



**QM-C-7.1/AB/0001/A**  
**Inspection Plan(Check Sheet)**

**Item:** Distributor Valve  
**Specn. :** 02-ARB-02, Appendix-A1  
**Amd.:** 3 of April 2010  
**Drg. No. & Alt.:** Proprietary Item

1.	<b>Name of manufacturer</b>	
2.	<b>Date of offer of assembled DVs</b>	
3.	<b>Description of material</b>	
4.	<b>Specification &amp; Model type</b>	
5.	<b>Purchase Order</b>	
6.	<b>Total quantity ordered</b>	
7.	<b>Quantity earlier passed</b>	
8.	<b>Quantity now offered</b>	
9.	<b>Consignee</b>	
10.	<b>D.P.</b>	

1.	<b>Date of inspection of assembled DVs</b>	
2.	<b>Qty. Accepted</b>	
3.	<b>Qty. Rejected</b>	
4.	<b>Balance order</b>	

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**1.0 Pre-inspection checks**

- 1.1 Ensure that all past NCRs issued in last one year are complied with YES NO
- 1.2 Sampling plan : Single/Double  
 (Specify reason in case of double sampling)\_\_\_\_\_
- 1.3 Ensure availability of valid Internal Test Reports YES NO
- 1.4 Ensure calibration status of equipment, test benches, gauges and Instruments to be used in inspection. YES NO
- 1.5 Availability of adequate air pressure on test bench YES NO
- 1.6 Availability of overcharge production on DV being tested YES NO

**2.0 Audit checks of the manufacturing procedure / IQA system**

- 2.1 Ensure that the QAP of the firm is approved and available. YES NO
- 2.2 Details of Audit Checks on record of internal Quality Assurance System  
 (This shall include all the manufacturing activities, testing, inspection of bought-out items, phosphating & waxing etc.)

S. No.	Reference to QAP check Sheets	Description of manufacturing operation	Deficiencies observed
1.	10 of 91	DV assy. & testing record	
2.	12 of 91	Corrective & preventive action	
3.	15 of 91	Testing plan for assembly products	
4.	16 of 91	Distributor valve assembly practices	

**3.0 Endurance testing**

- 3.1 One million cycles endurance test observations  
 Sample size : Two DVs from a lot of not less than 20 per year or per contract  
 DV Numbers picked up for test :- ..... and ..... DATED:- .....

Ensure that firm's internal records are maintained for daily testing: Collated records of testing for minimum of last four years to be available.

DV No.	Date test started	Cycles completed	Status of test bench	Ongoing cycle rate
E 007			<i>Ok/Not OK</i>	Six cycles / min.
E 008			<i>Ok/Not OK</i>	Six cycles /min.

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3.2 5000 cycle endurance test on 100% coaching DV's -

- |     |   |     |    |
|-----|---|-----|----|
| i.  | Ensure from the firm's record that all the coaching DV's have been subjected to 5000 cycles endurance test. | YES | NO |
| ii. | Check the observations for the lot in firm's record –   |     |    |
| a)  | Whether variation between initial & final tests observed  | YES | NO |
| b)  | Whether the repairs carried out / attention paid to the DV's as a result of endurance tests are recorded.   | YES | NO |
| c)  | Whether based on above records corrective & preventive actions being taken by the firm.                     | YES | NO |

4.0 **Audit check of DVs** (if applicable in the particular lot, records to be maintained by firm) – **Samples size 1 in 100.**

- i. DV No. picked up for testing  
ii. Dismantle the DV and check for following :

4.1 Dismantling and visual examination Check for

- |      |   |    |        |
|------|---|----|--------|
| i)   | Presence for excess wax, grease, dirt, dust, metallic burrs, moisture | OK | Not OK |
| ii)  | Interchangeability by swapping any five components and re-testing     | OK | Not OK |
| iii) | Identification and manufacturing marks on rubber components           | OK | Not OK |
| iv)  | Use of appropriate grease   | OK | Not OK |
| v)   | Proper fitment  | OK | Not OK |

