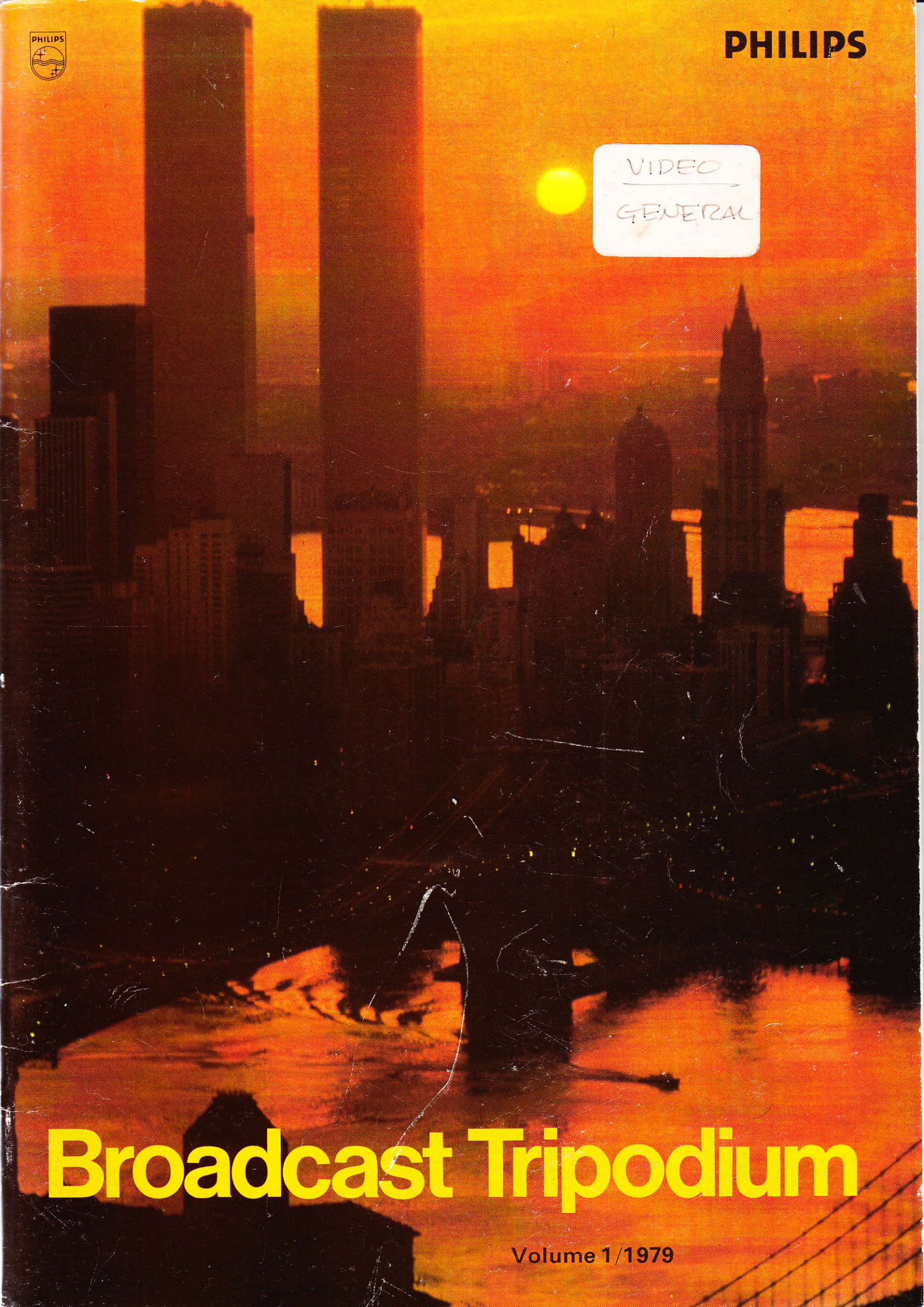
PHILIPS

PHILIPS

VIDEO
GENERAL



Broadcast Tripodium

Volume 1/1979

A new three camera OB production unit

General

An evaluation of customer needs has indicated that there is a requirement for a vehicle with more facilities than is possible with a small, two-camera vehicle but where the size of a four-camera vehicle would restrict its use on some outside broadcast sites. To fulfil this need Pye TVT have designed this 'mid-range' vehicle to accommodate three of the Philips LDK 5 range of colour cameras. A variety of camera combinations are possible within the range, either three LDK 5 triax cameras or three LDK 25 multicore cameras can be supplied. In addition the LDK 15L portable production camera, which is compatible with either the LDK 5 or 25, can be substituted for any of the larger cameras and operate from the same base station. Since the introduction of the LDK 14 camera in both portable and studio formats, and with its LDK 5 interface unit, the LDK 14 can also be used in this vehicle with the LDK 5 family of cameras from common base stations.

The design is based upon the Bedford KHL chassis having a permissible GVW of 14 tons which allows a generous safety factor against the actual GVW of 10·14 tons. The vehicle is robustly constructed to provide reliable performance under the arduous conditions sometimes encountered during outside broadcasts. It is available in either left hand drive or right hand drive versions; this is only a chassis change since the operational area has been designed with access from both sides.

The body is built by specialist coach-builders from light alloy materials to the high standards demanded by the broadcasting industry. All body frames and panelling are riveted using corrosion proof Monel metal. Other fixings are zinc chromate dipped to minimise electrolytic action between dissimilar metals.

