

TTV 491 • Transit Testing Vehicle

Holland's Transit Testing Vehicle, TTV 491, is a unique track testing vehicle engineered to suit the testing needs of the transit sector.

Partnered with Holland's Rangecam Reporting Software, the TTV 491 provides a comprehensive testing and reporting package.



Transit Testing Vehicle (TTV) Specification

Maximum testing speed: 30 mph (limited by regulation, track conditions)

Minimum testing speed: 6 mph geometry; 0.1 mph rail profile, gauge, and cross-level

Track Gauge Capability: 56-1/2" (standard) up to 62" (broad gauge capable)

Gradient capability: Typically 6%, dependent on rail surface condition

GVW: 22,100 lb

GAWR Front: 7,900 lb

GAWR Rear: 14,200 lb

Length: 26 feet

Height: 11'6" on track (less on highway)

Width: 96"

Hi-rail wheel base: 11'10"

Guide wheel equipment:

- Custom Holland LP & Mitchell design
- Wheel diameter: 18 inches
- 4-wheel drive, positive drive differential (wet rail traction; steep grade capability)
- 4-wheel anti-lock brakes (wet rail and steep grade capability)
- No rubber tire contact with rails, steel guide wheels only (wet rail capability)
- Multi-gauge capable

Maximum curvature for vehicle negotiation: 80-foot radius (72 degree)

Crew:

Driver	Driver seat
Operator	Passenger seat/ observation seat in body
Observer	Observation seat in body/passenger seat

Rail Profile Measurement (RP): KLD Orian sensor heads Maximum measurement curvature: 80-foot radius (72 degree curve)

Track Geometry Measurement: ENSCO TGMS (Track Geometry Measurement System)

Loaded Gauge Measurement

Applied Vertical Load: 3,000 lb per rail

Applied Lateral Load: 3,000 lb between rails

Shunting capability:

- Through guide wheel set (un-tested)
- