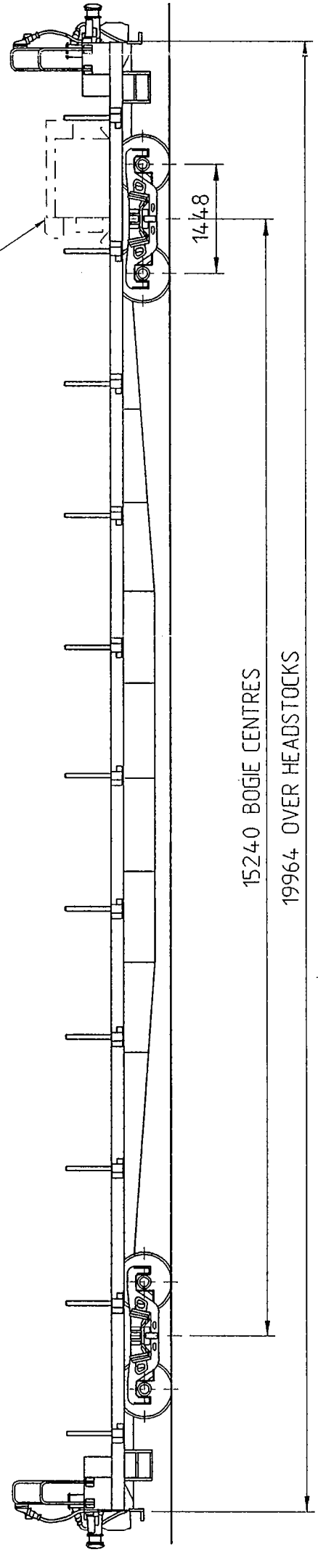
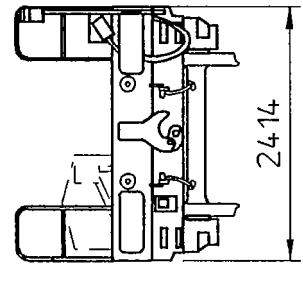
IN ADDITION EACH WAGON HAS AN INTEGRAL CIRCUIT FOR THE SUPPLY OF POWER TO ELK CRANES MOUNTED ON THE UNDERFRAME. THE CIRCUIT IS TERMINATED AT EACH SIDE OF THE WAGON WITH A 110 VOLT SOCKET OUTLET CONTROLLED BY AN M.C.B. RATED UP TO 32 AMPS.

SIDE STANCHIONS

EACH SIDE OF THE WAGON IS FITTED WITH SIDE STANCHIONS WHICH SHALL, IF REQUIRED, SUPPORT SIDE BOARDS FOR THE RETENTION OF THE LOAD. EACH STANCHION SHALL HAVE A SUITABLE BRACKET TO SUPPORT IT IN THE LOWERED POSITION.

20 TONNE RAIL WAGON

ELECTRICAL GENERATOR BOX
RW801 - RW804 ONLY



NO. RANGE: RW801 - RW826

23/11/93

LUL13b

RAIL WAGONS

TITLE	20 TONNE CAPACITY BOGIE RAIL WAGON
FUNCTION	TRANSPORTING RAILS
NUMBER RANGE	RW 505 - RW 506 RW 801 - RW 826
DELIVERY DATE - MANUFACTURERS NAME	RW 505 - RW 506 1965 BREL ASHFORD RW 801 - RW 826 1986 PROCOR LTD
DESIGN LIFE EXPIRES	(TAKEN AT 40 YEARS) RW 505 - RW 506 2005 RW 801 - RW 826 2026
MODIFICATION DETAILS	SEE APPENDIX
TARE WEIGHT	18 TONNES
LOAD CAPACITY	20 TONNES 21 x 60ft BULLHEAD RAILS 17 x 60ft FLAT BOTTOM RAILS
BRAKING SYSTEM	AIR BRAKED DAVIES AND METCALFE AUTOMATIC EMPTY/LOAD VALVE SCREW PARKING BRAKE
COUPLINGS	RW 505 - RW 506 WARD/RCH 14"/355mm AND 41.5"/1055mm
SERVICE AND MAXIMUM SPEEDS PERMITTED	RW 810 - RW 826 BUCKEYE 41.5"/1055mm 30 mph (48 kph) SERVICE 45 mph (72 kph) MAX
AXLE BOX TYPE	ROLLER BEARING RW 505 - RW 506 SKF RW 801 - RW 826 TIMKEN SP 120
ROUTE AVAILABILITY	CONFORM TO LONDON UNDERGROUND LTD TUBE VEHICLE LOAD GAUGE REQUIREMENTS FULL ROUTE AVAILABILITY MUST ONLY LOAD/UNLOAD RAIL WHEN TRACTION CURRENT IS 'OFF'

RAIL WAGONS (CONTINUED)

SPECIAL FEATURES

RW 505 - RW 506
ABILITY TO LOAD/UNLOAD RAIL OVER ENDS IN TUBE SECTIONS

RW 801 - RW 826
EACH WAGON IS SUPPLIED WITH 10 WAY THROUGH CONTROL WIRING, CONNECTING 10 PIN JUMPER RECEPTACLE BOXES, POSITIONED AT THE HEADSTOCKS. ONE RED AND ONE BLUE RECEPTACLE BOX IS FITTED TO EACH HEADSTOCK.

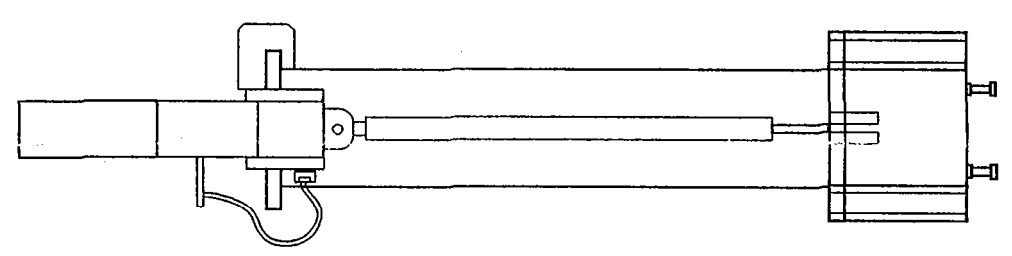
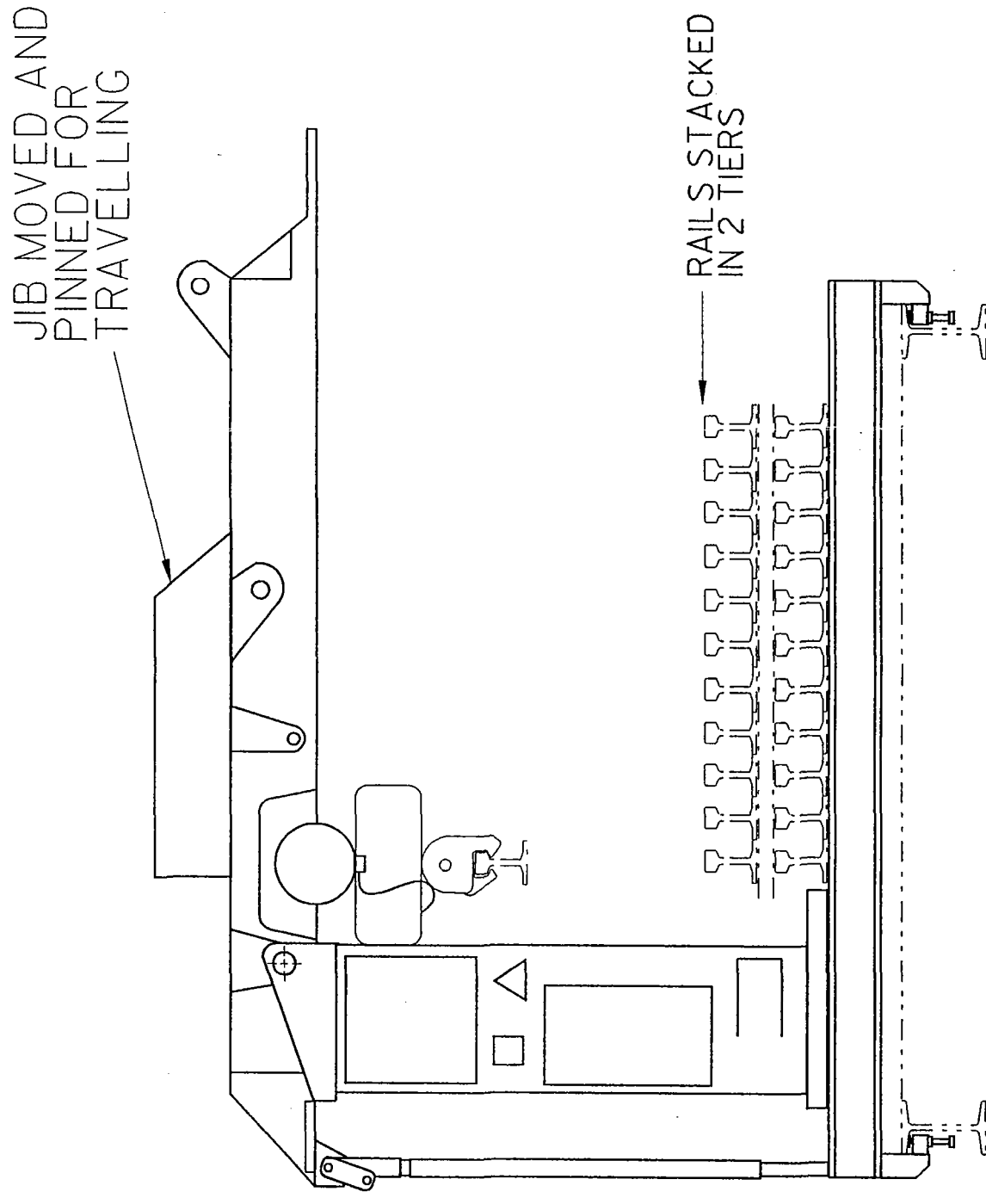
AN AUXILIARY POWER SOCKET IS PROVIDED AT EACH END OF THE WAGON FOR PASSING A 110 VOLT 63 AMP A.C. POWER SUPPLY DOWN THE TRAIN. ADJACENT TO EACH OF THESE THERE IS AN ADDITIONAL SOCKET FOR 110 VOLT 16 AMP SINGLE PHASE POWER SUPPLY CONTROLLED BY AN M.C.B. RATED UP TO 16 AMPS.

AUXILIARY POWER JUMPER CABLES SUITABLE FOR CONNECTING ADJOINING WAGONS ARE ALSO SUPPLIED.

IN ADDITION EACH WAGON HAS AN INTEGRAL CIRCUIT FOR THE SUPPLY OF POWER TO ELK CRANES MOUNTED ON THE UNDERFRAME. THE CIRCUIT IS TERMINATED AT EACH SIDE OF THE WAGON WITH A 110 VOLT SOCKET OUTLET CONTROLLED BY AN M.C.B. RATED UP TO 32 AMPS.

SIDE STANCHIONS
EACH SIDE OF THE WAGON IS FITTED WITH SIDE STANCHIONS WHICH SHALL, IF REQUIRED, SUPPORT SIDE BOARDS FOR THE RETENTION OF THE LOAD. EACH STANCHION SHALL HAVE A SUITABLE BRACKET TO SUPPORT IT IN THE LOWERED POSITION.

2.5 TONNE ELK SIDE RAIL LOADER



NO. RANGE: MOUNTED ON RW801 - RW803

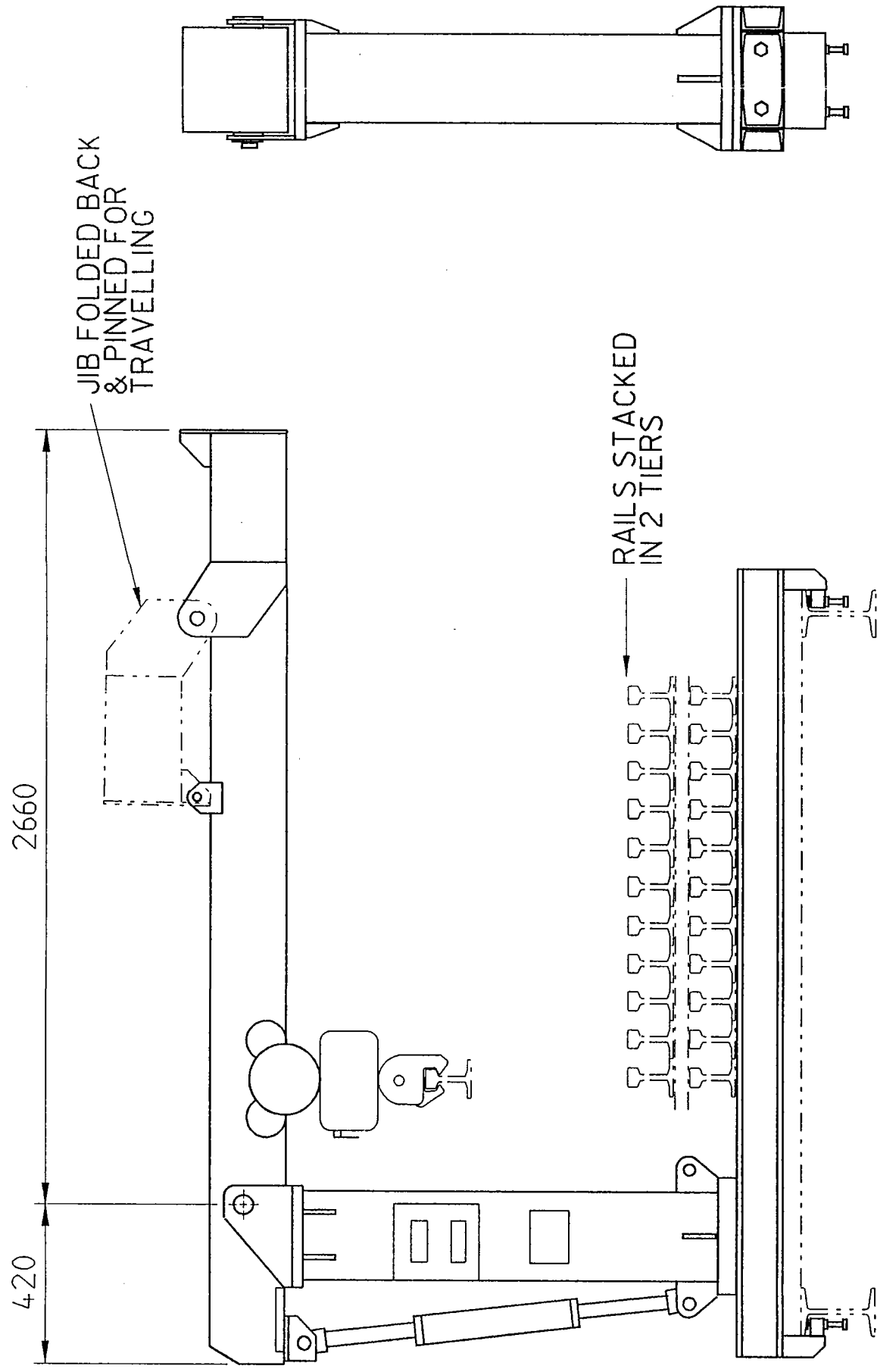
23/11/93

LULI3C

2.5 TONNE WAGON MOUNTED ELK CRANES

TITLE	WAGON MOUNTED ELK CRANES
FUNCTION	TO UNLOAD OR LOAD 18.3M (60FT), OR SHORTER, LENGTHS OF RUNNING OR CONDUCTOR RAIL TO OR FROM THE SIDE OF THE TRACK CLOSE AND PARALLEL TO RUNNING RAILS
DELIVERY DATE - MANUFACTURERS NAME	1972 - 1980 ELK CRANE - K&M ENGINEERING LTD ROTARY CONVERTER - ELECTRO-DYNAMIC CONSTRUCTION LTD M/A SET - ARCONTROL LTD
DESIGN LIFE EXPIRES	(TAKEN AT 30 YEARS) 2002 - 2010
MODIFICATION DETAILS	NONE RECORDED
LIMITATIONS IN OPERATION	CONFORM TO LUL 'TUBE' VEHICLE LOAD GAUGE REQUIREMENTS IN THEIR FULLY AND CORRECTLY STOWED CONDITION
SPECIAL FEATURES	THE ELK UNITS ARE MOUNTED ON NON-DEDICATED 20 TONNE RAIL WAGONS. TWO ELK CRANE UNITS, FITTED WITH ELECTRIC HOISTS, ARE MOUNTED ON EACH WAGON AND ARE CAPABLE OF BEING OPERATED SINGLY OR IN TANDEM. THE ELK UNITS MOUNTED ON RW 801 - RW 803 HAVE FIXED JIBS. THE ELK UNITS MOUNTED ON RW 804 EACH HAVE A JIB THAT CAN BE SLEWED THROUGH 90 DEGREES ALL UNITS CAN ONLY LOAD/UNLOAD TO ONE SIDE OF THE TRACK. A ROTARY CONVERTER OR M/A SET IS MOUNTED ON EACH WAGON TO PROVIDE THE ELK UNITS WITH A 110V AC 3 PHASE SUPPLY PRIMARY POWER SOURCE IS A BATTERY LOCOMOTIVE THE ELK UNITS ON RW804 CAN BE FED DIRECT FROM A 1985 BATTERY LOCOMOTIVE

2.5 TONNE ELK SIDE RAIL LOADER



NO. RANGE: MOUNTED ON RW804

23/11/93

LULI3d

2.5 TONNE WAGON MOUNTED ELK CRANES

TITLE
WAGON MOUNTED ELK CRANES

FUNCTION
TO UNLOAD OR LOAD 18.3M (60FT), OR SHORTER, LENGTHS OF RUNNING OR CONDUCTOR RAIL TO OR FROM THE SIDE OF THE TRACK CLOSE AND PARALLEL TO RUNNING RAILS

DELIVERY DATE - MANUFACTURERS NAME
1972 - 1980
ELK CRANE - K&M ENGINEERING LTD
ROTARY CONVERTER - ELECTRO-DYNAMIC CONSTRUCTION LTD
M/A SET - ARCONTROL LTD

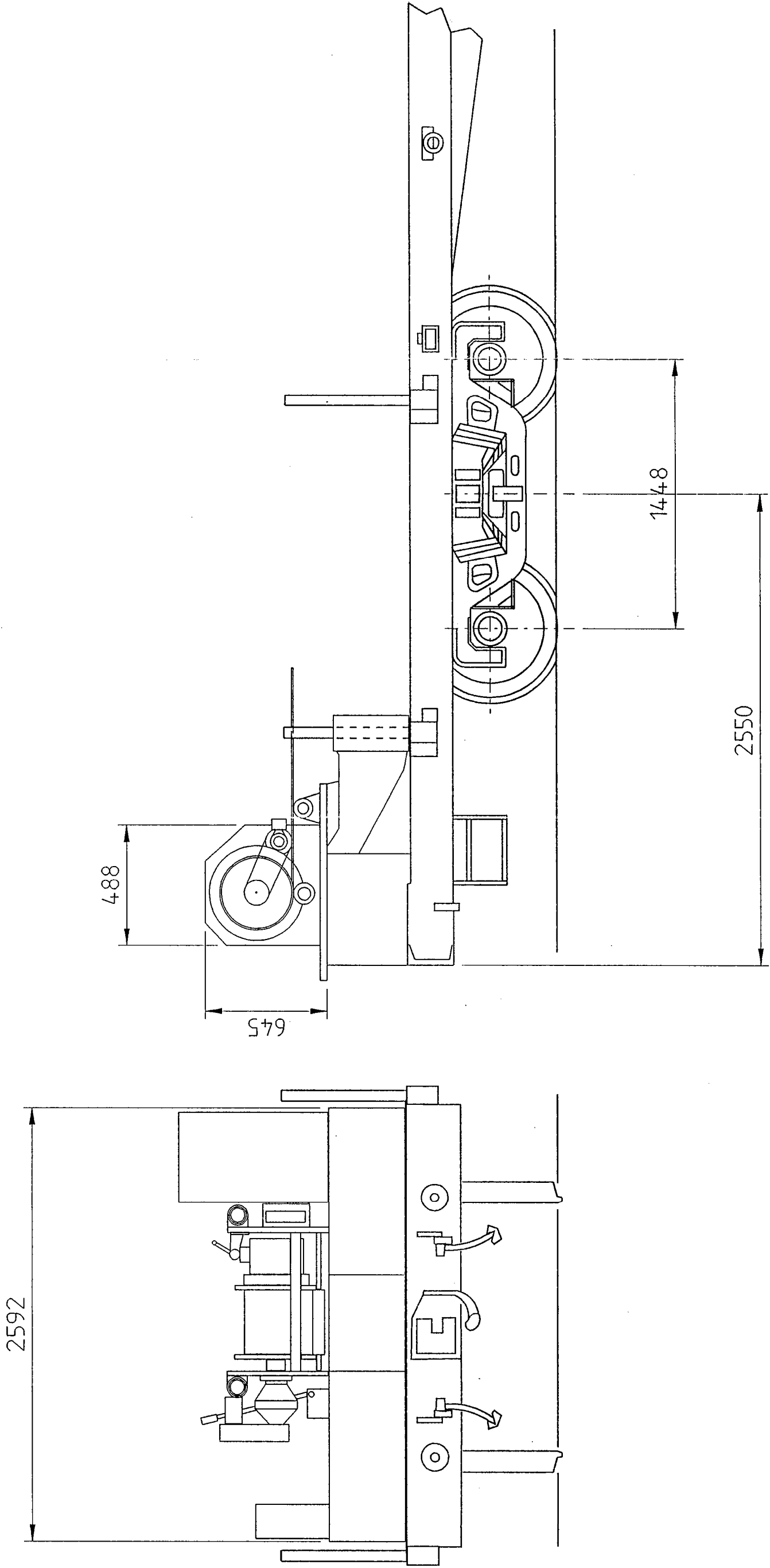
DESIGN LIFE EXPIRES
(TAKEN AT 30 YEARS) 2002 - 2010

MODIFICATION DETAILS
NONE RECORDED

LIMITATIONS IN OPERATION
CONFORM TO LUL 'TUBE' VEHICLE LOAD GAUGE REQUIREMENTS IN THEIR FULLY AND CORRECTLY STOWED CONDITION

SPECIAL FEATURES
THE ELK UNITS ARE MOUNTED ON NON-DEDICATED 20 TONNE RAIL WAGONS.
TWO ELK CRANE UNITS, FITTED WITH ELECTRIC HOISTS, ARE MOUNTED ON EACH WAGON AND ARE CAPABLE OF BEING OPERATED SINGLY OR IN TANDEM.
THE ELK UNITS MOUNTED ON RW 801 - RW 803 HAVE FIXED JIBS.
THE ELK UNITS MOUNTED ON RW 804 EACH HAVE A JIB THAT CAN BE SLEWED THROUGH 90 DEGREES
ALL UNITS CAN ONLY LOAD/UNLOAD TO ONE SIDE OF THE TRACK.
A ROTARY CONVERTER OR M/A SET IS MOUNTED ON EACH WAGON TO PROVIDE THE ELK UNITS WITH A 110V AC 3 PHASE SUPPLY
PRIMARY POWER SOURCE IS A BATTERY LOCOMOTIVE
THE ELK UNITS ON RW804 CAN BE FED DIRECT FROM A 1985 BATTERY LOCOMOTIVE

1.5 TONNE WINCH UNIT



NO. RANGE: MOUNTED ON RW818

23/11/93

LULI3e

1.5 TONNE WAGON MOUNTED RAIL WINCH

TITLE

1.5 TONNE WINCH AND TAIL ROLLER UNIT

FUNCTION

TO LOAD (RECOVER) 18.3M (60FT), OR SHORTER, LENGTHS OF RUNNING OR CONDUCTOR RAIL FROM TUBE OR SUB-SURFACE TUNNELS.

