

Appendix 10 – Annex 7**Damage codes – Modules assignement**

The following table defines the link between the modules with measures to restore the fitness to run and the damage codes in accordance with Appendix 9. If damages are not listed in the table, module M00.001 shall be used.

Damage code Appendix 9:	Measures to restore the fitness to run
0.Measures with other modules to execute	
At every workshop stay	M00.002*: Additional inspections by the workshop
1. running gear	
1.1.1 Thickness of tyred wheel less than 35 mm on wagons suitable for running at 120 km/h or 30 mm on other wagons	M01.001: Wheelset removal/installation
1.1.2 Tyred wheel broken, cracked lengthways or crossways	M01.001: Wheelset removal/installation
1.1.3 Tyred wheel loose, inspection marks inconsistent or unclear ring or tyre clip loose or appearance of rust between the tyre and the rim over more than one third of the circumference	M01.001: Wheelset removal/installation M03.002: Carry out brake test to determine cause of damage
1.1.4 Inspection marks on tyred wheel missing, not clearly discernible	M01.001: Wheelset removal/installation
1.1.5 Tyred wheel shifted sideways, tyre clip loose or visibly distorted	M01.001: Wheelset removal/installation M03.002: Carry out brake test to determine cause of damage
1.1.6 Damage to tyred wheel clip (cracked, broken, missing)	M01.001: Wheelset removal/installation
1.2.1 Groove marking the minimum thickness is no longer fully visible in cross-section	M01.001: Wheelset removal/installation
1.2.2 Thermal overload due to braking: obviously recent paint burns of 50 mm or more at connection between rim and wheel plate (cracks or shelling on paint), traces of rust on rim (plate not painted), fusion of brake blocks, deterioration of wheel tread with build-up of metal (see also no. 1.3.4), uneven blueish appearance on rim due to the effect of thermal overload	M01.003: Handling of wagons after signs of thermal overload of wheelsets
1.2.2.2 Thermal overload due to braking with gauge widening of the inner faces	M01.001: Wheelset removal/installation M03.002: Carry out brake test to determine cause of damage
1.3.1.2 Width of tyre or corresponding part of solid wheel > 140 mm < 133 mm, presence of a projection	M01.001: Wheelset removal/installation
1.3.2 Tread of tyre or corresponding part of solid wheel crushed in places, uneven contact surfaces or irregular protrusions on the wheel rim	M01.001: Wheelset removal/installation
1.3.3.1 Wheel flat longer than 60 mm (wheel $\varnothing > 840$ mm)	M01.001: Wheelset removal/installation M03.002: Carry out brake test to determine cause of damage
1.3.3.2 Wheel flat longer than 40 mm (wheel $\varnothing 630$ mm < d ≤ 840 mm)	M01.001: Wheelset removal/installation M03.002: Carry out brake test to determine cause of damage
1.3.3.3 Wheel flat longer than 35 mm (wheel $\varnothing \leq 630$ mm)	M01.001: Wheelset removal/installation M03.002: Carry out brake test to determine cause of damage
1.3.4.1 Metal build-up over a length of > 60 mm or ≥ 1 mm thick (wheel $\varnothing > 840$ mm)	M01.001: Wheelset removal/installation M03.002: Carry out brake test to determine cause of damage
1.3.4.3 Metal build up over a length of > 40 mm or ≥ 1 mm thick (wheel $\varnothing: 630$ mm < d ≤ 840 mm)	M01.001: Wheelset removal/installation M03.002: Carry out brake test to determine cause of damage
1.3.4.5 Metal build up over a length of >35 mm and ≥ 1 mm thick (wheel $\varnothing \leq 630$ mm)	M01.001: Wheelset removal/installation M03.002: Carry out brake test to determine cause of damage

Damage code Appendix 9:	Measures to restore the fitness to run
1.3.5.1 Cavity, shelling or flaking (wheel $\varnothing > 840$ mm, length > 60 mm)	M01.001: Wheelset removal/installation
1.3.5.2 Cavity, shelling or flaking (wheel \varnothing : $630 \text{ mm} < d \leq 840 \text{ mm}$, length > 40 mm)	M01.001: Wheelset removal/installation
1.3.5.3 Cavity, shelling or flaking (wheel $\varnothing \leq 630$ mm, length > 35 mm)	M01.001: Wheelset removal/installation
1.3.6.1 Cracks at the interface between the wheel tread and the front edge	M01.001: Wheelset removal/installation
1.3.6.4 Cracks on the tread - isolated cracks: with characteristics of thermal overload	M01.001: Wheelset removal/installation M03.002: Carry out brake test to determine cause of damage
1.3.7 Deposits of paint, oil or lubricants on wheel tread edge, except for control marks (4 paint marks positioned 90° apart)	M01.005: Cleaning the faces of the tyres or rims
1.3.8.2 Grooves with sharp edges ≥ 1 mm deep	M01.001: Wheelset removal/installation
1.3.8.3 Furrows and false flanges > 2 mm deep	M01.001: Wheelset removal/installation
1.4.1 Height of flange Sh greater than 36 mm (wagon with LL brake blocks and permissible speed greater than 100 km/h) and height of wheel flange Sh greater than 32 mm: hollow on wheel tread	M01.001: Wheelset removal/installation
1.4.2 Flange thickness Sd < 22 mm on wheel $\varnothing > 840$ mm or Sd < 25 mm on wheel \varnothing : $760 \text{ mm} \leq d \leq 840 \text{ mm}$ or Sd < 27.5 mm on wheel $\varnothing < 760$ mm. For wagons with LL or K brake blocks, Sd > 33 mm on wheel $\varnothing > 330$ mm; worn flange	M01.001: Wheelset removal/installation
1.4.3 Wear of flange guide faces $qR \leq 6.5$ mm or sharp flange	M01.001: Wheelset removal/installation
1.4.4 Burrs and/or sharp edges on guide face at a distance $h > 2$ mm from maximum height of flange	M01.001: Wheelset removal/installation
1.5.1 Damage to solid wheel centre or wheel hub (cracked, defect repaired by welding)	M01.001: Wheelset removal/installation
1.5.2 Damage to tyred wheel centre, tyre clip, tyre (cracked, broken or defect repaired by welding)	M01.001: Wheelset removal/installation
1.6.1 Damage to axle (cracked, deformed), defect repaired by welding, sharp edge, worn to a depth of more than 1 mm)	M01.001: Wheelset removal/installation
1.6.3 Part rubbing against axle	M03.004: Reattach, remove loosen parts of brake rigging
1.7.1 Clearance between internal faces of wheelset non-compliant with limit values, signs of derailment, signs of movement of wheel on axle, heating (solid wheel) in fillet zone between web and rim/tyre	M01.001: Wheelset removal/installation
1.8.1.1 Housing axle box not watertight, defect allowing water or dust to enter: cracked or broken housing or missing plug (the loss of the protective cap of the centring cone is permissible), except housing types without cover	M01.001: Wheelset removal/installation
1.8.1.2 Loss of lubricant grease or oil discharge on the wheel centre	M01.004: Examination and handling of wheelsets with grease leak
1.8.2 Axle box guides no longer able to guide the axle (guide broken or axle box in abnormal position)	M01.001: Wheelset removal/installation
1.8.3.1 Hot box housing too hot to touch with back of hand, traces of rust	M01.001: Wheelset removal/installation
1.8.3.2 Confirmation by the RU of box over-heating during transport	M01.001: Wheelset removal/installation
1.8.4 Hard manganese wear plate on axle box of Y bogie or derivative designs displaced or missing	M01.001: Wheelset removal/installation

Damage code Appendix 9	Measures to restore the fitness to run
2. Suspension	
2.1.1 Spring leaves displaced by more than 10 mm with respect to buckle, shiny marks near buckle	M02.001: Leaf-spring suspension removal/installation