4.2 Dimensional check of machined components

No	Name of the component	Check sheet no. as in QAP	Drawing No.	Remarks
	Diaphragm Plate	4 of 91	4A30511/2	
	Valve Pin	4 of 91	4B58165	
	Valve Plate	4 of 91	4B58167	
	Locking Plug	4 of 91	4B65189	
	TopCover	4 of 91	2A30496	
	Valve Head	6 of 91	4A30509	
	Control Sleeve	4 of 91	4A58159	
	Valve Rod	6 of 91	4B58160	
	Locking Cap	6 of 91	4A30518	
	Guide Piece	4 of 91	4A30855	

Note : The check sheets are enclosed as annexure \_\_\_\_\_ to \_\_\_\_\_

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Rubber Components

4.3

i) Dimensional checks on rubber components

No	Name of the component	Check sheet no. as in QAP	Drawing No.	Remarks
	Seal	4 of 91	3B69999	
	Diaphragm	4 of 91	3A30507	
	Seal	4 of 91	3A67907	
	Cup Diaphragm	4 of 91	4A26918	
	Diaphragm	4 of 91	4A30487	

Note : The check sheets are enclosed as annexure \_\_\_\_\_ to \_\_\_\_\_

ii) Testing of Rubber components

No	Name of the component	Check sheet no. as in QAP	Drawing No.	Remarks
		4 of 91		
		4 of 91		
		4 of 91		

Note : The check sheets are enclosed as annexures \_\_\_\_\_ to \_\_\_\_\_

4.4

Testing of springs

No	Name of the spring	Check sheet no. as in QAP	Drawing No. Spc. No	Remarks
	Comp. Spring	4 of 91	4A99452	
	Comp. Spring	4 of 91	4A30485/4	
	Comp. Spring	4 of 91	4A10327	
	Comp. Spring	4 of 91	4A30485/9	
	Comp. Spring	4 of 91	4A45118	

Note : The check sheets are enclosed as annexure \_\_\_\_\_ to \_\_\_\_\_

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4.5

**Testing of various chokes**

No	Name of the choke	Drawing no. & spec. no.	Specified value of the choke size	Observed value of the choke	Remarks
	APPLICATION CHOKE	4A31259/18	1.8H11		
	RELEASE CHOKE	4A31657/19	1.7H11		

4.6

**Phosphating & Waxing**

Check five cast iron components for complete coverage, run marks, excess waxing & uniformity

*(Write the deficiency in case of non-conformity or OK in case of satisfactory results)*

S.No	Name of the component	
	DV Housing	
	R-charger	
	Bottom Cover	
	Side Cover	
	Choke Cover	

4.7

Check hardware e.g. circlips, washers, nuts, bolts & specialized items for proper quality, rusting, deformation etc.

OK Not OK

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5.0

**Performance Test –**

Ensure single pipe test stand for goods and twin pipe for passenger is available.

No. of lot offered –

Total quantity offered –

**Sample size – Passenger (P) -25% Goods(G) -10%**

	Parameters	G	P	DV No.		DV No.		DV No.	
				Firm	RDSO	Firm	RDSO	Firm	RDSO
2.1 (* )	Charging Time a) Time for Auxiliary Reservoir(AR) pressure to rise from 0 to 4.8 kg/cm2  b) Time for Control reservoir (CR) pressure to rise from 0 to 4.8 kg/cm2	For C3W 175±30 sec. For KEO 60-120 sec.  For C3W 165±20 sec. For KEO 160-210 sec	50-135  160-210						
2.2	Leakage Test Check for leakage from mounting of sub-assemblies during i. Release ii. Service Application iii. Emergency	No leakage No leakage No leakage							
2.3	Brake Cylinder (BC) filling time from 0 to 3.6 kg/cm2 under service and emergency application.	18-30s	3.5 s						
2.4	Brake cylinder draining time from 3.8 to 0.4 kg/cm2 after service and emergency application	45-60 s	15-20 s						
2.5	Maximum Brake Cylinder pressure under service and emergency application.	3.8±0.1 kg/cm2							
2.6	Sensitivity Test Response of brakes when Brake pipe (BP) pressure is reduced at a rate of 0.6 kg/cm2 in six seconds when BP is isolated from Main Reservoir.	Brake should apply within 6 sec.							
2.7	<b>Insensitivity Test</b> Response of brakes when Brake (BP) pressure is reduced at a rate of 0.3 kg/cm2 in 60 seconds when BP is isolated from Main Reservoir.	Brake should not apply.							
2.8	Re-feeding Test Response of valve when Brake Cylinder pressure is slowly exhausted.	Refeeding should be available.							

