The following list can be edited and shared.

It contains all the air brake and EP brake variations that I am aware of at the present time.

Further input from Spain, Italy, Russia or China might help to ensure the list is complete – but it seems unlikely that additional tokens will be needed other than those suggested here.

Colour coding is as follows:

Blue – under development.

Green – brake controller functions that use sprung “while pressed” positions or buttons.

Red – proposed but not currently defined in OR.

Purple – these are tokens that involve independent or locomotive brakes, I would suggest these wait until later due to the situation with engine brakes in Open Rails and ongoing work on mixed braking.

Westinghouse Automatic Brake Valve (including No 4, G-6, D-8)

BrakesTrainBrakesType (Air_Single_Pipe)

Brake_Train (0 1 0.01 0.50
NumNotches (5
 Notch (0.0 0 TrainBrakesControllerOverchargeStart) Comment (RELEASE)
 Notch (0.2 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)
 Notch (0.5 0 TrainBrakesControllerHoldLappedStart) Comment (LAP)
 Notch (0.7 0 TrainBrakesControllerFullServiceStart) Comment (APPLY)
 Notch (1.0 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)))

Notes: system used on US locomotives from 1887 to 1896, used on locomotives and electric multiple units worldwide until c. 1950. No independent air brake with this system. Originally brake pipe at 70 psi and main reservoir at 90 psi. London Underground operated at brake pipe 65 psi and main reservoir 80 psi.

Westinghouse A-1 Brake System

BrakesTrainBrakesType (Air_Single_Pipe)

Brake_Train (0 1 0.01 0.50
NumNotches (5
 Notch (0.0 0 TrainBrakesControllerOverchargeStart) Comment (RELEASE)
 Notch (0.2 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)
 Notch (0.5 0 TrainBrakesControllerHoldLappedStart) Comment (LAP)
 Notch (0.7 0 TrainBrakesControllerFullServiceStart) Comment (APPLY)
 Notch (1.0 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)))

Brake_Engine (0 1 0.1 0
NumNotches (4
 Notch (0.0 0 EngineBrakesControllerReleaseStart) Comment (RUNNING)
 Notch (0.3 0 EngineBrakesControllerHoldLappedStart) Comment (LAP)
 Notch (0.7 0 EngineBrakesControllerFullServiceStart) Comment (SLOW APPLICATION)
 Notch (1.0 0 EngineBrakesControllerEmergencyStart) Comment (QUICK APPLICATION)))

Notes: System used on steam locomotives in USA from 1896 to 1905. ‘Bail-off’ of locomotive brakes was not possible.

Westinghouse 5-ET Westinghouse 6-ET and Westinghouse 14-EL braking systems

BrakesTrainBrakesType (Air_Single_Pipe)

Brake_Train (0 1 0.01 0.60
NumNotches (6
Notch (0.0 0 TrainBrakesControllerOverchargeStart) Comment (RELEASE)
Notch (0.2 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)

Holding	Creates and maintains working pressure in brake pipe - Only train brakes are released - Locomotive (and tender) brakes NOT released.	Not currently available in OR

Notch (0.6 0 TrainBrakesControllerHoldLappedStart) Comment (LAP)
Notch (0.8 0 TrainBrakesControllerFullServiceStart) Comment (APPLY)
Notch (1.00 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)))

Brake_Engine (0 1 0.1 0.2
NumNotches (5

Release	Releases locomotive brake fully even when train brake is applied	EngineBrakesControllerFullQuickReleaseStart * Bail Off * Not currently working in OR.

Notch (0.2 0 EngineBrakesControllerReleaseStart) Comment (RUNNING)
Notch (0.5 0 EngineBrakesControllerHoldLappedStart) Comment (LAP)
Notch (0.7 0 EngineBrakesControllerFullServiceStart) Comment (SLOW APPLICATION)
Notch (1.0 0 EngineBrakesControllerEmergencyStart) Comment (QUICK APPLICATION)))

Notes: System widely used on steam locomotives in USA from 1905 onwards. In later years the ‘Release’ function was blocked off to prevent accidental overcharge.

Westinghouse A-6-ET and Westinghouse A-7-EL braking systems

BrakesTrainBrakesType (Air_Single_Pipe)

Brake_Train (0 1 0.01 0.50
NumNotches (5
Notch (0.0 0 TrainBrakesControllerOverchargeStart) Comment (RELEASE)
Notch (0.2 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)
Notch (0.5 0 TrainBrakesControllerHoldLappedStart) Comment (LAP)
Notch (0.7 0 TrainBrakesControllerFullServiceStart) Comment (APPLY)
Notch (1.0 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)))

Brake_Engine (0 1 0.1 0.2
NumNotches (5

Release	Releases locomotive brake fully even when train brake is applied	EngineBrakesControllerFullQuickReleaseStart * Bail Off * Not currently working in OR.

Notch (0.2 0 EngineBrakesControllerReleaseStart) Comment (RUNNING)
Notch (0.5 0 EngineBrakesControllerHoldLappedStart) Comment (LAP)
Notch (0.7 0 EngineBrakesControllerFullServiceStart) Comment (SLOW APPLICATION)
Notch (1.0 0 EngineBrakesControllerEmergencyStart) Comment (QUICK APPLICATION)))

* Engine drivers are instructed not to leave the train brake handle in the Release position as this would lead to overcharging – they should return the handle to the Running position when 70 psi is reached. Air is released through a small valve to provide an audible reminder when the brake handle is in this position.

Notes: The A-6-ET is Australian version of Westinghouse 6-ET brake system for steam locomotives. The A-7-EL is the equivalent brake system for diesel and electric locomotives.

Westinghouse 6-B braking system

BrakesTrainBrakesType (Air_Single_Pipe)

Brake_Train (0 1 0.01 0.6
NumNotches (6
Notch (0.0 0 TrainBrakesControllerOverchargeStart) Comment (RELEASE)
Notch (0.2 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)

Holding — Creates and maintains working pressure in brake pipe - Only train brakes are released - Locomotive (and tender) brakes NOT released. — Not currently available in OR

Notch (0.6 0 TrainBrakesControllerHoldLappedStart) Comment (LAP)
Notch (0.8 0 TrainBrakesControllerFullServiceStart) Comment (APPLY)
Notch (1.0 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)))

Brake_Engine (0 1 0.1 0.2
NumNotches (3

Release*/ Running — Releases locomotive brake fully even when train brake is applied — EngineBrakesControllerFullQuickReleaseStart * Bail Off * Not currently working in OR.