OPERATION DESCRIPTION

THE WINCH AND TAIL ROLLER UNIT ARE MOUNTED ON THE 'D' AND 'A' END RESPECTIVELY OF WAGON RW 818. THE WINCH IS FITTED WITH A WIRE ROPE WITH S.W.L. = 2.14 TONNES (MIN. BREAKING LOAD 10.7 TONNES) AND A SPECIALLY DESIGNED RAIL ATTACHMENT SHACKLE. IN OPERATION THE WINCH ROPE IS MANUALLY UNWOUND FROM THE WINCH DRUM, OVER THE TAIL ROLLER UNIT, AND ATTACHED TO THE END OF A RAIL IN THE FOUR FOOT BEYOND THE 'A' END OF THE WAGON. THE WINCH IS THEN POWERED TO RECOVER THE RAIL.

THE WINCH IS POWERED BY - 'BROOKS' 110V AC, 50HZ, 3 PHASE MOTOR
 PRIMARY POWER SOURCE: BATTERY
 1985 BATTERY LOCOMOTIVE ONLY

**DELIVERY DATE -
 MANUFACTURERS NAME**

1990
 GROSVENOR REEVE LTD

DESIGN LIFE EXPIRES

(TAKEN AT 15 YEARS) 2005

MODIFICATION DETAILS

MODIFIED MOUNTINGS FOLLOWING REMOVAL FROM FLAT WAGON TO MATCH WAGON (NOT DOCUMENTED)

LIMITATIONS IN OPERATION

CONFORM TO LUL 'TUBE' VEHICLE LOAD GAUGE REQUIREMENTS.

FULL ROUTE AVAILABILITY

MUST ONLY WORK WHEN THE TRACTION CURRENT IS 'OFF'

SPECIAL FEATURES

THE MACHINE IS MADE UP OF THE FOLLOWING SEPARATE ITEMS:

- 1) ELECTRICALLY DRIVEN HYDRAULIC WINCH UNIT
- 2) TAIL ROLLER UNIT
- 3) 4 TRIANGULAR SECTION BOLSTERS

THE WINCH UNIT IS CLAMPED OVER THE HEADSTOCK OF THE RAIL WAGON. AT THE END THAT IS COUPLED TO THE BATTERY LOCOMOTIVE.

THE WINCH DRUM IS DRIVEN BY A HYDRAULIC MOTOR THROUGH A FRICTION CLUTCH AND A REDUCTION GEARBOX.

1.5 TONNE WAGON MOUNTED RAIL WINCH (CONTINUED)

SPECIAL FEATURES CONTINUED

THE HYDRAULIC MOTOR IS POWERED BY AN ELECTRICALLY DRIVEN FIXED DISPLACEMENT PUMP, WITH A PRESSURE RELIEF VALVE TO LIMIT THE MAXIMUM PRESSURE OF THE OIL DELIVERED.

VARIOUS SAFETY FEATURES ARE INCORPORATED IN THE DESIGN TO PREVENT OVER TENSIONING OF THE ROPE DURING THE PULLING ON OPERATION.

THE TAIL ROLLER UNIT IS CLAMPED OVER THE OTHER HEADSTOCK OF THE RAIL WAGON WITH THE ROLLER OUT BOARD OF THE WAGON.

THE TRIANGULAR SECTION BOLSTERS ARE POSITIONED ALONG THE LENGTH OF THE WAGON DECK AND ARE LOCATED OVER THE STANCHION STOWAGE PLATES.

WINCH TEST LOADS - MEASURED IN TONNES WITH THE ROPE IN TENSION.

- 1) HYDRAULIC PRESSURE RELIEF VALVE SETTING = 1.4t
- 2) FRICTION CLUTCH SLIPPING = 1.58t
- 3) MOTOR STALL = 1.70t

ROPE DETAILS

MANUFACTURER: BRITISH ROPES
 TYPE: ENDURANCE 35LS STEEL WIRE ROPE
 CONSTRUCTION: 35 X 7 WSC

A MULTI-STRAND ROPE OF 35 STRANDS EACH COMPRISING OF 7 WIRES.

MINIMUM BREAKING LOAD = 10.7t
 SAFE WORKING LOAD = 2.14t
 PROOF LOAD TEST = 4.28t

RAIL WEIGHTS

BS NO 95 RHB	RAIL LENGTH (M)	WEIGHT (KG)
	18.3 (60FT)	860
	13.7 (45FT)	665
	9.1 (30FT)	430

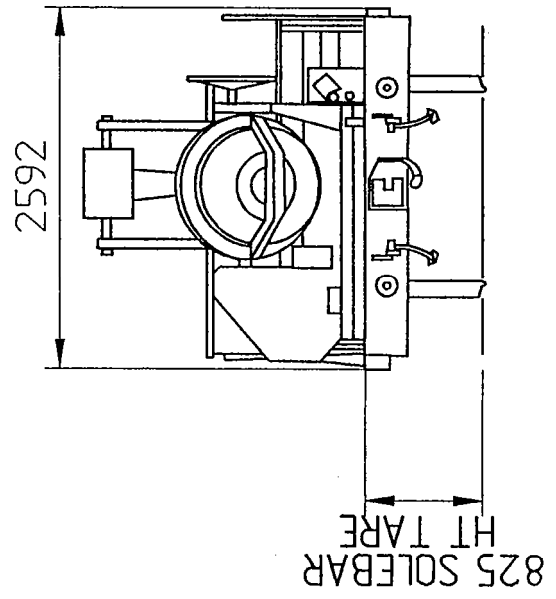
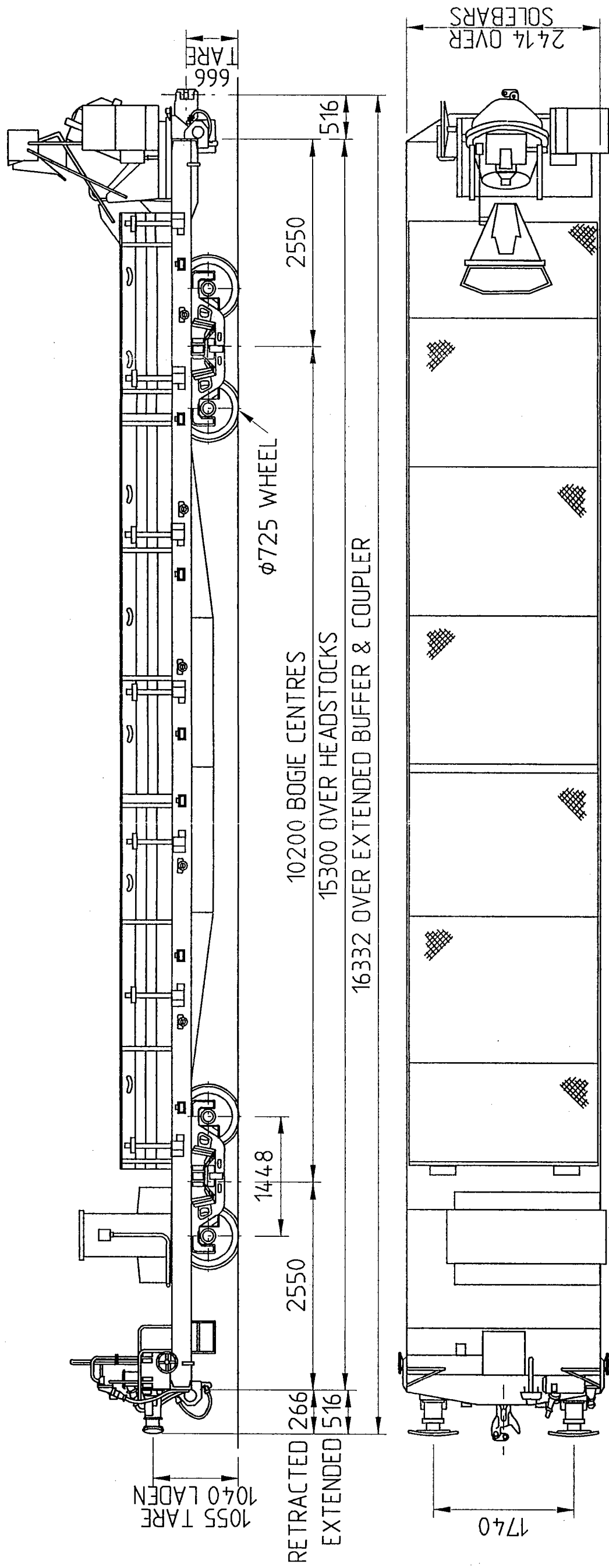
BS NO 113A

RAIL LENGTH (M)	WEIGHT (KG)
18.3 (60FT)	1030
13.7 (45FT)	770
9.1 (30FT)	515

21 X 18.3M (60FT) BULL HEAD RAILS MAY BE CARRIED ON A 20t RAIL WAGON WITH THE SHORT RAIL LOADING EQUIPMENT.

17 X 18.3M (60FT) FLAT BOTTOM RAILS MAY BE CARRIED ON A 20t RAIL WAGON WITH THE SHORT RAIL LOADING EQUIPMENT.

CEMENT MIXER WAGON



NO. RANGE: CMW950 - CMW955

23/11/93

LUL140

CEMENT MIXER/MATCH WAGONS

TITLE
CONCRETE MIXER AND
30 TONNE MATCH WAGONS

FUNCTION
TO CARRY AND MIX CONCRETE MAKING
MATERIALS FOR USE DURING TUBE
TUNNEL RECONDITIONING WORK

SECONDARY FUNCTION
TO CARRY AND MIX CONCRETE MAKING
MATERIALS FOR USE IN INFRASTRUCTURE
MAINTENANCE WORK

ANCILLIARY FUNCTION
ALTHOUGH ITS CAPACITY HAS BEEN
REDUCED THE WAGON CAN STILL BE
USED FOR GENERAL PURPOSE DUTIES

NUMBER RANGE
CMW 950 - CMW 955
MW 956 - MW 961

**DELIVERY DATE -
MANUFACTURERS NAME**
1987
PROCOR
CONCRETE MIXER -
FREDERICK PARKER LTD 1981
M/A SET - A R CONTROL - 1981

DESIGN LIFE EXPIRES
(TAKEN AT 40 YEARS) 2027

MODIFICATION DETAILS
SEE APPENDIX
ALSO: MODIFIED CHUTES

TARE WEIGHT
CONCRETE MIXER 20160 KG
MATCH WAGON 17960 KG

LOAD CAPACITY
CONCRETE MIXER 16.6 CUBIC METRES
MATCH WAGON 19.5 CUBIC METRES

BRAKING SYSTEM
AIR BRAKED
DAVIES AND METCALFE
AUTOMATIC EMPTY/LOAD VALVE
SCREW PARKING BRAKE

CEMENT MIXER/MATCH WAGONS (CONTINUED)

COUPLINGS
TYPE BUCKEYE
HEIGHT FROM RAIL LOW END 26"/666 mm
HIGH END 41.5"/1055 mm

SERVICE AND MAXIMUM SPEEDS PERMITTED
30 MPH (48 kph) SERVICE
45 MPH (72 kph) MAX

AXLE BOX TYPE
ROLLER BEARING TIMKEN SP120

LIMITATIONS IN OPERATION
IN ITS FULLY AND CORRECTLY
STOWED CONDITION THE CONCRETE
MIXER MOUNTED ON THE WAGON
CONFORMS TO LUL 'TUBE' VEHICLE
LOAD GAUGE REQUIREMENTS

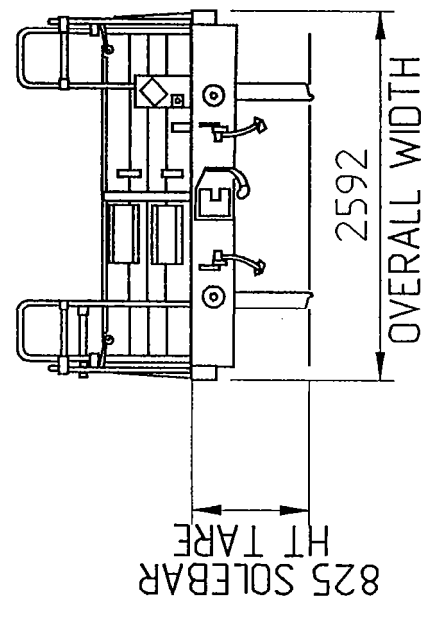
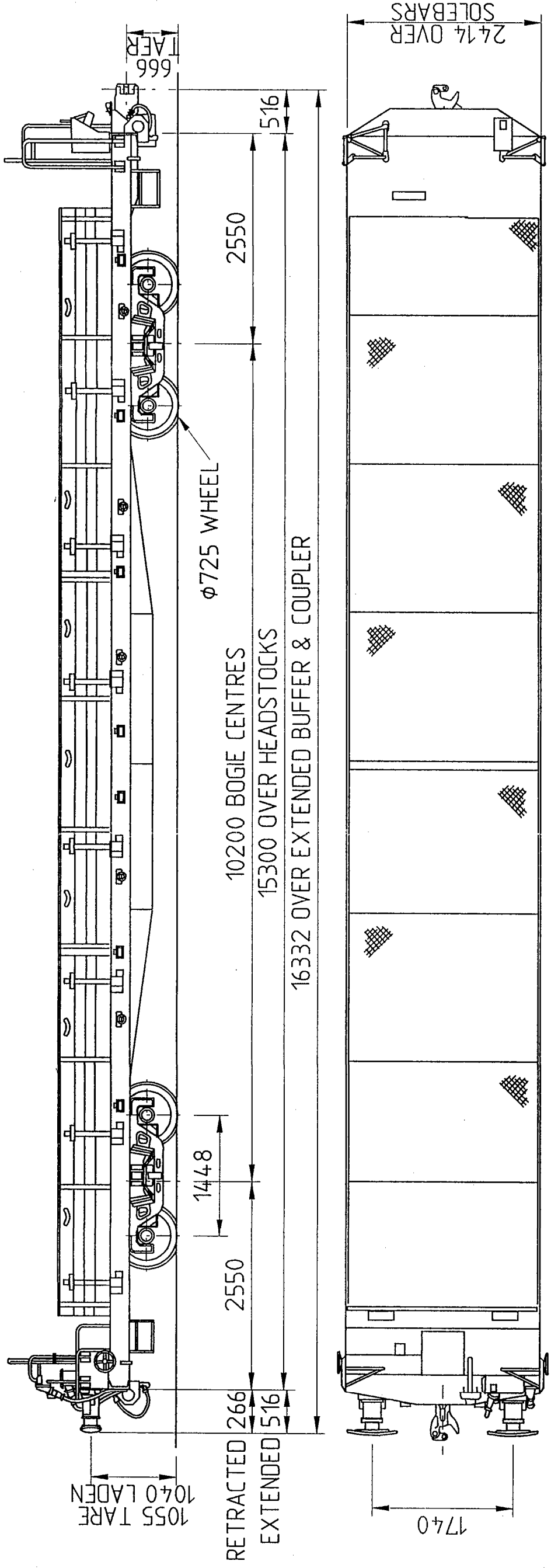
SPECIAL FEATURES
FULL ROUTE AVAILABILITY
MUST ONLY WORK WHEN TRACTION
CURRENT IS 'OFF'

ELECTRICS
THROUGH ELECTRICS ARE PROVIDED ON BOTH WAGONS

MIXER WAGON
TWO THROUGH JUMPER RECEPTACLES - RED
TWO THROUGH JUMPER RECEPTACLES - BLUE
ONE 320V 40A DC SUPPLY "WHITE" JUMPER RECEPTACLE
TWO AC AUX POWER SOCKETS WITH ONE 110V 63A 3 PHASE RECEPTACLE AND ONE
110V 16A SINGLE PHASE RECEPTACLE
ONE DUMMY JUMPER SOCKET WITH PROVING CIRCUIT
ONE THREE PHASE CONTROL UNIT

MATCH WAGON
TWO THROUGH JUMPER RECEPTACLES - RED
TWO THROUGH JUMPER RECEPTACLES - BLUE,
TWO AC AUX POWER SOCKET WITH ONE 110V 63A 3 PHASE RECEPTACLE AND ONE
110V 16A SINGLE PHASE RECEPTACLE
ONE DUMMY JUMPER SOCKET WITH PROVING CIRCUIT

MATCH WAGON



NO. RANGE: MW956 - MW961

23/11/93

LUL14b

CEMENT MIXER/MATCH WAGONS

TITLE
CONCRETE MIXER AND
30 TONNE MATCH WAGONS

FUNCTION
TO CARRY AND MIX CONCRETE MAKING
MATERIALS FOR USE DURING TUBE
TUNNEL RECONDITIONING WORK

SECONDARY FUNCTION
TO CARRY AND MIX CONCRETE MAKING
MATERIALS FOR USE IN INFRASTRUCTURE
MAINTENANCE WORK

ANCILLIARY FUNCTION
ALTHOUGH ITS CAPACITY HAS BEEN
REDUCED THE WAGON CAN STILL BE
USED FOR GENERAL PURPOSE DUTIES

NUMBER RANGE
CMW 950 - CMW 955
MW 956 - MW 961

**DELIVERY DATE -
MANUFACTURERS NAME**
1987
PROCOR
CONCRETE MIXER -
FREDERICK PARKER LTD 1981
M/A SET - A R CONTROL - 1981

DESIGN LIFE EXPIRES
(TAKEN AT 40 YEARS) 2027

MODIFICATION DETAILS
SEE APPENDIX
ALSO: MODIFIED CHUTES

TARE WEIGHT
CONCRETE MIXER 20160 KG
MATCH WAGON 17960 KG

LOAD CAPACITY
CONCRETE MIXER 16.6 CUBIC METRES
MATCH WAGON 19.5 CUBIC METRES

BRAKING SYSTEM
AIR BRAKED
DAVIES AND METCALFE
AUTOMATIC EMPTY/LOAD VALVE
SCREW PARKING BRAKE

CEMENT MIXER/MATCH WAGONS (CONTINUED)

COUPLINGS
TYPE BUCKEYE
HEIGHT FROM RAIL LOW END 26"/666 mm
HIGH END 41.5"/1055 mm

SERVICE AND MAXIMUM SPEEDS PERMITTED
30 MPH (48 kph) SERVICE
45 MPH (72 kph) MAX

AXLE BOX TYPE
ROLLER BEARING TIMKEN SP120

LIMITATIONS IN OPERATION
IN ITS FULLY AND CORRECTLY
STOWED CONDITION THE CONCRETE
MIXER MOUNTED ON THE WAGON
CONFORMS TO LUL 'TUBE' VEHICLE
LOAD GAUGE REQUIREMENTS

