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Lake Buena Vista, Florida
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Excerpts From
Operating Instruction Manual
Provided by
Bombardier Mass Transit Division
(Monorail Train Manufacture)

WED TRANSPORTATION SYSTEMS, INC.
MARK VI MONORAIL TRAINS

OPERATING INSTRUCTIONS MANUAL

Bombardier Inc.
Mass Transit Division

WED TRANSPORTATION SYSTEMS, INC.
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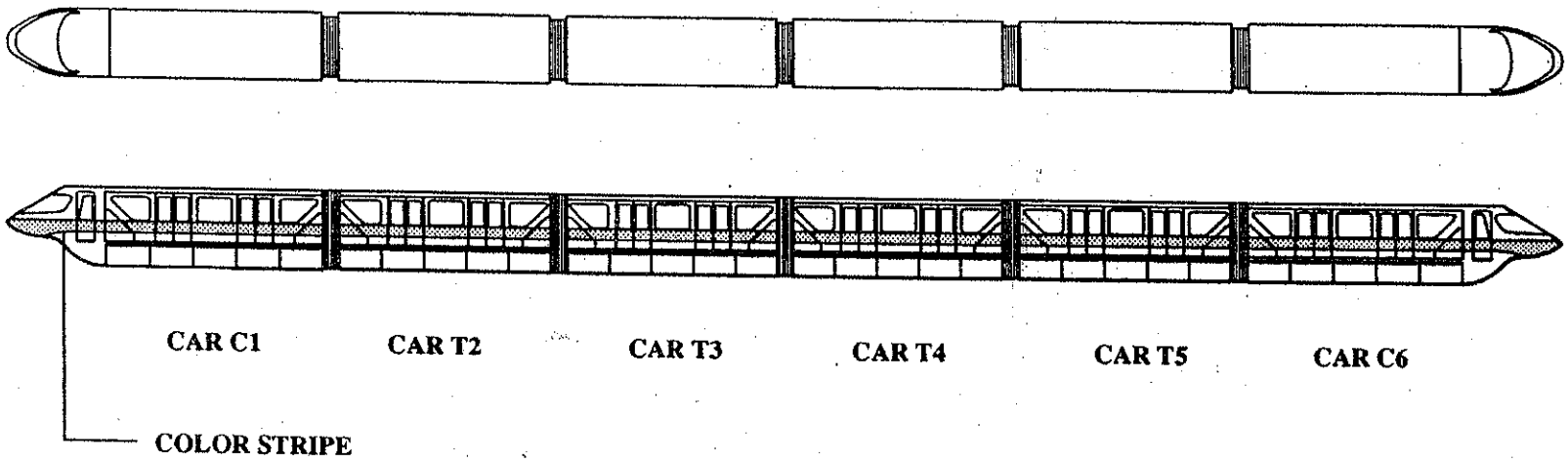
OPERATING INSTRUCTIONS MANUAL

FRONT MATTER

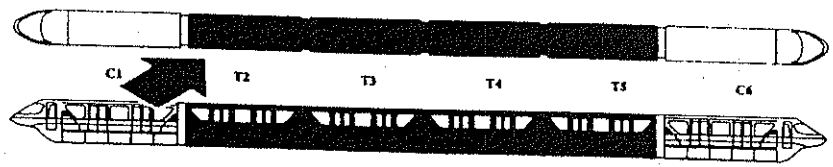
Bombardier Inc.
Mass Transit Division

MARK VI MONORAIL TRAIN



TRAIN COLOR	DELIVERY SEQUENCE
Blue	1
Gold	2
Purple	3
Black	4
Pink	5
Orange	6
Green	7
Yellow	8
Red	9
Silver	10
Lime	11
Coral	12

Train Color and Delivery Sequence



1. Carbody Shell.
2. Carbody Floor
3. U-Channel Mount (W/ Rubber Isolator)
4. End Truss Assembly (Round Tubing)
5. Side Truss Assembly (Square Tubing)
6. Female End Hanger
7. Removable Side Post
8. Side Truss Top Rail (W/ Neoprene Strip)
9. Male End Hanger

