

Addendum to PTS GR/TD/4869 Rev. - : Electrical Wiper system

The following addendum to PTS document GR/TD/4869 Rev.- for Electrical wiper system shall be considered.

1) Clause-10: Appendices 3) Electrical wiper system arrangement drawing: 525-18084.

Shall be read as:

Appendices 3) Electrical wiper system arrangement drawing: 525-18084_ALT1. (Front Emergency door opening section details & Note 7 added)

In place of:

Appendices 3) Electrical wiper system arrangement drawing: 525-18084.

MACHINING DEVIATIONS FOR LINEAR DIMENSIONS	RANGE						1000-2000	2000-6000	ABOVE 6000	RA
	0 - 6	6 - 30	30 - 120	120 - 315	315-1000					
TOLERANCE	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	±3	~	

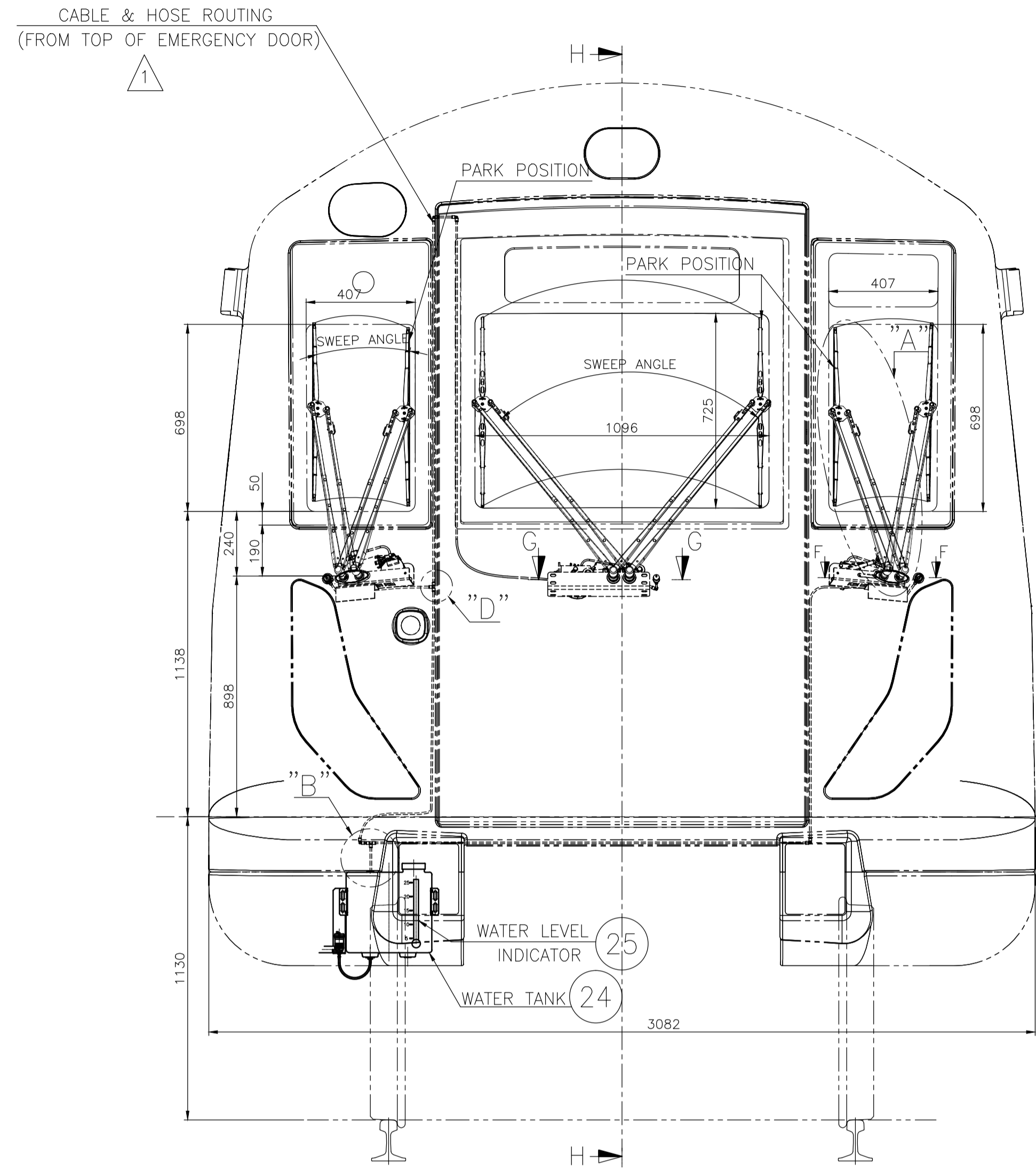
FOR DIMENSIONAL TOLERANCES OF SHEET METAL PARTS AND WELDED STRUCTURES, REFER STD. RD-227

UNSPECIFIED TOLERANCE FOR LINEAR AND ANGULAR DIMENSIONS REF. IS 2102 (PT-1) (MEDIUM)

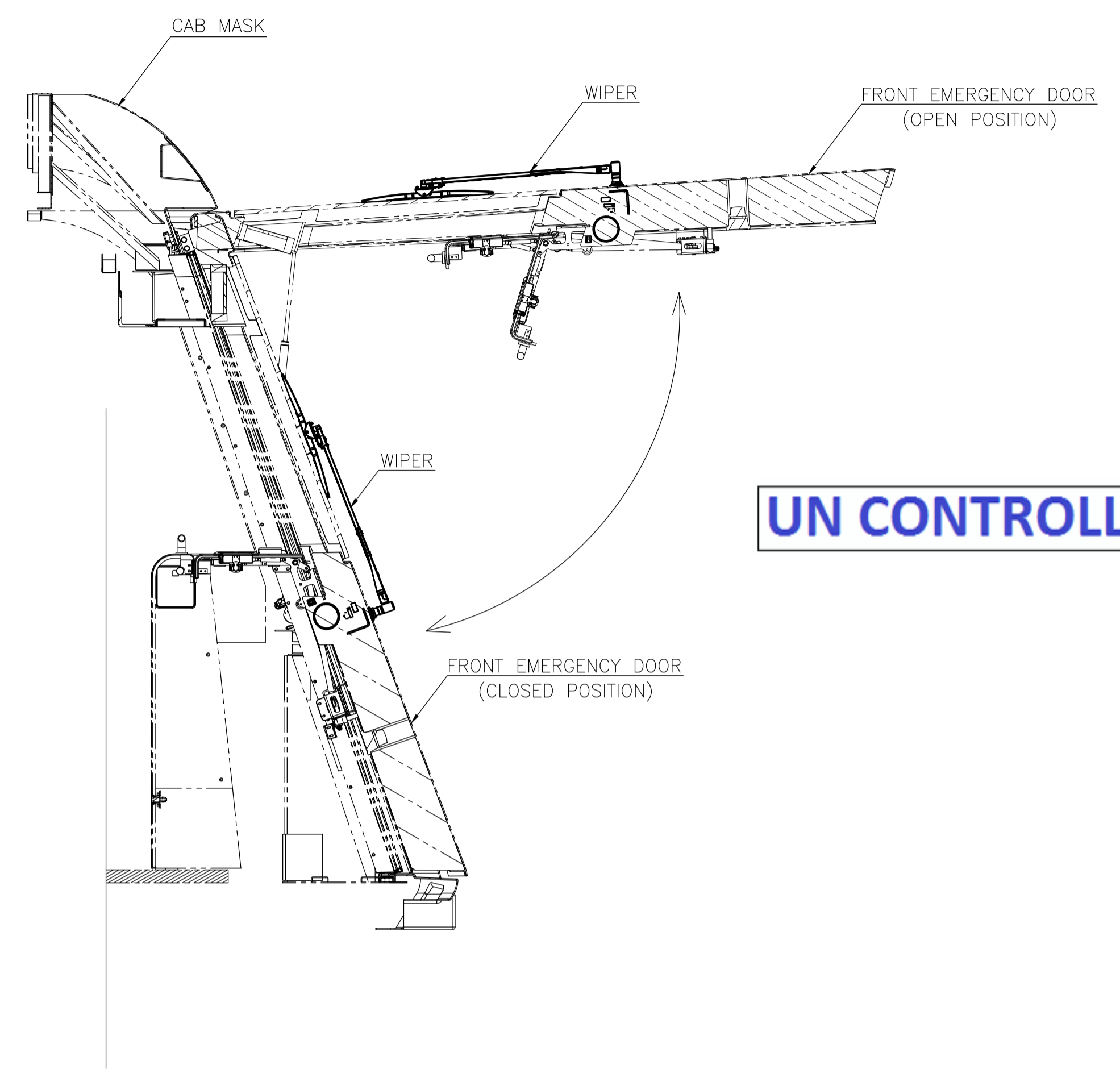
VALUES OF SURFACE TEXTURE SHALL BE AS PER COMPANY STD DS. 1012.C

WELDING SHALL BE CARRIED OUT AS PER IS: 9595-96

STATUS: **PROTO/PRODUCTION**

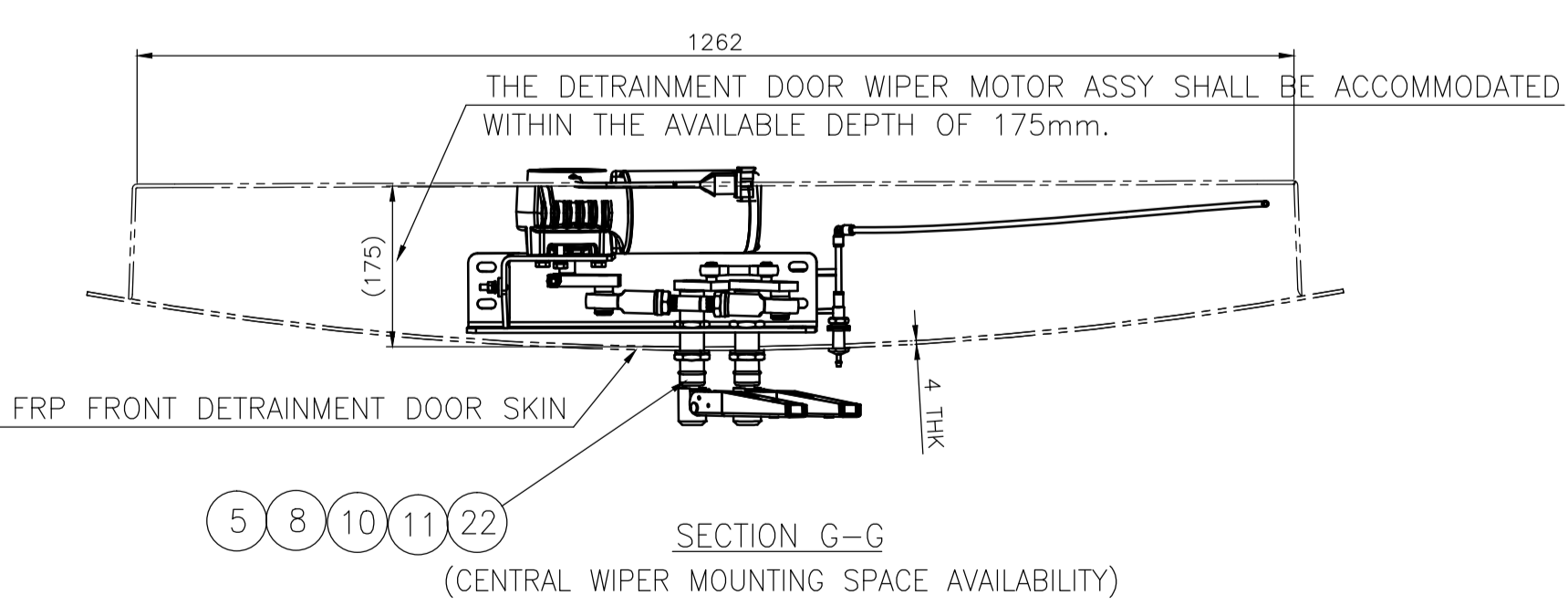
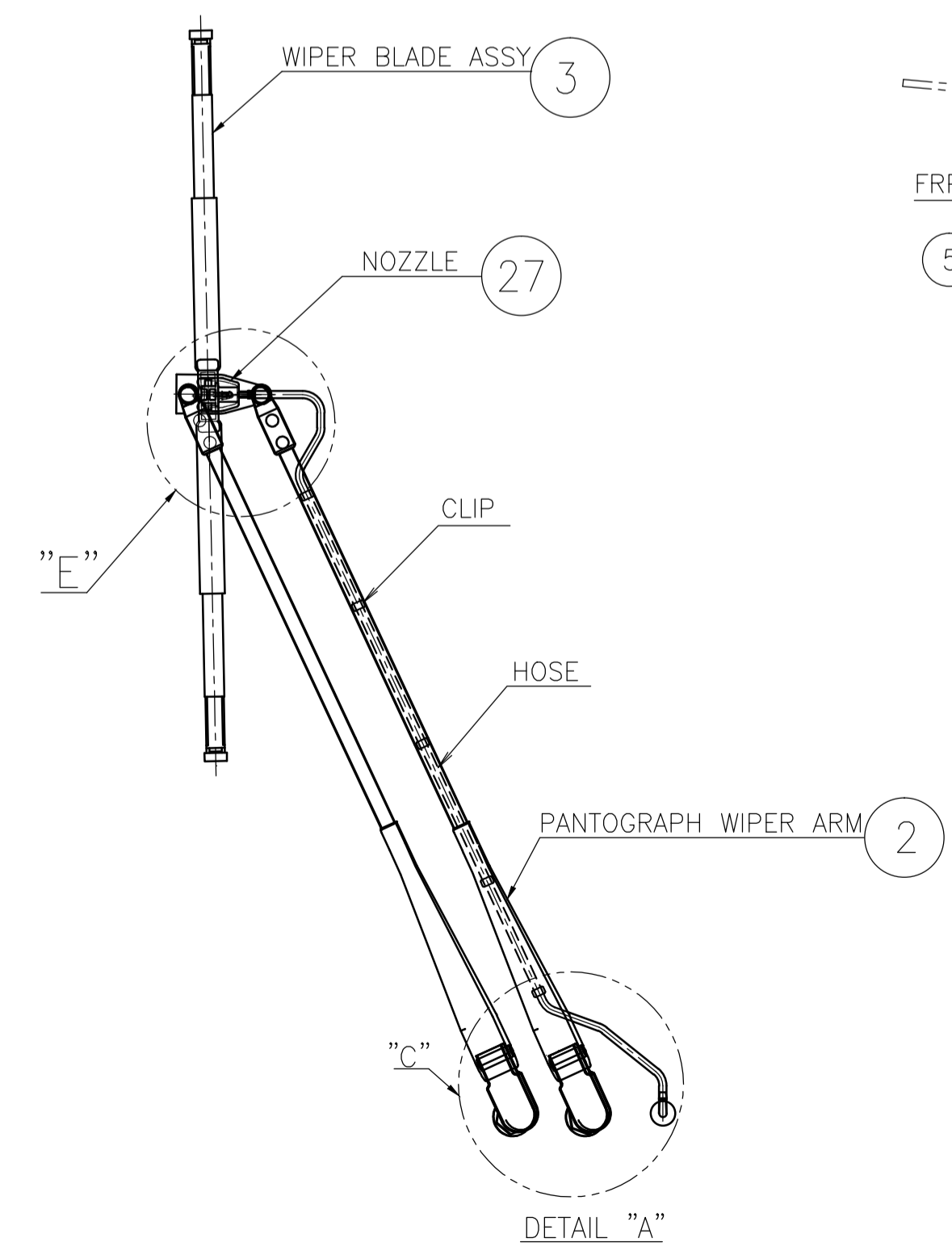
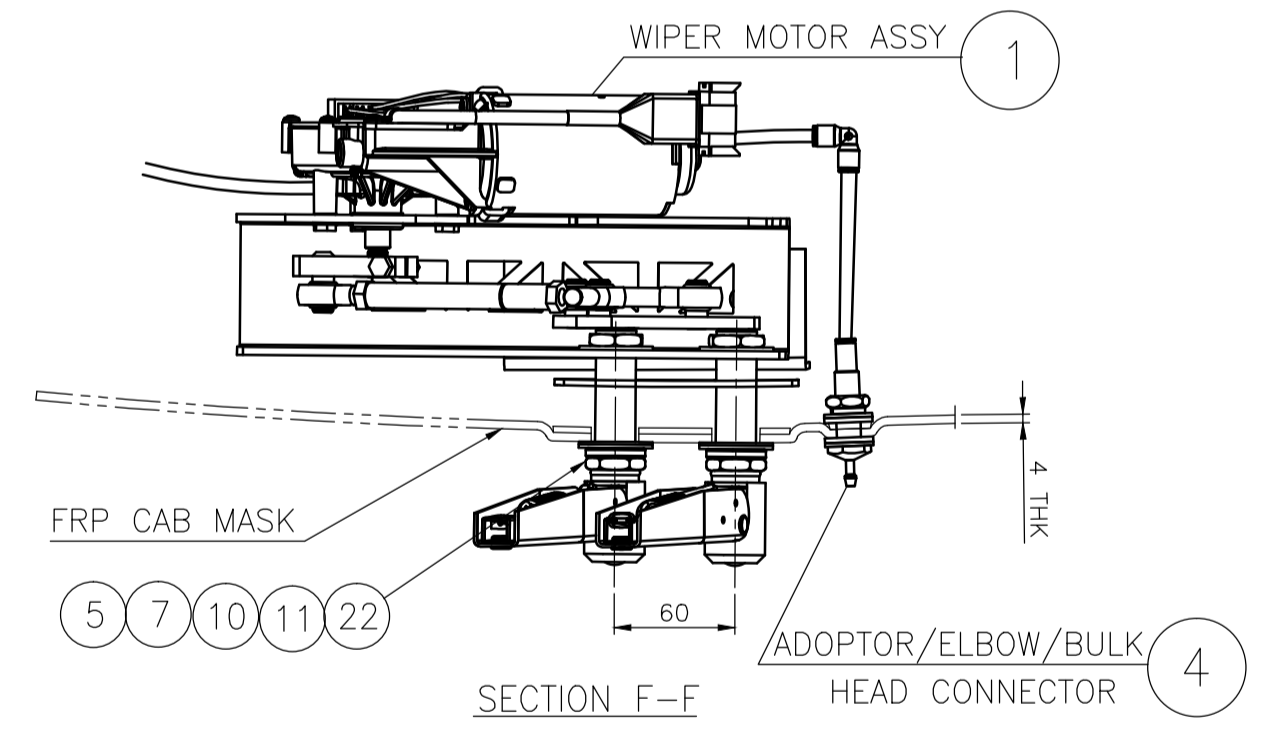