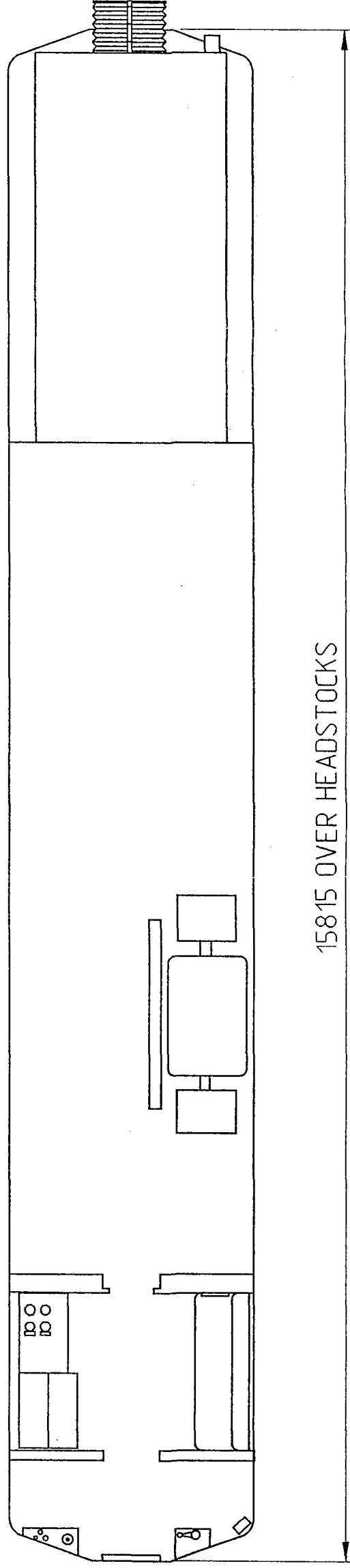
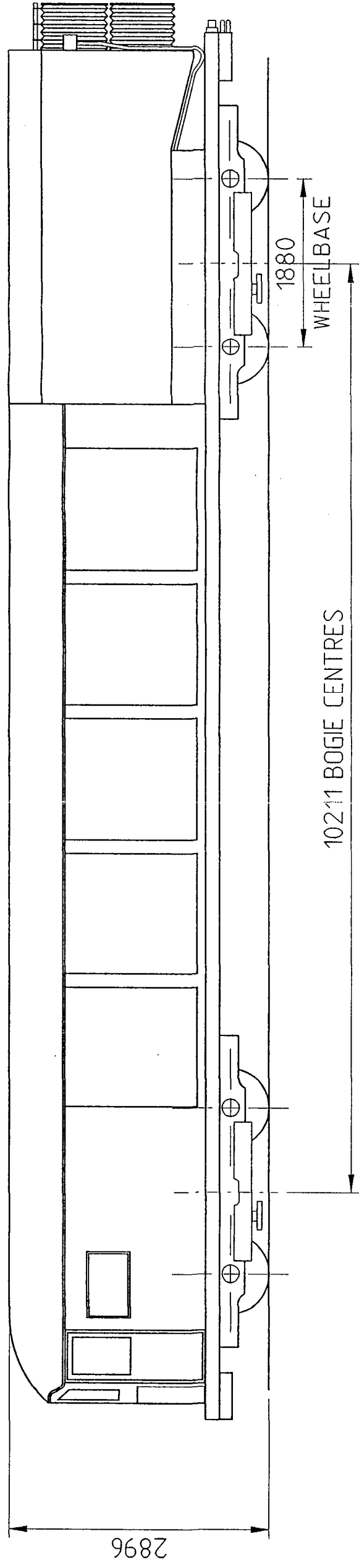
SPECIAL FEATURES
FULL ROUTE AVAILABILITY
MUST ONLY WORK WHEN TRACTION
CURRENT IS 'OFF'

ELECTRICS
THROUGH ELECTRICS ARE PROVIDED ON BOTH WAGONS

MIXER WAGON
TWO THROUGH JUMPER RECEPTACLES - RED
TWO THROUGH JUMPER RECEPTACLES - BLUE
ONE 320V 40A DC SUPPLY "WHITE" JUMPER RECEPTACLE
TWO AC AUX POWER SOCKETS WITH ONE 110V 63A 3 PHASE RECEPTACLE AND ONE
110V 16A SINGLE PHASE RECEPTACLE
ONE DUMMY JUMPER SOCKET WITH PROVING CIRCUIT
ONE THREE PHASE CONTROL UNIT

MATCH WAGON
TWO THROUGH JUMPER RECEPTACLES - RED
TWO THROUGH JUMPER RECEPTACLES - BLUE,
TWO AC AUX POWER SOCKET WITH ONE 110V 63A 3 PHASE RECEPTACLE AND ONE
110V 16A SINGLE PHASE RECEPTACLE
ONE DUMMY JUMPER SOCKET WITH PROVING CIRCUIT

TUNNEL CLEANING TRAIN CARS 1 & 5 (MOTOR CARS)



NO. RANGE: TCCI, TCC5

23/11/93

LUL150

TUNNEL CLEANING TRAIN

TITLE TUNNEL CLEANING TRAIN

FUNCTION TO REMOVE TUNNEL DUST AND REFUSE FROM TUBE TUNNELS INCLUDING THE REMOVAL OF DUST FROM CABLE RUNS, AND TO REMOVE DUST AND REFUSE FROM STATION PLATFORM AREAS IN SUB-SURFACE TUNNELS

NUMBER RANGE TCC 1 - TCC 5

DELIVERY DATE - MANUFACTURERS NAME TCC 2 - TCC 4
LONDON UNDERGROUND LTD 1978
TCC 1, TCC 5
EX 1938 STOCK MOTOR CARS

DESIGN LIFE EXPIRES TCC1, TCC5 - 1998
TCC2 - TCC4 - 2000

MODIFICATION DETAILS

- 1) NEGATIVE SHOEGEAR ARC SHIELDING
- 2) MODIFIED SPEED CONTROL
- 3) MODIFIED SPEED HYDRAULIC CIRCUIT
- 4) NYLON BRUSHES ON CLEANER CAR TO CONTAIN AIRBLASTS
- 5) 110V VACUUM CLEANER & TRANSFORMER SOCKETS
- 6) MODIFIED FIRE/EXPLOSION PREVENTION SYSTEM
- 7) MODIFIED HEAD LIGHTS (PROPOSED)

GROSS WEIGHT 173 TONNES

BRAKING SYSTEM AIR BRAKED

COUPLINGS WEDGE LOCK
147/355 mm

SERVICE AND MAXIMUM SPEEDS PERMITTED SERVICE SPEED 0.5 TO 6 MPH (0.8 TO 10 kph)
MAX 40 MPH (64 kph)

AXLE BOX TYPE ROLLER TCC1, TCC5 TIMKEN
TCC2-4 HOFFMAN SKF

TUNNEL CLEANING TRAIN (CONTINUED)

LIMITATIONS IN OPERATION

CONFORMS TO LUL 'TUBE' VEHICLE LOAD GAUGE REQUIREMENTS

FULL ROUTE AVAILABILITY

CONFORMS TO THE LUL RULE BOOK DEFINITION OF A 'TRAIN'

CAN ONLY WORK WHEN TRACTION CURRENT IS 'ON'

CAN ONLY WORK IN A POSSESSION. AN ENGINEER'S CURRENT AREA OR AS 'LAST TRAIN'

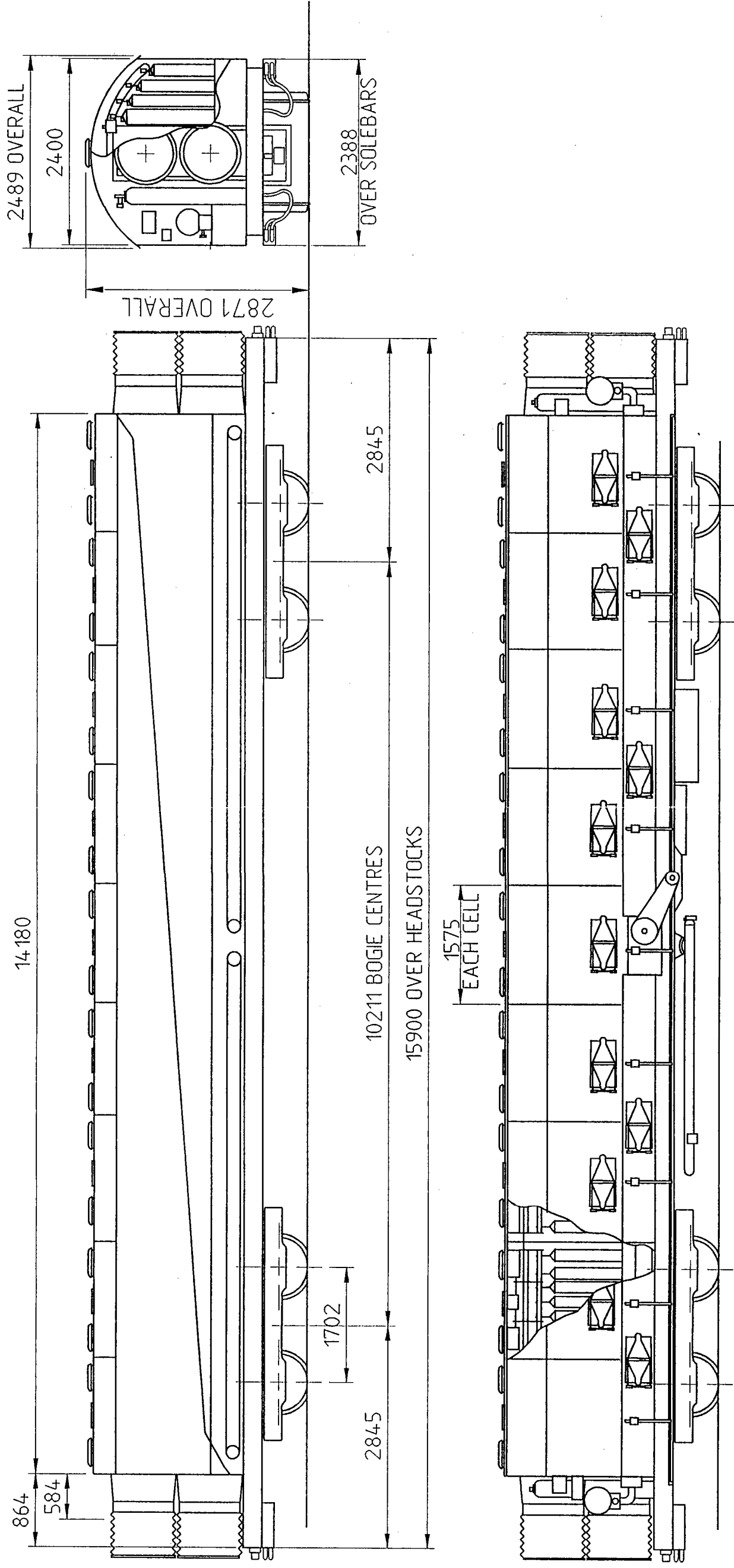
RESTRICTED ALL TUNNEL SIDINGS SEE SECTION 1B LONDON UNDERGROUND RULE BOOK - REGULATION C1 (E)

SPECIAL FEATURES

THE TRAIN IS COMPOSED OF FIVE CARS. TCC1 CONTAINS DRIVING AND OPERATING CONTROLS, SUCTION FAN AND HYDRAULIC DRIVE POWER UNIT; TCC2 CONTAINS DUST FILTRATION AND DISCHARGE EQUIPMENT; TCC3 CONTAINS HEAVY REFUSE COMPARTMENTS AND BLOWING AND SUCTION NOZZLES; TCC4 CONTAINS DUST FILTRATION AND DISCHARGE EQUIPMENT AND TCC5 CONTROLS SUCTIONS FAN AND M/A SET

MOTIVE POWER TRAVELLING: ELECTRIC
TRACTION MOTORS MOTIVE POWER WORKING: HYDRAULIC DRIVE MOTORS

TUNNEL CLEANING TRAIN, CARS 2 & 4 (FILTER CARS)



NO. RANGE: TCC2, TCC4

23/11/93

LUL15b

TUNNEL CLEANING TRAIN

TITLE TUNNEL CLEANING TRAIN

FUNCTION TO REMOVE TUNNEL DUST AND REFUSE FROM TUBE TUNNELS INCLUDING THE REMOVAL OF DUST FROM CABLE RUNS, AND TO REMOVE DUST AND REFUSE FROM STATION PLATFORM AREAS IN SUB-SURFACE TUNNELS

NUMBER RANGE TCC 1 - TCC 5

DELIVERY DATE - MANUFACTURERS NAME TCC 2 - TCC4 LONDON UNDERGROUND LTD 1978
TCC 1, TCC 5 EX 1938 STOCK MOTOR CARS

DESIGN LIFE EXPIRES TCC1, TCC5 - 1998
TCC2 - TCC4 - 2000

MODIFICATION DETAILS

- 1) NEGATIVE SHOEGEAR ARC SHIELDING
- 2) MODIFIED SPEED CONTROL
- 3) MODIFIED SPEED HYDRAULIC CIRCUIT
- 4) NYLON BRUSHES ON CLEANER CAR TO CONTAIN AIRBLASTS
- 5) 110V VACUUM CLEANER & TRANSFORMER SOCKETS
- 6) MODIFIED FIRE/EXPLOSION PREVENTION SYSTEM
- 7) MODIFIED HEAD LIGHTS (PROPOSED)

GROSS WEIGHT 173 TONNES

BRAKING SYSTEM AIR BRAKED

COUPLINGS WEDGE LOCK
HEIGHT FROM RAIL 147/355 mm

SERVICE AND MAXIMUM SPEEDS PERMITTED SERVICE SPEED 0.5 TO 6 MPH (0.8 TO 10 kph)
MAX 40 MPH (64 kph)

AXLE BOX TYPE ROLLER TCC1, TCC5 TIMKEN
TCC2-4 HOFFMAN SKF

TUNNEL CLEANING TRAIN (CONTINUED)

LIMITATIONS IN OPERATION

CONFORMS TO LUL 'TUBE' VEHICLE LOAD GAUGE REQUIREMENTS

FULL ROUTE AVAILABILITY

CONFORMS TO THE LUL RULE BOOK DEFINITION OF A 'TRAIN'

CAN ONLY WORK WHEN TRACTION CURRENT IS 'ON'

CAN ONLY WORK IN A POSSESSION. AN ENGINEER'S CURRENT AREA OR AS 'LAST TRAIN'

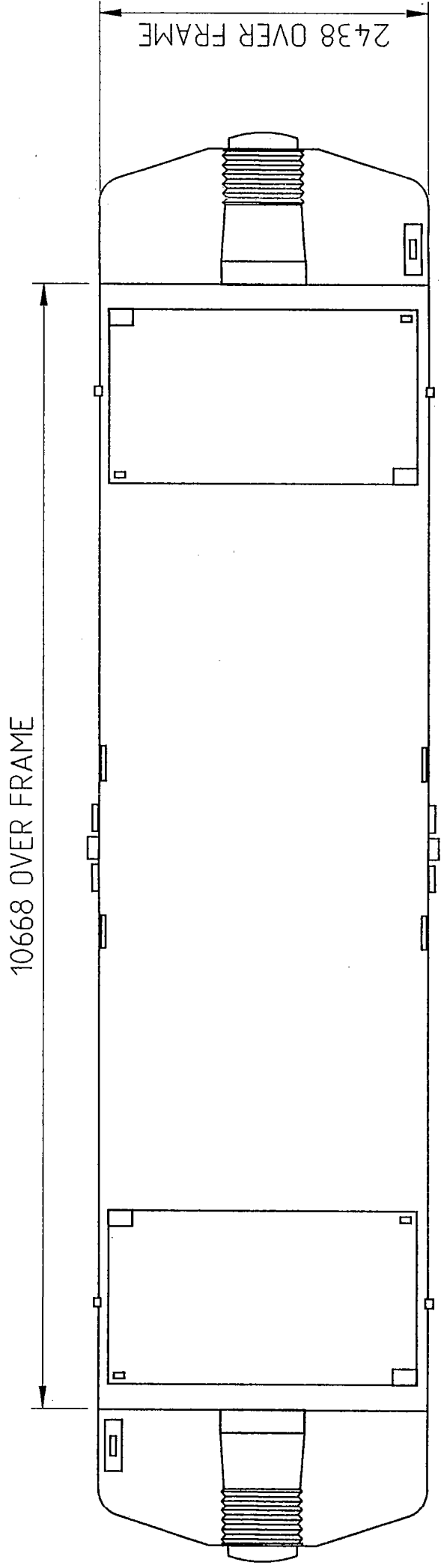
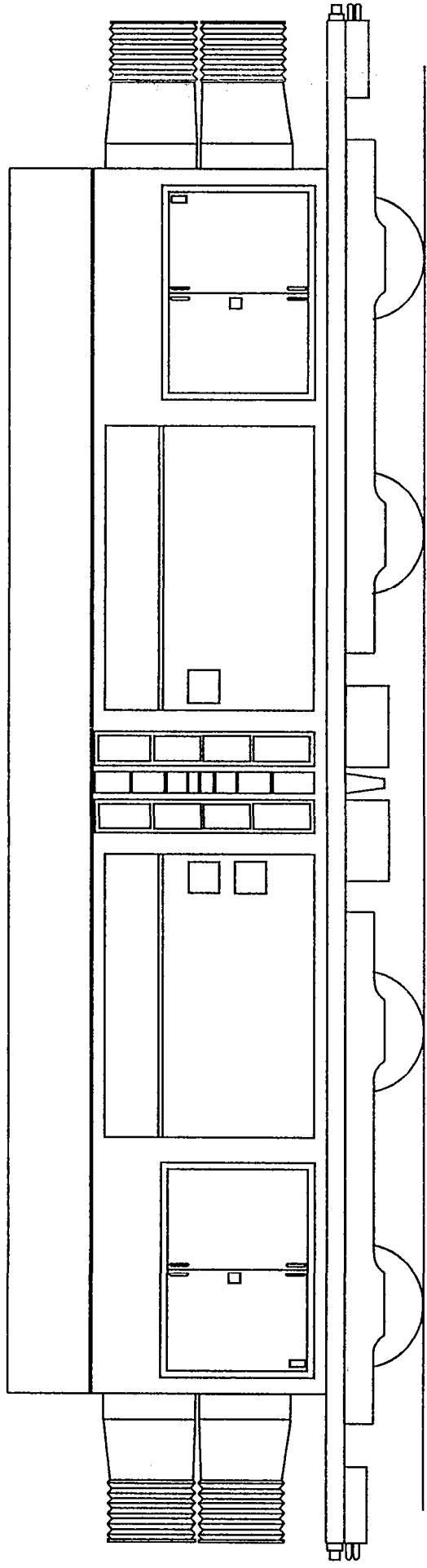
RESTRICTED ALL TUNNEL SIDINGS SEE SECTION 1B LONDON UNDERGROUND RULE BOOK - REGULATION C1 (E)

SPECIAL FEATURES

THE TRAIN IS COMPOSED OF FIVE CARS. TCC1 CONTAINS DRIVING AND OPERATING CONTROLS, SUCTION FAN AND HYDRAULIC DRIVE POWER UNIT; TCC2 CONTAINS DUST FILTRATION AND DISCHARGE EQUIPMENT; TCC3 CONTAINS HEAVY REFUSE COMPARTMENTS AND BLOWING AND SUCTION NOZZLES; TCC4 CONTAINS DUST FILTRATION AND DISCHARGE EQUIPMENT AND TCC5 CONTROLS SUCTIONS FAN AND M/A SET

MOTIVE POWER TRAVELLING: ELECTRIC
TRACTION MOTORS MOTIVE POWER WORKING: HYDRAULIC DRIVE MOTORS

TUNNEL CLEANING TRAIN CAR 3 (NOZZLE CAR)



NO. RANGE: TCC3

23/11/93

LUL15C

TUNNEL CLEANING TRAIN

TITLE
TUNNEL CLEANING TRAIN

FUNCTION
TO REMOVE TUNNEL DUST AND REFUSE FROM TUBE TUNNELS INCLUDING THE REMOVAL OF DUST FROM CABLE RUNS, AND TO REMOVE DUST AND REFUSE FROM STATION PLATFORM AREAS IN SUB-SURFACE TUNNELS

NUMBER RANGE
TCC 1 - TCC 5

DELIVERY DATE --
TCC 2 - TCC 4
LONDON UNDERGROUND LTD 1978

MANUFACTURERS NAME
TCC 1, TCC 5
EX 1988 STOCK MOTOR CARS

DESIGN LIFE EXPIRES
TCC1, TCC5 - 1998
TCC2 - TCC4 - 2000

MODIFICATION DETAILS
1) NEGATIVE SHOEGEAR ARC SHIELDING
2) MODIFIED SPEED CONTROL
3) MODIFIED SPEED HYDRAULIC CIRCUIT
4) NYLON BRUSHES ON CLEANER CAR TO CONTAIN AIRBLASTS
5) 110V VACUUM CLEANER & TRANSFORMER SOCKETS
6) MODIFIED FIRE/EXPLOSION PREVENTION SYSTEM
7) MODIFIED HEAD LIGHTS (PROPOSED)

GROSS WEIGHT
173 TONNES

BRAKING SYSTEM
AIR BRAKED

COUPLINGS
WEDGE LOCK
147355 mm

SERVICE AND MAXIMUM SPEEDS PERMITTED
SERVICE SPEED 0.5 TO 6 MPH (0.8 TO 10 kph)
MAX 40 MPH (64 kph)

AXLE BOX TYPE
ROLLER TCC1, TCC5 TIMKEN
TCC2-4 HOFFMAN SKF

TUNNEL CLEANING TRAIN (CONTINUED)

LIMITATIONS IN OPERATION

CONFORMS TO LUL 'TUBE' VEHICLE LOAD GAUGE REQUIREMENTS

FULL ROUTE AVAILABILITY

CONFORMS TO THE LUL RULE BOOK DEFINITION OF A 'TRAIN'

CAN ONLY WORK WHEN TRACTION CURRENT IS 'ON'

CAN ONLY WORK IN A POSSESSION. AN ENGINEER'S CURRENT AREA OR AS 'LAST TRAIN'

RESTRICTED ALL TUNNEL SIDINGS

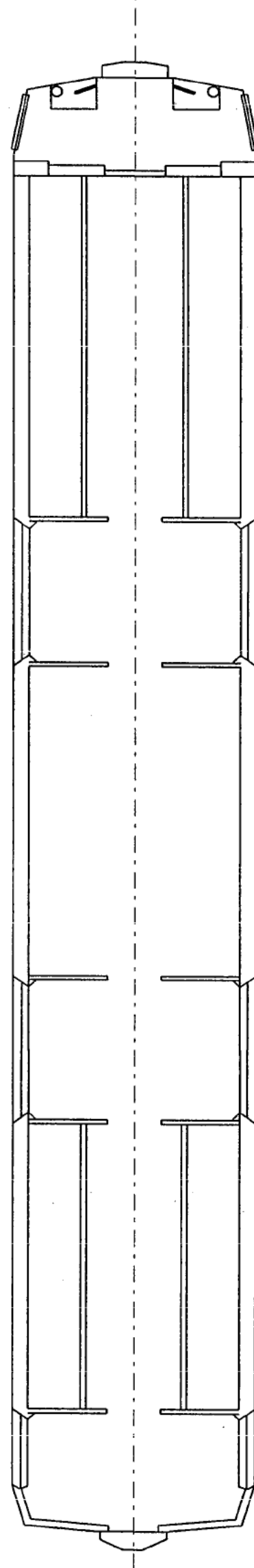
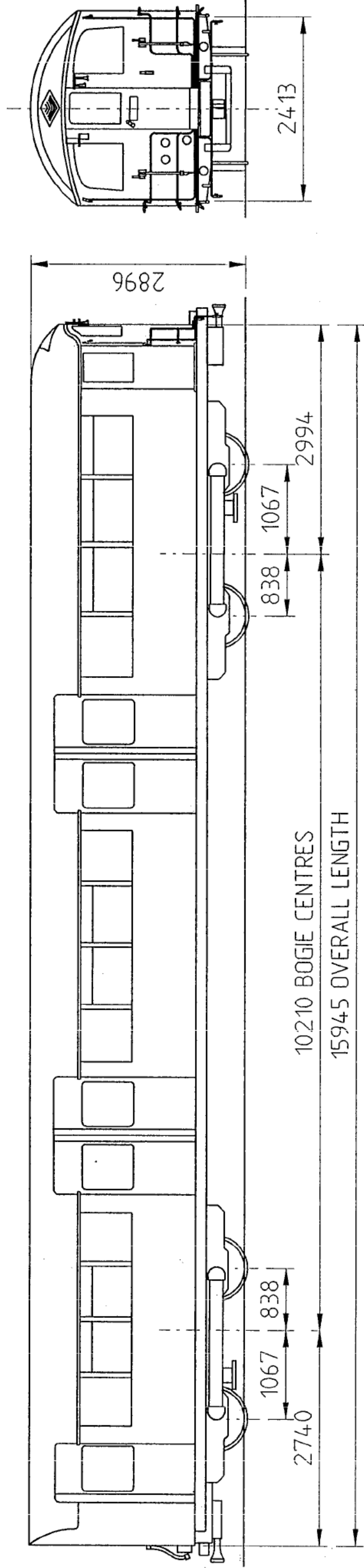
SEE SECTION 1B LONDON UNDERGROUND RULE BOOK - REGULATION C1 (E)

SPECIAL FEATURES

THE TRAIN IS COMPOSED OF FIVE CARS. TCC1 CONTAINS DRIVING AND OPERATING CONTROLS, SUCTION FAN AND HYDRAULIC DRIVE POWER UNIT; TCC2 CONTAINS DUST FILTRATION AND DISCHARGE EQUIPMENT; TCC3 CONTAINS HEAVY REFUSE COMPARTMENTS AND BLOWING AND SUCTION NOZZLES; TCC4 CONTAINS DUST FILTRATION AND DISCHARGE EQUIPMENT AND TCC5 CONTROLS SUCTIONS FAN AND M/A SET

MOTIVE POWER TRAVELLING: ELECTRIC
TRACTION MOTORS MOTIVE POWER WORKING: HYDRAULIC DRIVE MOTORS

WEEDKILLING TRAIN



NO. RANGE: L150, L151

23/11/93

LUL16

WEEDKILLING TRAIN

TITLE WEEDKILLING TRAIN

FUNCTION TO SPRAY WEEDKILLING CHEMICALS ONTO THE FOUR-FOOT, CESS AND ONTO EMBANKMENTS BEYOND THE CABLE RUNS OF RUNNING LINES

NUMBER RANGE L 150 - L 151

DELIVERY DATE - TWO CONVERTED 1938 BALLAST MOTOR CARS - CONVERTED 1986. WEEDKILLING MANUFACTURERS NAME EQUIPMENT CHIPMAN LTD

DESIGN LIFE EXPIRES 1997

MODIFICATION DETAILS

- 1) FALSE FLOOR
- 2) 50V SUPPLY LABELS
- 3) WIRING OF HEADLIGHTS
- 4) PIM (SPEEDO) CONNECTIONS
- 5) WEEDKILLING TRAIN STABLING SITE
- 6) RADAR UNIT
- 7) WIRING MODS. TO STORAGE UNIT
- 8) WINDSCREEN WASHER SYSTEM
- 9) VENTILATOR
- 10) DRAIN POINTS IN CAR L.150
- 11) ROUTE INFORMATION HOLDER
- 12) ISOLATING SWITCH FOR 50V D.C. SUPPLY
- 13) DRAINS CUT-OUTS IN PUMP FRAME
- 14) INSTALLATION OF 110V WARNING LAMP
- 15) OPERATORS SEAT
- 16) CHEMICAL STORE DOOR RAMP
- 17) CHEMICAL STORE WIRE SUPPORT BRACKET
- 18) CHEMICAL STORE SILL RAMP
- 19) ACCESS TO WEEDKILLING TRAIN

GROSS WEIGHT 65 TONS APPROXIMATELY

BRAKING SYSTEM AIR BRAKED

COUPLINGS TYPE WARD

HEIGHT FROM RAIL 147/355 mm

SERVICE AND MAXIMUM SPEEDS PERMITTED MAX 40MPH (64 kph)

AXLE BOX TYPE ROLLER HOFFMAN/SKF

WEEDKILLING TRAIN (CONTINUED)

LIMITATIONS IN OPERATION

CONFORMS TO LUL 'TUBE' VEHICLE LOAD GAUGE REQUIREMENTS

FULL ROUTE AVAILABILITY

CONFORMS TO THE LUL RULE BOOK DEFINITION OF A 'TRAIN'

CAN ONLY WORK WHEN TRACTION CURRENT IS 'ON'

THE CHEMICAL SPRAY EQUIPMENT ON THIS TRAIN MUST ONLY BE OPERATED BY STAFF HOLDING A 'CERTIFICATE OF COMPETENCE' AS A SPRAY TRAIN OPERATOR, ISSUED BY THE NATIONAL PROFICIENCY TESTS COUNCIL FOR AGRICULTURE AND HORTICULTURE

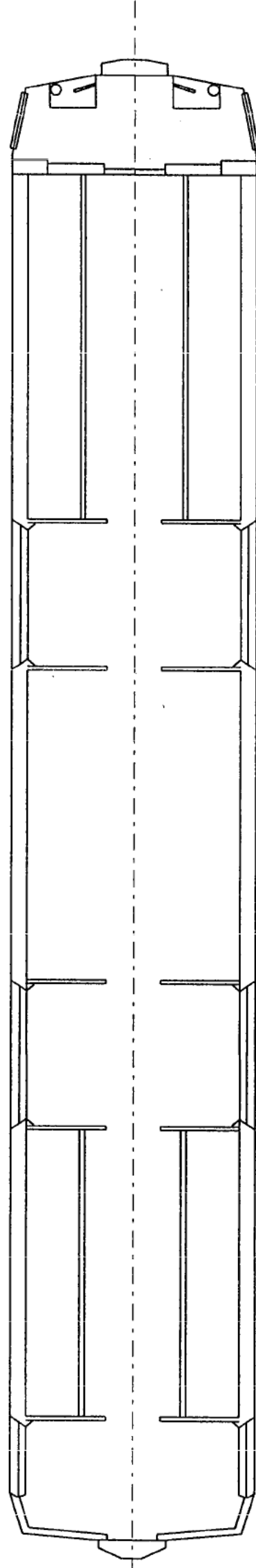
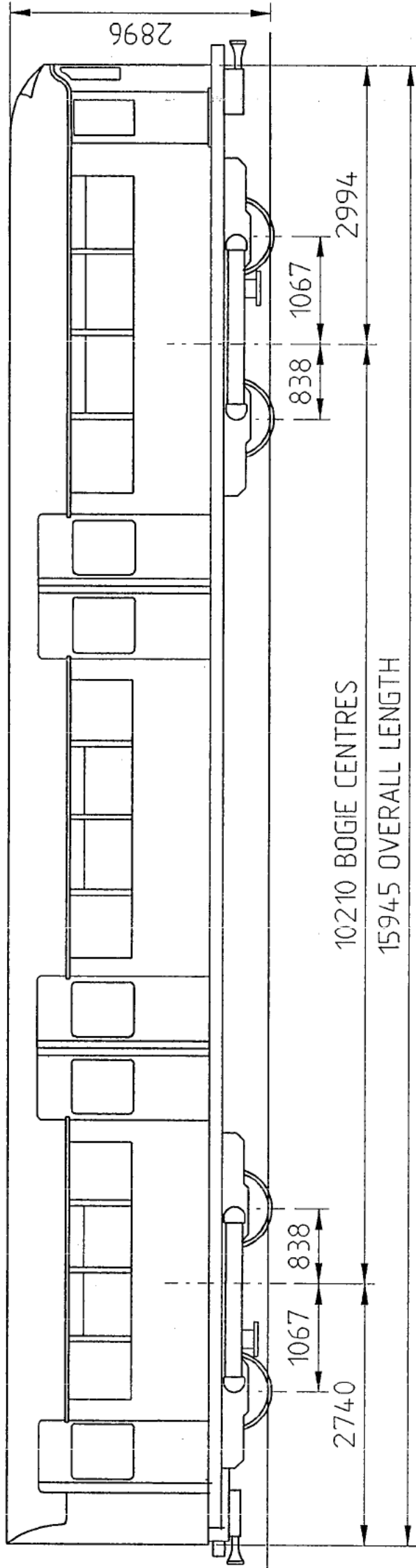
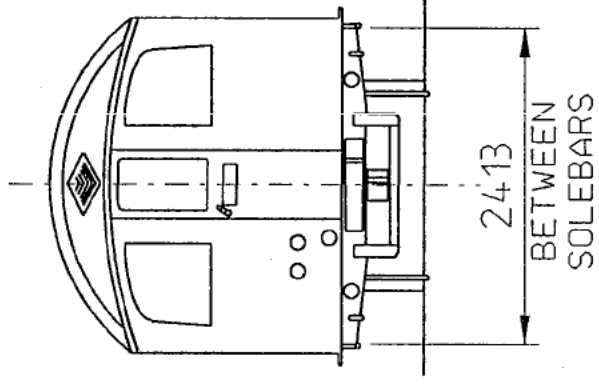
SPECIAL FEATURES

CAR L150 CONTAINS CHEMICAL STORAGE TANKS, CHEMICAL RING MAIN PUMPS, CHEMICAL WATER PUMPS, CHEMICAL WATER PUMPS, M/A SET AND DRIVING AND OPERATING CONTROLS. CAR 151 CONTAINS WATER STORAGE TANKS, CHEMICAL METERING PUMPS AND DRIVING AND OPERATING CONTROLS.

A CHEMICAL/WATER MIXTURE IS ALWAYS SPRAYED FROM THE REAR OF THE TRAIN IN DIRECTION OF TRAVEL

MAXIMUM WIDTH OF SPRAY CURTAIN: 5M EITHER SIDE OF CENTRELINE OF TRACK ON WHICH THE TRAIN IS TRAVELLING.

GAUGING TRAIN PILOT CARS



NO. RANGE: L146, L147

23/11/93

LUL17a

GAUGING TRAIN

TITLE GAUGING CAR AND PILOT MOTOR CARS

FUNCTION GAUGING THE MEASUREMENT OF RESTRICTED CLEARANCE OF TUNNEL SECTIONS

TO CHECK ANY OBSTRUCTIONS THAT WOULD FOUL STRUCTURE GAUGE. THESE INCLUDE:

SIGNAL EQUIPMENT
TUNNEL SEGMENTS
NOSING STONES
CONCRETE WORK
CABLE WORK
NOISE REDUCTION EQUIPMENT

NUMBER RANGE GAUGE CAR G663
PILOT CAR L 146 - L 147

DELIVERY DATE - GAUGE CAR BIRMINGHAM RC & W
MANUFACTURERS NAME LTD 1931 CONVERTED 1963
PILOT CAR METRO-CAMMELL 1938

DESIGN LIFE EXPIRES L.146 - L.147 2000
G.663 - 1993

MODIFICATION DETAILS NONE RECORDED

GROSS WEIGHT PILOT CAR 28 TON
GAUGE CAR 16 TON

BRAKING SYSTEM AIR BRAKED

COUPLINGS TYPE WARD COUPLERS
HEIGHT FROM RAIL 14"/355 mm

SERVICE AND MAXIMUM SPEEDS PERMITTED 30 MPH (48 kph) SERVICE
45 MPH (72 kph) MAX

AXLE BOX TYPE ROLLER HOFFMAN/SKF



GAUGING TRAIN (CONTINUED)

LIMITATIONS IN OPERATIONS

CONFORMS TO LUL TUBE VEHICLES
LOAD GAUGE EXCEPT GAUGE CAR G663
RESTRICTED CENTRAL LINE - WHITE
CITY (INCLUDING DEPOT) TO
LIVERPOOL STREET

WHEN WORKING WITH PILOT MOTOR
CARS TRACTION CURRENT MUST
REMAIN 'ON'

TRAIN MUST OPERATE IN A POSSESSION
OR ENGINEER'S CURRENT AREA UNDER
THE CONTROL OF THE TRAIN MASTER
AND THE TRAIN TEST ENGINEER
ACTING AS SITE PERSON IN CHARGE

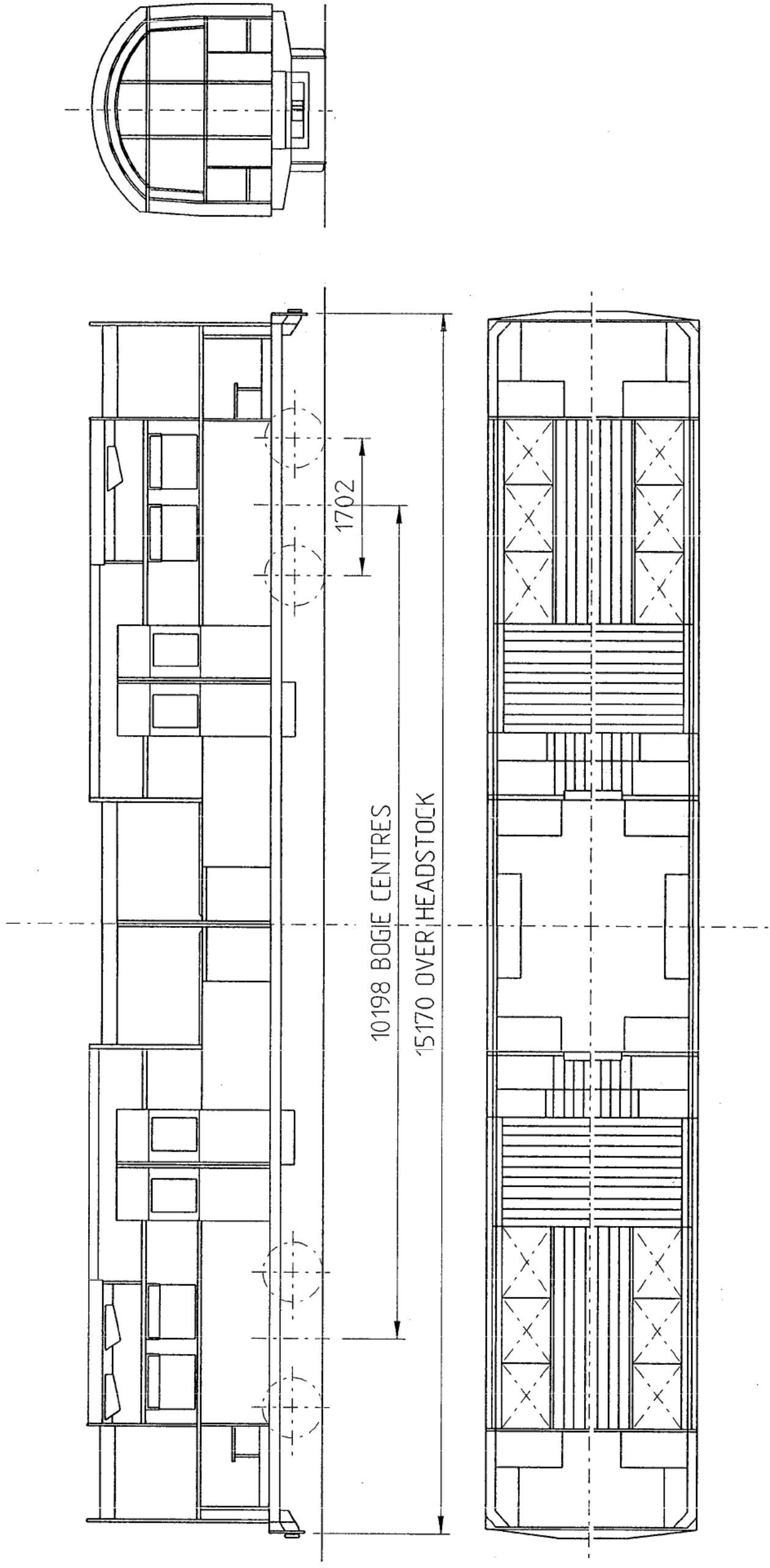
CONFORMS TO THE RULE BOOK
DEFINITION OF A TRAIN

SPECIAL FEATURES

GAUGE CAR IS EQUIPPED WITH LOAD
GAUGE WOODEN TEMPLATES FITTED
WITH METAL FINGERS. DESIGNED
TO DETECT INFRINGEMENTS OF
STRUCTURE GAUGE



GAUGING CAR



NO. RANGE: G663

23/11/93

LUL17b

GAUGING TRAIN

TITLE
FUNCTION
GAUGING CAR AND PILOT MOTOR CARS
GAUGING THE MEASUREMENT OF RESTRICTED CLEARANCE OF TUNNEL SECTIONS
TO CHECK ANY OBSTRUCTIONS THAT WOULD FOUL STRUCTURE GAUGE. THESE INCLUDE:
SIGNAL EQUIPMENT
TUNNEL SEGMENTS
NOSING STONES
CONCRETE WORK
CABLE WORK
NOISE REDUCTION EQUIPMENT
NUMBER RANGE
GAUGE CAR G663
PILOT CAR L 146 - L 147
DELIVERY DATE -
MANUFACTURERS NAME
GAUGE CAR BIRMINGHAM RC & W LTD 1931 CONVERTED 1963
PILOT CAR METRO-CAMMELL 1938
DESIGN LIFE EXPIRES
L.146 - L.147 2000
G.663 - 1993
MODIFICATION DETAILS
NONE RECORDED
GROSS WEIGHT
PILOT CAR 28 TON
GAUGE CAR 16 TON
BRAKING SYSTEM
AIR BRAKED
COUPLINGS
TYPE
WARD COUPLERS
HEIGHT FROM RAIL
14*355 mm
SERVICE AND MAXIMUM SPEEDS PERMITTED
30 MPH (48 kph) SERVICE
45 MPH (72 kph) MAX
AXLE BOX TYPE
ROLLER HOFFMAN/SKF



GAUGING TRAIN (CONTINUED)

LIMITATIONS IN OPERATIONS

CONFORMS TO LUL TUBE VEHICLES LOAD GAUGE EXCEPT GAUGE CAR G663 RESTRICTED CENTRAL LINE - WHITE CITY (INCLUDING DEPOT) TO LIVERPOOL STREET

WHEN WORKING WITH PILOT MOTOR CARS TRACTION CURRENT MUST REMAIN 'ON'

TRAIN MUST OPERATE IN A POSSESSION OR ENGINEER'S CURRENT AREA UNDER THE CONTROL OF THE TRAIN MASTER AND THE TRAIN TEST ENGINEER ACTING AS SITE PERSON IN CHARGE

