FREIGHT TRAIN EXAMINATION

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PATTERN OF FREIGHT TRAIN EXAMINATION:

- Comprehensive instructions regarding the pattern of freight train examination and issue of Brake Power Certificate have been issued by Railway Board in the form of-
- Joint Procedure Order vide letter No.94/M(N)/951/57 dated 28.2.2000 (Para 314).

NOTIFICATION OF EXAMINATION POINTS:

A) All goods trains must invariably be given Intensive Examination for repairs.

B) Railways should notify nodal points authorize to issue intensive brake power certificates –

- for running of air brake trains on End-to-End basis, Premium Examination and in Close Circuits.
- These nodal points should have adequate facilities like cemented pathways, welding points, proper lighting etc. for proper examination of air brake trains.

C) Intensive BPC to be issued from nodal examination points only.

D) As a special case, a Safe-to-Run certificate/ GDR certificate may be issued from examination points other than the nodal points for empty journey of air brake stock after unloading up to the first/nominated nodal point in the direction of movement as mentioned in para 314.

FREQUENCY OF INTENSIVE EXAMINATION FOR DIFFERENT STOCK:

- A) All freight trains should be subjected to intensive examination in empty condition at originating stations.
- B) In exceptional cases the back loaded freight trains can be examined as per instructions mentioned in para 314 item 1 (v).
- C) All freight trains shall be re-examined if stabled for more than 24 hours by SSE/JE (C&W) in yard and by guard and Loco Pilot in non C&W station up to next C&W point in the direction of movement for examination, as per Railway Board's Joint Procedure Order placed at para 314.
- D) Air brake stock shall run on end-to-end pattern as mentioned in para 314. The intensive BPC shall remain valid provided:
- i. The **destination is mentioned** on the BPC of the loaded train.
- ii. The composition of the rake is not changed by **4 or more wagons.**
- iii. The rake is **not stabled** for more than **24 hours**.

- E) Air brake stock shall run on nominated Close Circuit as mentioned in para 314. The intensive BPC issued at the nodal point shall remain valid provided:
- i. The kilometrage have been logged in correctly and continuously. (If not, BPC will be deemed to be valid for 15 days only from the date of issue of BPC.)
- ii. The rake integrity is not changed and only the listed wagons are included.
- iii. The rake is **not stabled** for more than **24 hours.**
- iv. The rake is running in the predefined circuit as mentioned on the BPC. (Breaking the rake into parts and reforming the same parts, will not be deemed to have broken the rake integrity)
- F) No intermediate examination of the Close Circuit rake is required. It would be the responsibility of the Driver and Guard to check the unloaded CC rake at the unloading point and ensure brake continuity before starting.
- G) All close circuit freight trains will be given intensive examination during day light hours.
- H) BPC issued after intensive examination in empty condition must be revalidated after loading. Revalidation includes conducting brake continuity test, ensuring completeness/securing of brake gears only and endorsing on intensive BPC. No detachments unless safety is affected.

STEPS OF INTENSIVE EXAMINATION

- A) Rolling-in-examination including axle box feeling.
- B) Intensive examination of originating trains including repairs, detachment of damaged/sick wagons, brake testing etc.
- C) Issue of Intensive Brake Power Certificate after ensuring brake continuity of the formed load.

For loads requiring sorting and/or having different terminating and originating yards/locations, the steps for issuing intensive BPC will be as follows:

- i. Rolling-in-examination including axle box feeling.
- ii. Terminating examination including detachment of damaged/sick wagons.
- iii. Intensive examination of originating trains including repairs, brake testing.
- iv. Issue of Intensive Brake Power Certificate after ensuring brake continuity of the formed load.