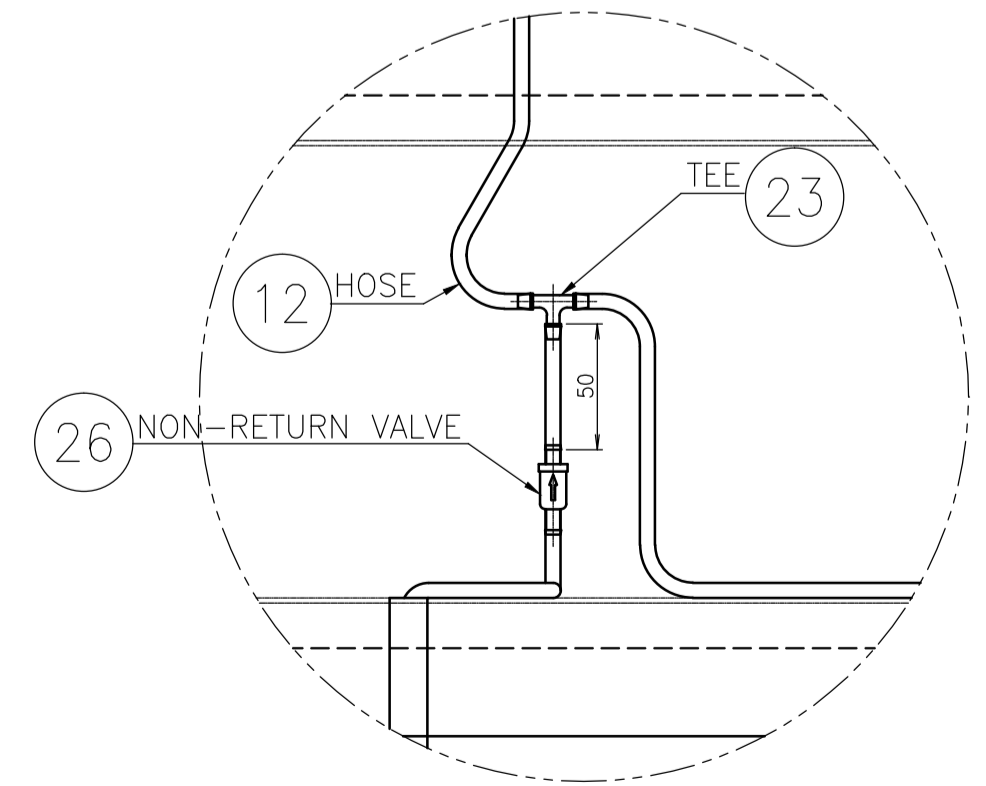
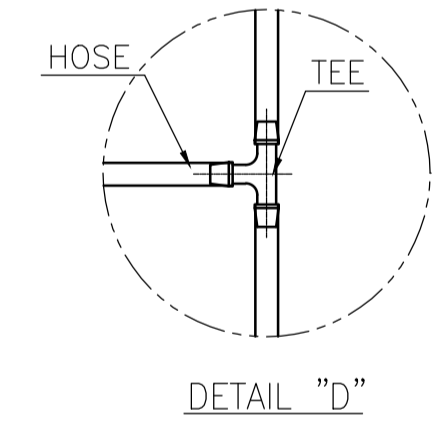
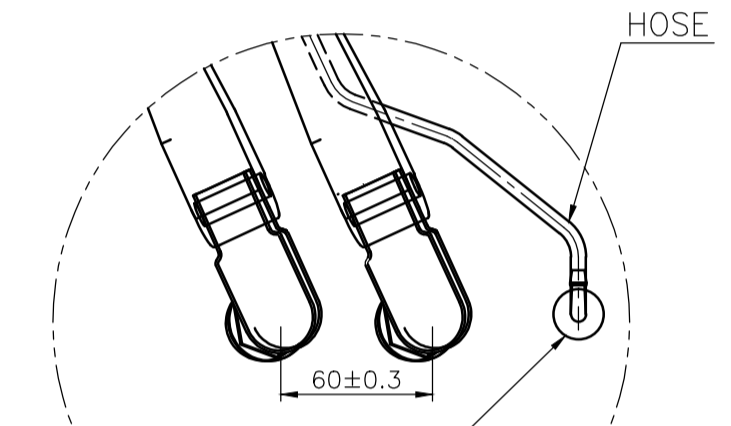
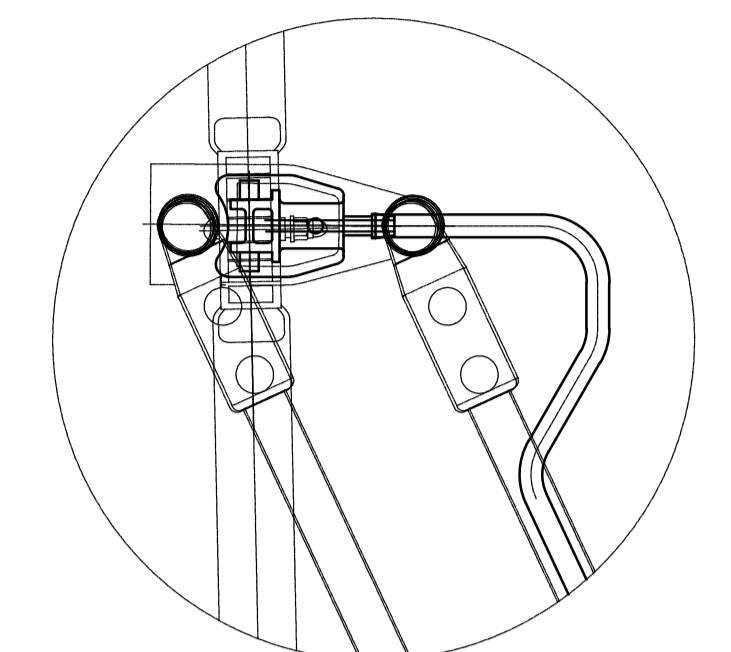