The cavity between the inner and outer skins of the vehicle is filled with a combination of mineral wool and foamed polyurethane of flame retardent grades to provide maximum thermal and acoustical isolation from outside. This insulation is

continued across the roof, under the floor and within the entrance doors. Additional protection from direct sunlight under tropical conditions is provided by an air cavity between the roof of the vehicle and the roof platform.

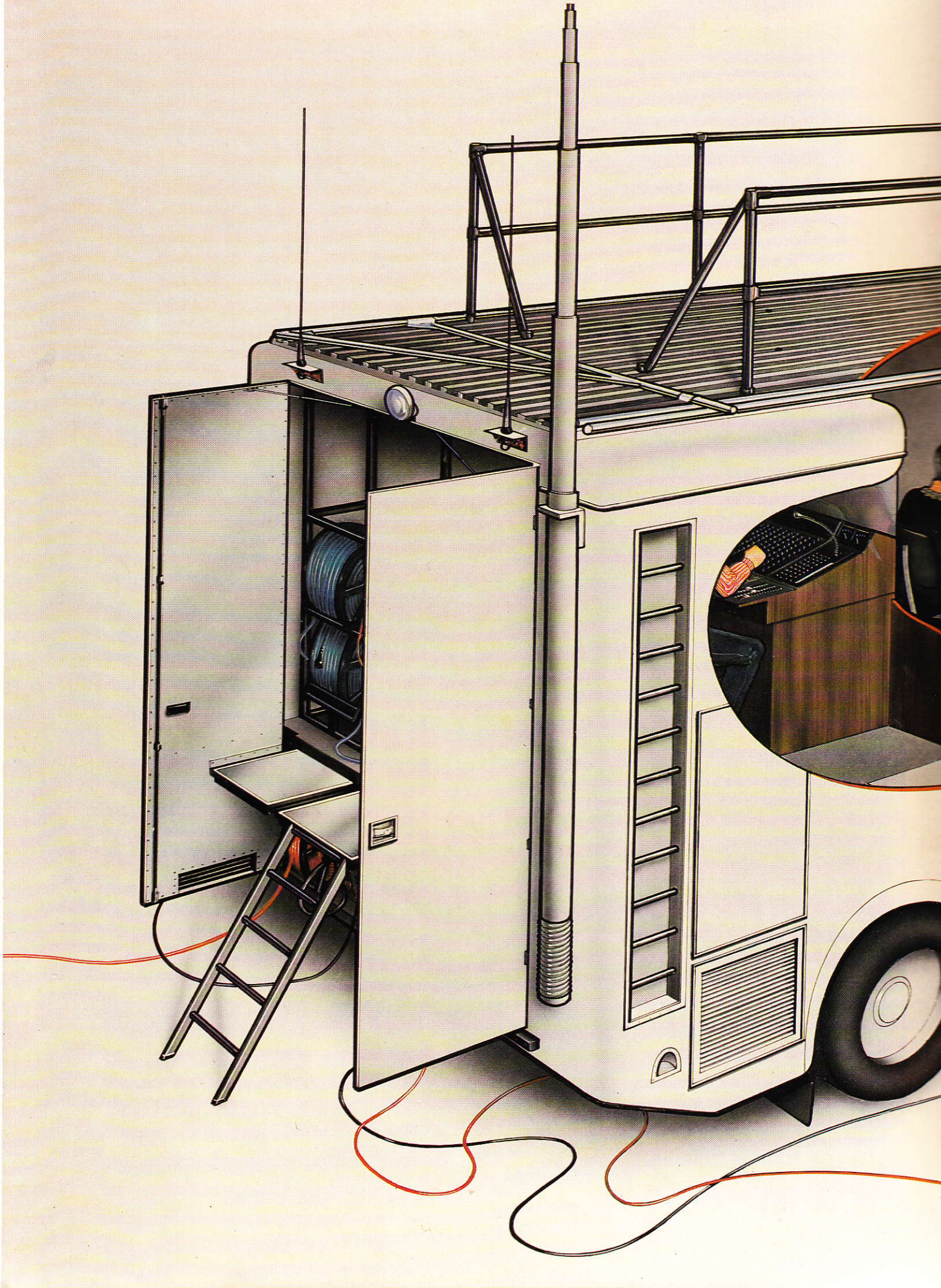
This roof platform extends for the whole length of the roof from behind the driver's cabin to the rear of the vehicle and is coated with a non-slip surface for safety. If required, an additional safety rail may be provided, which folds flat on to the platform for transit but is quickly erected to provide a safety barrier of 1066 mm (3 ft 6 in) height.