Notch (0.2 1 EngineBrakesControllerContinuousServiceStart)
Comment (FULL APPLICATION)))

Westinghouse 8-ET braking system

BrakesTrainBrakesType (Air_Single_Pipe)

Brake_Train (0 1 0.1 0.6
NumNotches (5
Notch (0.0 0 TrainBrakesControllerOverchargeStart) Comment (RELEASE)
Notch (0.2 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)
Notch (0.4 0 TrainBrakesControllerSlowServiceStart) Comment (FIRST SERVICE)
Notch (0.6 0 TrainBrakesControllerSelfLapStart) Comment (LAP)
Notch (0.8 0 TrainBrakesControllerFullServiceStart) Comment (SERVICE)
Notch (1.0 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)))

Brake_Engine (0 1 0.1 0.2
NumNotches (5

Release — Releases locomotive brake fully even when train brake is applied — EngineBrakesControllerFullQuickReleaseStart * Bail Off * Not currently working in OR.

Notch (0.2 0 EngineBrakesControllerReleaseStart) Comment (RUNNING)
Notch (0.5 0 EngineBrakesControllerHoldLappedStart) Comment (LAP)
Notch (0.7 0 EngineBrakesControllerFullServiceStart) Comment (SLOW APPLICATION)
Notch (1.0 0 EngineBrakesControllerEmergencyStart) Comment (QUICK APPLICATION)))

* Engine drivers are instructed not to leave the train brake handle in the Release position as this would lead to overcharging – they should return the handle to the Running position when working pressure is reached. Air is released through a small valve to provide an audible reminder when the brake handle is in this position.

Westinghouse 24-RL braking system

BrakesTrainBrakesType (Air_Single_Pipe) or BrakesTrainBrakesType (EP)

Brake_Train (0 1 0.1 0.4
NumNotches (5
Notch (0.0 0 TrainBrakesControllerFullQuickReleaseStart) Comment (RELEASE)
Notch (0.2 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)
Notch (0.4 0 TrainBrakesControllerSlowServiceStart) Comment (FIRST SERVICE)
Notch (0.6 0 TrainBrakesControllerSelfLapStart) Comment (LAP)
Notch (0.8 0 TrainBrakesControllerFullServiceStart) Comment (SERVICE)
Notch (1.0 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)))

Brake_Engine (0 1 0.1 0.2
NumNotches (4
Release*/ Releases locomotive brake fully even when train brake is applied EngineBrakesControllerFullQuickReleaseStart * Bail Off * Not currently working in OR.
Running
Notch (0.2 1 EngineBrakesControllerContinuousServiceStart)
Comment (FULL APPLICATION)
Notch (1.0 0 EngineBrakesControllerEmergencyStart) Comment (FREIGHT EMERGENCY)))

Westinghouse 26-L braking system – standard model

BrakesTrainBrakesType (Air_Single_Pipe)

<u>Freight Mode</u>

Brake_Train (0 1 0.1 0.1
NumNotches (5
Notch (0.0 0 TrainBrakesControllerReleaseStart) Comment (RELEASE / RUNNING)
Notch (0.1 1 TrainBrakesControllerGraduatedSelfLapHoldLimitedStart) Comment (MINIMUM REDUCTION >>> FULL SERVICE)
Notch (0.8 0 TrainBrakesControllerSuppressionStart) Comment (SUPPRESSION)
Notch (0.9 0 TrainBrakesControllerNeutralHandleOffStart) Comment (NEUTRAL HANDLE OFF)
Notch (1.0 0 TrainBrakesControllerEmergencyStart)Comment (EMERGENCY)))

Brake_Engine (0 1 0.1 0.2
NumNotches (3
Release*/ Running Releases locomotive brake fully even when train brake is applied EngineBrakesControllerFullQuickReleaseStart * Bail Off * Not currently working in OR.
Notch (0.2 1 EngineBrakesControllerContinuousServiceStart) Comment (APPLY)))

<u>Passenger Mode</u>

Brake_Train (0 1 0.1 0.1
NumNotches (5
Notch (0.0 0 TrainBrakesControllerReleaseStart) Comment (RELEASE / RUNNING)
Notch (0.1 1 TrainBrakesControllerGraduatedSelfLapLimitedStart) Comment (MINIMUM REDUCTION >>> FULL SERVICE)
Notch (0.8 0 TrainBrakesControllerSuppressionStart) Comment (SUPPRESSION)
Notch (0.9 0 TrainBrakesControllerNeutralHandleOffStart) Comment (NEUTRAL HANDLE OFF)
Notch (1.0 0 TrainBrakesControllerEmergencyStart)Comment (EMERGENCY)))

Brake_Engine (0 1 0.1 0.2
NumNotches (3
Release*/ Running Releases locomotive brake fully even when train brake is applied EngineBrakesControllerFullQuickReleaseStart * Bail Off * Not currently working in OR.
Notch (0.2 1 EngineBrakesControllerContinuousServiceStart) Comment (APPLY)))

Westinghouse 26-L braking system – EP model

BrakesTrainBrakesType (EP)

<u>Freight Mode</u>

Brake_Train (0 1 0.1 0.1
NumNotches (5
Notch (0.0 0 TrainBrakesControllerReleaseStart) Comment (RELEASE / RUNNING)
Notch (0.1 1 TrainBrakesControllerContinuousServiceStartStart) Comment (MINIMUM REDUCTION >>> FULL SERVICE)
Notch (0.8 0 TrainBrakesControllerSuppressionStart) Comment (SUPPRESSION)
Notch (0.9 0 TrainBrakesControllerNeutralHandleOffStart) Comment (NEUTRAL HANDLE OFF)
Notch (1.0 0 TrainBrakesControllerEmergencyStart)Comment (EMERGENCY)))

Brake_Engine (0 1 0.1 0.2
NumNotches (3
Release*/ Releases locomotive brake fully even when train brake is applied EngineBrakesControllerFullQuickReleaseStart * Bail Off * Not currently working in OR.
Running
Notch (0.2 1 EngineBrakesControllerContinuousServiceStart) Comment (APPLY)))