CAR EXTERIOR



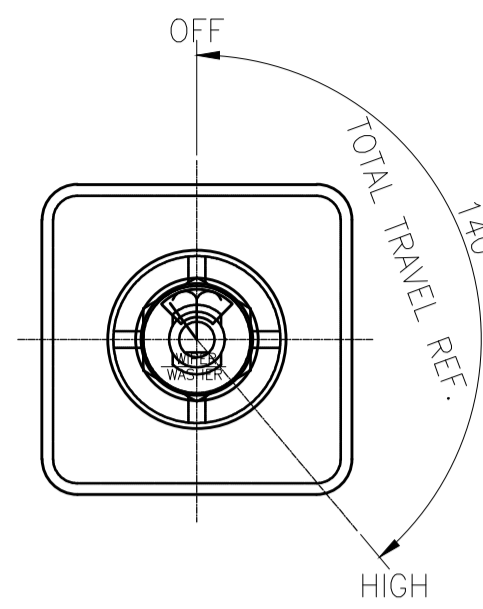
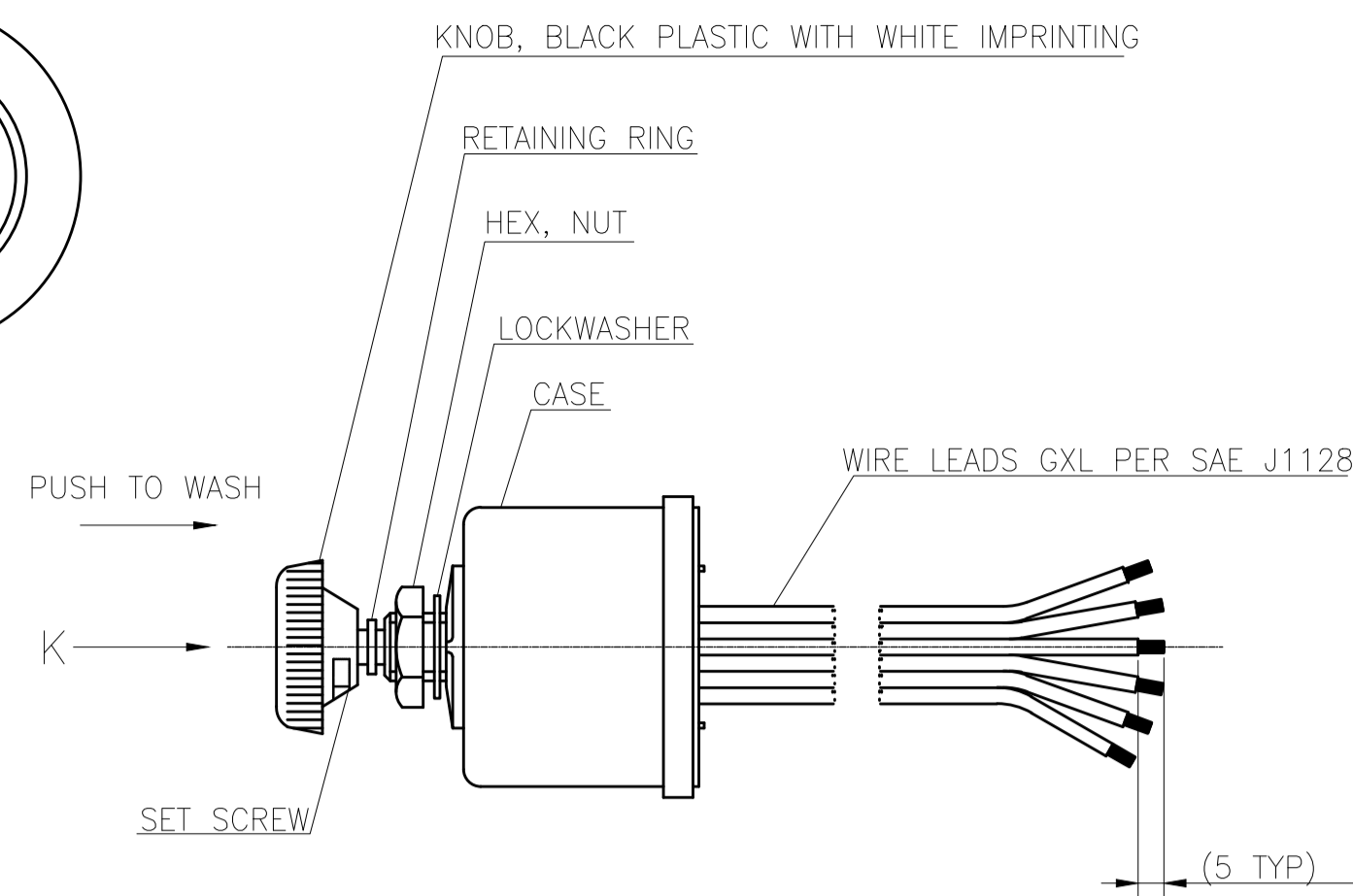
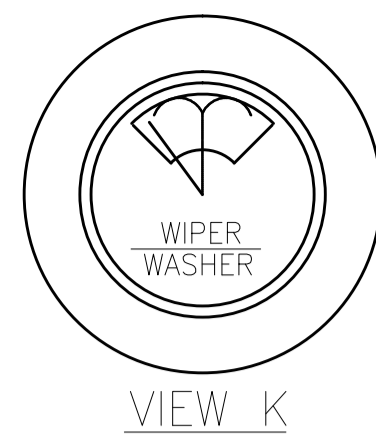
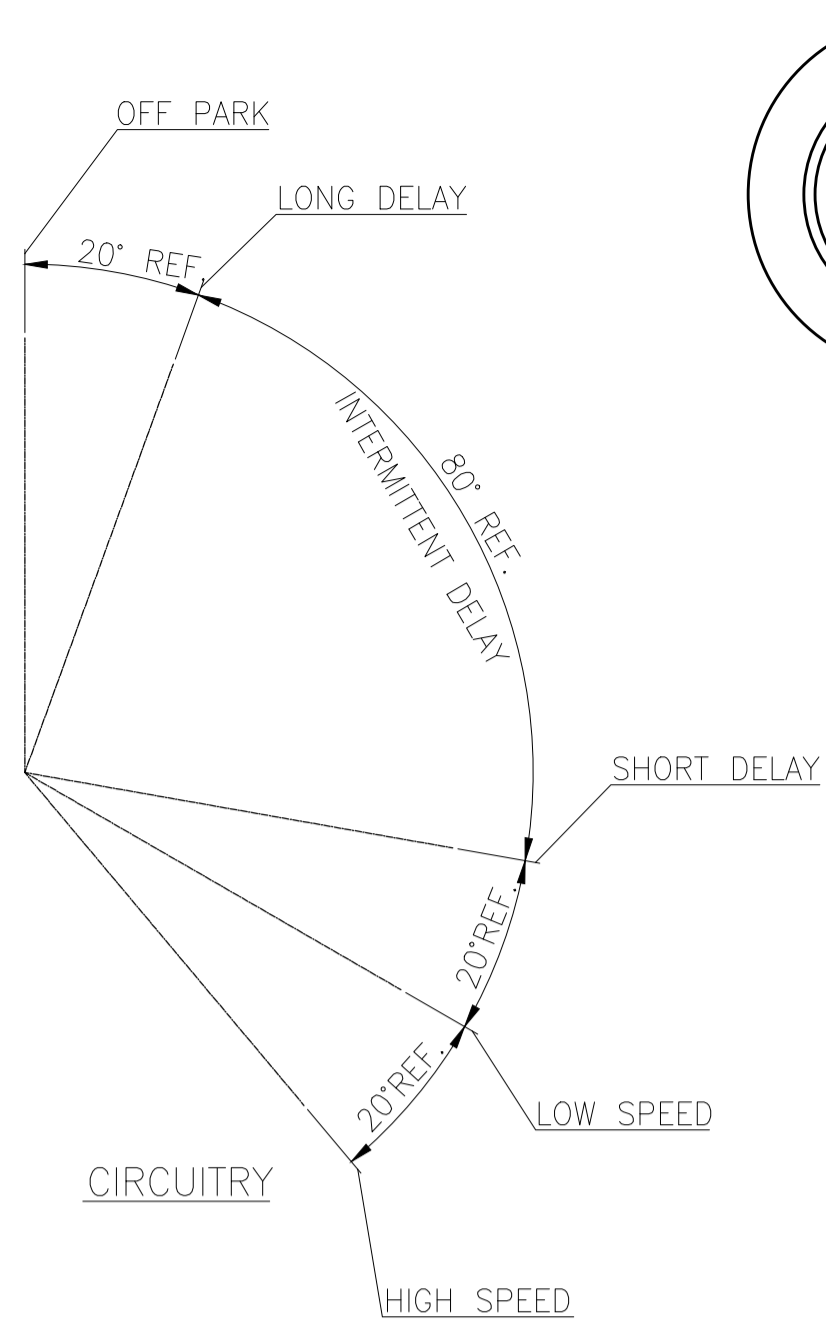
SECTION H-H (SHOWING FRONT EMERGENCY DOOR OPEN POSITION)