2.1.2 Main leaf fractured or with visible crack	M02.001: Leaf-spring suspension removal/installation
2.1.3 Part of a fractured suspension spring leaf missing	M02.001: Leaf-spring suspension removal/installation
2.1.4.1 Fracture (but without any part missing) of intermediate suspension spring leaf at a distance from the centre of the spring of less than $\frac{1}{4}$ of leaf length	M02.001: Leaf-spring suspension removal/installation
2.1.6 Buckle loose (fracture or crack in buckle, key missing or ineffective) or signs of loosening of leaves	M02.001: Leaf-spring suspension removal/installation
2.2.1.1 Main or intermediate spring leaf visible crack or break	M02.001: Leaf-spring suspension removal/installation
2.2.1.2 Main or intermediate spring leaf buckle broken, two leaves touching over 50% of their length	M02.001: Leaf-spring suspension removal/installation
2.2.2.1 Leaf parabolic spring displaced lengthways > 10 mm	M02.001: Leaf-spring suspension removal/installation
2.2.3 Buckle damaged or loose (buckle fractured, cracked or lug of the lower key cracked or weld seam of upper key fractured or cracked)	M02.001: Leaf-spring suspension removal/installation
2.4.1 Boss of buckle out of position, abnormal position of axle box	M02.002: Insert buckle boss
2.4.3 Link pin displaced, missing, not secured	M02.003: Suspension links removal/installation
2.5.1 Main/tare spring cracked or broken	M02.004 Helical springs removal/installation
2.5.2.2 Auxiliary/load spring displaced or broken – on loaded wagon (axle box no longer horizontal)	M02.004 Helical springs removal/installation
2.5.3.2 More than one damper ring missing or broken	M02.005: Damper ring removal/installation
2.5.4.2 More than one spring cap in contact per bogie	M02.005: Damper ring removal/installation
2.5.6 Insufficient spring clearance: Recent signs of contact between axle-box: housing and bogie frame (distance less than 8 mm) in combination with Appendix 9, Annex 9, Checklist 2, point 9.3 (no overloading detected)	M02.004 Helical springs removal/installation
3. Brake	
3.1. 3.1 Brake isolating cock unusable	M03.008 Restore usability of brake isolating cock
3.1.3.2 Brake isolating cock – position unclear	M03.008 Restore usability of brake isolating cock
3.2.4.2 Defective brake disc fixing on the axle pin	M01.001: Wheelset removal/installation
3.2.4.4 Crack in cross section on brake disc	M01.001: Wheelset removal/installation
3.3.1.1 Main brake pipe inoperative	M03.007 Check brake for leaks
3.3.2.1 Pneumatic part, brake coupling, damaged or missing (brake couplers must be available at all existing coupler connections on either end of a wagon)	M03.005: brake hoses removal/installation
3.3.5.1 Pneumatic part, stopcock unusable, leaking, warped or handle missing.	M03.006: stopcock removal/installation
3.3.5.2 Pneumatic part, stopcock, stopping device missing or visibly damaged	M03.006: stopcock removal/installation
3.3.6.3 DET's (derailment detector) connection hose not air- tight	M03.007 Check brake for leaks
3.4.2 Plate hanging loose	M04.006: Remove damaged spark arrestor plate

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4. Wagon underframe and bogies	
4.1.1 Wagon underframe warped vertically or horizontally (buffer height out of tolerance range, visible distortion)	M00.001: Keeper instructions to be obtained
4.1.2 Solebar, headstock stressed by coupler or intermediate crossbar exhibiting a fracture or crack	M00.001: Keeper instructions to be obtained
4.2.1 Axle guard distorted, safety hazard	M00.001: Keeper instructions to be obtained
4.2.2 Axle guard broken, abnormal position	M00.001: Keeper instructions to be obtained
4.2.3.1 Axle guard, fastening loose	M00.001: Keeper instructions to be obtained
4.2.4.1 Axle guard crack running over more than $\frac{1}{4}$ of horizontal cross-section	M00.001: Keeper instructions to be obtained
4.2.4.3 Axle guard crack close to or running towards a fastening point, regardless of length of crack	M00.001: Keeper instructions to be obtained
4.3.1 Axle guard tie bar missing, broken, visibly distorted, loose	M04.001: Axle-guard tie removal/assembly
4.4.1.2 More than one axle guard check plate missing per axle (bogie wagon)	M00.001: Keeper instructions to be obtained
4.4.1.3 One axle guard check plate missing (axle wagon)	M00.001: Keeper instructions to be obtained
4.4.2 Hard manganese wear plate on Y bogies or derivative designs displaced or missing	M00.001: Keeper instructions to be obtained
4.5.1 Suspension bracket (axle wagon) loose, cracked, broken or distorted (space between bracket and solebar; half or more of the fastening elements missing or broken)	M00.001: Keeper instructions to be obtained
4.6.1 Connection between bogie and underframe defective	M00.001: Keeper instructions to be obtained
4.6.1.1 Connection between bogie and underframe defective, connecting and fastening elements broken, missing or ineffective	M04.002: Restore connecting elements bogie/underframe
4.6.1.2 Locking device for the bogie pivot kingpin missing or ineffective or pin missing	M04.002: Restore connecting elements bogie/underframe
4.6.2.2 All earthing straps ineffective, fastening points indicate that straps should be present	M04.003 Replace earthing strap
4.7.1 Bogie frame component cracked or visibly distorted	M00.001: Keeper instructions to be obtained
4.7.2 Bogie frame component broken	M00.001: Keeper instructions to be obtained
4.8.1.2 Side bearer broken with part(s) missing	M04.005 Repair side bearers
4.8.2 Side bearer spring broken	M04.005 Repair side bearers
4.9.1 Friction surfaces of damper system lubricated	M04.004 Clean friction surfaces of damper system (Y25 bogie)
5. Buffing and draw gear	
5.1.2 Buffer height exceeding tolerance range $h < 940$ mm (980 mm in the case of coaches), $h > 1065$ mm or significant difference in buffer height at coupled wagon ends	M00.001: Keeper instructions to be obtained
5.2.1 Buffer head missing, broken, distorted such that it is no longer functional, rectangular plate twisted	M05.003: Buffer removal/assembly
5.2.2.1 Fastening on plunger $\geq \frac{1}{3}$ of rivets or bolts loose	M05.003: Buffer removal/assembly
5.2.3.1 Buffer head surfaces not lubricated if both buffer heads are made of metal	M05.001 Lubricate buffer
5.2.3.2 Buffer head surfaces more than 2 sharp-edged grooves measuring > 3 mm in depth and > 50 mm in length	M05.003: Buffer removal/assembly
5.2.4.1 Buffer head insert or plastic plate broken, cracked right through, missing	M05.003: Buffer removal/assembly

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5.2.4.3 Buffer head insert or plastic plate 2 or more fastenings loose/missing	M05.003: Buffer removal/assembly
5.3.1 Plunger missing, broken	M05.003: Buffer removal/assembly
5.3.2 Plunger cracked at the transition to buffer head	M05.003: Buffer removal/assembly
5.3.3.1 Cracked longitudinally and no longer capable of guiding buffer casing	M05.003: Buffer removal/assembly
5.3.3.2 More than 2 grooves distributed over the circumference, each > 2 mm in depth, sharp-edged, and > 60 mm in length	M05.003: Buffer removal/assembly
5.4.1 Buffer casing missing, broken	M05.003: Buffer removal/assembly
5.4.2 Buffer casing cracked at transition to buffer base	M05.003: Buffer removal/assembly
5.4.3.1 Cracked longitudinally and no longer capable of guiding plunge	M05.003: Buffer removal/assembly