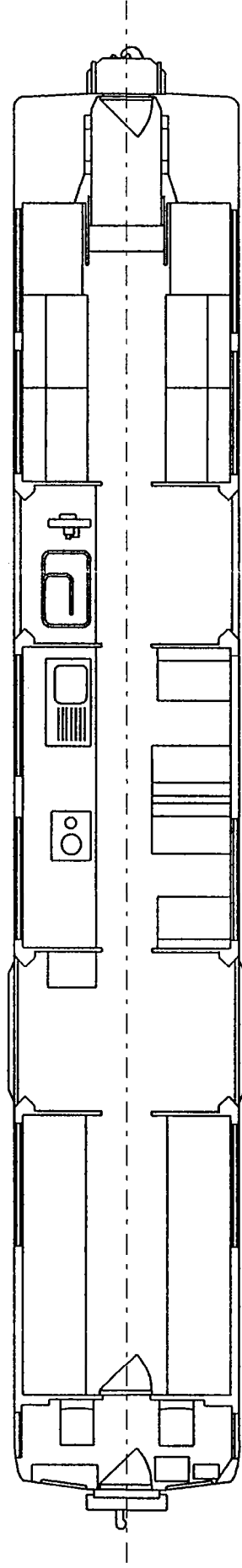
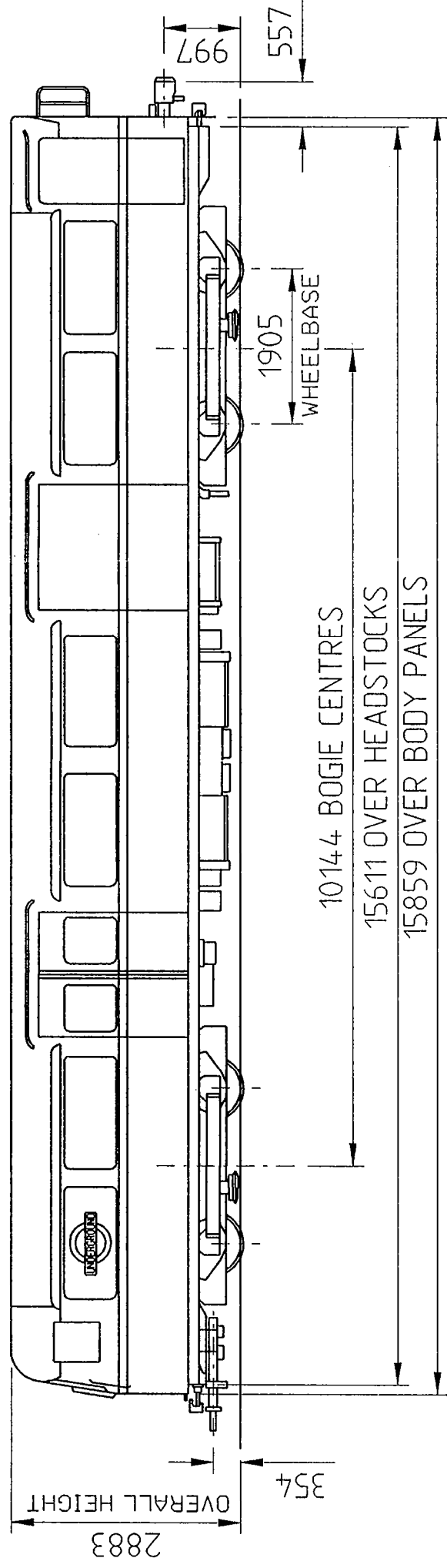
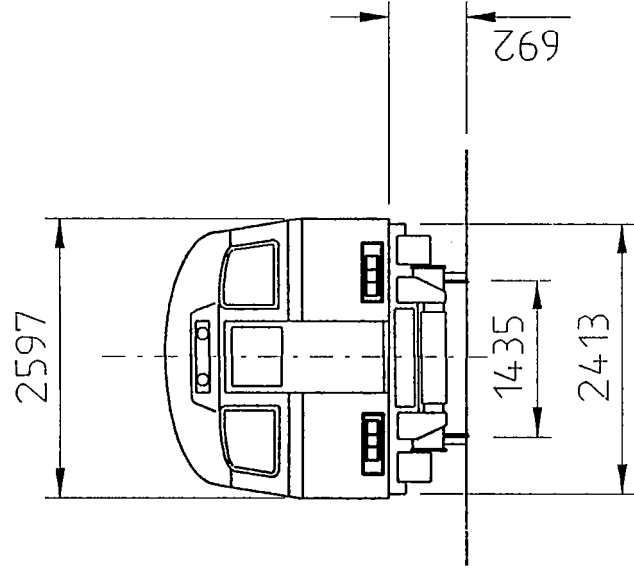
CONFORMS TO THE RULE BOOK DEFINITION OF A TRAIN

SPECIAL FEATURES

GAUGE CAR IS EQUIPPED WITH LOAD GAUGE WOODEN TEMPLATES FITTED WITH METAL FINGERS. DESIGNED TO DETECT INFRINGEMENTS OF STRUCTURE GAUGE



TRACK RECORDING TRAIN PILOT CAR



NO. RANGE: L132, L133

23/11/93

LUL180

TRACK RECORDING TRAIN

TITLE
 TRACK RECORDING TRAIN

FUNCTION
 TO MEASURE ELECTRONICALLY TRACK GEOMETRY.
 TO PRODUCE DEFECT AND STATISTICAL REPORTS FROM MEASURED DATA

NUMBER RANGE
 L132, DB999666, L133
 (NOTE DB999666 IS ALSO KNOWN AS TRC666 OR TRC912)

OPERATION DESCRIPTION
 ON BOARD COMPUTERS AND INSTRUMENTATION PRODUCE DATA TRAVELLING AT NORMAL LINE SPEED
 ANALOGUE DATA IS PLOTTED ON CHART RECORDERS
 STATISTICAL AND DEFECT REPORTS ARE GENERATED FROM PLOTTERS, RECORDERS STORE DATA FOR OFF LINE ANALYSIS
 PAINT IS SPRAYED ON THE TRACK IF CERTAIN FAULTS ARE DETECTED

DELIVERY DATE -
 MANUFACTURERS NAME
 L132/L133 EX-1960 CRAVEN STOCK 3901/3905
 CONVERTED BREL DERBY 1987
 DB999666 EX-1973 MET-CAM STOCK 514
 CONVERTED BREL DERBY 1987

DESIGN LIFE EXPIRES
 L132 - L133 - 2000
 DB999666 - 2013

MODIFICATION DETAILS
 SEE APPENDIX

GROSS WEIGHT
 DB 999666 23.80 TONNES
 PILOT CAR L 132, L 133 32 TONNES

BRAKING SYSTEM
 AIR BRAKED - WESTINGHOUSE
 SPRING PARKING BRAKE ON DB999666

COUPLINGS
 TYPE
 HEIGHT FROM RAIL
 BUCKEYE (INNER) WEDGELOCK (OUTER)
 41.5"/1055 mm

SERVICE AND MAXIMUM SPEEDS PERMITTED
 30 MPH (48 kph) SERVICE
 70 MPH (113 kph) MAX (DB 999666)
 50 MPH (80 kph) MAX (L 132 / L 133)

AXLE BOX TYPE
 ROLLER HOFFMAN/SKF

TRACK RECORDING TRAIN (CONTINUED)

LIMITATIONS IN OPERATIONS

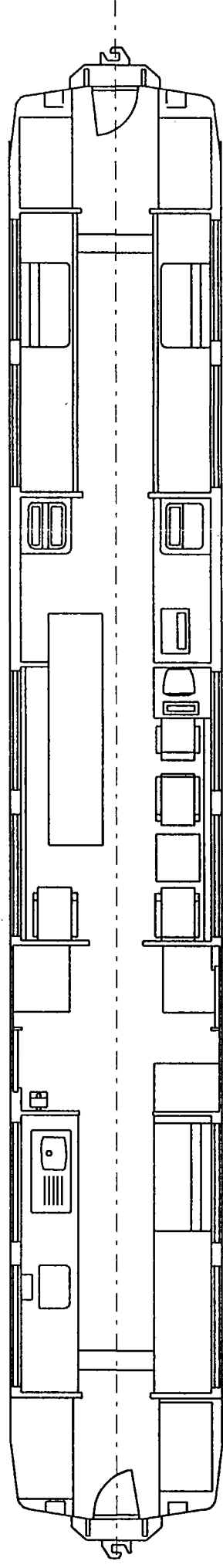
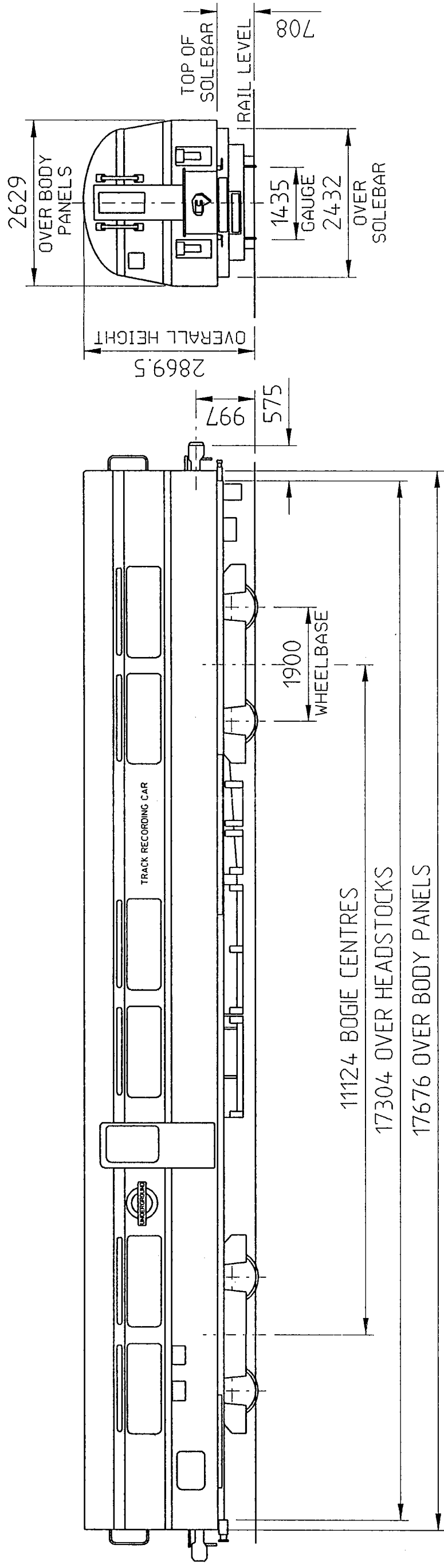
REQUIREMENTS TO RUN THE TRV ON ROUTE REQUIRED ARE STN'S OR POSSN
 CONFORMS TO LUL TUBE LOAD GAUGE WITH FULL ROUTE AVAILABILITY EXCEPT -
 KENNINGTON LOOP, LONDON ROAD DEPOT, EALING COMMON DEPOT CURVE ON A ROAD
 CAN ONLY BE WORKED WHEN HAULED BY ITS PILOT CARS OR LOCO WITH ETH POWER FACILITIES

THE RECORDING EQUIPMENT MAY ONLY BE USED BY AUTHORISED STAFF

SPECIAL FEATURES

ANCILLIARY EQUIPMENT THROUGH 27 WAY JUMPERS
 CONTROL JUMPERS (STANDARD BR)
 POWER SUPPLY
 ETH 450 - 900 VOLTS DC
 BR SOCKETS TO PILOT CAR
 LUL STANDARD TROLLEY JUMPERS

TRACK RECORDING COACH



NO. RANGE: DB9999666

23/11/93

LUL18b

TRACK RECORDING TRAIN

TITLE
TRACK RECORDING TRAIN

FUNCTION
TO MEASURE ELECTRONICALLY TRACK GEOMETRY.
TO PRODUCE DEFECT AND STATISTICAL REPORTS FROM MEASURED DATA

NUMBER RANGE
L132, DB999666, L133
(NOTE DB999666 IS ALSO KNOWN AS TRC666 OR TRC912)

OPERATION DESCRIPTION
ON BOARD COMPUTERS AND INSTRUMENTATION PRODUCE DATA TRAVELLING AT NORMAL LINE SPEED
ANALOGUE DATA IS PLOTTED ON CHART RECORDERS
STATISTICAL AND DEFECT REPORTS ARE GENERATED FROM PLOTTERS, RECORDERS STORE DATA FOR OFF LINE ANALYSIS
PAINT IS SPRAYED ON THE TRACK IF CERTAIN FAULTS ARE DETECTED
L132/L133 EX-1960 CRAVEN STOCK 3901/3905
CONVERTED BREL DERBY 1987
DB999666 EX-1973 MET-CAM STOCK 514
CONVERTED BREL DERBY 1987
L132 - L133 - 2000
DB999666 - 2013
SEE APPENDIX
DB 999666 23.80 TONNES
PILOT CAR L 132, L 133 32 TONNES
AIR BRAKED - WESTINGHOUSE
SPRING PARKING BRAKE ON DB999666
BUCKEYE (INNER) WEDGELOCK (OUTER)
41.57/1055 mm
30 MPH (48 kph) SERVICE
70 MPH (113 kph) MAX (DB 999666)
50 MPH (80 kph) MAX (L 132 / L 133)
ROLLER HOFFMAN/SKF

DELIVERY DATE - MANUFACTURERS NAME

DESIGN LIFE EXPIRES

MODIFICATION DETAILS

GROSS WEIGHT

BRAKING SYSTEM

COUPLINGS
TYPE
HEIGHT FROM RAIL

SERVICE AND MAXIMUM SPEEDS PERMITTED

AXLE BOX TYPE

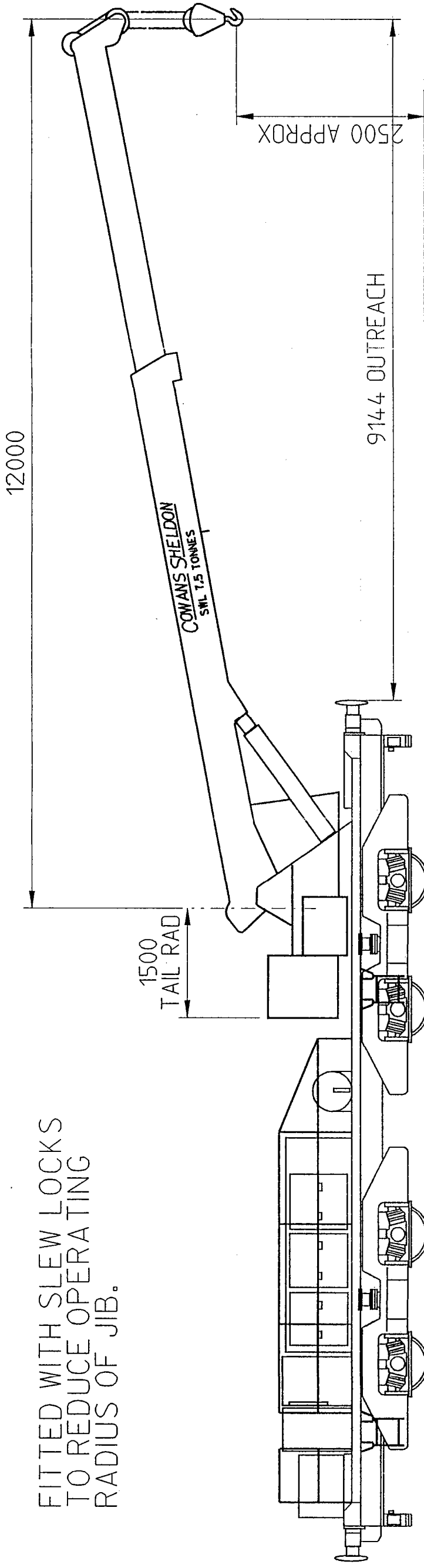
TRACK RECORDING TRAIN (CONTINUED)

LIMITATIONS IN OPERATIONS
REQUIREMENTS TO RUN THE TRV ON ROUTE REQUIRED ARE STN'S OR POSSN
CONFORMS TO LUL TUBE LOAD GAUGE WITH FULL ROUTE AVAILABILITY EXCEPT -
KENNINGTON LOOP, LONDON ROAD DEPOT, EALING COMMON DEPOT CURVE ON A ROAD
CAN ONLY BE WORKED WHEN HAULED BY ITS PILOT CARS OR LOCO WITH ETH POWER FACILITIES
THE RECORDING EQUIPMENT MAY ONLY BE USED BY AUTHORISED STAFF
ANCILLIARY EQUIPMENT THROUGH 27 WAY JUMPERS
CONTROL JUMPERS (STANDARD BR)
POWER SUPPLY
ETH 450 - 900 VOLTS DC
BR SOCKETS TO PILOT CAR
LUL STANDARD TROLLEY JUMPERS

SPECIAL FEATURES

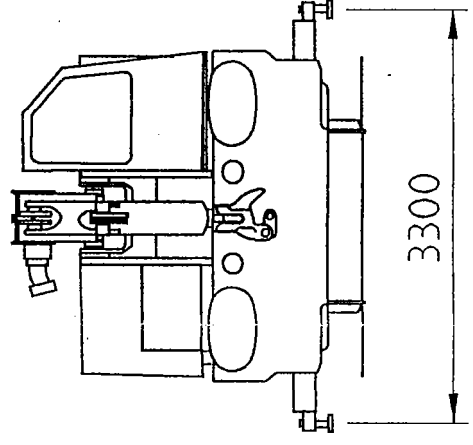
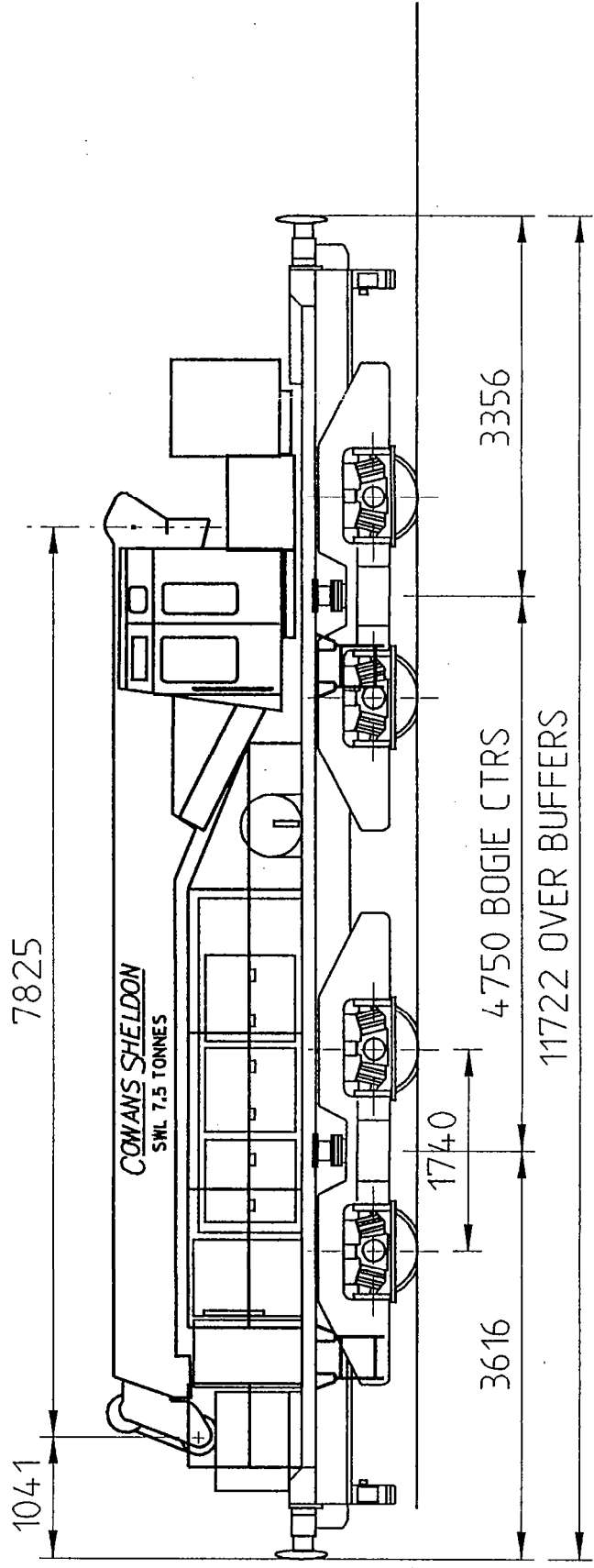
7.5 TONNE RAIL CRANE

FITTED WITH SLEW LOCKS
TO REDUCE OPERATING
RADIUS OF JIB.



MAX RADIUS 12150 JIB HORIZONTAL

φ 800 WHEELS



NO. RANGE: C623 - C626

23/11/93

LUL19

7.5 TONNE RAIL CRANE

TITLE
7.5 TONNE DIESEL HYDRAULIC RAIL CRANE

FUNCTION
TO PROVIDE A MEANS OF HANDLING 18.3M (60FT) RUNNING (AND CONDUCTOR) RAILS TO PROVIDE A MEANS OF HANDLING ALL TYPES OF PLANT, EQUIPMENT, PALLETISED GOODS AND ALL TYPES OF MATERIALS USED IN TRACK AND INFRASTRUCTURE MAINTENANCE UP TO THE CAPACITY OF THE CRANE

NUMBER RANGE
C 623 - C 626

DELIVERY DATE - MANUFACTURERS NAME
C 623 - 1983
C 624-6 - 1985
NEI CLARKE-CHAPMAN

DESIGN LIFE EXPIRES
(TAKEN AT 40 YEARS) 2023 - 2025

MODIFICATION DETAILS
NONE CARRIED OUT ALTHOUGH PROPOSALS MADE IN RESPONSE TO A DERAILMENT

GROSS WEIGHT
MAXIMUM SPEED REDUCED AS A RESULT

BRAKING SYSTEM
64 TONNES APPROXIMATELY
AIR BRAKED WESTINGHOUSE

COUPLINGS
BUCKEYE
41.5"/1055 mm

SERVICE AND MAXIMUM SPEEDS PERMITTED
MAXIMUM TRAVEL SPEEDS:
5.75 TONNE AT 3 mph (5 kph) ON LEVEL TRACK
NO LOAD AT 10 mph (16 kph) ON LEVEL TRACK
IN TRAIN FORMATION AT 20 mph (32 kph) (SEE MODIFICATIONS)

AXLE BOX TYPE
ROLLER

7.5 TONNE RAIL CRANE (CONTINUED)

LIMITATIONS IN OPERATION

IN ITS FULLY AND CORRECTLY STOWED CONDITION THE CRANE CONFORMS TO LUL 'TUBE' VEHICLE LOAD GAUGE REQUIREMENTS

FULL ROUTE AVAILABILITY

DOES NOT CONFORM TO THE LUL RULE BOOK DEFINITION OF A 'TRAIN'
MUST ONLY WORK WHEN THE TRACTION CURRENT IS 'OFF'

NORMALLY TRAVELS TO AND FROM ITS WORKSITE IN TRAIN FORMATION (AS PART OF AN ENGINEER'S TRAIN)

ABILITY TO BE SELF PROPELLED ON SITE

FITTED WITH SLEW LOCKS TO LIMIT ARC OF OPERATION OF JIB

DUTY TABLE

JIB AT ANY LENGTH WITH DERRICK RAM EXTENDED TO GIVE RATED RADII FULL SLEW FREE ON RAIL

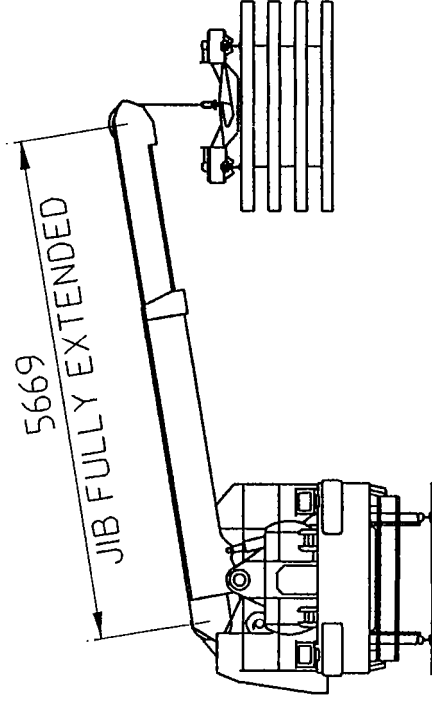
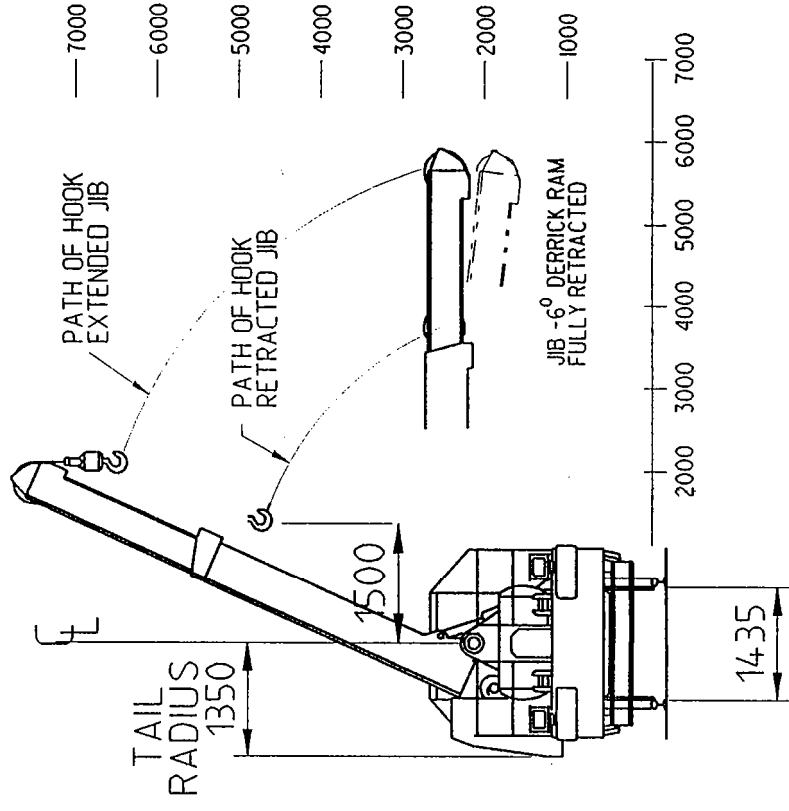
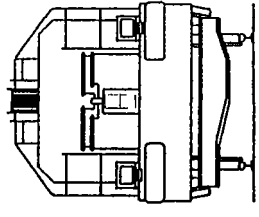
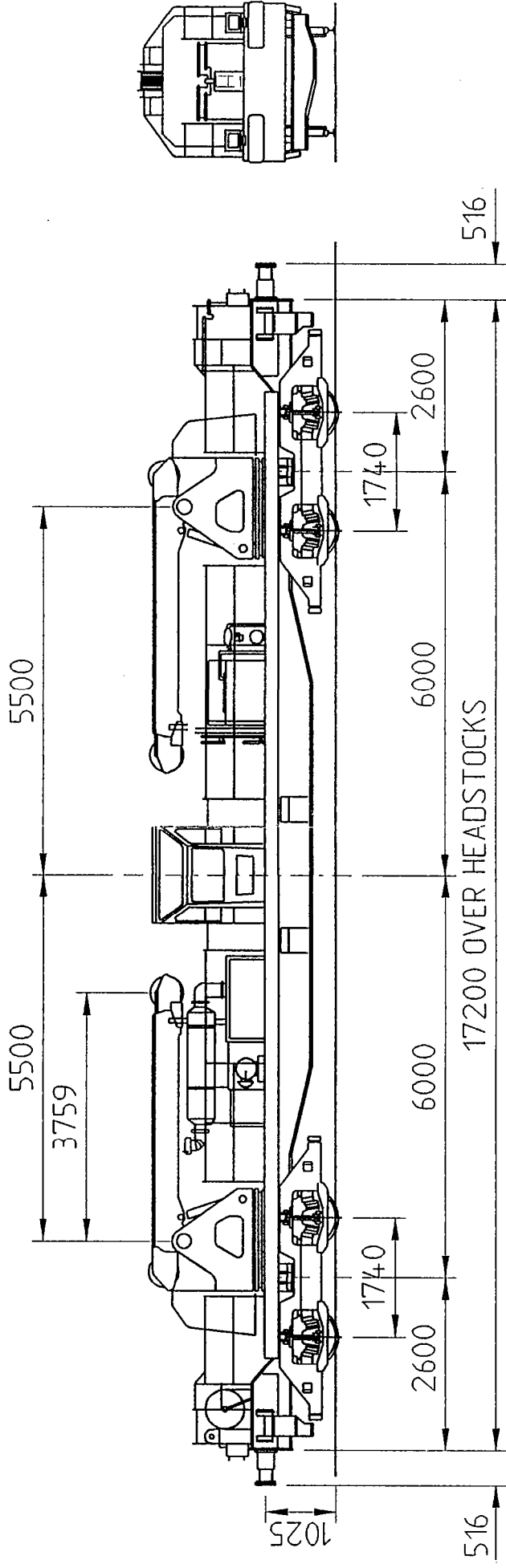
RADIUS (m)	LEVEL	50 SE LOAD (TONNES)	100 SE LOAD (TONNES)	150 SE LOAD (TONNES)
4.5			6	5.75
5	6	6	5.25	5
6	5	4.75	4	3.5
7	4	3.5	3.25	3
8.5	3	2.75	2.25	2
10.5	2	1.75	1.5	1.25
12.15	1.5	1.25	1	1

JIB FULLY RETRACTED, FULL SLEW, FREE ON RAIL, LEVEL TRACK
7.5 TONNES AT 5m RADIUS

JIB FULLY EXTENDED, FREE ON RAIL, OVER END BETWEEN TRACK CENTRES
2 TONNES AT 12.15m RADIUS

GRAB, FULL SLEW, FREE ON RAIL, UP TO 100mm SE
RATED GRAB FULL UP TO 8.5m RADIUS

IOT TWIN JIB TRACKLAYER



10 TONNE TWIN JIB TRACK LAYER

TITLE 10 TONNE TWIN JIB TRACK LAYING MACHINE

FUNCTION

PRIMARY FUNCTION
TO REMOVE AND LOAD REDUNDANT TRACK PANELS ONTO FLAT WAGONS AND OFF-LOADING NEW REPLACEMENT TRACK PANELS

SECONDARY FUNCTION
TO PROVIDE A MEANS OF HANDLING ALL TYPES OF PLANT, EQUIPMENT AND MATERIALS USED IN TRACK AND INFRASTRUCTURE MAINTENANCE UP TO THE CAPACITY OF THE MACHINE

NUMBER RANGE C 627

DELIVERY DATE - 1986

MANUFACTURERS NAME NEI CLARKE-CHAPMAN

DESIGN LIFE EXPIRES (TAKEN AT 40 YEARS) 2026

MODIFICATION DETAILS NONE RECORDED

GROSS WEIGHT 67 TONNES

BRAKING SYSTEM AIR BRAKED WESTINGHOUSE TRIPLE VALVE

COUPLINGS TYPE BUCKEYE
HEIGHT FROM RAIL 41.57/1055 mm

SERVICE AND MAXIMUM SPEEDS PERMITTED SEE SPECIAL FEATURES

AXLE BOX TYPE ROLLER

10 TONNE TWIN JIB TRACK LAYER (CONTINUED)

RESTRICTIONS IN USE

CONFORMS TO LUL 'TUBE' VEHICLE LOAD GAUGE REQUIREMENTS

FULL ROUTE AVAILABILITY

DOES NOT CONFORM TO THE LUL RULE BOOK DEFINITION OF A 'TRAIN'

MUST ONLY WORK WHEN THE TRACTION CURRENT IS 'OFF'

NORMALLY TRAVELS TO AND FROM ITS WORKSITE IN TRAIN FORMATION (AS PART OF AN ENGINEER'S TRAIN)

THE MACHINE IS CAPABLE OF TRAVELLING WITH LOADS ON EITHER OR BOTH OF ITS JIBS

SPECIAL FEATURES

THE MACHINE HAS BEEN DESIGNED TO LIFT AND TRAVEL WITH A 10 TONNES TRACK PANEL AT A MAXIMUM RADIUS OF 4.5 METRES ON LEVEL TRACK SINGLE JIB CAPACITY = 5.8 TONNES AT 4.5 METRES RADIUS

THE MACHINE'S DRIVE AND CONTROL CABIN IS POSITIONED IN THE MIDDLE OF THE MACHINE BETWEEN THE TWO JIBS

MOTIVE POWER: 'DEUTZ' AIR-COOLED DIESEL ENGINE

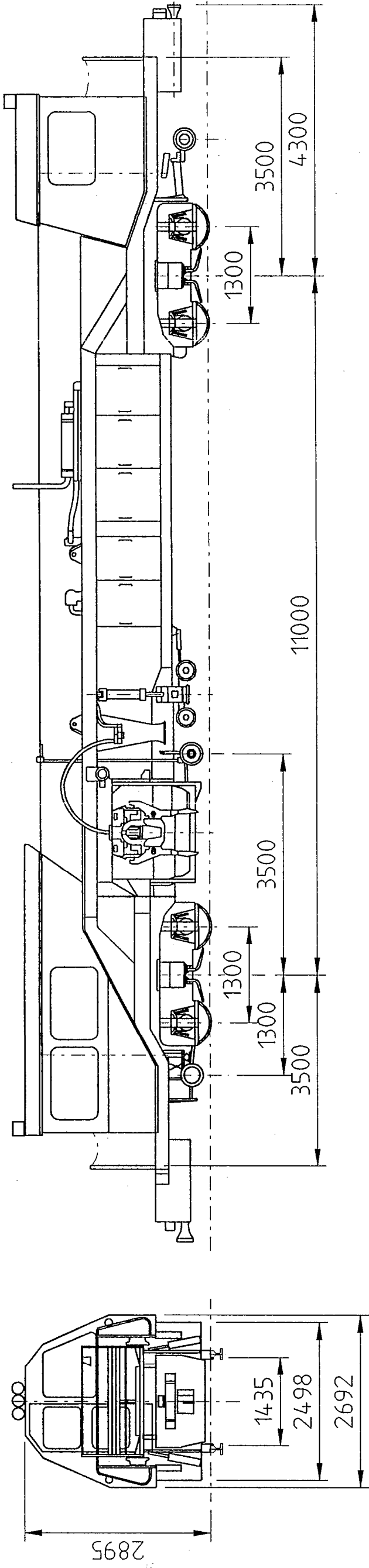
MAXIMUM TRAVEL SPEEDS:

10 TONNE LOAD AT 3.7 mph (6 kph) ON LEVEL TRACK

NO LOAD AT 10 mph (16 kph) ON LEVEL TRACK

IN TRAIN FORMATION 50 mph (80 kph)

PLASSER TAMPING MACHINE



NO. RANGE: TMM771 - TMM773

23/II/93

LUL21

PLASSERMATIC PLAIN LINE TAMPING & LINING MACHINE

TITLE PLASSER PU 07-16
TAMPING AND LINING MACHINE

FUNCTION TO CORRECT LONGITUDINAL AND LATERAL GEOMETRIC TRACK ERRORS BY REPOSITIONING EACH SLEEPER PROGRESSIVELY THROUGHOUT THE LENGTH OF ITS WORKSITE AND TO MAINTAIN THE CORRECTED GEOMETRY BY SIMULTANEOUSLY COMPACTING THE TRACK BALLAST BENEATH EACH CORRECTED SLEEPER

NUMBER RANGE TMM 771 - TMM 773

DELIVERY DATE - MANUFACTURERS NAME 1980
PLASSER AND THEURER
RAILWAY MACHINERY LTD
(TAKEN AT 20 YEARS) 2000

DESIGN LIFE EXPIRES

MODIFICATION DETAILS

1. CHORD WIRE TENSIONER (TRAVELLING)
2. EMERGENCY STOWAGE SYSTEM AND PUMP
3. OIL TAIL LAMP BRACKETS
4. OIL DRUM SPANNER
5. TOOL RACK FOR P/WAY SHOVELS
6. CHORD WIRE PROTECTION BAR ON BOGIE
7. FIRE DETECTION CIRCUIT AND EXTINGUISHING SYSTEM
8. DISTRIBUTION VALVE MOUNTING BLOCK
9. HANDED PIVOT PLATES
10. SIDE COVER WARNING PLATE
11. TINE EXTRACTORS
12. SAFETY LABELS
13. SILENCER SHIELD
14. WORM AND RUNNING SHAFT
15. TRI-SOUND SIREN AND SPEECH UNIT
16. LEVELLING TROLLEY BEARING STAND PLATE
17. TINE SPADE WEAR GAUGES
18. STANDPIPE FILTER
19. ROLLER CLAMP LIFTING FRAME REINFORCEMENT
20. REPLACEMENT PULL CABLES
21. AUTOMATIC TRAIN PROTECTION
22. VISUAL DISPLAY PACKAGE (PROPOSED)

GROSS WEIGHT 40 TONNES

PLASSERMATIC PLAIN LINE TAMPING & LINING MACHINE (CONTINUED)

BRAKING SYSTEM AIR BRAKED TWO PIPE WESTINGHOUSE TWO TRIPLE VALVES

COUPLINGS BUCKEYE
TYPE HEIGHT FROM RAIL 41.5"/1055 mm

SERVICE AND MAXIMUM SPEEDS PERMITTED MAXIMUM 25 MPH (40 kph) TUNNELLED SECTION
30 MPH (48 kph) OPEN SECTION

AXLE BOX TYPE ROLLER

LIMITATIONS IN OPERATION CONFORMS TO LUL 'TUBE' VEHICLE LOAD GAUGE REQUIREMENTS FULL ROUTE AVAILABILITY

SPECIAL FEATURES CONFORMS TO THE LUL RULE BOOK DEFINITION OF A 'TRAIN'
MUST ONLY WORK WHEN TRACTION CURRENT IS 'OFF'
CAN ONLY BE COUPLED TO VEHICLES FITTED WITH WEDGELOCK COUPLERS IN AN EMERGENCY
MOTIVE POWER: 'DEUTZ' AIR-COOLED DIESEL ENGINE

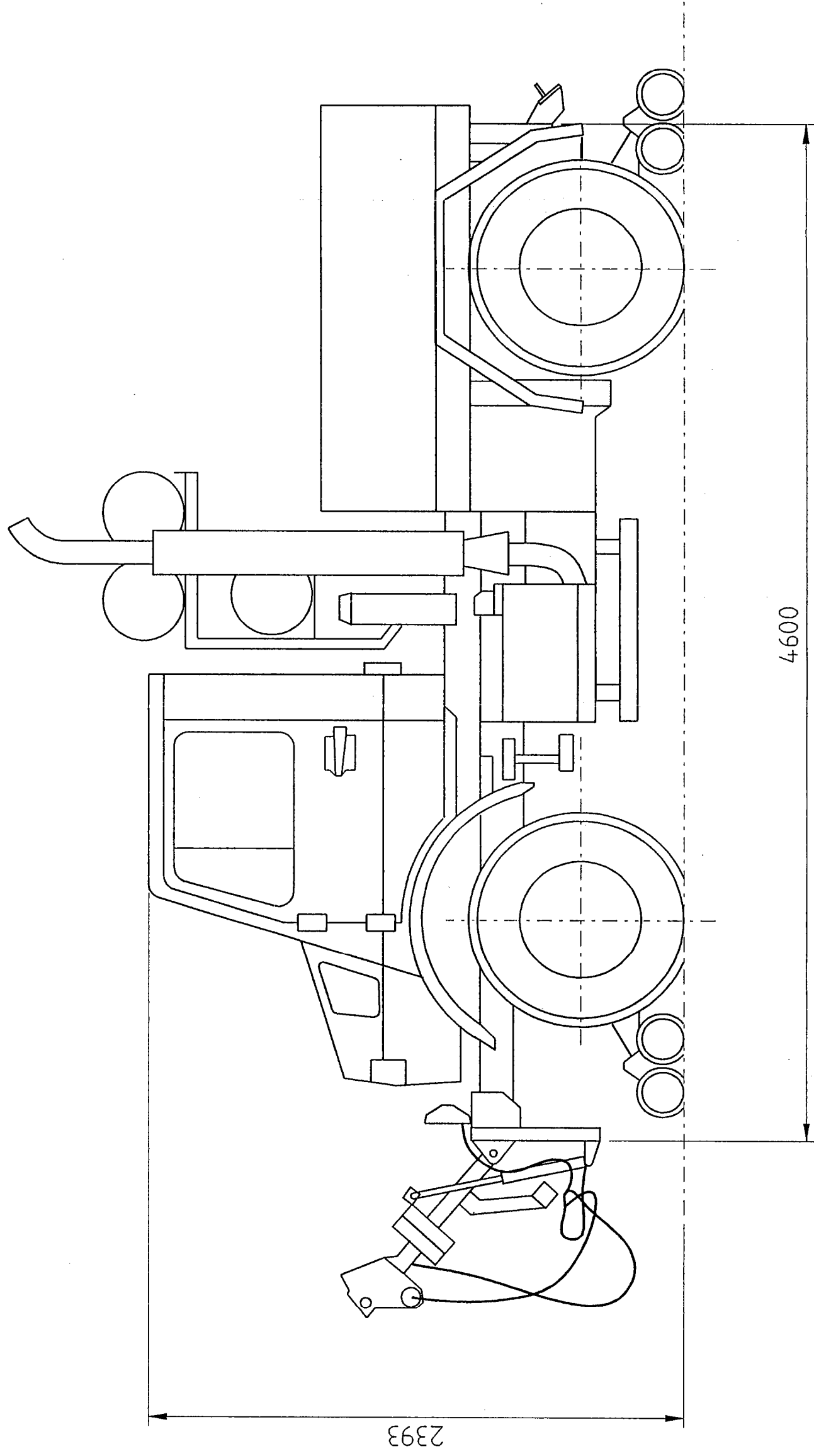
NOTE

TAMPER 771

THIS MACHINE WAS INVOLVED IN A FIRE INCIDENT AND ON REPAIR WAS RE-BUILT TO A DIFFERENT STANDARD. THIS MEANS THAT EQUIPMENT AND CAB ARRANGEMENTS DIFFER FROM THE OTHER TWO MACHINES, ALTHOUGH OPERATION IS THE SAME.