UN CONTROLLED



SL.No.	QTY	PART / STOCK No.	DESCRIPTION	SIZE	COMPANY STD./I.S.	Wt. (Kg)
MUMBAI METRO CARS - L2 & L7						
PRODUCT						
REF DRG						
MATERIAL						
HEAT TREAT.						
SURFACE TREAT.						
TITLE						
ELECTRICAL WIPER SYSTEM ARRANGEMENT						
SCALE					SHEET	Wt.(Kg)
NTS					1 of 2	-
DRG No.					ALT	
ALT No.					1	
ECN NO/CHANGES					DATE	
DATE 18.02.2020					BY	
APPD					APPD	
BEM BEM LIMITED					525-18084	

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SWITCH CONNECTIONS

MOTOR LOW SPEED TERMINAL
MOTOR HIGH SPEED TERMINAL
MOTOR PARK TERMINAL
GROUND (B- TERMINAL)
WASHER PUMP (B+ TERMINAL)
B+ TERMINAL

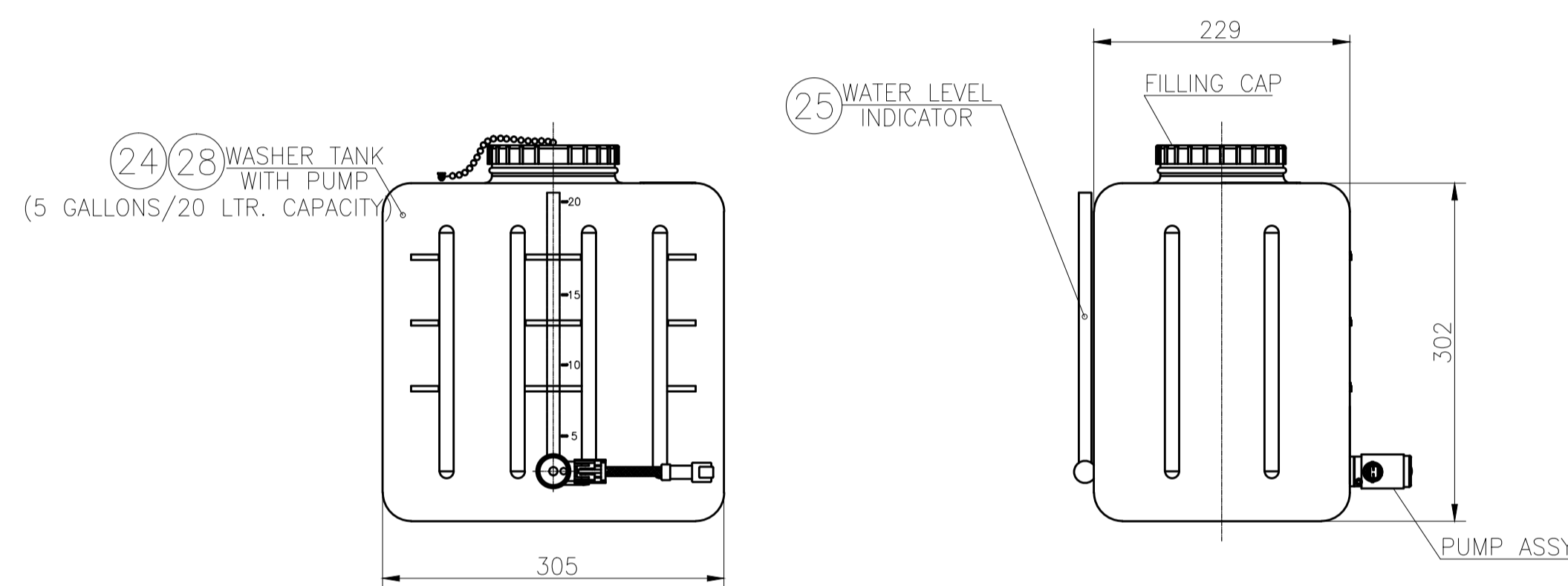
SEPARATE B+ AND GROUND CONNECTIONS MUST BE MADE TO THE WIPER MOTOR

- NOTE:**
- TO CONTROL 110V/24V DC PERMANENT MAGNET MOTOR WITH DYNAMIC PARK (NEGATIVE GROUND ONLY REVERSE POLARITY PROTECTED)
 - PUSH TO WASH (WASHER & WIPER CIRCUIT ACTIVATED - 1 TO 3 WIPES AFTER WASHER CIRCUIT DEACTIVATED)
 - RATING: 110V/ 24V DC - 20000 CYCLES MINIMUM. WASHER CIRCUIT: 110V/24V DC - 20000 CYCLES MINIMUM.
 - SWITCH SHALL CONFORM TO SAE J1455:
 - SWITCH SHALL BE OF MICROPROCESSOR CONTROLLED TYPE MAKE: COLE HARSEE.
 - SWITCH SHALL BE COMPATIBLE TO OPERATE ALL THE THREE WIPERS TOGETHER AND AS WELL AS INDIVIDUAL WIPERS.