5.4.3.2 More than 2 grooves distributed over the circumference, each > 2 mm in depth, sharp-edged, and > 60 mm in length	M05.003: Buffer removal/assembly
5.4.4.1 Fastening of buffer casing defective, 2 or more bolts loose (play between buffer casing and headstock)	M05.003: Buffer removal/assembly
5.4.4.2 Fastening of buffer casing defective, 1 bolt missing	M05.003: Buffer removal/assembly
5.5.1 Buffer so slack that it can be depressed by hand (one buffer, by more than 15 mm both buffers at the same end)	M05.003: Buffer removal/assembly
5.5.2 Anti crash components triggered	M05.003: Buffer removal/assembly
5.5.3 Anti crash component warning mark missing or incomplete	M05.004: Renew danger marking
5.6.1 Screw coupler inoperative, damage or part missing	M05.005: Screw coupler removal/assembly
5.7.1.1 Draw hook broken, cracked (including tip)	M05.006: Replace the parts of the draw gear
5.8.1 Other draw gear parts damaged (length of coupler, drawbar broken, cracked or distorted, etc.), clearly abnormal projection of draw hook from guideline	M05.006: Replace the parts of the draw gear
5.9.1 Sliding element (long-stroke damper) not in mid-position with respect to wagon underframe, the two headstocks are at different distances from wagon body	M00.001: Keeper instructions to be obtained
5.9.2 Danger marking (diagonal black bands on yellow background) missing on overlapping wagon surfaces on which the front part is liable to be displaced in relation to the underframe during impact (impact absorption devices, etc.)	M05.004: Renew danger marking
6. Vehicle body and accessories	
6.1.1.1 Markings on wagons missing, illegible or incomplete	M06.001 Check and correct markings
6.1.1.2 "RIV" sign, "TEN" + "GE" or acceptance marking ("TEN" + "G1", country acronym in approval plate) missing, illegible or incomplete	M06.001 Check and correct markings
6.1.1.3 agreement plate (if showing exchange codes 41, 43, 45, 81, 83 or 85) or acceptance marking ("TEN" + "CW", country acronym in approval plate) missing, illegible or incomplete	M06.001 Check and correct markings
6.1.1.4 Tare weight missing, illegible or incomplete	M06.001 Check and correct markings
6.1.1.5 Holding force of parking brake missing, illegible or incomplete	M06.001 Check and correct markings
6.1.1.6 Load limits missing, illegible or incomplete	M06.001 Check and correct markings
6.1.1.7 Capacity of tank wagons missing, illegible or incomplete	M06.001 Check and correct markings
6.1.1.8 Both the VKM and full address of wagon keeper missing, illegible or incomplete	M06.001 Check and correct markings

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6.1.1.9 Length-over-buffers of wagon	M06.001 Check and correct markings
6.1.1.10 "High voltage" warning sign on wagons with step or ladder access up to a height > 2 m above rail level missing, illegible or incomplete	M06.001 Check and correct markings
6.1.1.11 Indication of compatibility with ILUs on carrying wagon missing, illegible or incomplete	M06.001 Check and correct markings
6.1.2.1 Inscription on the maintenance plate missing, incomplete or illegible	M06.001 Check and correct markings
6.1.7.3 Steps: damage representing a safety hazard for staff, torn off or deformed beyond tolerated limit (a > 80 mm)	M06.002 Restore/replace steps and handles
6.1.7.4 Handles: missing, damage representing a safety hazard for staff, torn off or deformed beyond tolerated limit (b < 60 mm)	M06.002 Restore/replace steps and handles
6.1.7.5 Inadequate securing of inscription plates, folding plates, label holders	M06.003 Repair inscription plates, label holders, and folding plates
6.1.7.6 Missing inscription plates, folding plates, label holders	M06.003 Repair inscription plates, label holders, and folding plates