<u>Passenger Mode</u>

Brake_Train (0 1 0.1 0.1
NumNotches (5
Notch (0.0 0 TrainBrakesControllerReleaseStart) Comment (RELEASE / RUNNING)
Notch (0.1 1 TrainBrakesControllerEPApplyStart) Comment (MINIMUM REDUCTION >>> FULL SERVICE)
Notch (0.8 0 TrainBrakesControllerSuppressionStart) Comment (SUPPRESSION)
Notch (0.9 0 TrainBrakesControllerNeutralHandleOffStart) Comment (NEUTRAL HANDLE OFF)
Notch (1.0 0 TrainBrakesControllerEmergencyStart)Comment (EMERGENCY)))

Brake_Engine (0 1 0.1 0.2
NumNotches (3
Release*/ Releases locomotive brake fully even when train brake is applied EngineBrakesControllerFullQuickReleaseStart * Bail Off * Not currently working in OR.
Running
Notch (0.2 1 EngineBrakesControllerContinuousServiceStart) Comment (APPLY)))

Westinghouse M6a

BrakesTrainBrakesType (Air_Twin_Pipe)

<u>Air Brake Mode</u>

Brake_Train (0 1 0.1 0.2
NumNotches (4
Notch (0.0 0 TrainBrakesControllerOverchargeStart) Comment (RELEASE - sprung position)
Notch (0.1 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)
Notch (0.2 1 TrainBrakesControllerGraduatedSelfLapLimitedStart) Comment (1st SERVICE >>> FULL SERVICE)
Notch (1.0 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)))

Brake_Engine (0 1 0.1 0.0
NumNotches(1
Notch(0 1 EngineBrakesControllerContinuousServiceStart)
Comment (BRAKE OFF >>> BRAKE ON)))

<u>Vacuum Brake Mode</u>

BrakesTrainBrakesType (Vacuum_Single_Pipe_EQ)

Brake_Train (0 1 0.1 0.2
NumNotches (4
Notch (0.0 0 TrainBrakesControllerFullQuickReleaseStart) Comment (RELEASE - sprung position - exhauster fast speed)
Notch (0.1 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)
Notch (0.2 1 TrainBrakesControllerVacuumContinuousServiceStart) Comment (1st SERVICE >>> FULL SERVICE)
Notch (1.0 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)))

Brake_Engine (0 1 0.1 0.0
NumNotches(1
Notch(0 1 EngineBrakesControllerVacuumContinuousServiceStart)
Comment (BRAKE OFF >>> BRAKE ON)))

Westinghouse M8a

BrakesTrainBrakesType (Air_Twin_Pipe)

<u>Air Brake Mode</u>

Brake_Train (0 1 0.1 0.2
NumNotches (4
Notch (0.0 0 TrainBrakesControllerOverchargeStart) Comment (RELEASE - sprung position)
Notch (0.1 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)
Notch (0.2 1 TrainBrakesControllerGraduatedSelfLapLimitedStart) Comment (1st SERVICE >>> FULL SERVICE)
Notch (0.9 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)
Notch (1.0 0 TrainBrakesControllerNeutralHandleOffStart) Comment (SHUT DOWN)))

Brake_Engine (0 1 0.1 0.0
NumNotches(1
Notch(0 1 EngineBrakesControllerContinuousServiceStart)
Comment (BRAKE OFF >>> BRAKE ON)))

<u>Vacuum Brake Mode</u>

BrakesTrainBrakesType (Vacuum_Single_Pipe_EQ)

Brake_Train (0 1 0.1 0.2
NumNotches (4
Notch (0.0 0 TrainBrakesControllerFullQuickReleaseStart) Comment (RELEASE - sprung position - exhauster fast speed)
Notch (0.1 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)
Notch (0.2 1 TrainBrakesControllerVacuumContinuousServiceStart) Comment (1st SERVICE >>> FULL SERVICE)
Notch (0.9 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)
Notch (1.0 0 TrainBrakesControllerNeutralHandleOffStart) Comment (SHUT DOWN)))

Brake_Engine (0 1 0.1 0.0
NumNotches(1
Notch(0 1 EngineBrakesControllerVacuumContinuousServiceStart)
Comment (BRAKE OFF >>> BRAKE ON)))

Metcalfe Oerlikon FV4

<u>Air Brake Mode</u>

BrakesTrainBrakesType (Air_Twin_Pipe)

Brake_Train (0 1 0.1 0.2
NumNotches (6
Notch (0.0 0 TrainBrakesControllerNeutralHandleOffStart) Comment (NEUTRAL)
Notch (0.06 0 TrainBrakesControllerOverchargeStart) Comment (FILL - sprung position)
Notch (0.1 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)
Notch (0.2 1 TrainBrakesControllerGraduatedSelfLapLimitedStart) Comment (INITIAL >>> FULL SERVICE)
Notch (0.9 0 Dummy) Comment (RE-APPLICATION)
Notch (1.0 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)))

Brake_Engine (0 1 0.1 0.0
NumNotches(1
Notch(0 1 EngineBrakesControllerContinuousServiceStart)
Comment (BRAKE OFF >>> BRAKE ON)))

<u>Vacuum Brake Mode</u>

BrakesTrainBrakesType (Vacuum_Single_Pipe_EQ)

Brake_Train (0 1 0.1 0.2
NumNotches (6
Notch (0.0 0 TrainBrakesControllerNeutralHandleOffStart) Comment (NEUTRAL)
Notch (0.06 0 TrainBrakesControllerFullQuickReleaseStart) Comment (FILL - sprung position - exhauster fast speed)
Notch (0.1 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)
Notch (0.2 1 TrainBrakesControllerVacuumContinuousServiceStart) Comment (INITIAL >>> FULL SERVICE)
Notch (0.9 0 Dummy) Comment (RE-APPLICATION)
Notch (1.0 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)))

Brake_Engine (0 1 0.1 0.0
NumNotches(1
Notch(0 1 EngineBrakesControllerVacuumContinuousServiceStart)
Comment (BRAKE OFF >>> BRAKE ON)))

SNCF PBL 90 brake system

BrakesTrainBrakesType (Air_Twin_Pipe) or BrakesTrainBrakesType (EP)

Brake_Train (0 1 0.5 0
NumNotches (3
Notch (0.0 0 TrainBrakesControllerReleaseStart) Comment (RELEASE - sprung)
Notch (0.5 0 EngineBrakesControllerSelfLapStart) Comment (LAP)
Notch (1.0 0 EngineBrakesControllerFullServiceStart) Comment (APPLY - sprung)))

ORTSOvercharge (0 1 0)

EmergencyStopToggle (0 1 0)

Brake_Engine (0 1 0.5 0
NumNotches (3
Notch (0.0 0 EngineBrakesControllerReleaseStart) Comment (RELEASE – sprung)
Notch (0.5 0 EngineBrakesControllerHoldLappedStart) Comment (LAP)
Notch (1.0 0 EngineBrakesControllerFullServiceStart) Comment (APPLY - sprung)))

Davies & Metcalfe E70, Westinghouse 'Westcode' DW1, DW2 and DW3 brake systems

BrakesTrainBrakesType (Air_Twin_Pipe) or BrakesTrainBrakesType (EP)

<u>Locomotive:</u>

Brake_Train (0 1.0 0.01 0.2
NumNotches (9
Notch (0 0 TrainBrakesControllerOverchargeStart) Coment (RELS – sprung)
Notch (0.01 0 TrainBrakesControllerReleaseStart) Comment (RUN)
Notch (0.02 0 TrainBrakesControllerEPApplyStart) Comment (1 INI)
Notch (0.16 0 TrainBrakesControllerEPApplyStart) Comment (2)
Notch (0.40 0 TrainBrakesControllerEPApplyStart) Comment (3)
Notch (0.65 0 TrainBrakesControllerEPApplyStart) Comment (4)
Notch (0.80 0 TrainBrakesControllerEPApplyStart) Comment (5)
Notch (0.99 0 TrainBrakesControllerEPApplyStart) Comment (6 FULL SERV)
Notch (1.00 0 TrainBrakesControllerEmergencyStart) Comment (EMGY)))

EmergencyStopToggle (0 1 0)

Brake_Engine (0 1 0.5 0
NumNotches (3
Notch (0.0 0 EngineBrakesControllerReleaseStart) Comment (RELEASE)
Notch (0.5 0 EngineBrakesControllerHoldLappedStart) Comment (LAP)
Notch (1.0 0 EngineBrakesControllerFullServiceStart) Comment (APPLY)))

Davies & Metcalfe E70, Westinghouse 'Westcode' DW1, DW2 and DW3 brake systems

BrakesTrainBrakesType (Air_Twin_Pipe) or BrakesTrainBrakesType (EP)

DVT:

```
Brake_Train ( 0 1.0 0.01 0.2
NumNotches ( 8
Notch ( 0.00 0 TrainBrakesControllerReleaseStart ) Comment ( RUN )
Notch ( 0.02 0 TrainBrakesControllerEPApplyStart ) Comment ( 1 INI )
Notch ( 0.16 0 TrainBrakesControllerEPApplyStart ) Comment ( 2 )
Notch ( 0.40 0 TrainBrakesControllerEPApplyStart ) Comment ( 3 )
Notch ( 0.65 0 TrainBrakesControllerEPApplyStart ) Comment ( 4 )
Notch ( 0.80 0 TrainBrakesControllerEPApplyStart ) Comment ( 5 )
Notch ( 0.99 0 TrainBrakesControllerEPApplyStart ) Comment ( 6 FULL SERV )
Notch ( 1.00 0 TrainBrakesControllerEmergencyStart ) Comment ( EMGY ) ) )

ORTSOvercharge ( 0 1 0 )

EmergencyStopToggle ( 0 1 0 )
```

Davies & Metcalfe E70, Westinghouse 'Westcode' DW1, DW2 and DW3 brake systems

BrakesTrainBrakesType (Air_Twin_Pipe) or BrakesTrainBrakesType (EP)

HST:

```
Brake_Train ( 0 1.0 0.01 0.2
NumNotches ( 8
Notch ( 0.00 0 TrainBrakesControllerReleaseStart ) Comment ( RUN )
Notch ( 0.02 0 TrainBrakesControllerEPApplyStart ) Comment ( 1 INI )
Notch ( 0.16 0 TrainBrakesControllerEPApplyStart ) Comment ( 2 )
Notch ( 0.40 0 TrainBrakesControllerEPApplyStart ) Comment ( 3 )
Notch ( 0.65 0 TrainBrakesControllerEPApplyStart ) Comment ( 4 )
Notch ( 0.80 0 TrainBrakesControllerEPApplyStart ) Comment ( 5 )
Notch ( 0.99 0 TrainBrakesControllerEPApplyStart ) Comment ( 6 FULL SERV )
Notch ( 1.00 0 TrainBrakesControllerEmergencyStart ) Comment ( EMGY ) ) )

EmergencyStopToggle ( 0 1 0 )
```

Knorr Driver's Brake Valves K1, No 8, No 10, No 14

```
BrakesTrainBrakesType ( Air_Single_Pipe )

Brake_Train ( 0 1 0.01 0.50
NumNotches ( 5
 Notch ( 0.0 0 TrainBrakesControllerOverchargeStart ) Comment ( Füll- und Lösestellung  )
 Notch ( 0.2 0 TrainBrakesControllerReleaseStart ) Comment ( Fahrtstellung  )
 Notch ( 0.3 0 TrainBrakesControllerNeutralHandleOffStart ) Comment ( Mittelstellung   )
 Notch ( 0.5 0 TrainBrakesControllerHoldLappedStart  ) Comment ( Bremsabschlußstellung  )
 Notch ( 0.7 0 TrainBrakesControllerFullServiceStart ) Comment ( Betriebsbremsstellung  )
 Notch ( 1.0 0 TrainBrakesControllerEmergencyStart ) Comment ( Schnellbremsstellung ) ) )

Brake_Engine ( 0 1 0.5 0
NumNotches ( 3
Notch ( 0.0  0 EngineBrakesControllerReleaseStart ) Comment ( RELEASE )
Notch ( 0.5  0 EngineBrakesControllerHoldLappedStart ) Comment ( LAP )
Notch ( 1.0  0 EngineBrakesControllerFullServiceStart ) Comment ( APPLY ) ) )
```