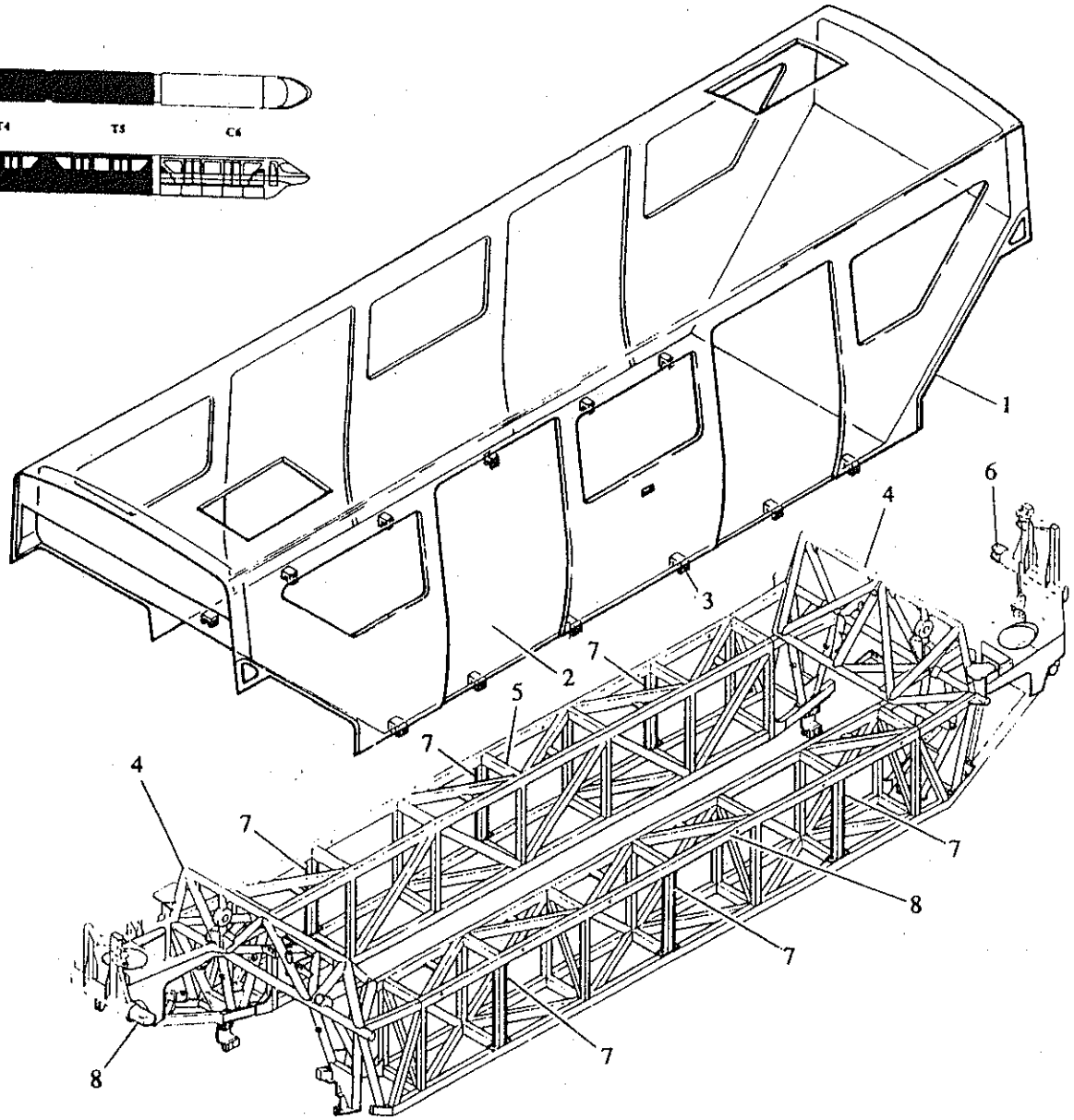
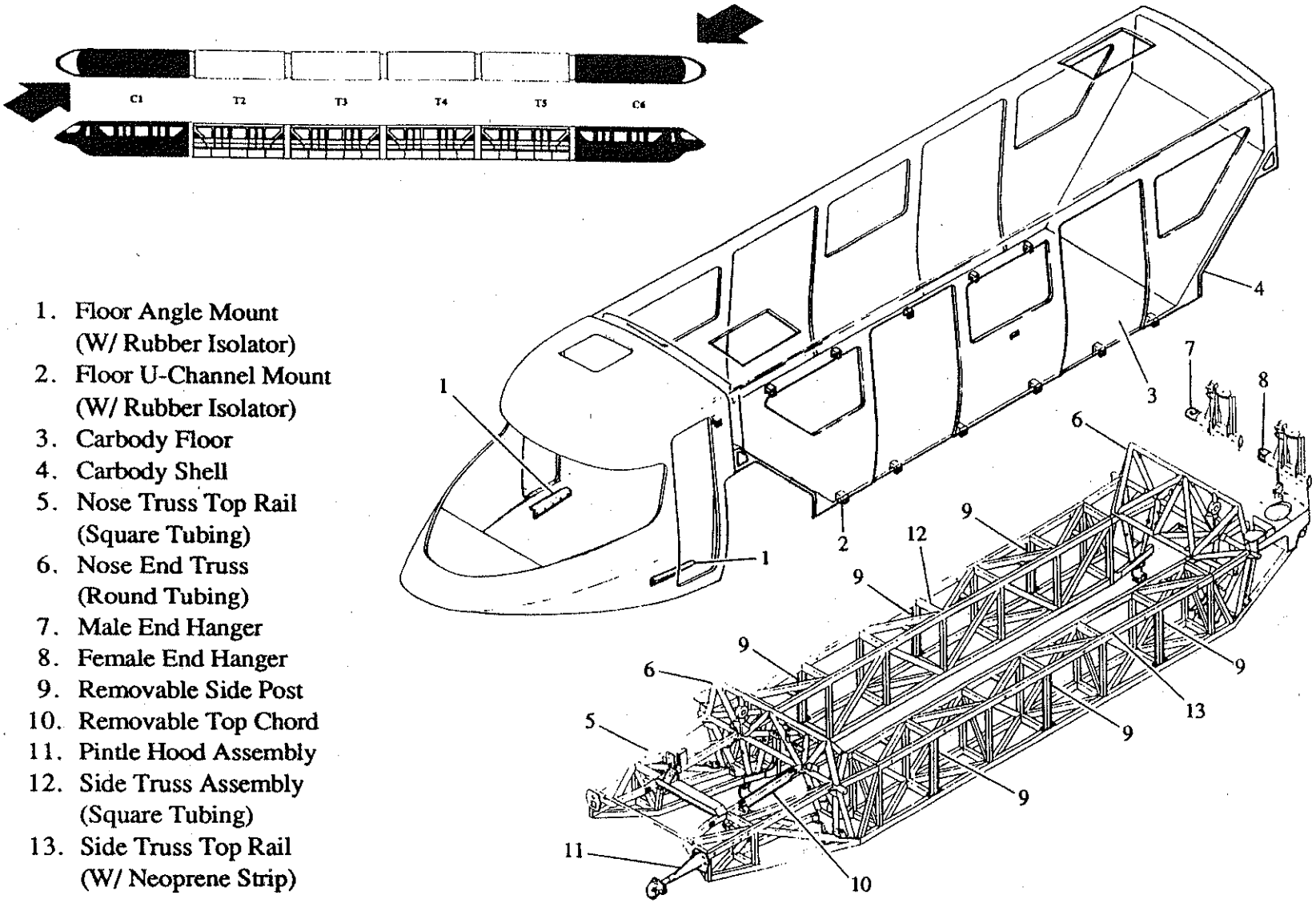
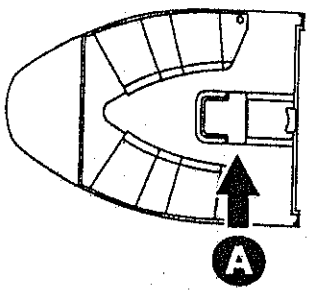