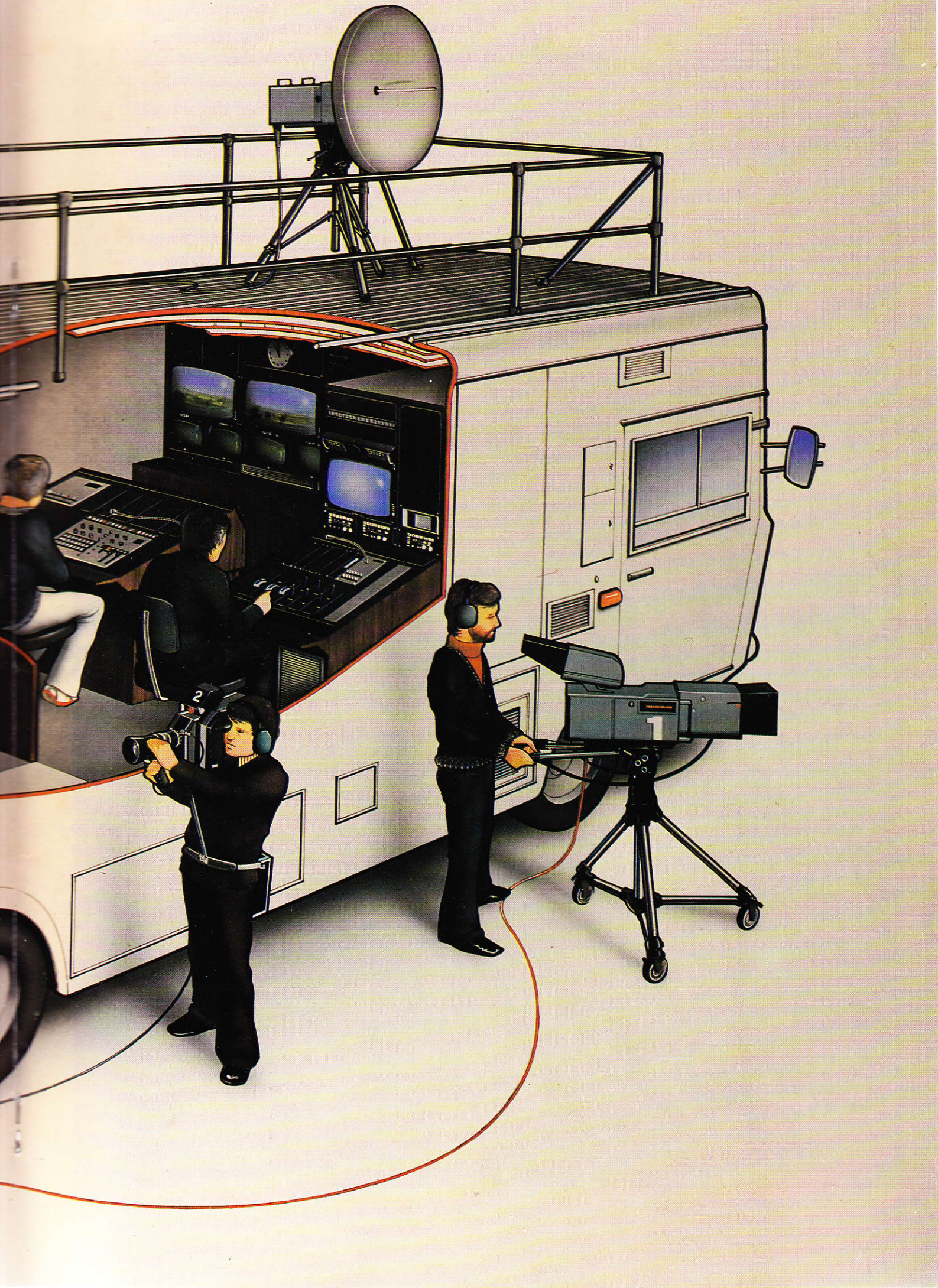
The roof platform is specially reinforced to accept two tripods. Each area includes three pads for the tripod legs and a central anchoring point, providing a secure operating position for both cameras and/or microwave antennae.

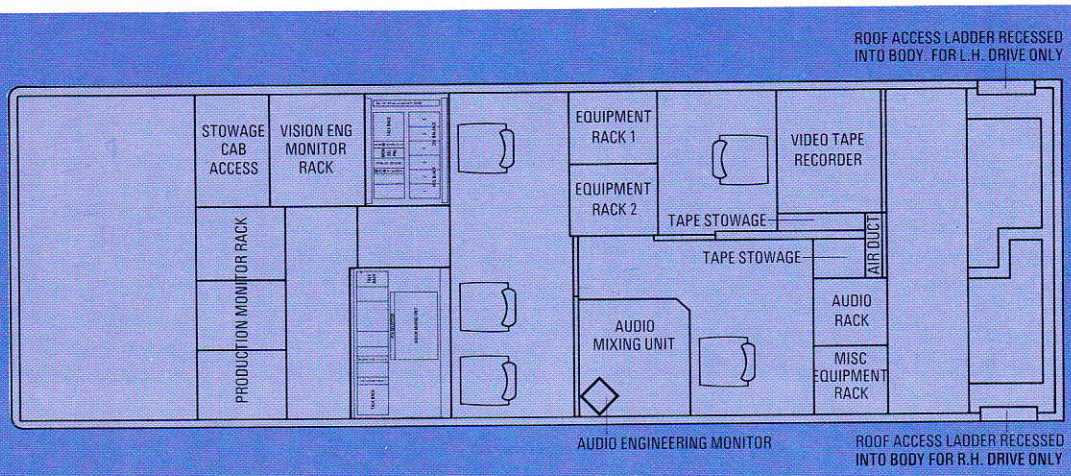
Other standard items on the roof are: cable tie-rails along the full length of each side of the platform; two antenna masts which are stowed alongside the tie-rails; and an equipment hoist which is fitted into a socket on the rear of the vehicle during use or stowed flat on the roof. Access to the roof is provided by a permanently mounted ladder on the kerb side of the vehicle which folds into a recess in the side of the vehicle during transit.

To steady the vehicle on its suspension whilst at an outside broadcast site, four manually operated stabilising jacks are fitted near to the four corners of the vehicle. This is an important feature when the roof platform is being used.