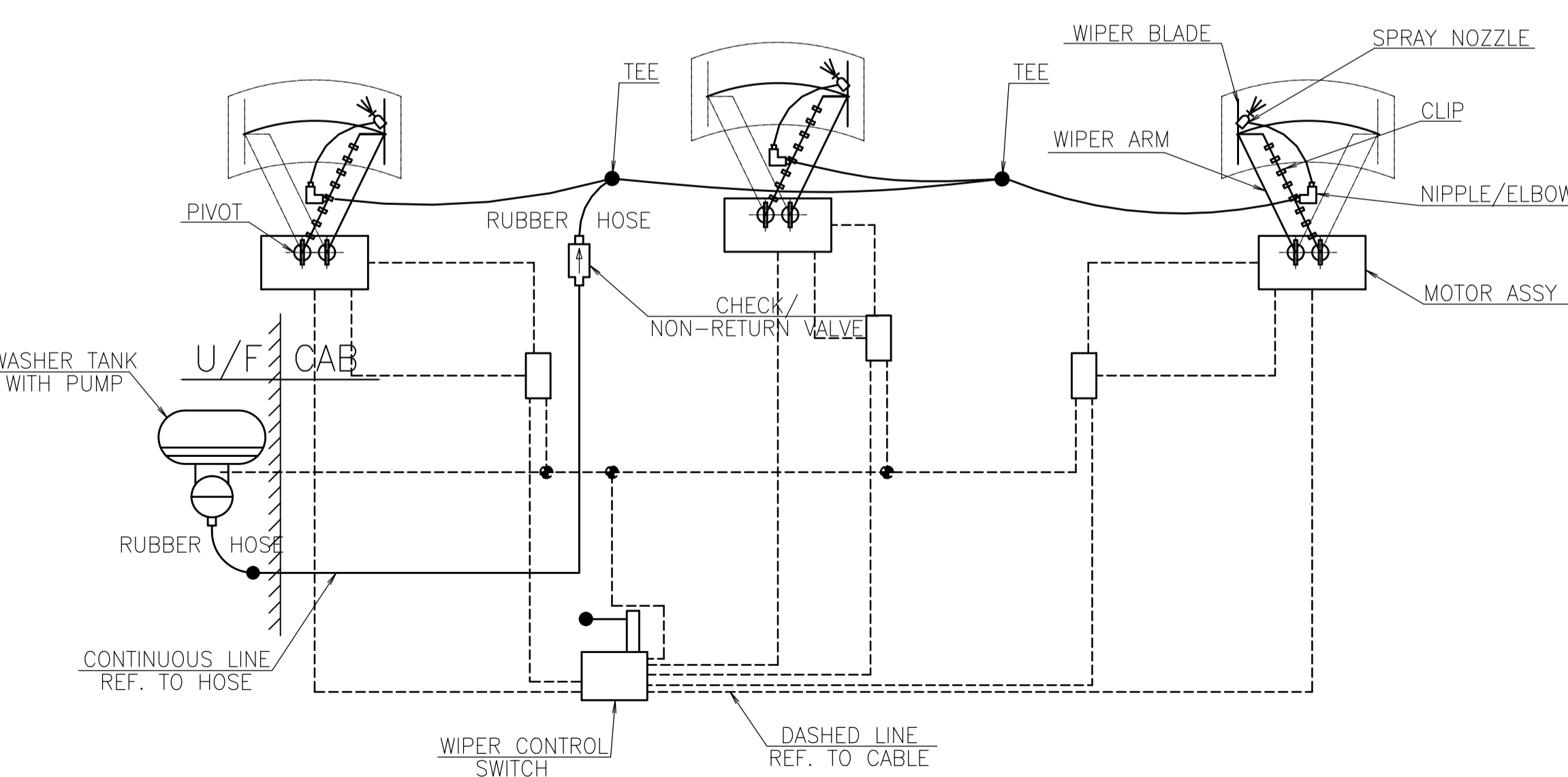
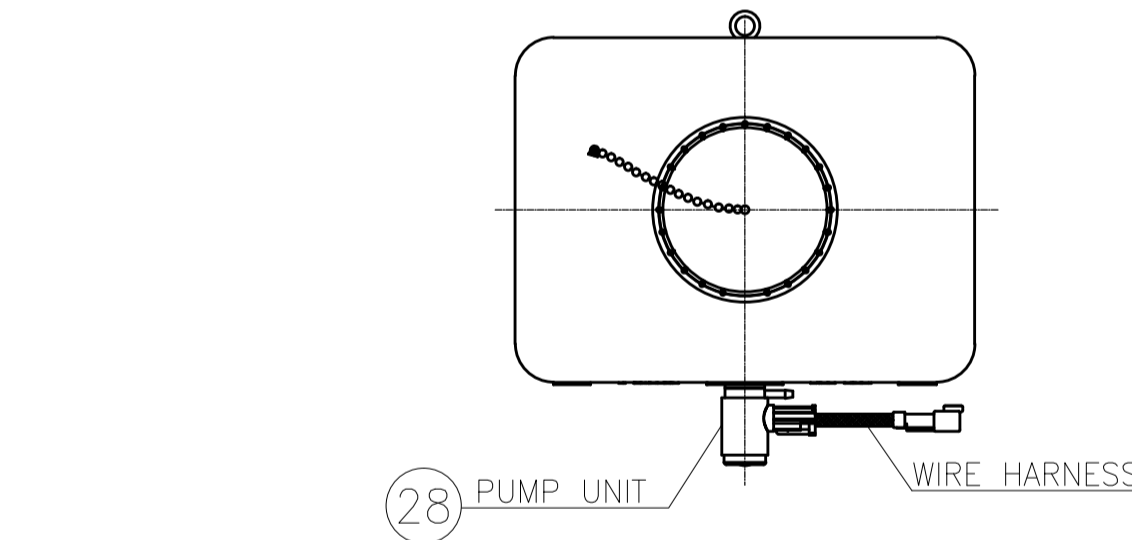
UN CONTROLLED

SPECIFICATION:-

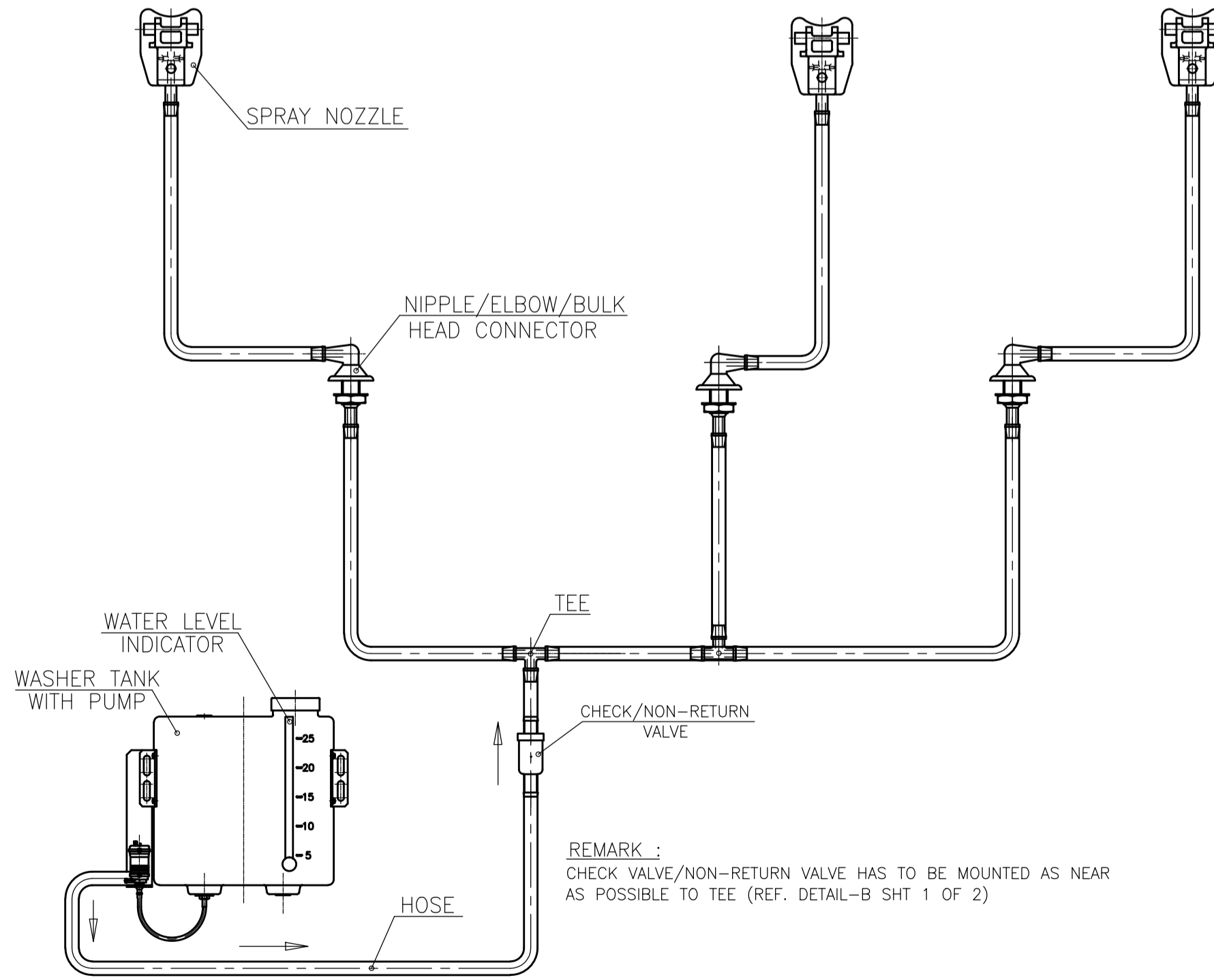
WIPER TYPE	PANTOGRAPH WIPE
WINDSCREEN PROFILE	CURVED
PARKING POSITION	AS PER DRAWING
DYNAMIC PARKING	REQUIRED
SWEEP ANGLE	SUPPLIER HAS TO SPECIFY FOR 80-90% WIPE WINDSCREEN AREA
STROKE/MINUTE	
LOW SPEED :	35
HIGH SPEED :	50
NOMINAL VOLTAGE	110V DC/ 24 V DC(WITH DC-DC CONVERTER)
OPERATING TEMP RANGE	AS PER MUMBAI (INDIA) ENVIRONMENT
WIPER BLADE LENGTH	SUPPLIER HAS TO SPECIFY
CONTACT PRESSURE	SUPPLIER HAS TO SPECIFY
WIPER ARM LENGTH	SUPPLIER HAS TO SPECIFY
ARM TRACKING FORCE	SUPPLIER HAS TO SPECIFY
WIPER MOTOR	
POWER CONSUMPTION:	
AT HIGH SPEED	SUPPLIER HAS TO SPECIFY
AT LOW SPEED	
MOUNTING LOCATION	BOTTOM MOUNTED (BELOW WINDSCREENS) INSIDE THE DRIVER'S CABIN
MODE OF OPERATION	HIGH SPEED, SLOW SPEED & WASH MODES
PROTECTION	IP54