DIFFERENCES NOT EXACTLY KNOWN, BUT ONLY INVOLVES EQUIPMENT LOCATIONS

UNIMOG MULTI-PURPOSE VEHICLE



NO. RANGE: L84, L85

23/11/93

LUL22

UNIMOG - MULTI PURPOSE MACHINES

TITLE UNIMOG - MULTI PURPOSE MACHINE

FUNCTION DEPOT SHUNTING - HAULING WAGONS

NUMBER RANGE L 84 - L 85

DELIVERY DATE - L 84 - 1983, L 84 - 1986
MANUFACTURERS NAME UNIMOG

DESIGN LIFE EXPIRES (TAKEN AT 15 YEARS) L84 - 1998
L85 - 2001

MODIFICATION DETAILS NONE RECORDED

GROSS WEIGHT 7250 KG APPROX

BRAKING SYSTEM AIR BRAKED
AUTOMOTIVE SYSTEM

COUPLINGS TYPE BUCKEYE
HEIGHT FROM RAIL 41.57/1055 mm

SERVICE AND MAXIMUM SPEEDS PERMITTED RAIL 20 MPH (32 kph) FORWARD,
15 MPH (24 kph) REVERSE
ROAD 50 MPH (80 kph)

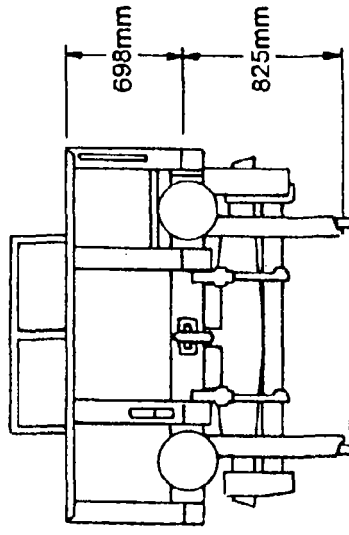
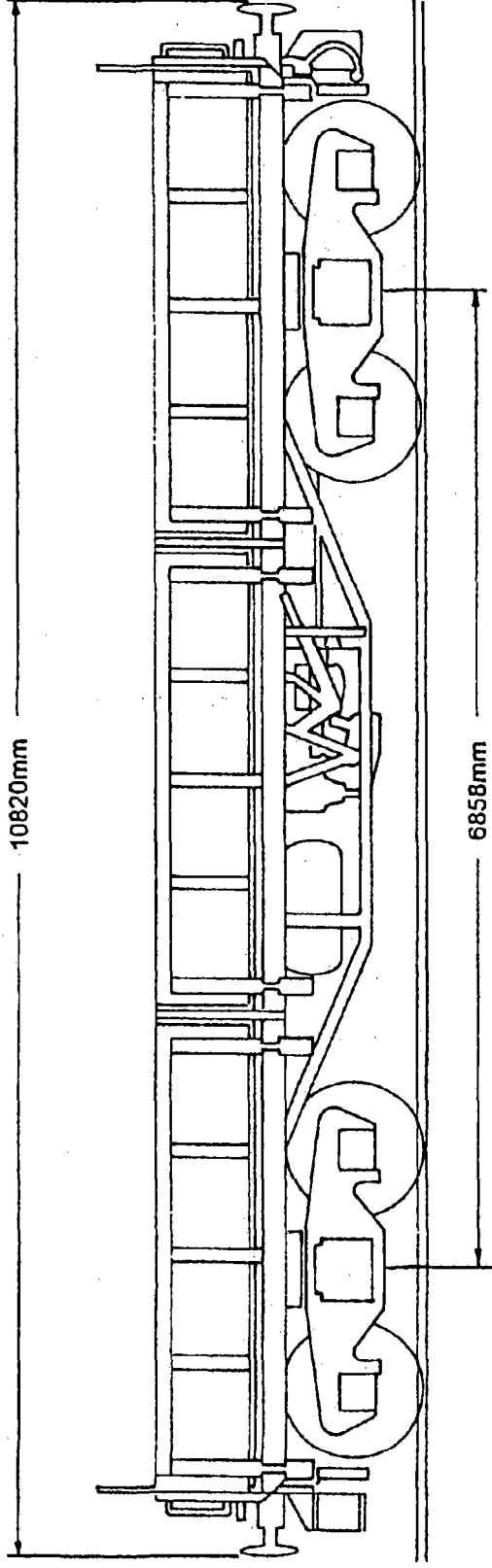
AXLE BOX TYPE ROLLER

ROUTE AVAILABILITY ALL TUBE SECTIONS OUT OF GAUGE

SPECIAL FEATURES ROAD/RAIL VEHICLE

SPOIL & BALLAST WAGONS (TYPE SB)

ISSUE:- 1 DATE:- 02/05/96



General View of Wagon

SPOIL & BALLAST WAGONS (TYPE SB)

ISSUE:- 1 DATE:- 02/05/96

3.1 GENERAL WAGON DESCRIPTION

The following information covers the modification of sixty B.R. Turbot Wagons for use by London Underground Limited, TransPlant in support of its track replacement works. The modified wagons being designated Spoil & Ballast Wagons (Type SB).

The main scope of the modifications consists of an air brake modification, fitting of control wiring, body modifications and painting. The work being carried out by ADtranz. Vehicle Repairs Division of Crewe.

Leading Particulars

Vehicle Numbers SB 231 to SB 290

Payload Capacity: 34 tonnes

Tare Weight: 14 tonnes

Gross Weight: 48 tonnes

Design Criteria

Loading gauge LTE 49754

Operational Speed:

Maximum speed 48 kph (30 mph)
72 kph (45 mph)

Min horizontal curve

46m rad

Min vertical curve

200m rad

Max super elevation

150mm

Max cant gradient

1 in 150

Max incline gradient

1 in 29

Principal Dimensions

Length over extended buffers

10820mm

Length over headstock

9754mm

Length over deck between headstocks

9726mm

Width over deck:-

Over floor plates

2427mm

Inside door plates

2435mm

Bulk head height from deck

698mm

Bogie centres

6858mm

Deck height tare

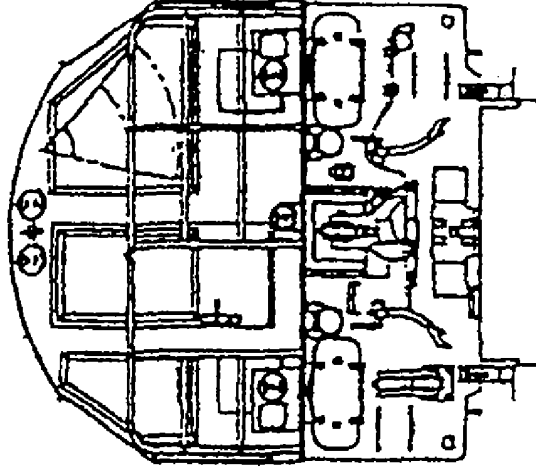
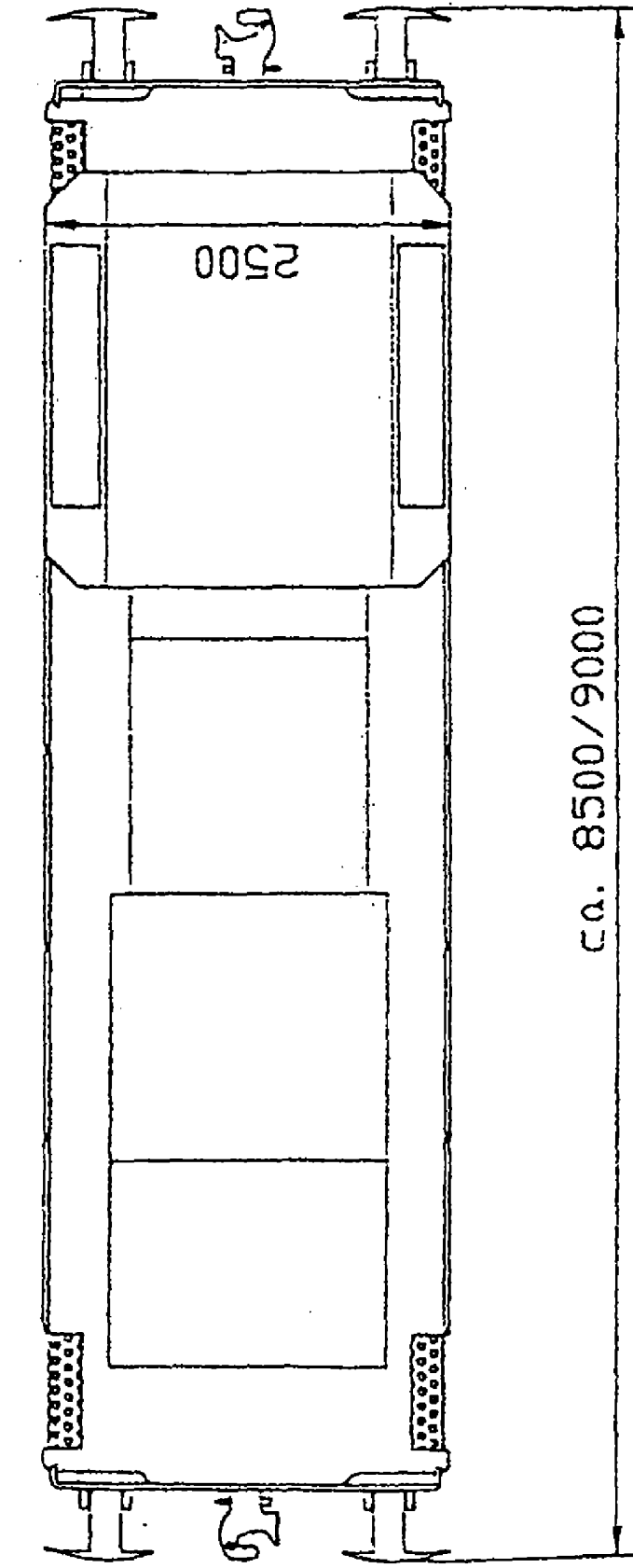
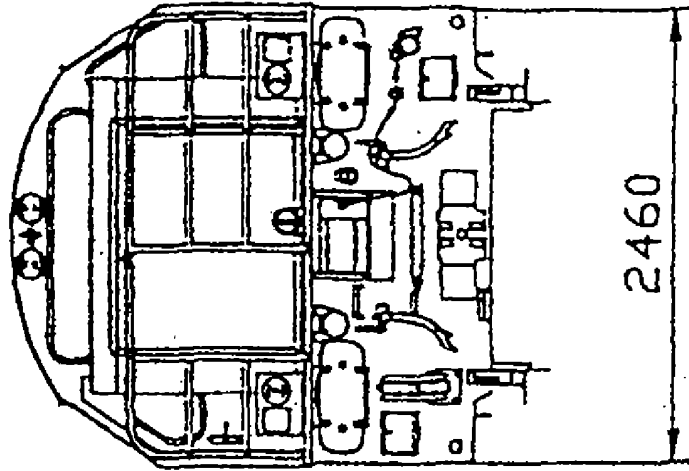
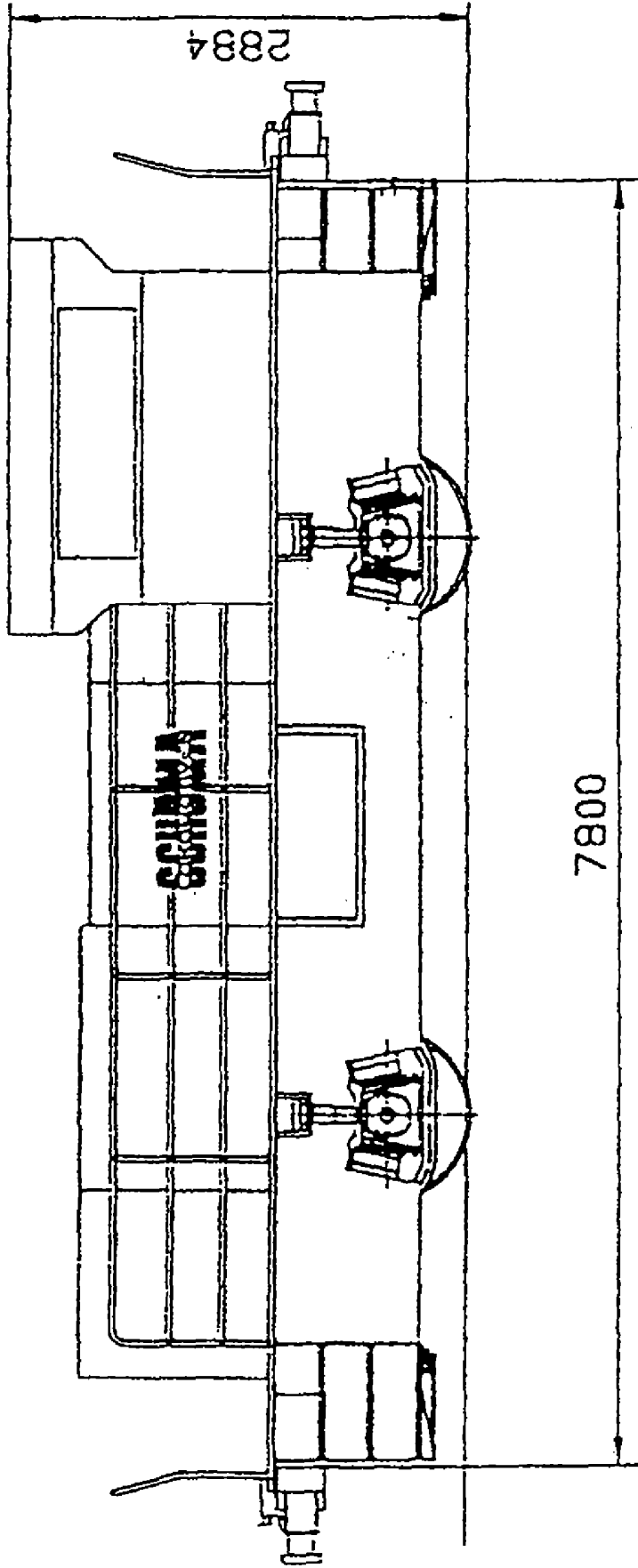
825mm

Height to CL buffing & drawgear tare

1035 ± 32mm

CFL 500-V-R

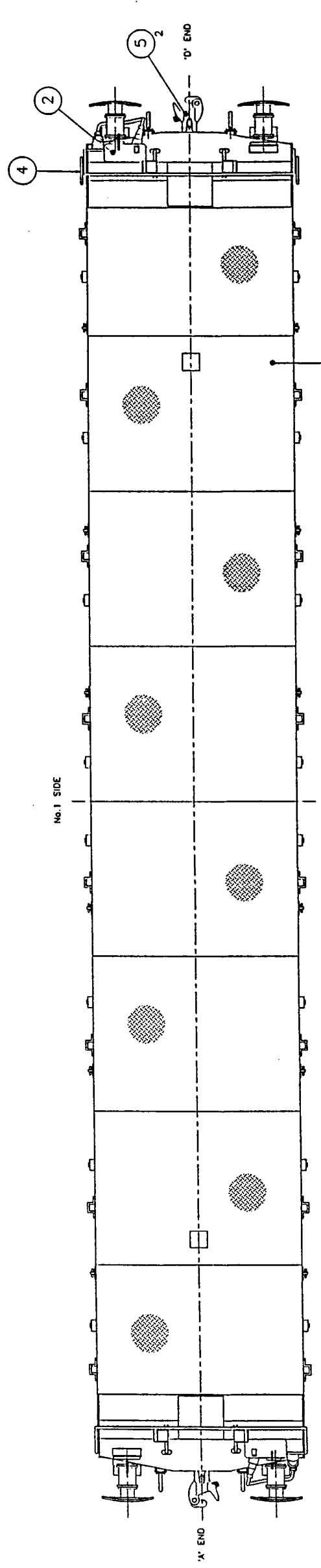
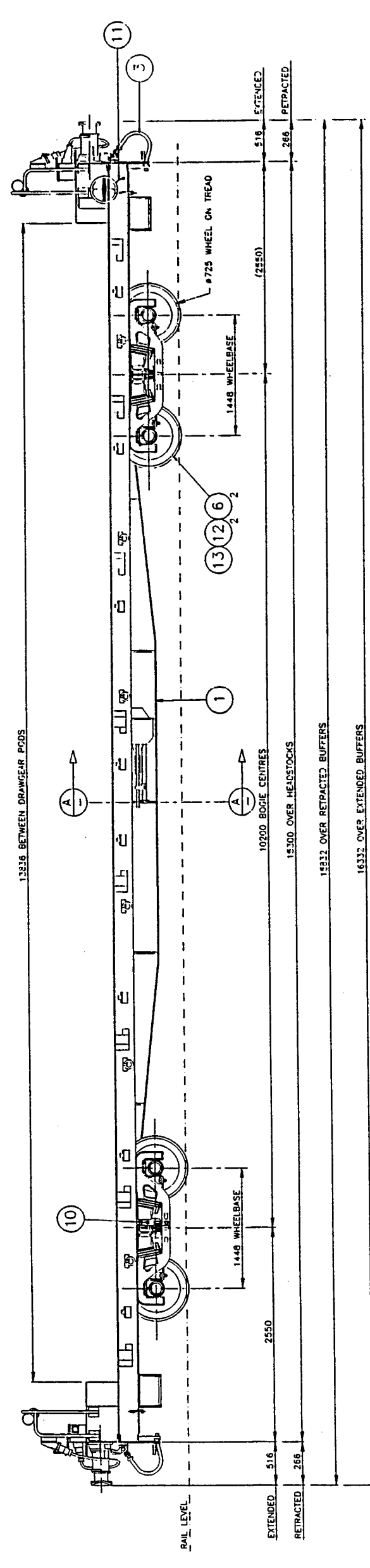
SCHINDLER



4.2. LOCOMOTIVE INTRODUCTION

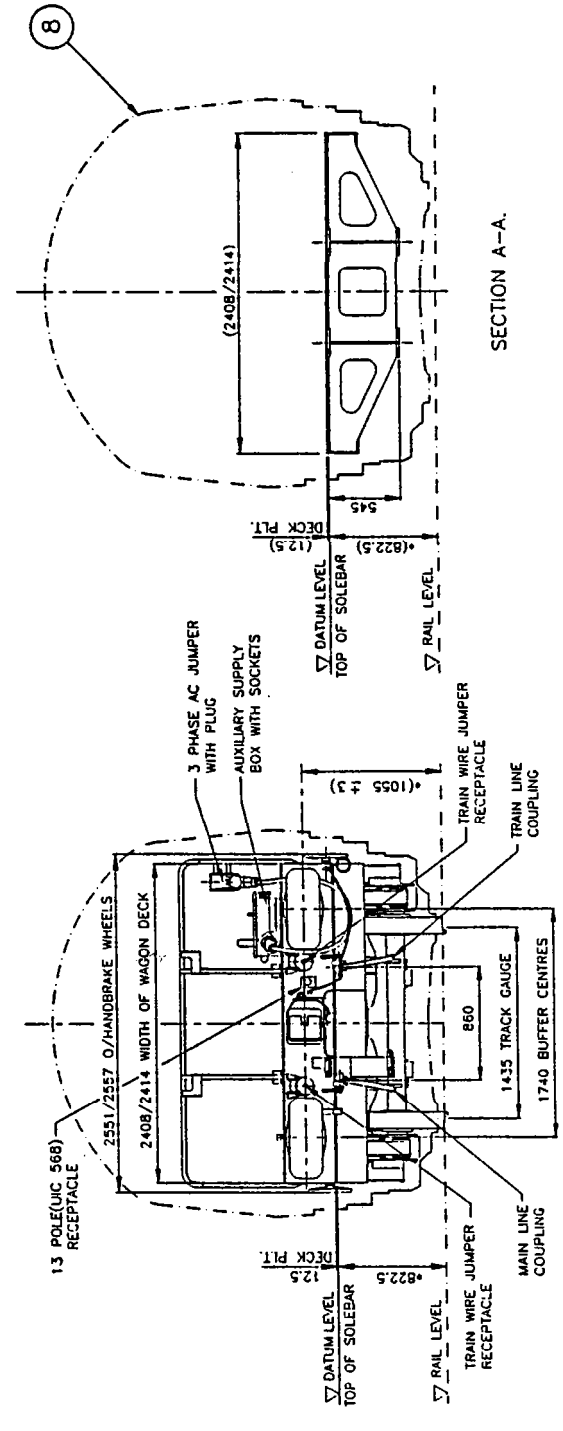
General Specification

MANUFACTURED BY	SCHOMA LOKOMOTIVEN. DIEPHOLZ, GERMANY.
DELIVERED TO LUL	FEBRUARY, 1996. (LOCO 1) (Fleet of 14)
LOCO TYPE	CFL 500VR CFL Cardan Fluid Locomotive 500 Horse Power (380 Kw) V Voith Transmission R Shunting Locomotive (Rangierloko)
WEIGHT	33.88 tonnes
LENGTH	8500 mm over buffers
BETWEEN AXLES	3500 mm
GAUGE	LUL tube profile
MAX SPEED	50 km/h
SLOW SPEED	1 to 4 km/h (adjustable 0.1 km/h increments)
PRIMARY POWER	6 cylinder, inline diesel engine. Detroit Diesel series 60
TRANSMISSION	Hydro-dynamic Gearbox Voith L3r4 U2
WHEEL SLIDE	Controlled via Krauss Maffei Control Computer
WHEEL SLIP	Controlled via Krauss Maffei Control Computer
BRAKING	2 system, Direct & Automatic (Davis Metcalfe) Deadman operation (vigilance delayed) 7 seconds to alarm, 5 seconds to brake (12 total) All Loco's now fitted with a Tripcock
Fluids	
ENGINE	40.5 Lts Engine Oil Rimula X15/40
VOITH TRANSMISSION	120 Lts Hydraulic Oil Tegula 32
AXLE GEARBOXES (diffs)	12 Lts Oil (per axle) Spirax 80W/90
COMPRESSOR	4 Lts Oil Corena P100
FUEL	600 Lts Greenergy City Diesel (Low Sulphur)
RADIATOR	85 Lts Water/Glycol (50/50)
WINDSCREEN WASHER	2 Lts Wash Solution
AIR CONDITIONING	2 Lts Water/Glycol (75/25)
AIR CONDITIONING	2.5 Kg HFC R407c



PRINCIPAL PARTICULARS

TARE WEIGHT	20 TONNES MAXIMUM
LOADING CAPACITY	30 TONNES EVENLY DISTRIBUTED 10 TONNES CONCENTRATED ON CENTRE 2.0m



* THESE HEIGHTS ARE MEASURED FROM TOP OF RUNNING RAIL WITH WAGON AT TARE CONDITION AND WITH NEW WHEELS.