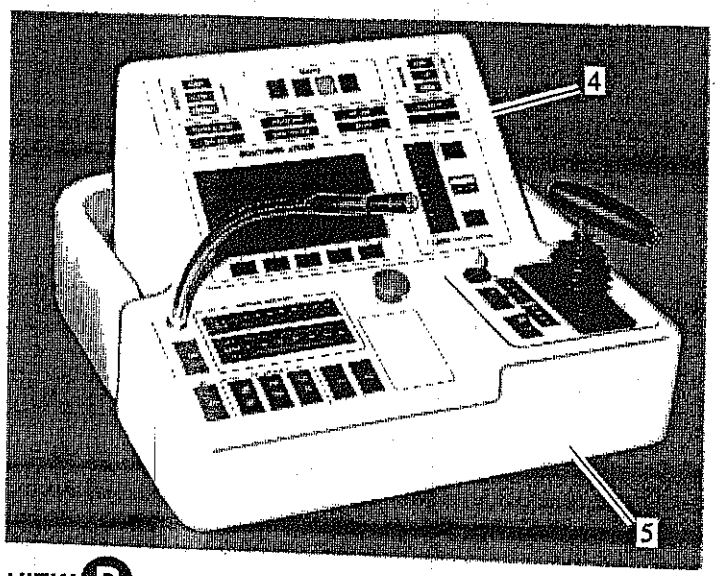
Figure 1-1
Carbody Shell and Chassis Arrangement, Cars T-2 to T-5



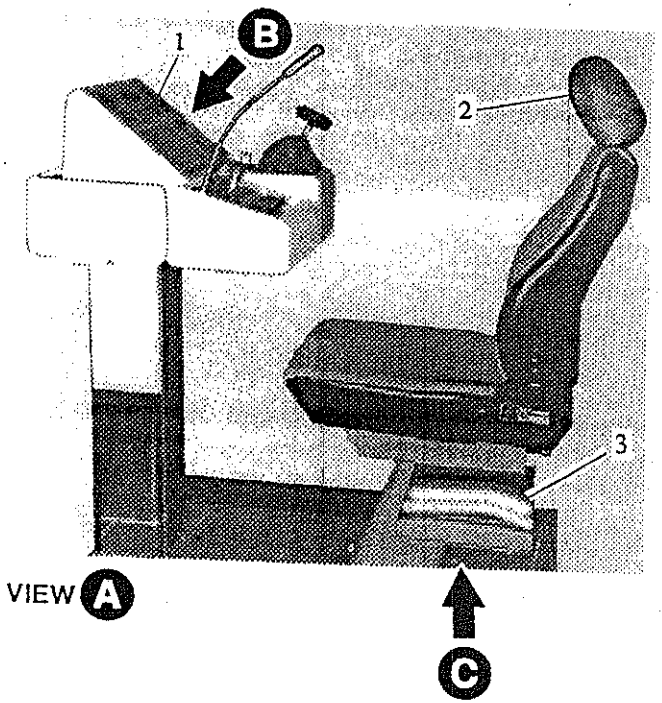
1. Floor Angle Mount (W/ Rubber Isolator)
2. Floor U-Channel Mount (W/ Rubber Isolator)
3. Carbody Floor
4. Carbody Shell
5. Nose Truss Top Rail (Square Tubing)
6. Nose End Truss (Round Tubing)
7. Male End Hanger
8. Female End Hanger
9. Removable Side Post
10. Removable Top Chord
11. Pintle Hood Assembly
12. Side Truss Assembly (Square Tubing)
13. Side Truss Top Rail (W/ Neoprene Strip)