- NOTE:**
- WIPER ARM SHALL BE PARKED AWAY AUTOMATICALLY WHEN THE ARM IS PULLED BACK.
 - THE SPRAYING OF WATER THROUGH NOZZLE SHALL BE INSTANT(WITHOUT ANY DELAY).
 - A SEPARATE WATER LEVEL INDICATOR SHALL BE PROVIDED IN WATER TANK FOR MONITORING WATER LEVEL IN TANK.
 - WASHER TANK KIT CONSISTS OF WASHER TANK/RESERVOIR, PUMP, DC-DC CONVERTER, WASHER FLUID LEVEL INDICATOR, NON-RETURN VALVE, TEES, ELBOWS,CONNECTORS & NOZZLES.
 - THE WIPER SYSTEM SHALL CONFORM TO PTS DOC NO. GR/TD/4869.
 - ALL THE NON-METALLIC MATERIALS INCLUDING CABLES & CONNECTORS SHALL MEET THE FIRE SAFETY REQUIREMENTS AS PER EN 45545 HL3 STANDARD.
 - THE FRONT EMERGENCY DOOR WILL BE OPENED DURING EMERGENCY SITUATION, SUPPLIER SHALL TAKE CARE OF THIS CONDITION IN WIPER DESIGN & PROPER CABLE AND HOSE ROUTING SHALL BE PROPOSED.
 - SAMPLE APPROVAL SHALL BE OBTAINED BEFORE BULK SUPPLIES.



LINE DIAGRAM OF WIPER SYSTEM
(IF 24 V SYSTEM OFFERED, SUITABLE DC-DC CONVERTER SHALL BE CONSIDERED BY WIPER SUPPLIER)



WASHER KIT ASSEMBLY (HYDRAULIC CIRCUIT)

29	1	-	DC-DC CONVERTOR (REQUIRED FOR 24V DC SYSTEM)		
28	1	-	WASHER PUMP ASSY	110V/24V DC	ASSY
27	3	-	NOZZLE ASSY	-	-
26	1	-	NON-RETURN VALVE	-	-
25	1	-	WATER LEVEL INDICATOR	-	-
24	1	-	WASHER TANK, CAP:20L/5GAL.	305x302x229	FIRE SAFE PVC/POLYETHYLENE/ANY OTHER PROVEN MATL. (COMPLYING TO EN5545-HL3)
23	3	-	HOSE,TEE	-	-
22	3	-	SPECIAL FLAT WASHER	-	-
21	AR	-	MALE TERMINAL	-	-
20	AR	-	FEMALE TERMINAL	-	-
19	AR	-	FEMALE SOCKET TERMINAL	-	-
18	1	SET	PLUG CONNECTOR HOUSING	-	-
17	1	SET	CONNECTOR LOCK	-	-
16	1	SET	CONNECTOR LOCK	-	-
15	1	SET	PLUG CONNECTOR HOUSING	-	-
14	1	SET	MALE CONNECTORS HOUSING	-	-
13	1	SET	FEMALE CONNECTORS HOUSING	-	-
12	1	-	HOSE ASSY	L=15000	FIRE SAFE EPDM/SILICON/NEOPRENE
11	3	-	GASKET	-	-
10	3	-	SPECIAL LOCK NUT	-	-
9	1	-	MICROPROCESSOR CONTROLLED, ROTARY SWITCH	110V/24V DC	MAKE: COLE HERSEE
8	1	-	HOUSING ASSEMBLY-CENTER	-	ASSY
7	2	-	HOUSING ASSEMBLY SIDE	-	ASSY
6	6	-	HOSE PIPE BEND(90°)	-	-
5	3	-	WEATHER CAPS	-	-
4	3	-	ADAPTER ASSY/ELBOW	-	ASSY
3	3	-	WIPER BLADE ASSY	-	ASSY
2	3	-	WIPER ARM ASSY	-	ASSY
1	3	-	MOTOR ASSY WITH PULSE GENERATOR	110V/24V DC	ASSY

SL.No.	QTY	PART / STOCK No.	DESCRIPTION	SIZE	COMPANY STD./I/S	Wt. (Kg)
MATERIAL						
PRODUCT: MUMBAI METRO CARS - L2 & L7						
REF DRG:						
MATERIAL:						
HEAT TREAT:						
SURFACE TREAT:						
TITLE:						
ELECTRICAL WIPER SYSTEM ARRANGEMENT						
APPD	13.01.2020					
REVD	13.01.2020					
CHKD	13.01.2020					
DRWN	13.01.2020					
SCALE	1:10	SHEET	2 OF 2	Wt.(Kg)		
DRG No.	525-18084		ALT			

ECN NO: 52510133
SECTION H-H ADDED
HOSE ROUTING RELOCATED, NOTE 7 ADDED
DATE: 18-02-2020
BY: [Signature]
APPD: [Signature]
BEMBL LIMITED
525-18084