Knorr Self Regulating Driver's Brake Valves Type C

```
BrakesTrainBrakesType ( Air_Single_Pipe )

Brake_Train ( 0 1.0 0.01 0.31
NumNotches ( 11
Notch ( 0.00 0 TrainBrakesControllerOverchargeStart ) Coment ( Sonderstellung )
Notch ( 0.10 0 TrainBrakesControllerNeutralHandleOffStart ) Comment ( Vorspannstellung )
Notch ( 0.20 0 TrainBrakesControllerReleaseStart ) Comment ( Fahrtstellung )
Notch ( 0.31 0 Dummy )
Notch ( 0.40 0 Dummy )
Notch ( 0.49 0 Dummy )
Notch ( 0.58 0 Dummy )
Notch ( 0.67 0 Dummy )
Notch ( 0.76 0 Dummy )
Notch ( 0.85 0 Dummy )
Notch ( 1.00 0 TrainBrakesControllerEmergencyStart ) Comment ( Schnellbremsstellung ) ) )

Brake_Engine ( 0 1 0.5 0
NumNotches ( 3
Notch ( 0.0  0 EngineBrakesControllerReleaseStart ) Comment ( RELEASE )
Notch ( 0.5  0 EngineBrakesControllerHoldLappedStart ) Comment ( LAP )
Notch ( 1.0  0 EngineBrakesControllerFullServiceStart ) Comment ( APPLY ) ) )
```

Knorr Self Regulating Driver's Brake Valves Type D

BrakesTrainBrakesType (Air_Single_Pipe)

Brake_Train (0 1.0 0.01 0.24
NumNotches (13
Notch (0.00 0 TrainBrakesControllerOverchargeStart) Coment (Sonderstellung)
Notch (0.10 0 TrainBrakesControllerReleaseStart) Comment (Fahrtstellung)
Notch (0.20 0 TrainBrakesControllerNeutralHandleOffStart) Comment (Vorspannstellung)
Notch (0.24 0 Dummy)
Notch (0.33 0 Dummy)
Notch (0.42 0 Dummy)
Notch (0.51 0 Dummy)
Notch (0.60 0 Dummy)
Notch (0.69 0 Dummy)
Notch (0.78 0 Dummy)
Notch (0.87 0 Dummy)
Notch (0.96 0 Dummy)
Notch (1.00 0 TrainBrakesControllerEmergencyStart) Comment (Schnellbremsstellung)))

Brake_Engine (0 1 0.5 0
NumNotches (3
Notch (0.0 0 EngineBrakesControllerReleaseStart) Comment (RELEASE)
Notch (0.5 0 EngineBrakesControllerHoldLappedStart) Comment (LAP)
Notch (1.0 0 EngineBrakesControllerFullServiceStart) Comment (APPLY)))

Knorr St 60 Driver's Brake Valve

BrakesTrainBrakesType (Air_Single_Pipe)

Brake_Train (0 1 0.01 0.50
NumNotches (7
Notch (0.0 0 TrainBrakesControllerFullQuickReleaseStart) Comment (Vollösen)
Notch (0.2 0 TrainBrakesControllerReleaseStart) Comment (Fahrt)

Release Engine Brake Triebfahrzeugbremse lösen	Reduces pressure in engine brake cylinder only	**EngineBrakesControllerFullQuickReleaseStart ** = Bail Off

Notch (0.5 0 TrainBrakesControllerHoldLappedStart) Comment (Abschluß)

Apply Engine Brake Triebfahrzeug bremsen	Increases pressure in engine brake cylinder only.	**EngineBrakesControllerFullServiceStart**

Notch (0.8 0 TrainBrakesControllerFullServiceStart) Comment (Zug bremsen)
Notch (1.0 0 TrainBrakesControllerEmergencyStart) Comment (Schnellbremsen)))

** combining train and engine brake controllers in this way is not possible in Open Rails

Note: this controller used on trams, light railways and railcars.

Knorr St 125 Driver’s Brake Valve

```
BrakesTrainBrakesType ( Air_Single_Pipe )

Brake_Train ( 0 1 0.01 0.50
NumNotches ( 5
 Notch ( 0.0 0 TrainBrakesControllerFullQuickReleaseStart ) Comment ( Lösen  )
 Notch ( 0.2 0 TrainBrakesControllerReleaseStart ) Comment ( Fahrt  )
 Notch ( 0.3 0 TrainBrakesControllerNeutralHandleOffStart ) Comment ( Abschluß   )
 Notch ( 0.5 0 TrainBrakesControllerSlowServiceStart  ) Comment ( Betriebsbremse I  )
 Notch ( 0.7 0 TrainBrakesControllerFullServiceStart ) Comment ( Betriebsbremse II  )
 Notch ( 1.0 0 TrainBrakesControllerEmergencyStart ) Comment ( Schnellbremse) ) )
```

Driver’s Valve No. 394

BrakesTrainBrakesType (Air_Single_Pipe)

```
Brake_Train ( 0 1 0.1 0.5
NumNotches ( 7
 Notch ( 0.0 0 TrainBrakesControllerOverchargeStart ) Comment ( I )
 Notch ( 0.1 0 TrainBrakesControllerReleaseStart ) Comment ( II )
 Notch ( 0.3 0 TrainBrakesControllerHoldLappedStart  ) Comment ( III )
 Notch ( 0.5 0 TrainBrakesControllerSelfLapStart  ) Comment ( IV )
 Notch ( 0.7 0 TrainBrakesControllerSlowServiceStart ) Comment ( V-A )
 Notch ( 0.9 0 TrainBrakesControllerFullServiceStart ) Comment ( V )
 Notch ( 1.0 0 TrainBrakesControllerEmergencyStart ) Comment ( VI ) ) )
```