Figure 1-2
Carbody Shell and Chassis Arrangement, Cars C-1 and C-6



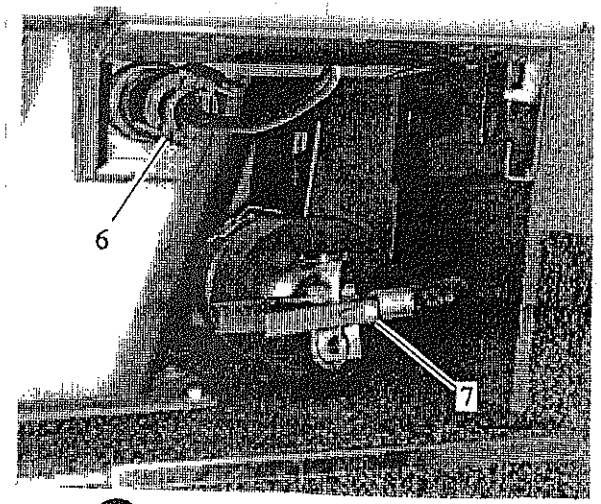


VIEW B



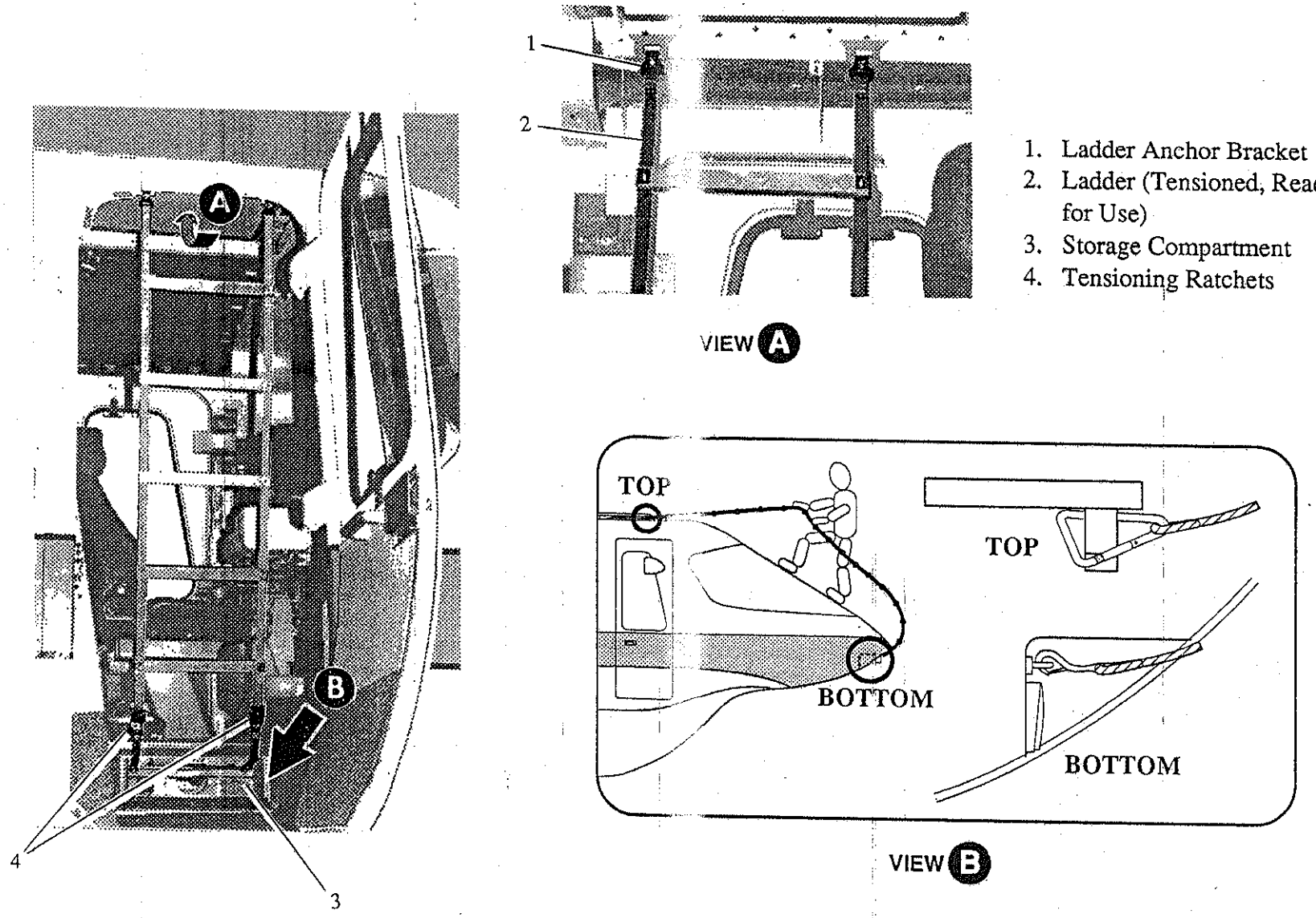
VIEW A

1. Control Console. Chapter 4
2. Seat
3. Intercom Handset Unit. Chapter 7
4. Upper Display Panel. Chapter 3
5. Lower Command Panel. Chapter 3
6. Fire Extinguisher
7. Handset Unit Connector. Chapter 7



VIEW C

Figure 1-5
Train Operator's Station Arrangement —
Control Console and Seat Assembly, Cars C1 and C6



1. Ladder Anchor Bracket
2. Ladder (Tensioned, Ready for Use)
3. Storage Compartment
4. Tensioning Ratchets

Figure 1-6
Cab Emergency Exit Hatch Access Ladder, Cars C1 and C6

INDICATOR	COLOR	FUNCTION
POWER SYSTEM	Red	Flashes to indicate a power supply failure (stabilizers, inverters, LVPS or battery charger).
600 VDC	Red	Flashes to indicate a 600 VDC power loss (status of the PTR relay).
PROPULSION	Red	Flashes to indicate a failure of either propulsion groups.
TRAIN CONTROL	Red	Flashes to indicate a vehicle onboard controller failure.
MR LINE	Red	Flashes to indicate a main or supply reservoir low pressure condition.
BRAKE	Red	Flashes to indicate a failure of either brake electronic control units.
OVERHEAT	Red	Flashes to indicate an overheat condition (equipment supplied by Client).
SPARE	Red	Must be fed 37.5 VDC (MFSP2 line) to maintain indicator off.
DOOR ALERT	Red	Turns on to indicate abnormal condition of any door panel (including emergency exit hatches).
DOOR OPEN	Amber	Turns on to indicate a normal door open condition.
DOOR CLOSE	Green	Turns on to indicate that all doors are closed and locked.
MAPO	Red	Flashes to indicate that less than two (one or none) frequencies received.
MAPO	Amber	Flashes to indicate that only two frequencies are received.
MAPO	Green	Turns on to indicate that three frequencies are received.
MAPO OVERRIDE SWITCH	Red	Turns on when OVERRIDE pushbutton switch is depressed.

Table 4-1
Upper Display Panel Indicators

A. Top Panel PC Board Circuit (Table 4-1)

(1) Door System Status Indicators

Two sets of three indicators (left and right), ALERT (red), CLOSE (green) and OPEN (amber) provides the operating status of all door panels located on the corresponding side. These indicators reflect the result of a logic function of the door relays located on the door control card, and correspond to the door safety loop trainline status and the train status (running or stopped).

(2) MAPO System Control and Indicators

This portion of the top panel houses the OVERRIDE pushbutton and three indicators; red, yellow and green. In normal operation, only the green indicator is lit, thus indicating proper clearance on the beamway between the train and the one ahead.

(a) Green Aspect Indicator

The green aspect indicates that the VOBC receives three frequencies from the MAPO transmitter, a condition representing adequate clearance. At that moment, the VOBC sets a trainline high, thus turning on the green indicator. If less than three frequencies are received, the green indicator turns off and one of the others (yellow or red) turns on.

(b) Yellow and Red Aspect Indicators and Alarm

When the VOBC receives two frequencies, it causes the yellow indicators to flash and the audible alarm to sound (pulsed at the same frequency). This reflects an unsafe condition and advises the Train Operator of the proximity of another train ahead. The Train Operator must stop the train before passing over the next transmitter and wait for the green indication to come back on. When the VOBC changes the indicator aspect from YELLOW to GREEN, the audible alarm is heard briefly while the yellow indicator turns off and the green indicator turns on. When the VOBC receives less than two frequencies, it deenergizes the TACR relay, causing an emergency brake application. The RED indicator flashes and the audible alarm is heard (pulsed). This condition represents a very unsafe condition and the VOBC initiates emergency braking. The REPLY pushbutton must be depressed to stop the alarm and the indicator flashing. The red indicator is still lighted.

(c) MAPO OVERRIDE Pushbutton Switch

The MAPO override operating mode allows the train to continue under a MAPO red condition. The latter operating condition can result from either an abnormal (hazardous) operating occurrence (less than two MAPO transmitter frequencies received, one or none) or from a failure condition. A failure condition resulting in a MAPO red is identified by the monitoring system. The MAPO override mode is initiated by depressing the MAPO OVERRIDE switch pushbutton. With the DAY/NIGHT switch is in NIGHT position, the OVERRIDE switch lamp is on at a low intensity. When depressed, the red pushbutton is illuminated (backlighted) at full intensity and the audible alarm is heard as long as the button is held depressed. When the MAPO override mode is initiated, automatic braking associated with the MAPO red state is inhibited. The MAPO override mode can only be initiated after the train has been stopped for at least one second and the master controller handle has been moved to a braking position.

(3) Power System/600 VDC/Propulsion/Train Control/ MR Line/Brake Malfunction Indicators

Below the MAPO and door status/malfunction areas of the Upper Display Panel, there are eight red rectangular indicators, all of which operate the same way. Only the six system malfunction indicators listed in the paragraph title are operational, the other two are available for future applications. These indicators are turned off (proper operation of corresponding train support systems) when the trainline signal is high (37.5 VDC) and are turned on (malfunction) when the trainline signal is low. Some trainlines are powered from the non-active cab control console and are connected through various equipment status relays in their routing to the active cab control console indicator circuits. The other trainlines are directly powered by other subsystems and are routed to both control consoles. In the event of a malfunction the corresponding indicator flashes and the audible alarm is heard until the REPLY pushbutton switch is depressed on the Lower Command Panel. The malfunction will cause the indicator to continuously remain on, until the input signal is returned back to normal. This causes the audible alarm to sound briefly and the indicator to turn off. The illumination intensity of these indicators varies with the position of the DAY/NIGHT switch.

(a) **POWER SYSTEM Indicator**

The POWER SYSTEM indicator signal originates from the trainline energized from the non-active control console, at the opposite end. The trainline passes through eleven contacts distributed in the following equipment: battery charger, LVPS, seven inverters, and two bus stabilizers. If one of these units fails, the POWER SYSTEM indicator turns on and the monitoring system displays a descriptive alert or warning message.

(b) **600 VDC Indicator**

The 600 VDC indicator signal originates from the trainline fed by the Cab A Transfer Interlock Panel RPTR relay. This relay is a repeater of the PTR relay which is energized when 600 VDC power is present at the collector shoes (derived from beamway rails). When 600 VDC is interrupted at the rails/collector shoes, the 600 VDC indicator turns on and the monitoring system displays a descriptive alert or warning message.

(c) **PROPULSION Indicator**

The PROPULSION indicator signal originates from the trainline energized at the opposite end non-active control console. The trainline is routed through both propulsion electronic control unit (PECUA and PECUB) failure circuits. If one of these fails, the PROPULSION indicator turns on and the monitoring system displays a descriptive alert or warning message.

(d) **TRAIN CONTROL Indicator**

The TRAIN CONTROL indicator signal originates from the trainline fed by the vehicle onboard controller (VOBC), when it is operating properly. Upon power application, the VOBC performs a self-test routine of its equipments. If the self-test fails, the TRAIN CONTROL indicator turns on and the monitoring system displays a descriptive alert or warning message.

(e) **MR LINE Indicator**

The MR LINE indicator signal originates from trainlines fed by the main reservoir pressure switch (MRS). If the reservoir air pressure drops below 135 psi the MR LINE indicator turns on and the monitoring system displays a descriptive alert or warning message.

9.9 FRICTION BRAKE SYSTEM OPERATIONAL/FUNCTIONAL DESCRIPTION

9.9.1 Manually-Requested Brake Applications

The Train Operator can manually request partial or full service brake application, by means of the master controller handle on the control console. Four of the overall ten handle detents provide service braking, and are labeled B1 through B4. Moving the handle to B4 requests a full rate service brake application (2.2 mphps deceleration with automatic compensation for external rate drift). Handle positions B1 through B3 request partial rate service brake application, at one-quarter, two-quarters (half), and three-quarters of full rate, respectively. The Train Operator can also manually request an emergency brake application, by means of the "red mushroom" emergency stop switch, ESS, located on the console Lower Command Panel.

9.9.2 Automatically-Requested Brake Applications

The train control system can request automatic brake applications, at either full service rate (B4), or at emergency braking rate, whenever predetermined undesirable events occur or potentially dangerous situations arise during train operation. The built-in logic determines which braking rate will be applied in each such instance. Two data tables, listing the causes and effects of these automatic brake applications, are provided in Chapter 8.

9.9.3 Automatically-Applied Parking Brake

The parking brake is applied automatically, within two seconds or less depending upon the rate at which the stop was performed, after the train has come to a full stop. Such parking brake application consists of a friction brake-only application, at a system pressure equivalent to a B4 rate. Lower pressures are not used because they will not reliably hold the train under worst-case (beam slope, train weight) conditions.

9.9.4 Braking System Response to Requests

Braking system response to application requests is preprogrammed into train control software. Requests initiated by the Train Operator for partial rate service brake, result in dynamic brake application, with supplemental friction braking automatically applied only if the dynamic braking is unable to provide the required deceleration rate. If such partial rate request is sustained to speeds approaching or passing the point of dynamic brake fadeout, then supplemental friction braking will be applied and will become the only braking effort below fadeout speed. Requests initiated by the Train Operator for full rate service braking from any high-end cruising speed, result in blended dynamic and friction braking virtually immediately. As train speed diminishes, so does the contribution made

by the dynamic braking system, while friction braking is automatically increased, as compensation to maintain the required deceleration rate. By dynamic fadeout speed, only friction braking remains to bring the train to a final stop. Automatically initiated stops at B4 rate are identical to manually-requested B4 braking, that is, blended dynamic and friction braking is applied. All emergency brake requests, whether initiated manually by the Train Operator, or automatically by train control logic are accomplished totally by friction braking; dynamic braking is not used at all. Parking brake applications involve friction braking only. With the train already at zero speed, the dynamic option is not available.

9.9.5 Friction Brake Application and Release

In the descriptions which follow, all references to the propulsion control system and/or the (friction) brake control unit, are understood to cover both such groups, unless otherwise stated. Although independent, both propulsion groups are fed the identical request signals simultaneously, and all subsequent responses are considered to occur identically and simultaneously within both propulsion groups and/or both friction brake groups. Brake application requests, whether originating at the master controller or the train control system, are forwarded to the propulsion control system for processing into braking demand signals. These demand signals are forwarded to the brake electronic control unit within each of the two braking groups. The microprocessor within the BECU translates the incoming demand signals into control commands for the brake operating unit, BROU. In the latter translation, the BECU introduces appropriate corrections for hysteresis and non-linearity, so that actual braking performance will conform as accurately as possible with the desired result.

The BROU within each group, consists of an N-4-D magnet valve, an XB-1 variable load valve, and an H-7 Relayair valve, series-connected in that sequence by internal passages within a pipe bracket, which serves also as a mounting panel for the operating unit components. Both BROUs also contain a brake cylinder pressure transducer, while that of Group B only, contains a main reservoir pressure transducer also. This latter device need only occur once per train, so is not duplicated in the Group A hardware inventory. Control commands generated within the BECU are forwarded to the BROU, where they control the N-4-D magnet valve. The N-4-D magnet valve contains two solenoid-actuated valves, which may be actuated either singly or simultaneously. Its purpose is to cause service brake application or release by admitting and trapping supply air in the circuitry beyond, or by venting such trapped air, respectively.