(305) DETAILS OF INTENSIVE EXAMINATION:

305A.ROLLING-IN-EXAMINATION INCLUDING AXLE BOX FEELING –

- To carry out this examination the Train Examiner and his staff should take up positions on both sides of the lines short of the normal halting place on which the train is to be received.
- The following inspection should be carried out during the rolling in examination:
- i. In motion inspection and observation of under gear of wagons for any loose or dangling components and flat places on tyres/wheels.
- ii. Immediately after the train has come to a halt, all axle boxes should be felt/ temp. measurement taken with contact-less thermometers and those, which are found running at high temperature(More then 90 0C), should be marked sick for opening/checking at the time of examination and attention if necessary.
- iii. Examination of any abnormal behaviour of any of the vehicles or any other observation which may relate to unsafe working condition.
- iv. The rolling in examination must be conducted to detect any skidded wheel. Defect in the brake system or faulty manipulation by the driver may cause skidding of wheels.
- v. Incoming BPC should be collected by yard C&W staff.

305B. INTENSIVE EXAMINATION AND REPAIRS -

- Once, the train has been offered for examination by Traffic Department, the rake should be protected at both the ends before undertaking the following examination and repair activities:
- i. Inspection and repairs of running gear fittings.
- ii. Inspection and repairs of brake gear and spring gears.
- iii. Inspection and repairs of draw and buffing gear.
- iv. Checking and making good the deficiency of safety fittings, safety brackets,
- safety loops, etc.
- v. Replacement of brake blocks:
- □ Brake blocks should be replaced on reaching condemning thickness.
- □ Worn out composite brake blocks should be replaced with composite brake
- blocks.
- □ To ensure correct fitment of brake blocks, only spring steel key should only be
- used.
- □ After fitment of brake block and key on brake head fitment of split pin should be ensured.
- vi. Correct fitment of washers, bulb cotters and all brake gear pins to be ensured.
- vii. Correct functioning and positioning of empty load device.
- viii. CTRB stock found running at high temperature may be taken in sick lines for further attention

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- ix. Checking and proper securing of doors of covered wagons.
- . x. Look for abnormal and /or unequal buffer heights/CBC height, wear plate knuckle, etc. to the extent it is possible to detect by visual examination. In case of doubt, the buffer height/CBC height should be measured
- xi. Meticulous check of brake cylinders, distributor valves, auxiliary reservoir control chambers and other pipe points should be carried out to ensure that these are in proper working order. Isolating cocks and angle cocks to be checked for proper position. Brake cylinder should be released and checked for piston stroke.
- xii. After brakes are released, the wheel profile should be examined visually. If any defect is noticed, it should be checked with tyre defect gauge and wagon to be marked sick for wheel changing, if required. If bent axle is suspected wheel gauging must be done.

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- xiii. The bogies, complete side frames and bolsters to be visually examined for cracks and missing parts. Bolster springs, snubbers, spigots, centre pivots fastening, side bearer and Elastomeric pads in case of CASNUB 22 bogie to be checked for defects, if any.
- xiv. Examine brake rigging components with special attention to brake beam deformation and wear on integral brake shoe bracket.
- xv. Check intactness of the pull and push rods with pins, washers, split pins and cotters, etc. Hand brakes must be checked for smooth and effective operation.
- xvi. Visual examination of under frame members, body, door mechanism, CBC wear or deficiency of parts to be marked and their operation to be checked.
- xvii. Brake power should be tested.

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- xviii. Examination of loaded stock should be done as per IRCA part-III.
- xix Examination of tank wagons should be done as per IRCA Part-III.
- **xx. Where a rejectable defect can not be attended to on the train in the yard, the wagon shall be damaged labelled for attention in the sick line.**
- xxi. Brake adjustment shall be done as per wheel diameter by adjusting End Pull Rod hole position.
- xxii. Visual examination of under frame members, body, door mechanism for any defects/ damages. Attend, if necessary.