Driver’s Valve No. 395

BrakesTrainBrakesType (EP)

```
Brake_Train ( 0 1 0.05 0.2
NumNotches ( 7
 Notch ( 0.0 0 TrainBrakesControllerOverchargeStart ) Comment ( I )
 Notch ( 0.1 0 TrainBrakesControllerReleaseStart ) Comment ( II )
 Notch ( 0.2 0 TrainBrakesControllerHoldLappedStart  ) Comment ( III )
 Notch ( 0.3 0 TrainBrakesControllerSelfLapStart  ) Comment ( IV )
 Notch ( 0.4 1 TrainBrakesControllerEPOnlyStart ) Comment ( V-A >>> VЭ )
 Notch ( 0.9 0 TrainBrakesControllerFullServiceStart ) Comment ( V )
 Notch ( 1.0 0 TrainBrakesControllerEmergencyStart ) Comment ( VI ) ) )
```

Westinghouse type ‘A’ electro-pneumatic braking system

```
BrakesTrainBrakesType ( EP )

Brake_Train ( 0 1 0.1 0.2
NumNotches ( 6
Notch ( 0    0 TrainBrakesControllerReleaseStart )  Comment ( Release / Running )
Notch ( 0.2  0 TrainBrakesControllerEPHoldStart )  Comment ( Hold EP )
Notch ( 0.4  0 TrainBrakesControllerEPFullServiceStart ) Comment ( Apply EP )
Notch ( 0.6  0 TrainBrakesControllerHoldStart ) Comment ( Lap Air )
Notch ( 0.8  0 TrainBrakesControllerFullServiceStart ) Comment ( Apply Air )
Notch ( 1.0  0 TrainBrakesControllerEmergencyStart ) Comment ( Emergency ) ) )
```

Westinghouse electro-pneumatic braking system used on LT O and P stock

```
BrakesTrainBrakesType ( EP )

Brake_Train ( 0 1 0.1 0.2
NumNotches ( 8
Notch ( 0    0 TrainBrakesControllerReleaseStart )  Comment ( Release / Running )
Notch ( 0.2  0 TrainBrakesControllerEPHoldStart )  Comment ( Hold EP )
Notch ( 0.3  0 TrainBrakesControllerEPHoldStart )  Comment ( Regeneration I )
Notch ( 0.4  0 TrainBrakesControllerEPFullServiceStart  )  Comment ( Regeneration II and EP )
Notch ( 0.5  0 TrainBrakesControllerEPFullServiceStart ) Comment ( Regeneration III and EP )
Notch ( 0.6  0 TrainBrakesControllerHoldStart ) Comment ( Lap Air )
Notch ( 0.8  0 TrainBrakesControllerFullServiceStart ) Comment ( Apply Air )
Notch ( 1.0  0 TrainBrakesControllerEmergencyStart ) Comment ( Emergency ) ) )
```

Additionally, in the .eng file:

```
ORTSTrainBrakeControllerDynamicBrakeApplication
(
0 0
0.1 0
0.2 1
0.8 1
1 0
)
```

Westinghouse type ‘D’ electro-pneumatic braking system

BrakesTrainBrakesType (EP)

SR dc electric units 1951 and 1957 designs

```
Brake_Train ( 0 1 0.1 0.15
NumNotches ( 5
Notch ( 0.0  0 TrainBrakesControllerReleaseStart )  Comment ( Release / Running )
Notch ( 0.1  1 TrainBrakesControllerEPOnlyStart )  Comment ( Service EP )
Notch ( 0.7  0 TrainBrakesControllerHoldLappedStart )  Comment ( Lap Air )
Notch ( 0.8  0 TrainBrakesControllerFullServiceStart )  Comment ( Apply Air )
Notch ( 0.9  0 TrainBrakesControllerEmergencyStart )  Comment ( Emergency ) ) )
```

First Generation ac units

```
Brake_Train ( 0 1 0.1 0.15
NumNotches ( 5
Notch ( 0.0  0 TrainBrakesControllerReleaseStart )  Comment ( Release / Running )
Notch ( 0.1  1 TrainBrakesControllerEPOnlyStart )  Comment ( Service EP )
Notch ( 0.7  0 TrainBrakesControllerHoldLappedStart )  Comment ( Lap Air )
Notch ( 0.8  0 TrainBrakesControllerFullServiceStart )  Comment ( Apply Air )
Notch ( 0.9  0 TrainBrakesControllerEmergencyStart )  Comment ( Emergency )
Notch ( 1.0  0  TrainBrakesControllerNeutralHandleOffStart)  Comment ( Shut Down ) ) )
```

SR dc electric units 1963 and 1966 designs

```
Brake_Train ( 0 1 0.1 0.15
NumNotches ( 3
Notch ( 0.0  0 TrainBrakesControllerReleaseStart )  Comment ( Release / Running )
Notch ( 0.1  1 TrainBrakesControllerEPOnlyStart )  Comment ( Service EP )
Notch ( 0.9  0 TrainBrakesControllerEmergencyStart )  Comment ( Emergency ) ) )
```

Westinghouse Westcode 3 step braking system

BrakesTrainBrakesType (EP_only)

```
Brake_Train ( 0 1 0.01 0.33
NumNotches ( 5
Notch( 0.00 0 TrainBrakesControllerReleaseStart )
Notch( 0.33 0 TrainBrakesControllerEPApplyStart )
Notch( 0.66 0 TrainBrakesControllerEPApplyStart )
Notch( 0.99 0 TrainBrakesControllerEPApplyStart )
Notch( 1.00 0 TrainBrakesControllerEmergencyStart ) ) )
```

* Emergency brake can not be released until speed is below 5 mph – in some units there is also a time delay

Pulse modulated EP braking system

BrakesTrainBrakesType (EP_only)

```
Brake_Train ( 0 1 0.1 0.3
NumNotches ( 3
  Notch ( 0    0 TrainBrakesControllerReleaseStart )
  Notch ( 0.3 1 TrainBrakesControllerEPOnlyStart )
  Notch ( 1.0  0 TrainBrakesControllerEmergencyStart ) ) )
```