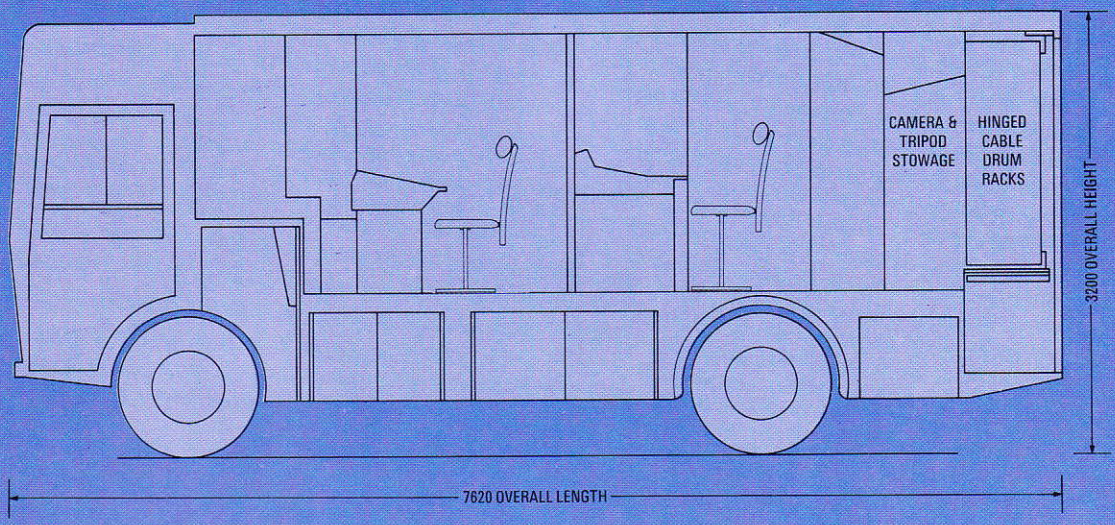
The vehicle has many doors to allow quick and easy movement of the crew. There are four doors to the operational