305C. ISSUE OF INTENSIVE BRAKE POWER CERTIFICATE –

- i) All freight trains after being subjected to intensive examination will be given a Brake Power Certificate.
- ii) The **colour** brake power certificates of-

  air brake stock End to End- Green

  Premium- **light green**

  CC Rakes - yellow

- iv) The **minimum originating brake power** for air braked goods trains, running on end-to-end pattern of examination, shall be **90% .**

- v) The **originating brake power** for air braked goods trains, running **in close circuits shall be 100 %** with adequate brake block thickness. The originating brake power for air braked Premium rakes shall be **95%**.
- vi) As far as possible, the close circuit air brake rakes should be formed by off- ROH and off-POH wagons for better monitoring.
- vii) No fresh Brake Power Certificate shall be issued during revalidation.
- viii) No Safe-to-Run BPC shall be issued from nodal points.
- ix) Brake pipe pressure required in the air braked train with locomotive should be as follows:

No. of wagons	**On Locomotive**	**Min. on last wagon**
Up to 56	5.0 Kg/Cm2	4.8 Kg/Cm2
Beyond 56	5.0 Kg/Cm2	4.7 Kg/Cm2

The following procedure should be followed to issue the BPC after attachment of the locomotive:-

- ✓ All BP& FP hoses on the train should be coupled.
- ✓ The angle cocks at both ends of the wagon in brake pipe should be open.
- ✓ The angle cock at the end of air brake van must be in closed position.
- ✓ Attach front wagon BP hose to BP hose of the locomotive.
- ✓ Ensure firmness and tightness of hoses with palm ends coupling and clips.
- ✓ Ensure that all the cut off angle cocks on brake pipes are in open position.
- ✓ Attend to all leaks by replacing MU washer, leaky hoses and angle cock assembly, if requisite BP pressure is not coming in the last vehicle.
- ✓ Inoperative or defective brake cylinders should be isolated by putting the isolating cock handle in close position.

AIR BRAKE TESTING :

- A rake consisting of air brake wagons should be tested with rake test rig.
- This rig may be used for testing the train in yard before attaching the engine.
- The rake test rig has compressed air supply and a mobile test rig.
- The mobile test rig has a cubical structure and is mounted on wheels.

1. Attach the locomotive/compressor through the test rig to the train & couple brake pipes.
2. Ensure correct coupling with pipes so that there is no leakage of airfrom coupled joints
3. The coupling should be done with angle cocks in closed position.
4. Open the angle cocks of loco after coupling brake pipe.
5. Open the angle cock of the brake pipe on all the wagons.
6. Check for continuity of Brake pipe by reducing and rebuilding brake pipe pressure.
7. The verification should invariably be carried out through the pressure gauge provided in Guard‟s Brake Van.
8. After the brake pipe pressure has stabilised in the locomotive and rearmost vehicle, move the driver‟s automatic brake valve handle towards application position to reduce the brake pipe pressure from 5 kg/cm2 to 4 kg/ cm2.

9. After the brake pipe pressure has been stabilised, close the brake pipe isolating cocks provided between additional C2 relay valve and brake pipe of the locomotive.

10. Wait for 60 seconds for gauge settlement. Then note the drop in pressure in the brake pipe gauge in the locomotive for five minutes.

11. The drop in brake pipe pressure gauge shall not be more than 0.25 kg/cm2 per minute.

12. Examine for leaky components, malfunctioning of distributor valves, brake cylinders, control and auxiliary reservoirs, angle cocks, BP hoses.

13.In case leakage is heavy and cannot be arrested, the wagon may have to be isolated/detached

14. In case where leakage can be arrested temporarily by tape and the nature of leakage is such that it requires attention at primary depot, clear marking on the wagon must be made to draw attention of primary depot for adequate attention.

15. In case the leakage is from the distributor valve and cannot be arrested, close the distributor valve isolating cock. In such a condition, clear marking should beprovided on the wagon to indicate this defect to primary depot.

- **IMPORTANT PARAMETERS TO BE ENSURED DURING INTENSIVE EXAMINATION:-**

A-BRAKE GEAR LIMIT AND CLEARANCES:

Description	Limits
Brake block condemning limits	10 mm
Yard leaving thickness of brake block except BOY wagon	20 mm
„A" dimension of air brake stock fitted with CASNUB bogie except BOBRN wagon	70 mm +2 - 0
„A" dimension of BOBRN wagon	27 mm +2 - 0