List of Train Air Brake Controller Tokens Used in tested Brake Controllers

TrainBrakesControllerOverchargeStart – quick release or fill with overcharge
TrainBrakesControllerFullQuickReleaseStart – quick release or fill without overcharge
TrainBrakesControllerReleaseStart – Running /Slow Release
TrainBrakesControllerEPHoldStart – hold for EP otherwise as Self Lap
TrainBrakesControllerSelfLapStart – Lap with compensation for leakage
TrainBrakesControllerHoldLappedStart – Lap without compensation for leakage
TrainBrakesControllerNeutralHandleOffStart – as Hold Lapped Start
TrainBrakesControllerSlowServiceStart – applies air brake at slow service rate
TrainBrakesControllerFullServiceStart – applies air brake (and EP brake) at service rate
TrainBrakesControllerEPFullServiceStart – applies EP brake only at service rate
TrainBrakesControllerGraduatedSelfLapLimitedStart – continuous graduated application and release of air brake
TrainBrakesControllerGraduatedSelfLapLimitedHoldStart – continuous graduated application of air brake (release is not graduable)
Dummy – notched graduated application and release of air brake
TrainBrakesControllerEPOnlyStart – continuous (or notched) graduated application and release of EP brake only
TrainBrakesControllerEPApplyStart – continuous (or notched) graduated application and release of air and EP brakes
TrainBrakesControllerContinuousServiceStart – continuous (or notched) graduated application and of air and EP brakes (release is not graduable)
TrainBrakesControllerSuppressionStart – allows recovery of control after a TCS application
TrainBrakesControllerEmergencyStart – applies air brake (and EP brake) at emergency rate

List of 'Legacy' MSTS and OR Brake Controller Tokens not used in any of the tested controllers

TrainBrakesControllerRunningStart = as SelfLapStart
TrainBrakesControllerHoldStart = HoldLappedStart / NeutralHandleOffStart
TrainBrakesControllerMinimalReductionStart – reduces brake pipe pressure to MaxSystem - MinReduction
TrainBrakesControllerGraduatedSelfLapStart – as graduated self lap limited start, but reduces brake pipe pressure to zero
TrainBrakesControllerApplyStart – as FullServiceStart, but reduces brake pipe pressure to zero
TrainBrakesControllerEPContinuousServiceStart

Vacuum Brake Controllers for Steam Locomotives

BrakesTrainBrakesType (Vacuum_Single_Pipe)

Vacuum Brake for Steam Locomotive with Separate Ejectors

```
Brake_Train ( 0 1 0.1 0
NumNotches ( 2
Notch (0.0  0 TrainBrakesControllerReleaseStart )  Comment ( OFF )
Notch (0.2  1 TrainBrakesControllerVacuumApplyContinuousServiceStart ) Comment ( ON ) ) )

ORTSLargeEjector ( 0 1 0.25 0.0 NumNotches ( 0 ) )

ORTSSmallEjector ( 0 1 0.1 0.0 NumNotches ( 0 ) )
```

Vacuum Brake for Steam Locomotive with Combination Ejector

```
Brake_Train ( 0 1 0.2 0.2
NumNotches( 3
Notch (0.0  0 TrainBrakesControllerReleaseStart ) Comment ( RELEASE )
Notch (0.1  0 TrainBrakesControllerRunningStart )  Comment ( RUNNING )
Notch (0.4  1 TrainBrakesControllerVacuumApplyContinuousServiceStart ) Comment ( APPLY ) ) )

ORTSSmallEjector ( 0 1 0.1 0.0 NumNotches ( 0 ) )
```

Gresham & Craven SSJ Ejector

```
Brake_Train ( 0 1 0.1 0.1
NumNotches( 1
Notch( 0 1 TrainBrakesControllerVacuumContinuousServiceStart ) Comment ( OFF >>> ON ) ) )

ORTSLargeEjector ( 0 1 0.1 0.0 NumNotches ( 0 ) )

ORTSSmallEjector ( 0 1 0.1 1.0 NumNotches ( 0 ) )
```

Gresham & Craven SJ Combination Ejector

```
Brake_Train ( 0 1 0.1 0.1
NumNotches( 3
Notch ( 0.0 0 TrainBrakesControllerReleaseStart ) Comment ( RELEASE )
Notch ( 0.1 0 TrainBrakesControllerRunningStart ) Comment ( RUNNING )
Notch ( 0.2 1 TrainBrakesControllerVacuumContinuousServiceStart ) Comment (APPLY ) ) )

ORTSSmallEjector ( 0 1 0.1 1.0 NumNotches ( 0 ) )
```

Vacuum Brake Controllers for Diesel and Electric Trains

Vacuum Brake for Locomotives fitted with only with Vacuum Train Brakes

BrakesTrainBrakesType (Vacuum_Single_Pipe) or (Vacuum_Single_Pipe_EQ)

```
Brake_Train ( 0 1 0.1 0.2
 NumNotches ( 4
  Notch( 0.0  0 TrainBrakesControllerReleaseStart ) Comment ( RUNNING )
  Notch( 0.2  0 TrainBrakesControllerHoldLappedStart ) Comment ( LAP )
  Notch ( 0.4  1 TrainBrakesControllerVacuumApplyContinuousServiceStart ) Comment ( APPLY )
  Notch ( 1.0  0 TrainBrakesControllerEmergencyStart ) Comment ( EMERGENCY ) ) )
```

ORTSFastVacuumExhauster (0 1 0)

Vacuum Brake for Locomotives fitted with only with Vacuum Train Brakes

BrakesTrainBrakesType (Vacuum_Single_Pipe) or (Vacuum_Single_Pipe_EQ)

```
Brake_Train ( 0 1 0.1 0.2
 NumNotches ( 5
  Notch ( 0.0  0 TrainBrakesControllerFullQuickReleaseStart ) Comment ( RELEASE – sprung )
  Notch ( 0.1  0 TrainBrakesControllerReleaseStart ) Comment ( RUNNING )
  Notch ( 0.2  0 TrainBrakesControllerHoldLappedStart ) Comment ( LAP )
  Notch ( 0.4  1 TrainBrakesControllerVacuumApplyContinuousServiceStart ) Comment ( APPLY )
  Notch ( 1.0  0 TrainBrakesControllerEmergencyStart ) Comment ( EMERGENCY ) ) )
```

Vacuum Brake for Diesel Multiple Units

BrakesTrainBrakesType (Vacuum_Twin_Pipe)

```
Brake_Train ( 0 1 0.1 0.2
 NumNotches ( 3
  Notch( 0.0  0 TrainBrakesControllerReleaseStart ) Comment ( RUNNING )
  Notch( 0.2  0 TrainBrakesControllerHoldLappedStart ) Comment ( LAP )
  Notch ( 0.4  1 TrainBrakesControllerVacuumApplyContinuousServiceStart ) Comment ( APPLY )
```

Westinghouse M6a

BrakesTrainBrakesType (Air_Twin_Pipe)

<u>Air Brake Mode</u>

Brake_Train (0 1 0.1 0.2
NumNotches (4
Notch (0.0 0 TrainBrakesControllerOverchargeStart) Comment (RELEASE - sprung position)
Notch (0.1 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)
Notch (0.2 1 TrainBrakesControllerGraduatedSelfLapLimitedStart) Comment (1st SERVICE >>> FULL SERVICE)
Notch (1.0 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)))

Brake_Engine (0 1 0.1 0.0
NumNotches(1
Notch(0 1 EngineBrakesControllerContinuousServiceStart)
Comment (BRAKE OFF >>> BRAKE ON)))

<u>Vacuum Brake Mode</u>

BrakesTrainBrakesType (Vacuum_Single_Pipe_EQ)

Brake_Train (0 1 0.1 0.2
NumNotches (4
Notch (0.0 0 TrainBrakesControllerFullQuickReleaseStart) Comment (RELEASE - sprung position - exhauster fast speed)
Notch (0.1 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)
Notch (0.2 1 TrainBrakesControllerVacuumContinuousServiceStart) Comment (1st SERVICE >>> FULL SERVICE)
Notch (1.0 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)))

Brake_Engine (0 1 0.1 0.0
NumNotches(1
Notch(0 1 EngineBrakesControllerVacuumContinuousServiceStart)
Comment (BRAKE OFF >>> BRAKE ON)))

Westinghouse M8a

BrakesTrainBrakesType (Air_Twin_Pipe)

<u>Air Brake Mode</u>

Brake_Train (0 1 0.1 0.2
NumNotches (4
Notch (0.0 0 TrainBrakesControllerOverchargeStart) Comment (RELEASE - sprung position)
Notch (0.1 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)
Notch (0.2 1 TrainBrakesControllerGraduatedSelfLapLimitedStart) Comment (1st SERVICE >>> FULL SERVICE)
Notch (0.9 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)
Notch (1.0 0 TrainBrakesControllerNeutralHandleOffStart) Comment (SHUT DOWN)))

Brake_Engine (0 1 0.1 0.0
NumNotches(1
Notch(0 1 EngineBrakesControllerContinuousServiceStart)
Comment (BRAKE OFF >>> BRAKE ON)))

<u>Vacuum Brake Mode</u>

BrakesTrainBrakesType (Vacuum_Single_Pipe_EQ)

Brake_Train (0 1 0.1 0.2
NumNotches (4
Notch (0.0 0 TrainBrakesControllerFullQuickReleaseStart) Comment (RELEASE - sprung position - exhauster fast speed)
Notch (0.1 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)
Notch (0.2 1 TrainBrakesControllerVacuumContinuousServiceStart) Comment (1st SERVICE >>> FULL SERVICE)
Notch (0.9 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)
Notch (1.0 0 TrainBrakesControllerNeutralHandleOffStart) Comment (SHUT DOWN)))

Brake_Engine (0 1 0.1 0.0
NumNotches(1
Notch(0 1 EngineBrakesControllerVacuumContinuousServiceStart)
Comment (BRAKE OFF >>> BRAKE ON)))

Metcalfe Oerlikon FV4

<u>Air Brake Mode</u>

BrakesTrainBrakesType (Air_Twin_Pipe)

Brake_Train (0 1 0.1 0.2
NumNotches (6
Notch (0.0 0 TrainBrakesControllerNeutralHandleOffStart) Comment (NEUTRAL)
Notch (0.06 0 TrainBrakesControllerOverchargeStart) Comment (FILL - sprung position)
Notch (0.1 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)
Notch (0.2 1 TrainBrakesControllerGraduatedSelfLapLimitedStart) Comment (INITIAL >>> FULL SERVICE)
Notch (0.9 0 Dummy) Comment (RE-APPLICATION)
Notch (1.0 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)))

Brake_Engine (0 1 0.1 0.0
NumNotches(1
Notch(0 1 EngineBrakesControllerContinuousServiceStart)
Comment (BRAKE OFF >>> BRAKE ON)))

<u>Vacuum Brake Mode</u>

BrakesTrainBrakesType (Vacuum_Single_Pipe_EQ)

Brake_Train (0 1 0.1 0.2
NumNotches (6
Notch (0.0 0 TrainBrakesControllerNeutralHandleOffStart) Comment (NEUTRAL)
Notch (0.06 0 TrainBrakesControllerFullQuickReleaseStart) Comment (FILL - sprung position - exhauster fast speed)
Notch (0.1 0 TrainBrakesControllerReleaseStart) Comment (RUNNING)
Notch (0.2 1 TrainBrakesControllerGraduatedSelfLapLimitedStart) Comment (INITIAL >>> FULL SERVICE)
Notch (0.9 0 Dummy) Comment (RE-APPLICATION)
Notch (1.0 0 TrainBrakesControllerEmergencyStart) Comment (EMERGENCY)))

Brake_Engine (0 1 0.1 0.0
NumNotches(1
Notch(0 1 EngineBrakesControllerVacuumContinuousServiceStart)
Comment (BRAKE OFF >>> BRAKE ON)))

List of Train Vacuum Brake Controller Tokens Used in tested Brake Controllers

TrainBrakesControllerFullQuickReleaseStart – releases brake with exhauster fast speed
TrainBrakesControllerReleaseStart – Running / Release with large ejector
TrainBrakesControllerRunningStart – Running / Release with small ejector
TrainBrakesControllerHoldLappedStart – Lap without compensation for leakage
TrainBrakesControllerNeutralHandleOffStart – as Hold Lapped Start
TrainBrakesControllerVacuumApplyContinuousServiceStart – varies rate of brake application
TrainBrakesControllerVacuumContinuousServiceStart – graduated self lapping application
TrainBrakesControllerEmergencyStart – applies air brake (and EP brake) at emergency rate

List of 'Legacy' MSTS and OR Brake Controller Tokens not used in any of the tested controllers

TrainBrakesControllerHoldStart = HoldLappedStart / NeutralHandleOffStart
TrainBrakesControllerApplyStart – MSTS legacy brakes only