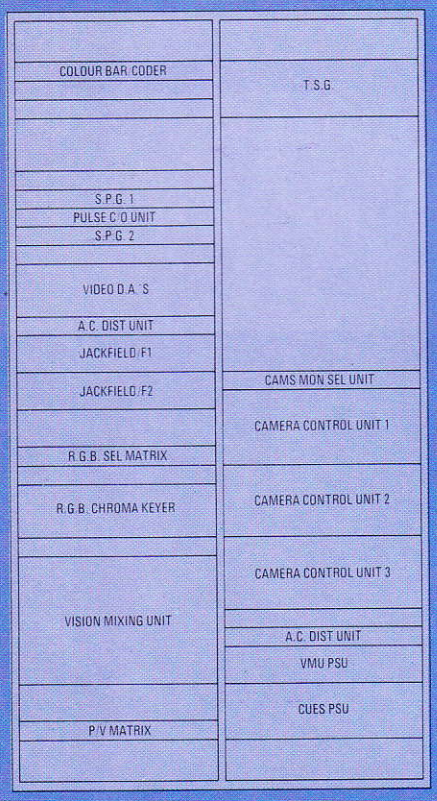




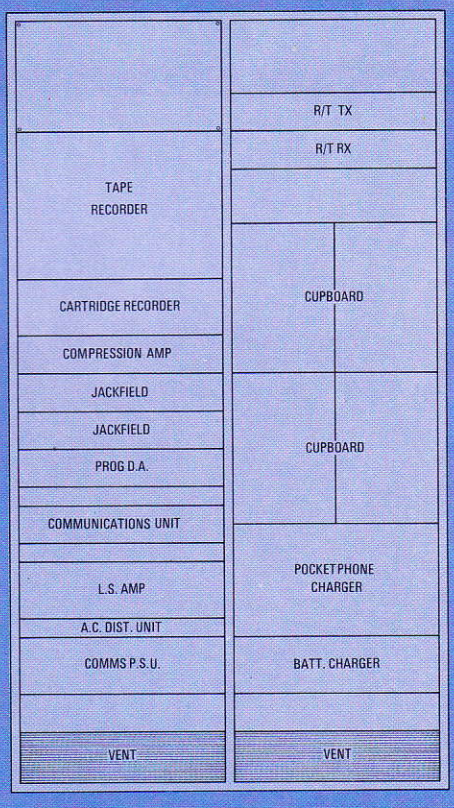


LAYOUT OF THREE CAMERA VEHICLE





VISION EQUIPMENT RACK LAYOUT



AUDIO EQUIPMENT RACK LAYOUT

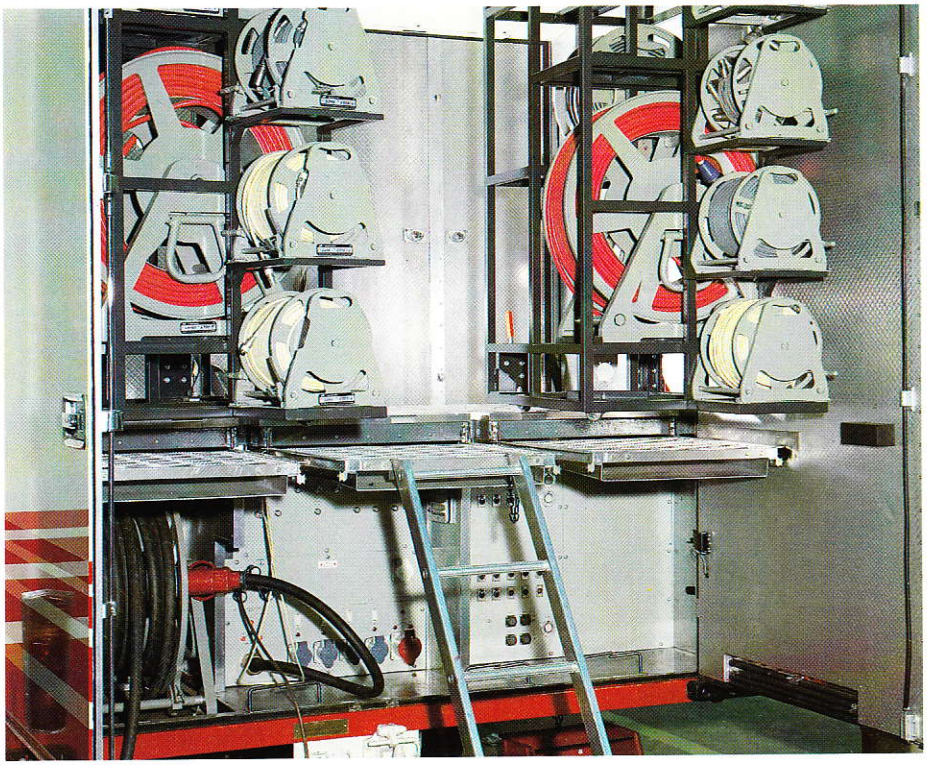
operating conditions for the crew. Communicating doors provide easy access from one room to another while providing quiet conditions when required. Room lighting facilities similar to those in production are also provided as are local air-conditioning controls.
The rear of the vehicle is mainly occupied by two racks for cable drum stowage, these carry the camera, commentators, audio and video cables and are designed to hinge outward for maintenance access to the rear of the audio equipment racks and the video tape recorder. Between the cable drum racks and the audio and VTR rooms is a full width stowage area for cameras and tripods. Doors on either side of the vehicle provide access to this stowage area.