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2.9 (*)	Brake Cylinder pressure attained when Brake pipe pressure is reduced in steps (at lease seven steps)								
		BP Dropping		BC Pressure	.C PRESSURE	.C PRESSURE	.C PRESSURE	.C PRESSURE	.C PRESSURE
	1.	4.6	kg/cm <sup>2</sup>	0.35 - 1.00					
	2,	4.4	kg/cm <sup>2</sup>	1.00 - 1.50					
	3,	4.2	kg/cm <sup>2</sup>	1.50 - 2.00					
	4.	4.0	kg/cm <sup>2</sup>	2.00 - 2.70					
	5,	3.8	kg/cm <sup>2</sup>	2.70 - 3.20					
	6,	3.6	kg/cm <sup>2</sup>	3.20 - 3.70					
	7.	3.4	kg/cm <sup>2</sup>	3.70 - 3.90					
		BP Rising		BC Pressure	.C PRESSURE	.C PRESSURE	.C PRESSURE	.C PRESSURE	.C PRESSURE
	1.	3.6	kg/cm <sup>2</sup>	3.50 - 3.90					
	2,	3.8	kg/cm <sup>2</sup>	2.95 - 3.25					
	3,	4.0	kg/cm <sup>2</sup>	2.40 - 2.70					
	4.	4.2	kg/cm <sup>2</sup>	1.75 - 2.10					
	5,	4.4	kg/cm <sup>2</sup>	1.15 - 1.60					
	6,	4.6	kg/cm <sup>2</sup>	0.55 - 1.00					
	7.	4.8	kg/cm <sup>2</sup>	0.00 - 0.00					
2.10	Maximum brake cylinder pressure at full application.			3.8±0.1kg/cm2.					
2.11	Brake pipe pressure when cylinder pressure is 0.4 kg/cm2			4.85 kg/cm2 approx.					
2.12	Automatic exhausting of Brake Cylinder and Control reservoir – Test of Quick release valve.			CR & BC pressure should automatically exhaust to zero.					
2.13	Overcharge protection – Overcharge brake pipe (BP) to 6.0 kg/cm2 after full service application.			Control reservoir (CR) pressure should not rise within 25 sec. –G. 10 sec.- Pass.					
2.14	Test the pipe bracket with control reservoir and gasket mounting on a suitable test stand for leakage at 10kg/cm2.			No leakage.					

(\*) Note – Specified values of test indicated at para 2.1 a, 2.1 b & 2.9 shall be furnished by the manufacturer on the basis of test certificate collaborator.

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6.0

**Painting –**

**Sample size – Passenger (P) -25% Goods(G) -10%**

Check that the distributor valve including adopter with isolating cock & pipe bracket with control reservoir is given suitable anticorrosive treatment and the exterior excluding the flange faces are painted with black enamel paint.

Observations -

1	2	3

7.0

**Packing –**

**Sample size – Passenger (P) -25% Goods(G) -10%**

- |    |  |             |
|----|--|-------------|
| 1. | All external ports of DV & pipe bracket are covered with protector caps. | OK / Not OK |
| 2. | Complete DV to be covered with polythene/thermocool                      | OK / Not OK |
| 3. | Ensure immovability of DV after seating in packing crate.                | OK / Not OK |
| 4. | Protection of delicate ports to be adequate                              | OK / Not OK |
| 5. | Overall suitability for transportation                                   | OK / Not OK |
| 6. | Availability of test certificate   | OK / Not OK |

Observations -

1	2	3

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