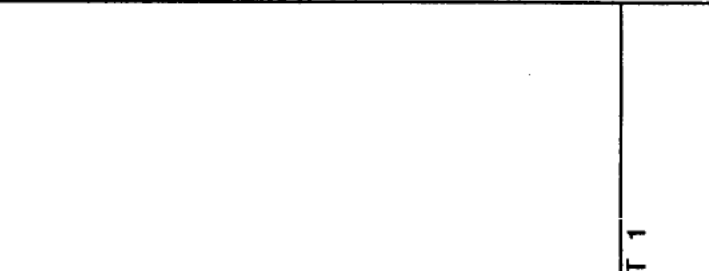
ITEM	DESCRIPTION	MAT'L	SPEC'N	REMARKS	WELL FLAT DRAIN WT. KG.	CIT. PER WAGON
13	EARTH BONDING			214/A/11/00/208		1
12	BOGIE/UNDERFRAME SHIMMING			214/A/02/00/244		2
11	SCREWBRAKE INDICATOR ARRGT.-FLAT			214/A/03/00/242		1
10	"VITA" CHANGE OVER VALVE			214/A/03/00/240		1
9	FLOOR PLATE ASSY & DETAIL			214/A/02/00/215		1
8	GAUGE & KINEMATIC PROFILE			214/A/05/00/200		1
7	POWER BRAKE ARRANGEMENT			214/A/03/00/200		2
6	BOGIE (FOWELL DUFFRYN)			SBA 40660		2
5	HEADSTOCK ARRANGEMENT			214/A/01/00/203		2
4	SCREWBRAKE ARRANGEMENT			214/A/03/00/203		1
3	BRAKE PIPING ARRANGEMENT			214/A/03/00/233. 214/A/03/00/234. 214/A/03/00/235. 214/A/03/00/236.		1
2	CONDUIT ARRANGEMENT			214/A/11/00/206		1
1	UNDERFRAME ARRANGEMENT			214/A/02/00/200. 214/A/02/00/201.		1

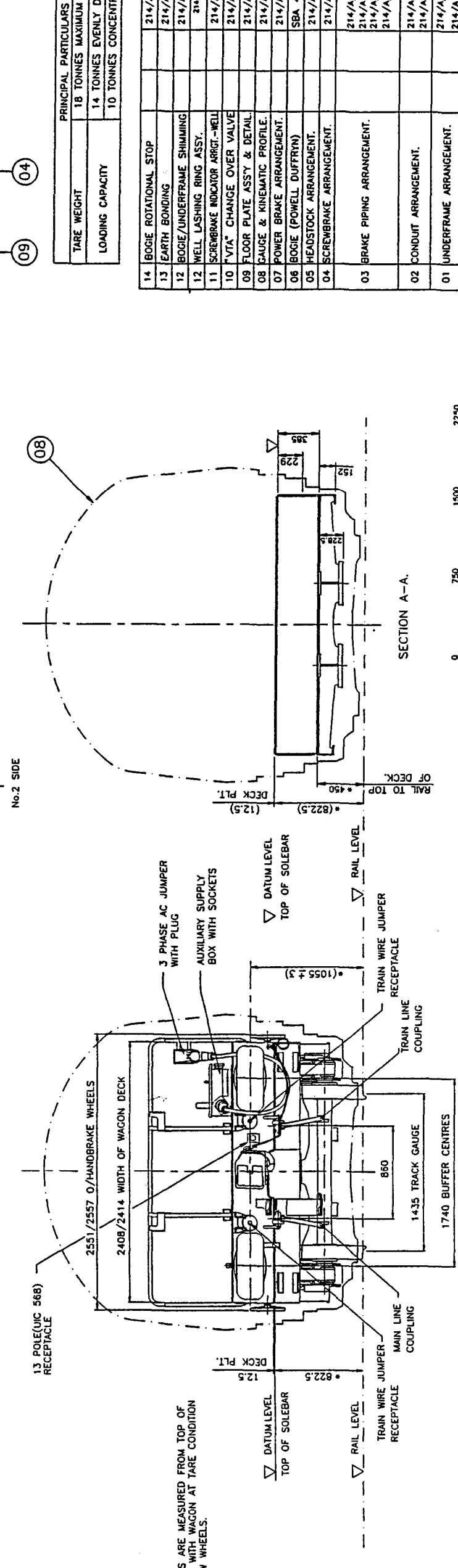
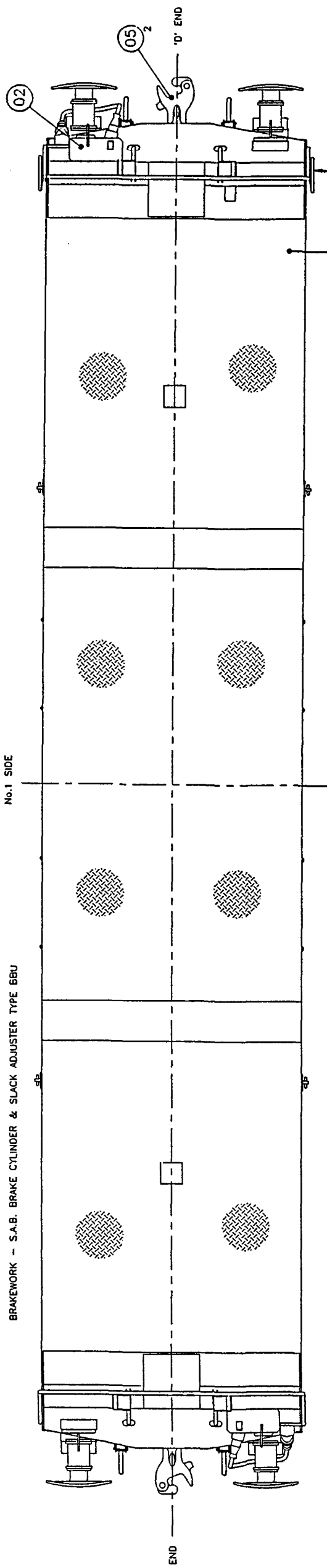
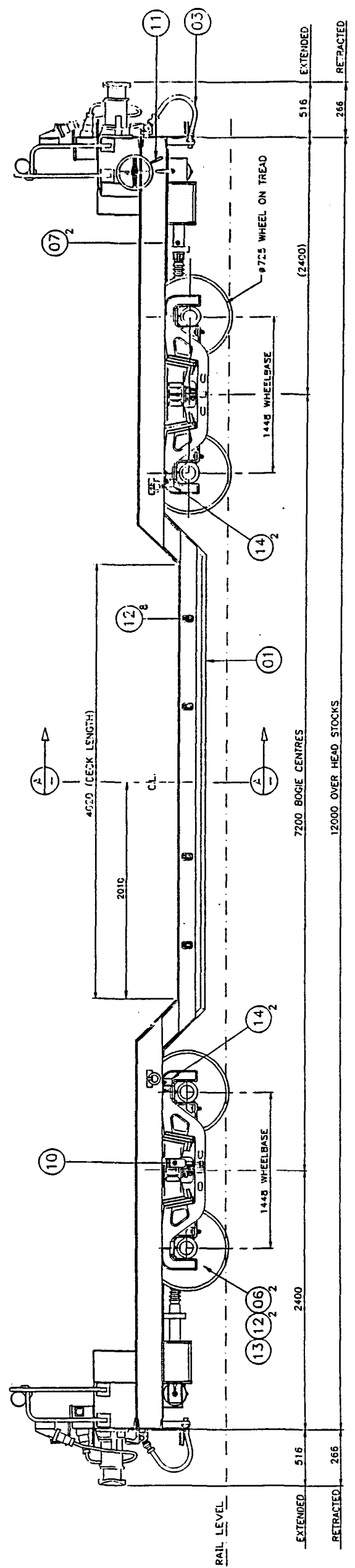
Jubilee Line Extension

GENERAL ARRANGEMENT FLAT WAGON

Scale	1:20	Date	7.1.94	Drawn	2024	Checked	
Author		By		App. No.		Date	
Description							
Rev		Date		App. No.		Date	

0 1000 2000 3000
 214/A/01/00/200
 214/A/01/00/200

DOC. NO. 93063 - OM / 0001	GENERAL SPECIFICATION OF THE WAGON	ISSUE 01
GENERAL DESCRIPTION		
The wagon is a general purpose flat deck wagon supported by two twin axle bogies. The vehicle has a 30 tonne distributed load capacity and 18.7 tonne tare weight.		
PRINCIPAL DIMENSIONS AND SETTINGS		
Length over headstocks	15300 mm	
Length over deck between headstocks	13836 mm	
Length over extended buffers	16332 mm	
Bogie Centres	10200 mm	
Deck height (tare condition and new wheels)	835 mm	
Height to C.L. buffing and drawgear tare	1055± 3 mm	
Loading gauge	LUL drg SK 12212	
Min horizontal curve	See section 5, page 14	
Min vertical curve	400m rad	
Max super elevation	150 mm	
Max cant gradient	1 in 29	
Service speed	30 mph	
Maximum speed	45 mph	
Regulator 'A' dimension	48 +0 - 4mm	
VTA Changeover setting	8 ±1mm	
Brake Block Clearance	6 +0 -1mm	
Brake Cylinder Pressure - Tare	2.55 bar	
Brake Cylinder Pressure - Laden	3.75 bar	
Wheel Profile	LUL Drg. 57933	
		
<p style="text-align: right;">JUBILEE LINE EXTENSION WORKS WAGON PART 1 SECTION 3.1, PAGE 2 ISSUE DATE: 4/95</p>		



PRINCIPAL PARTICULARS

TARE WEIGHT	18 TONNES MAXIMUM
LOADING CAPACITY	14 TONNES EVENLY DISTRIBUTED WITHIN WELL 10 TONNES CONCENTRATED ON CENTRE 2.0m


ITEM	DESCRIPTION	MATL	SPECN	REMARKS	WELL FLAT DRUM WT.
14	BOGIE ROTATIONAL STOP			214/A/02/00/248	4
13	EARTH BONDING			214/A/11/00/208	1
12	BOGIE/UNDERFRAME SHIMMING			214/A/02/00/243	2
12	WELL LASHING RING ASSY.			214/02/00/230	8
11	SCREWBRAKE INDICATOR ARGGT.-WELL			214/A/03/00/241	1
10	"VTA" CHANGE OVER VALVE			214/A/03/00/223	1
09	FLOOR PLATE ASSY & DETAIL			214/A/02/00/226	1
08	GAUGE & KINEMATIC PROFILE			214/A/03/00/203	1
07	POWER BRAKE ARRANGEMENT.			214/A/03/00/207	2
06	BOGIE (POWELL DUFFRYN)			SBA 40660	2
05	HEADSTOCK ARRANGEMENT.			214/A/01/00/206	2
04	SCREWBRAKE ARRANGEMENT.			214/A/03/00/227	1
03	BRAKE PIPING ARRANGEMENT.			214/A/03/00/221. 214/A/03/00/215. 214/A/03/00/214. 214/A/03/00/213.	1
02	CONDUIT ARRANGEMENT.			214/A/11/00/201. 214/A/11/00/200.	1
01	UNDERFRAME ARRANGEMENT.			214/A/02/00/217. 214/A/02/00/216.	1

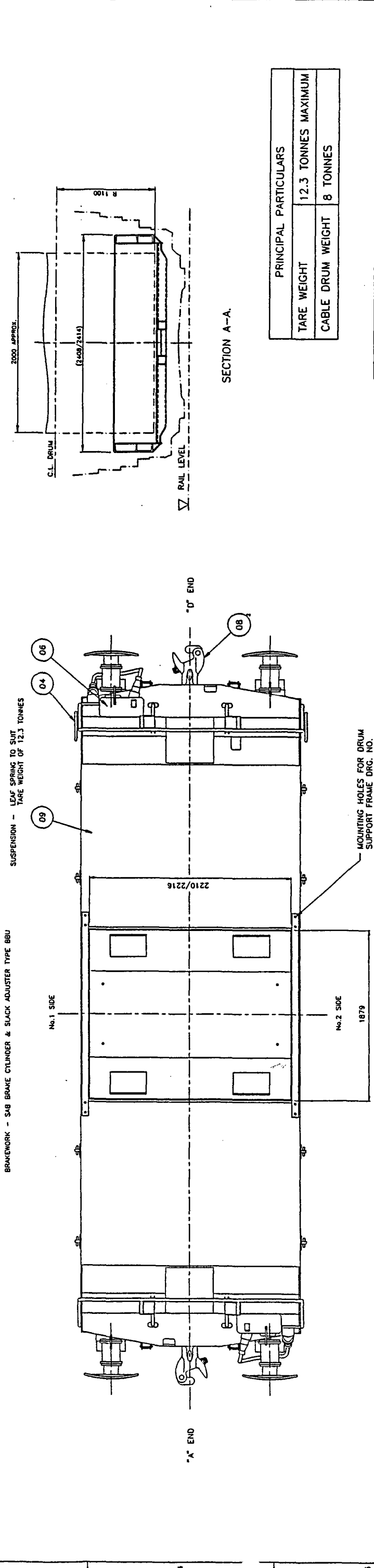
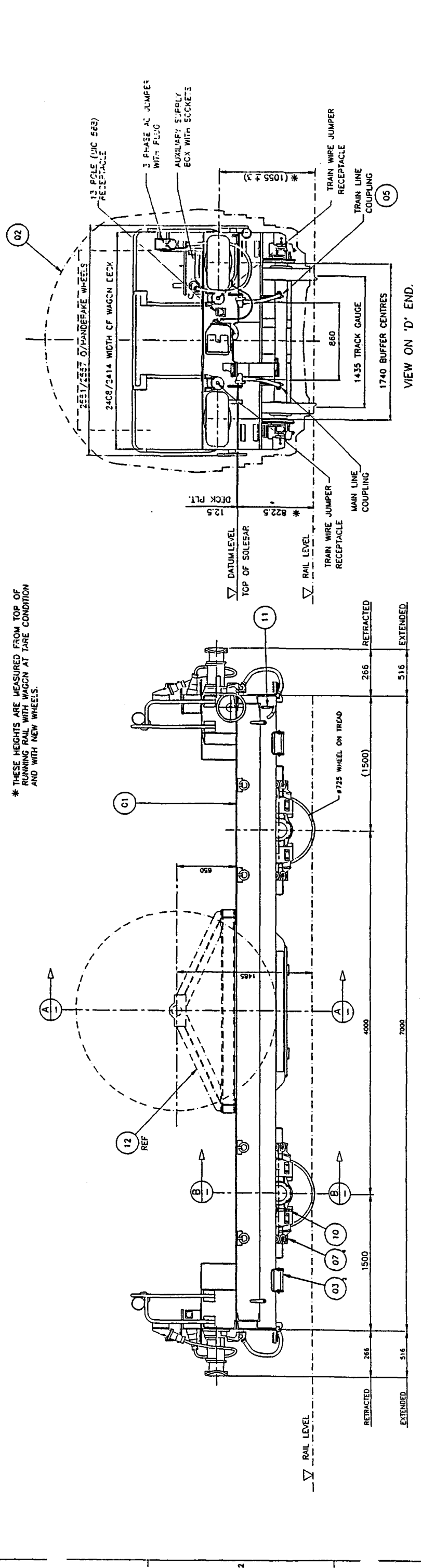
Jubilee Line Extension

Drawing No: 214/A/01/00/201
 Date: 1/16
 Scale: 1:10
 Author: G
 Checker: G
 Approver: G
 Project: Jubilee Line Extension

Rev.	Date	Description	By	Check	App.	Rev.	Date	Description

* THESE HEIGHTS ARE MEASURED FROM TOP OF RUNNING RAIL WITH WAGON AT TARE CONDITION AND WITH NEW WHEELS.

DOC. NO. 93064 - OM / 0001	GENERAL SPECIFICATION OF THE WAGON	ISSUE 01
GENERAL DESCRIPTION		
The wagon is a general purpose well wagon supported by two twin axle bogies. The vehicle has a 14 tonne distributed load capacity and 18.0 tonne tare weight.		
PRINCIPAL DIMENSIONS AND SETTINGS		
Length over headstocks	12000 mm	
Length over deck between headstocks	10536 mm	
Length over extended buffers	13032 mm	
Bogie Centres	7200 mm	
Deck height (tare condition and new wheels)	835 mm	
Well height (tare condition and new wheels)	450mm	
Height to C.L. buffing and drawgear tare	1055±3 mm	
Loading gauge	LUL drg SK 12212	
Min horizontal curve	See section 5, page 14	
Min vertical curve	400m rad	
Max super elevation	150 mm	
Max cant gradient	1 in 29	
Service speed	30 mph	
Maximum speed	45 mph	
Regulator 'A' dimension	14 +0 - 4mm	
VTA Changeover setting	4 ±1mm	
Brake Block Clearance	6 +0 -1mm	
Brake Cylinder Pressure - Tare	2.89 bar	
Brake Cylinder Pressure - Laden	3.75 bar	
Wheel Profile	LUL Drg. 57933	
		
JUBILEE LINE EXTENSION WORKS WAGON PART 1 SECTION 3.1, PAGE 2 ISSUE DATE: 4/95		



ITEM	DESCRIPTION	MATL	SPECN	REMARKS	WELL FLAT DRUM WT QTY. PER WAGON	KG.
12	DRUM SUPPORT FRAME				214/A/01/00/211	1
11	SCREWBRAKE INDICATOR ARRGT.				214/A/03/00/244	1
10	"VTA" CHANGE OVER VALVE				214/A/03/00/243	1
9	FLOORPLATE ASSEMBLY & DETAIL				214/A/02/00/233	1
8	HEADSTOCK ARRANGEMENT				214/A/01/00/207	2
7	SUSPENSION ARRANGEMENT				214/A/02/00/237	4
6	CONDUIT ARRANGEMENT				214/A/11/00/205	1
5	BRAKE PIPEWORK ARRANGEMENT				214/A/03/00/231	1
4	SCREWBRAKE ARRANGEMENT				214/A/03/00/229	1
3	POWER BRAKE ARRANGEMENT				214/A/03/00/210	2
2	GAUGE & KINEMATIC PROFILE				214/A/03/00/208	1
1	UNDERFRAME ARRANGEMENT				214/A/03/00/202	1

Jubilee Line Extension		GENERAL ARRANGEMENT ~ DRUM	
Scale	1:15	Date	7.1.94
Sheet	1 of 1	Drawn	SZM
Rev.		CD File Name	214/A/01/00/202
Rev.		Drawn	7.1.94
Rev.		Checked	7.1.94
Rev.		Approved	7.1.94
Rev.		Project No.	93065/01
Rev.		Project Name	Jubilee Line Extension
Rev.		Project Location	London Underground
Rev.		Project Reference	214/A/01/00/202

DOC. NO.
93065 - OM / 0001

GENERAL SPECIFICATION OF THE WAGON

ISSUE 01

GENERAL DESCRIPTION

The wagon is a cable drum wagon supported by two axles. The vehicle has an 8 tonne load capacity supported on a purpose built frame mounted onto the wagon underframe.

PRINCIPAL DIMENSIONS AND SETTINGS

Length over headstocks	7000 mm
Length over deck between headstocks	5536 mm
Length over extended buffers	8032 mm
Bogie Centres	7200 mm
Deck height (tare condition and new wheels)	835 mm
Height to C.L. buffing and drawgear tare	1055± 3 mm
Loading gauge	LUL drg SK 12212
Min horizontal curve	See section 5, page 14
Min vertical curve	400m rad
Max super elevation	150 mm
Max cant gradient	1 in 29
Service speed	30 mph
Maximum speed	45 mph
Regulator 'A' dimension	9 +0 - 4mm
VTA Changeover setting	7 ±1mm
Brake Block Clearance	6 +0 -1mm
Brake Cylinder Pressure - Tare	2.89 bar
Brake Cylinder Pressure - Laden	3.75 bar
Wheel Profile	LUL Drg. 57933



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