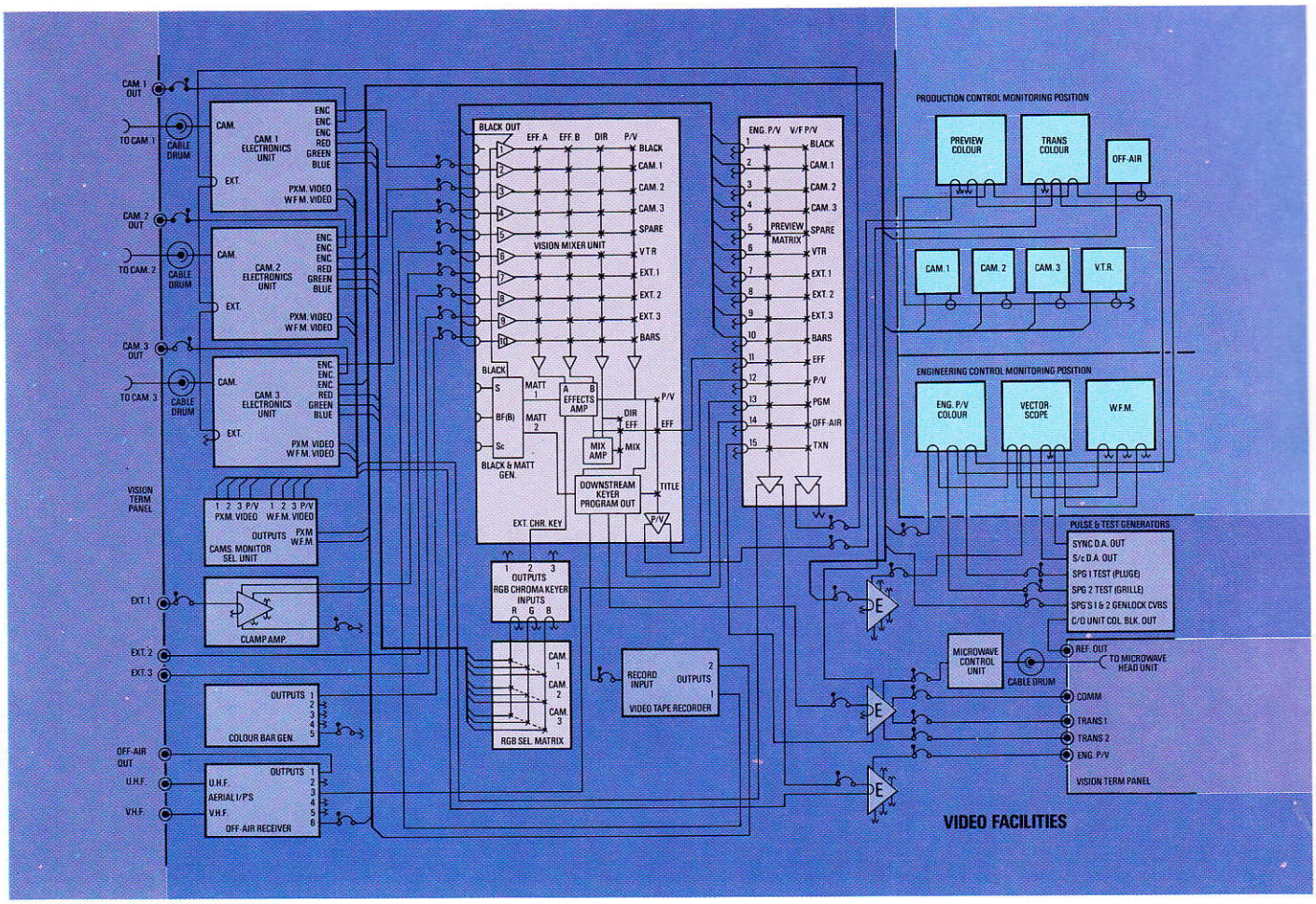
Video facilities

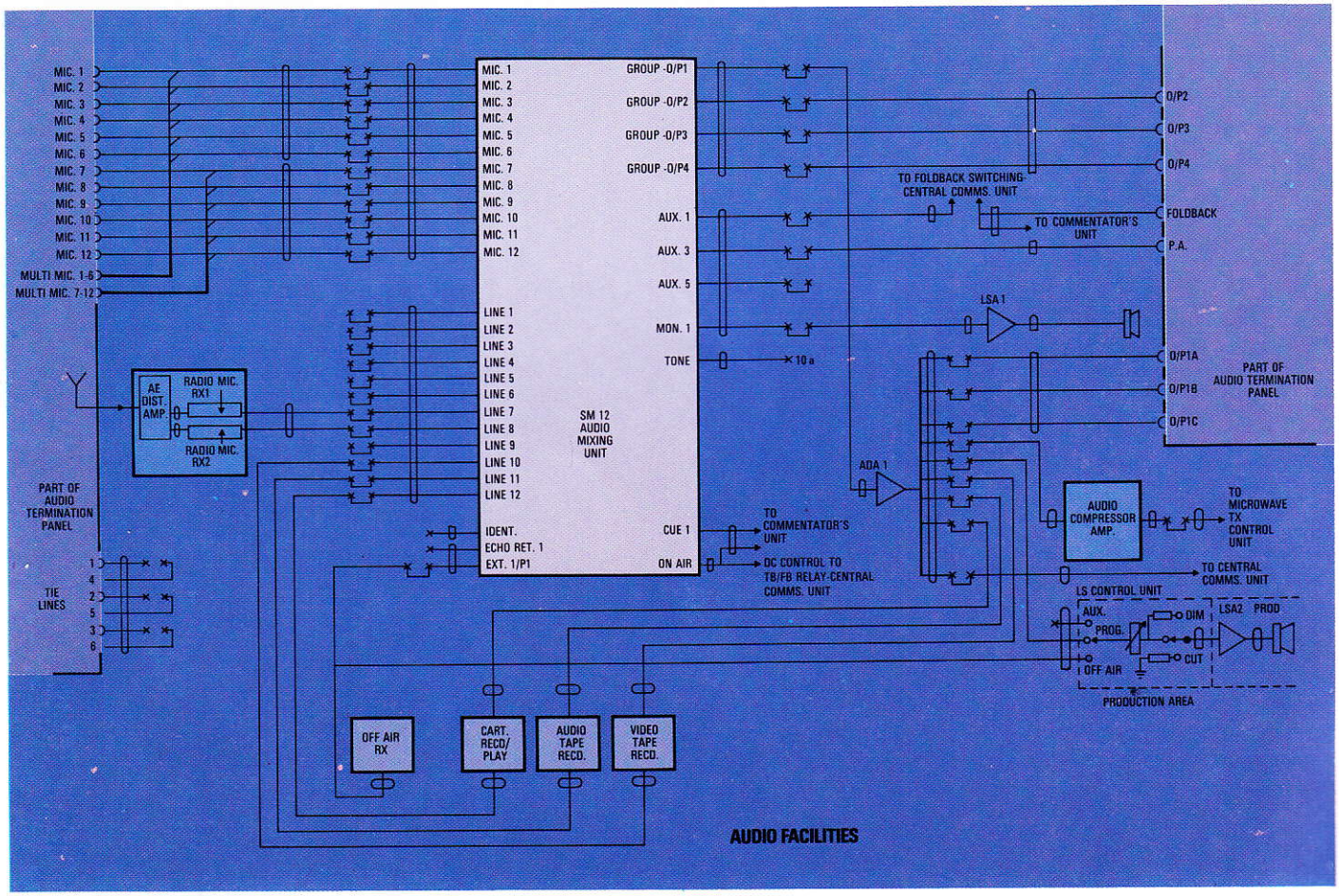
This vehicle is designed to take full advantage of the flexibility of operation provided by the Philips family of cameras. Not only are the advanced facilities offered by the camera range ideally suited to outside broadcast work, but the interchangeability of different camera heads from common base stations enables camera heads to be chosen to best suit any particular OB assignment with the minimum of prior notice.
The basic vision facilities are shown in the block diagram overleaf. All picture sources are routed to a CDL VS14R 10-input video switcher, having full mix and wipe facilities and a down-stream keyer for adding captions. An optional RGB chroma keyer may be added when the LDK 25 or LDK 15L/25 versions of the camera are selected.
Full monitoring facilities are provided and a variety of options, such as caption camera, video tape recorder and microwave link may be added to suit varying requirements.

Audio facilities

The SM 12, 12-channel audio mixing unit is the centre of the audio system. Each input channel has one microphone level and one high-level input plus full phasing, sensitivity and equalisation facilities. In addition, each channel has access to any three of six auxiliary busbars.
All the microphone inputs are available on the audio termination panel as single inputs or as 2 × 6 way multi-microphone inputs. These are routed via the patch panel to the audio mixer allowing full flexibility of operation. The channel high-level inputs are all available at the patch panel and are normalised to the audio tape recorder, video tape recorder, cassette recorder and the high-level microphone lines from the LDK 5 when these cameras are selected.
The outputs of the input modules are routed to a four group output system; full cross-assignment of the groups is available on the group/monitor modules. Peak programme metering (PPM) or volume unit (VU) metering is available together with other options (such as phantom powering on the microphone lines for capacitor microphones) are available on the audio mixing unit.
The programme sound is monitored on a high-quality loudspeaker in the sound room and is repeated on a check monitor loudspeaker in the production room.
The audio system may be expanded by selecting from a series of available options to include a reverberation unit, a compression amplifier, reel-to-reel audio tape recorder, cassette tape recorder and a selection of microphones, including radio microphones.




CAM. 1 OUT
TO CAM. 1
CABLE DRUM
CAM. 1 ELECTRONICS UNIT
CAM. 2 OUT
TO CAM. 2
CAM. 2 ELECTRONICS UNIT
CAM. 3 OUT
TO CAM. 3
CAM. 3 ELECTRONICS UNIT
ENC.
RED
GREEN
BLUE
PXM. VIDEO
W.F.M. VIDEO
EXT.
VISION TERM. PANEL
CAMS. MONITOR SEL. UNIT
OUTPUTS PXM. W.F.M.
EXT. 1
EXT. 2
EXT. 3
CLAMP AMP.
COLOUR BAR GEN.
OFF-AIR OUT
U.H.F.
V.H.F.
AERIAL I/PS
OFF-AIR RECEIVER
BLACK OUT
EFF. A
EFF. B
DIR
P/V
VISION MIXER UNIT
BLACK
CAM. 1
CAM. 2
CAM. 3
SPARE
V.T.R.
EXT. 1
EXT. 2
EXT. 3
BARS
MATT 1
MATT 2
A B EFFECTS AMP.
DIR EFF
EFF
MIX AMP.
MIX
BLACK & MATT GEN.
DOWNSTREAM KEYER PROGRAM OUT
TITLE
EXT. CHR. KEY
OUTPUTS RGB CHROMA KEYER INPUTS R G B
RGB SEL. MATRIX
RECORD INPUT
OUTPUTS
VIDEO TAPE RECORDER
ENG. P/V
W/F P/V
PREVIEW MATRIX
PGM
OFF-AIR
TXN
PRODUCTION CONTROL MONITORING POSITION
PREVIEW COLOUR
TRANS COLOUR
OFF-AIR
ENGINEERING CONTROL MONITORING POSITION
ENG. P/V COLOUR
VECTOR-SCOPE
W.F.M.
PULSE & TEST GENERATORS
SYNC D.A. OUT
S/c D.A. OUT
SPG 1 TEST (PLUGE)
SPG 2 TEST (GRILLE)
SPG S1 & 2 GENLOCK CVBS
C/O UNIT COL. BLK. OUT
MICROWAVE CONTROL UNIT
CABLE DRUM
REF. OUT
TO MICROWAVE HEAD UNIT
COMM
TRANS 1
TRANS 2
ENG. P/V
VISION TERM PANEL
VIDEO FACILITIES


MIC. 1
MIC. 2
MIC. 3
MIC. 4
MIC. 5
MIC. 6
MIC. 7
MIC. 8
MIC. 9
MIC. 10
MIC. 11
MIC. 12
MULTI MIC. 1-6
MULTI MIC. 7-12
GROUP -O/P1
GROUP -O/P2
GROUP -O/P3
GROUP -O/P4
AUX. 1
AUX. 3
AUX. 5
MON. 1
TONE
10 a
LINE 1
LINE 2
LINE 3
LINE 4
LINE 5
LINE 6
LINE 7
LINE 8
LINE 9
LINE 10
LINE 11
LINE 12
SM 12 AUDIO MIXING UNIT
IDENT.
ECHO RET. 1
EXT. 1/P1
CUE 1
ON AIR
O/P2
O/P3
O/P4
FOLDBACK
P.A.
TO FOLDBACK SWITCHING CENTRAL COMMS. UNIT
TO COMMENTATOR'S UNIT
LSA 1
O/P1A
O/P1B
O/P1C
PART OF AUDIO TERMINATION PANEL
AE DIST. AMP.
RADIO MIC. RX1
RADIO MIC. RX2
PART OF AUDIO TERMINATION PANEL
TIE LINES
ADA 1
TO COMMENTATOR'S UNIT
DC CONTROL TO TB/FB RELAY-CENTRAL COMMS. UNIT
AUDIO COMPRESSOR AMP.
TO MICROWAVE TX CONTROL UNIT
TO CENTRAL COMMS. UNIT
LS CONTROL UNIT
AUX.
PROG.
OFF AIR
DIM
CUT
LSA2
PROD
PRODUCTION AREA
OFF AIR RX
CART. RECD/ PLAY
AUDIO TAPE RECD.
VIDEO TAPE RECD.
AUDIO FACILITIES

Communications facilities

The Pye TVT TS 20 communications system is the basis of intercommunication within the outside broadcast vehicle. The centre of this system is the Central Communications Unit which provides the switching matrix and amplifiers to interconnect all members of the crew, cameraman and commentators via a four wire, selectable talkback network. Programme sound and producer's talkback is constantly available at all stations. The communications network may be expanded to include remote stations, a VTR van or microphone boom operator. Further options include integrating radio telephones into the system for communication back to base, or for communication to the field crew via hand-held radio telephones.

Power

Power is connected to the vehicle via a single 30 metre cable which can be supplied as either three-phase or single-phase. The input connector is provided with two sets of monitoring neons to warn of any reversed (live/neutral) connections before the vehicle is switched on; one set is located on the termination panel adjacent to the input connector, the second on the main power distribution and metering panel within the vehicle.