B-PISTON STROKE:-

Type of wagon	Piston Stroke	
	Empty	**Loaded**
BOXN, BCN/BCNA, BRN, BTPGLN,	85 mm +/- 10	130 mm +/- 10
BOXNHL, BCNHL	85 mm +/- 10	120 mm +/- 10
BTPN	87 mm +/- 10	117 mm +/- 10
BOY	90 mm +/- 10	135 mm +/- 10
BVZC	70 mm +/- 10	
BOBRN	100 mm+/-10	110 mm+/-10
BOBYN	100 mm+/-10	110 mm+/-10
BVZI	45 mm+/- 10	

C-BUFFER HEIGHT :

Buffer height from Rail level

- Max. 1105 mm (Empty)
- Min. 1030 mm (Loaded)

IMPORTANT PARAMETERS TO BE ENSURED DURING SICK LINE/ DEPOT ATTENTION-

A-NOMINAL CLEARANCES OF CASNUB BOGIES

Description	22W 22W (RETRO)	22W(M)	22NL NLB, NLM, NLC	22HS HS(MOD1), HS(MOD2), IRF108HS
Lateral clearance between side frame and bolster	**18 mm**	**18 mm**	**18 mm**	**25 mm**
Lateral clearance between side frame and axle box/adopter	**25 mm**	**25 mm**	**16 mm**	**16 mm**
Longitudinal clearance between side frames and axle box/adopter	**2 mm**	**10 mm**	**9 mm**	**9 mm**
Longitudinal clearance between side frame and bolster	**6 mm**	**6 mm**	**6 mm**	**6 mm**
Clearance between anti rotation lug and bolster	**4 mm**	**4 mm**	**4 mm**	**4 mm**

B. WEAR LIMITS

Description	Limits
Adapter Thrust shoulder	0.7 mm
Adapter Crown lugs	4.0 mm
Adapter crown seat	3.5 mm
Adapter side lugs	3.5 mm
Adapter sides	3.0 mm
Side frame column friction plate	4.0 mm
Side frame column sides	5.0 mm
Side frame anti rotation lug	3.0 mm
Pedestal crown roof	5.0 mm
Pedestal crown sides	4.0 mm
Pedestal sides	2.0 mm
Pedestal jaw	4. mm
Bolster liner wear limit	5.0 mm
Bolster land surface	3.0 mm
Bolster column sides – Inner/Outer	5.0 ,mm

C- LOAD/SNUBBER SPRINGS OF CASNUB

Type of Bogie	Location	**Free Height Nominal (mm)**	**Free condemning height (mm)**
CASNUB 22W, W(Retro),W(M), NL, NLB, NLM & NLC	Outer Inner Snubber	260 262 294	245 247 279
CASNUB 22 HS	Outer Inner Snubber	260 243 293	245 228 278
CASNUB 22 HS (MOD-I)	Outer Inner Snubber	253 225 304	238 210 289
CASNUB 22 HS (MOD-II)	Outer Inner Snubber	253 222 304	238 207 289

D- WEAR LIMIT FOR FRICTION WEDGE BLOCK

- Vertical Surface -7 mm
- Slope Surface -3 mm

E-CENTRE PIVOT WEAR LIMIT

	CASNUB 22(W)	**OTHERS**
Vertical sides	5.5 mm	4.0 mm
Seats	4.0 mm	4.0 mm

F- ELASTOMERIC PAD & CONSTANT CONTECT SIDE BEARE-

Description	Nominal dimension	Dimension after permanent set (condemning size)
Elastomeric Pad	46 mm	42 mm
Constant contact side bearer pad		
a). Metal Bonded rubber pad	114 mm (pad only)	109 mm
b). PU CCSB for CASNUB 22HS	142.5 mm (With three rings)	137 mm
c). PU CCSB for CASNUB 22NLB	134 mm (With two rings)	128.5 mm

G- WHEEL & AXLE

Description	Limits	
	New	Condemn
Wheel dia used on BOXN/CASNUB bogie)	1000 mm	906 mm
Wheel dia used on BLC/ BLL	840 mm	780 mm

Man-hours for examination of various types of stock-

Stock	Type of Examination		
	Terminating	**Intensive**	**Originating**
Air Brake (End-to-End running)	6	56	10
Air Brake (Premium)	6	75	10
Air Brake(Close Circuit)	6	100	10