A. Service Brake Application

At system power-up, the BECU energized the N-4-D valve application magnet, closing the normally-open valve, thus blocking pressure entry to the brake control circuit. Upon receipt of a brake demand signal, the BECU sends a stream of digital pulses (at 37.5 VDC) to the application coil of the magnet valve, causing the valve to alternate between open and closed positions, admitting supply air into the brake control circuit beyond. The BECU simultaneously monitors the brake cylinder pressure transducer signal to know how the pressure buildup is progressing. The digital pulse train is continuously adjusted to produce a smooth and jerk-free pressure rise, which yields equally smooth brake rate increase. In the event of an overshoot, or if the Train Operator backed down his demand by a notch or two, the pulse train would include release magnet signals to bleed off excess pressure. Air admitted to the control circuit by the application valve would flow freely through the variable load valve and H-7 Relayair valve, into the C-2-W relay valve. The relay valve reacts by admitting supply air to a corresponding pressure level, into the brake cylinder pipe. This pressure is delivered to the four brake boosters in the braking group, causing actuation of the calipers proportional to the pressure of the application.

B. Service Brake Release

The BECU pulse train is directed to the magnet valve in a pattern which maintains the apply magnet continuously energized, thus closing the valve and preventing further entry of supply pressure. Simultaneously, it rapidly alternates the release valve between open and closed positions, allowing controlled bleed down of control circuit pressure. This reduction in pressure allows the C-2-W relay valve to vent a proportional pressure from the brake cylinder, causing a reduction in force applied by the caliper.

C. Emergency Brake Application

To effect a brake application at the emergency rate, the BECU deenergizes the application magnet, causing the corresponding valve to the held fully open, and simultaneously deenergizes the release magnet, causing its valve to close the vent port, preventing pressure escape. Supply air at full system pressure flows through the magnet valve and into the variable load valve. The variable load valve allows control circuit pressure to build towards the emergency rate pressure requirement, plus or minus any compensation required to suit current train weight, as determined from current suspension air bag pressure. As the required value is reached, the BECU senses that fact from the cylinder pressure transducer feedback signal, and commands the application valve to close, thus blocking further supply air entry and halting further pressure buildup. Response at the boosters and calipers is as previously described.

9.9.5 Friction Brake System System Control Relays

A. Emergency Stop Circuit

The emergency relay, EMR, and repeater emergency relay, REMR, and their associated emergency loop, constitute the emergency brake application control feature. The EMR and REMR relays, located on the transfer interlock panels TIPLA and TIPLB respectively, must both be energized to enable the propulsion and dynamic braking mode. Several prerequisite conditions must be met to close the emergency loop and thus cause EMR pickup. If any of these conditions fails, the resulting dropout of EMR interrupts command signal flow between the BECUs and their corresponding BROUs, thereby deenergizing the N-4-D valves. The apply magnet valve permits full supply pressure to be applied to the XB-1 variable load valve. It in turn, permits pressure into the brake control circuit, up to its preset limit of (nominally) 85 psi, which produces an emergency rate friction brake application. The nine operating conditions which cause interruption of the emergency loop and trigger an emergency stop, are given in the list which follows:

- Depressing the active cab console emergency stop switch (ESS)
- Loss of 600 VDC on collector shoes (RPTR relay)
- Brake electronic control unit (BECU1) malfunction (BU1R relay)
- Brake electronic control unit (BECU2) malfunction (BU2R relay)
- Group A supply reservoir pressure drops below 94 psi (VLAPR relay)
- Group B supply reservoir pressure drops below 94 psi (VLAPR relay)
- When the VOBC detects a red aspect zone (TACR relay)
- Two seconds after the VOBC has detected a yellow aspect zone, if the Train Operator does not apply the brake (TACR relay)
- Master controller key is set to OFF position

A switch and the other relays related to this system are described in Chapter 8, they are: the ZSR relay, RPTR relay, BU1R & BU2R relays, VLAPR relays, TACR relay, BRR relay, and the HVBS switch.

9.10 AIR SUPPLY AND BRAKE SYSTEM MALFUNCTIONS/MONITORING SYSTEM DISPLAY

9.10.1 Air Supply Malfunction (Fig. 9-6, Sheet 1)

The monitoring system constantly observes the status of the main reservoir pressure by monitoring the analog signal from Car C6 brake electronic control unit (BECU2) and the logic signal from Car T4 main reservoir pressure switch (MRS). The analog signal (0-10 VDC) represents the pressure value 0-180 psi of the main reservoir as dictated by

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OPERATING INSTRUCTIONS MANUAL

CHAPTER 13
EN ROUTE PROCEDURES

Bombardier Inc.
Mass Transit Division

CHAPTER 13

EN ROUTE INFORMATION

13.1 GENERAL INFORMATION

This chapter contains the procedures to be performed en route by the Operating Personnel. These instructions assume that all circuit breakers, switches, control devices, etc., have been placed in the appropriate positions as discussed in Chapter 12, Prerun Information. Refer to the appropriate preceding chapters for the arrangement and exact locations of the components requiring attention.

WARNING: THE FOLLOWING PROCEDURES ARE SUGGESTED AND MUST NOT BE ASSUMED TO BE COMPLETE. OVERALL TRAIN, POWER, BRAKE AND OPERATING INSTRUCTIONS ISSUED BY YOUR COMPANY MUST PREVAIL.

13.2 EN ROUTE PROCEDURES

13.2.1 Power-Up Train by Establishing Active Cab

Enter whichever cab is to be the leading cab for the current operating session, and perform the following steps:

A. Set master controller handle to B4, Run/Stop switch to STOP, and Forward/Reverse switch to FWD.

B. Insert master controller key into keyswitch, and set to ON, thus causing power supply to all systems, and causing both the monitoring system and control console to go into automatic self-test mode.

C. Observe all console indicators and when satisfied that all are functional, halt the console test by pressing the REPLY rocker switch on the Lower Command Panel.

D. Allow the monitoring system to complete its self-test sequence, then press the Upper Display Panel membrane REPLY switch to display the default image.

13.2.2 Retest Console Status Indicators

Any time it is desired to retest the various console status indicator lamps for functionality, proceed as follows:

A. Momentarily press the console TEST rocker switch.

B. Observe that all indicator lamps/LEDs are operational.

C. Press the console REPLY rocker switch to terminate the test mode.

13.2.3 Train Status Check

After completion of the monitoring system self-test, but prior to putting the train into motion, make the following checks of train status:

A. With all doors closed and locked, check that both door CLOSE (green) indicators are lit.

B. If on a beam protected by MAPO, the green indicator will be lit; if in an area without MAPO protection, the red indicator will be lit.

C. The green ZERO SPEED indicator should be lit.

D. The speed bargraph should indicate zero mph.

E. The main reservoir pressure bargraph should indicate approximately 145 psi.

F. The two brake pressure bargraphs should indicate 65 psi (nominal) parking brake applied.

G. The propulsion bargraph on the monitoring default image should show zero amperes.

13.2.4 Putting Train into Forward Motion

To put the train into forward motion, proceed as follows:

A. Confirm that both green CLOSE status indicators are lit, confirming that all doors and hatches are closed and locked.

B. Confirm that the Forward/Reverse switch is still set to FWD.

C. Set the Run/Stop switch to RUN.

D. Confirm that the beamway ahead is unobstructed, and that it is safe to proceed.

E. Move the master controller handle out of B4 and into the propulsion range of P1 through P5. Brake release should occur within two seconds and the train should immediately begin to roll forward.

F. As speed increases, reduce propulsion demand by notching back on controller handle, to avoid excessive speed.

13.2.5 Increasing Forward Speed

To increase train forward speed from its present level, proceed as follows:

A. Advance master controller handle from present setting to desired higher setting.

B. Observe speed increase on readouts, and notch back if necessary to avoid overshooting desired new speed.

13.2.6 Decreasing Forward Speed (Without Braking)

To decrease present forward speed without the use of braking, proceed as follows:

A. Notch back master controller handle to position N (neutral), thus placing the train in a coasting mode.

B. Observe speed decay on readouts, and reapply appropriate level of propulsion when desired new operating speed is reached.

13.2.7 Requesting Partial or Full Service Braking

To request service braking at any of the four available rates, proceed as follows:

A. Move the master controller handle into the braking range, selecting notch B1 for quarter, B2 for half, B3 for three-quarter, or B4 for full service braking, respectively, as desired.

B. Hold selected braking request until zero speed is reached, or reduce braking demand as desired new speed is reached.

13.2.8 Requesting an Emergency Brake Application

To cause an emergency brake application, proceed as follows:

A. Actuate the emergency stop switch by depressing the "red mushroom" switch handle on the lower command panel. The button will rotate when fully depressed, thus locking itself in the actuated position.

13.2.9 Releasing the Emergency Stop Switch

To release the emergency stop switch, and thus reset the switch for future use, proceed as follows:

A. Place the master controller handle in position B4.

B. Slightly rotate the switch button against its spring-load device, and allow the button to pop upward.

C. Observe that the brake group bargraphs show a pressure reduction from emergency brake pressure (nominally 85 psi) to parking brake pressure (nominally 65 psi).

13.2.10 Stopping the Train in Station

To stop the train, using service brakes, proceed as follows:

A. Enter the station at authorized entry speed, and apply braking as necessary to bring the train to a full stop at the platform reference point. The master controller handle should be in position B4 at or before final wheel stop.

B. Set the Run/Stop switch to STOP.

C. Verify the brake group bargraphs to ensure parking brake pressure (65 psi) is applied.

D. Release the deadman feature, leaving the handle in position B4.

13.2.11 Moving the Train in Reverse Direction

CAUTION: Moving a train in reverse is a potentially hazardous operation even under the best conditions. The use of an observer stationed at the opposite train end is strongly recommended. When backing a train, all Company regulations and restrictions must be complied with.

To back a train, whether for positioning at a station platform, or elsewhere on the beamway, proceed as follows:

A. Ensure that master controller handle is in position B4, and that the train is at a full stop.

B. Set Forward/Reverse switch to REV.

C. Ensure that Run/Stop switch is set to RUN.

D. Holding the deadman feature off, move the controller handle to position P1 until the train begins to move.

E. Alternate handle position between P1 and N as necessary to keep the train moving at a very slow pace.

F. Utilize any or all of the three rear-view mirrors, as appropriate for the operating conditions.

G. Stop rearward motion by conventional braking procedures.

H. When the backing maneuver is completed, and with the train at true zero speed, and handle in B4, reset the Forward/Reverse switch to FWD.

13.2.12 Opening Cab Doors

Before opening either cab door, ensure that the train is fully stopped, and that the controller is set to B4 and STOP. Proceed as follows:

A. Using the door window and its rear-view mirror, ensure that nobody is standing in or approaching the door sweep zone. Proceed with door opening only when certain that the move can be made safely.

B. Actuate the cab door open pushbutton on the side corresponding to the door to be opened.

13.2.13 Opening Passenger Doors on One Train Side

The master controller must be set to B4, the Run/Stop switch must be set to STOP, and the train must be at zero speed for the four door controllers to become enabled. To open the passenger doors, proceed as follows:

A. At either door controller on the train side on which the doors are to be opened, press and hold the E membrane switch.

B. To open only individual cars, press the membrane switches corresponding to the cars desired;

or

To open all cars on train side, press the A membrane switch.

C. Release the E membrane switch.

13.2.14 Closing Passenger Doors on One Train Side

To close all open passenger doors on a given train side, proceed as follows:

A. At either door controller on the train side on which the doors are to be closed, press and hold the E membrane switch.

B. While holding the E switch actuated, press the C membrane switch.

C. Observe the indicator lamps behind membrane switches 1 through 6. Each lamp should be lit steadily when the doors on its car are open. The lamp should begin blinking as the C switch is actuated, such blinking signifying that the doors are in transition, and finally should be extinguished when all four doors on the corresponding side of this car are closed and locked.

13.2.15 Recycling of Obstructed Doors

Door recycling is performed automatically when needed, and requires no action on the part of the Train Operator or Loading Personnel. However, should any door fail to close and lock after several unsuccessful recyclings it should be investigated, and manually locked-out if malfunctioning. The procedures for locking-out a malfunctioning door are given in Chapter 14, Emergency Procedures.