A main, current sensing, earth leakage circuit breaker protects the whole vehicle from earth fault and over current conditions. From this circuit breaker the supply is distributed via sub-circuit breakers to the various equipment within the vehicle. Full monitoring of input voltage, current and frequency is provided on a meter display panel which is located at the top of the main distribution unit.

All technical apparatus is normally supplied with stabilised power from fast-acting automatic voltage regulators; but if a fault should occur in any regulator it may be by-passed by a switch on the control panel.

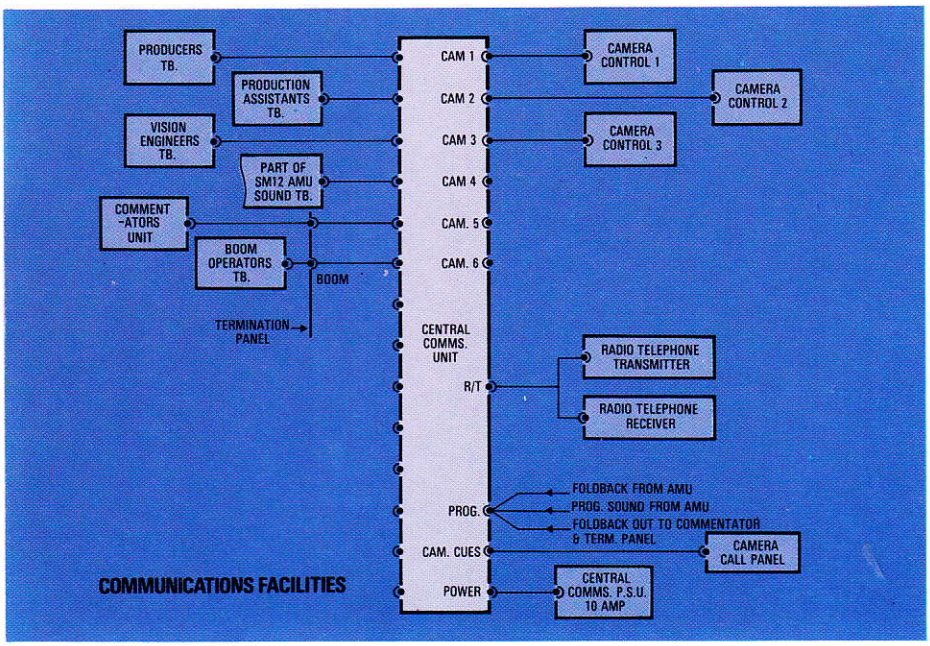
Lighting of all lockers and external doors is by 24 Vd.c. lamps controlled by time switches. This prevents the lamps being left on for long periods which would cause undue battery discharge.

Similarly the emergency lighting within the vehicle automatically switches on in the event of power failure. This emergency lighting is controlled by an electronic 30 minute time relay to prevent excessive battery drain. If required the 30 minute cycle may be repeated any number of times by simply pushing the re-set button on the distribution panel. The emergency sequence is automatically re-set to the beginning of its cycle as soon as mains power is restored.

Other facilities

Independent power sources may be supplied, if required, in the form of diesel alternators with a silencing enclosure, either built into a separate vehicle or as a trailer. These are designed to provide a noise level not greater than 60 dBA at 10 metres distance from the generator and may be remotely controlled from within the outside broadcast vehicle.

A support vehicle, based on the Bedford CF is also available, supplied with a selection of retaining bars and straps and built-in anchoring strips for carrying the many miscellaneous items required on an outside broadcast.



Overall Video Characteristics

from the input of the Video Mixing Unit to the output at the Termination Panel

	Typical	Worst Path
K rating with 100 nanosecond pulse	±2%	±2·5%
K rating of 50 Hz response	±0·75%	±1%
Differential gain – measured at 4·43 mHz	±2%	±2·5%
Chrominance/Luminance gain inequality	±1·5°	±2·5°
Chrominance/Luminance delay inequality	±10 ns	±15 ns
Crosstalk 0 to 5 mHz	56 dB	53 dB
Signal to unweight noise ratio – 0·5 mHz to 5 mHz	better than 60 dB	

Overall audio characteristics

from microphone input of Audio Mixing Unit to the output at the Termination Panel

Frequency response – 30 Hz to 15 kHz: ±2 dB

Maximum gain – with no equalisation: greater than 94 dB

Crosstalk: better than 70 dB

Harmonic distortion at +20 dBm – 30 Hz to 15 kHz: less than 1%

Noise – equivalent noise at microphone input: −120 dBm

Power requirements

Input supply: 380/220 V or 415/240 V +7·5% −17·5%, 3 phase, 50 Hz/60 Hz

Power consumption (Nominal): 15 kVA

(Maximum): 20 kVA

External supply available for distribution from the termination panel: 20 kVA

Specification

Vehicle details

Chassis type: Bedford KHL with power assisted steering

Overall length: 7·70 m (25 ft 3 in)

Overall width: 2·5 m (8 ft 2·5 in)

Overall height: 3·3 m (10 ft 4 in)

Wheelbase: 4·14 m (13 ft 7 in)

Gross vehicle weight: 10·3 tonnes (10·14 tons)

Engine: 7·634 litres (466 cu in)

Diesel Fuel tank: 205 litres (45 gallons, Imperial)

Maximum climb gradient: 1 :5·6 (1 :5·8 stop & start on hill)

Maximum speed – on level ground: 80 k.p.h. (50 m.p.h.)