13.2.16 Deploying Passenger Compartment Folding Seats

To deploy the folding seats, proceed as follows:

A. Using a general access key, release the restraining latch below the seat hinge.

B. Swing the seat downward into horizontal position until the mechanism latches open.

13.2.17 Securing Wheelchair with Restraint Device

To secure a wheelchair, proceed as follows:

A. Using a general access key, open the restraint gear stowage compartment. Withdraw the straps and stretch them out on the floor, removing any twists.

B. Back the wheelchair against the stanchion, centered with respect to the anchor straps.

C. Engage first one and then the other spindle hooks with the chair frame, and remove any slack from the restraining straps, to secure the chair.

D. Fit and adjust the lap belt to the chair occupant.

E. Secure loose strap tails with velcro retainers provided.

13.2.18 Making Public Address Announcement

To make a PA announcement, proceed as follows:

A. Set the microphone rocker switch in position TO PA.

B. Depress the push-to-talk switch in the controller handle.

C. Speak clearly and distinctly into the microphone, at a normal speaking volume.

13.2.19 Making Radio Transmission

To make a radio transmission, proceed as follows:

A. Set the microphone rocker switch to radio position.

B. Depress the push-to-talk switch in the controller handle.

C. Speak clearly and distinctly into the microphone, at a normal speaking volume.

13.2.20 Take Incoming Intercom Call

To take an incoming intercom call after hearing the warble annunciator on the cab unit, proceed as follows:

A. Lift the intercom unit handset.

B. Press the illuminated pushbutton to connect the handset to the car initiating the call.

C. Converse as for a standard telephone call.

13.2.21 Make Intercom Call to Specific Car

To establish communication with a specific car via the intercom system, proceed as follows:

A. Make a PA announcement to the desired car, requesting that a specific person pick up the intercom handset.

B. Await the warble signal from the cab unit, and proceed to take the incoming call.

13.2.22 Make Intercom Call to Opposite-End Cab

To call the other cab via the intercom system, proceed as follows:

A. Lift the handset and actuate the CAB pushbutton.

B. Wait until the call is answered, and converse as for a standard telephone call.

13.2.23 MAPO Yellow Occurring En Route

If a MAPO yellow aspect occurs en route, proceed as follows:

— Apply braking at sufficient rate to achieve a full stop prior to passing the next MAPO transmitter.

13.2.24 MAPO Red Occurring En Route

If a MAPO red aspect occurs en route, the Train Operator need not take any action, as the train control system will automatically apply emergency braking to zero speed.

13.2.25 MAPO Red Override

After being at a full stop for one second or longer, and the controller handle having been cycled through position B4, the MAPO override button is enabled. To move the train in MAPO override mode, proceed as follows:

A. Hold MAPO OVERRIDE depressed and simultaneously apply propulsion.

B. Advance train until MAPO green indicator becomes illuminated.

C. Release the OVERRIDE pushbutton and resume conventional operation.

13.2.26 Overspeed Alarm Trip

When the overspeed alarm is tripped, proceed as follows:

A. Within two seconds, apply braking until alarm is silenced at 3 mph below limit speed.

B. Release braking and resume conventional operation.

13.2.27 Entering More Restrictive Speed Zone

When entering a zone of lower speed, proceed as follows:

A. Apply braking at either B3 or B4 rate, within three seconds to prevent automatic full stop service brake application.

B. When speed has reduced to or below new limit, resume conventional operation.

WED TRANSPORTATION SYSTEMS, INC.
MARK VI MONORAIL TRAINS

OPERATING INSTRUCTIONS MANUAL

CHAPTER 14
EMERGENCY PROCEDURES

Bombardier Inc.
Mass Transit Division

CHAPTER 14

EMERGENCY PROCEDURES

14.1 GENERAL INFORMATION

This chapter outlines the procedures that may have to be performed by the Operating Personnel en route (on beamway, in station, or other areas) in the event of an emergency situation occurrence.

14.2 CAB PROCEDURES

14.2.1 Opening Cab Emergency Exit Hatch

In an emergency, the cab may be evacuated by way of the roof-mounted exit hatch, located above the seated Train Operator's right shoulder. To open the hatch, proceed as follows:

A. Standing below the interior hatch cover, grasp the cover by the two molded-in grip recesses, and pull sharply downward, releasing the cover from its gripper clips. Set the cover aside.

B. From beneath the now exposed exit hatch, grasp and pull downward on the locking handle within the circular recess on the hatch, and rotate clockwise approximately ninety degrees to release the deadbolt lock.

C. Push upwards on the hatch with sufficient force to carry the hatch beyond vertical, so it lays flat on the cab roof surface.

D. Erect the cab hatch access ladder and climb onto the roof. See procedure below.

14.2.2 Erecting Cab Hatch Access Ladder

To facilitate climbing through the cab emergency exit hatch, an access ladder is provided, stowed in a compartment within the Train Operator's seat base. To erect the ladder, proceed as follows:

A. Open the compartment door, and withdraw the folded or rolled ladder.

B. With the ladder extended to full length, remove any twists from the two web straps, and insert their upper end hooks into the anchor brackets projecting downward from the open hatchway.

C. Operate the ratchet handles to remove all slack from the ladder.

D. Before exiting the hatchway, remove and retain the safety rope lashed to the top ladder rung. Continue climbing onto the roof, using the handrail mounted full length along the roof centerline.

E. Clear the hatch area, or offer assistance to other evacuees, as the situation warrants.

14.2.3 Descending from Cab Roof Via Safety Rope

A safety rope, knotted at regular intervals to provide for secure hand gripping, is lashed to the cab hatch access ladder by velcro-type straps. It is intended to permit descent down the windshield and cab nose, to the beam surface, if necessary. To make such a descent, proceed as follows:

A. Unfurl the rope to its full length. Note that one end is equipped with a pear-shaped link, while the opposite end is equipped with a harness snap-hook.

B. Fasten the pear-shaped link around the end stand-off of the roof centerline handrail, immediately behind the beacon light.

C. Grasping the rope securely, and paying it out in a hand-over-hand motion, walk backwards down the windshield and cab nose, until able to step down to the beam surface.

D. Secure the lower end of the safety rope by attaching the harness hook to the eyebolt provided for such purpose, above the headlights under the cab nose.

E. Clear the immediate area, or offer assistance to other evacuees, as the situation warrants.

14.2.4 Operating Cab Fire Extinguisher

A dry-chemical fire extinguisher, usable on all types of fires, is located on the Train Operator's seat base, behind the chair pedestal. To use the extinguisher, proceed as follows: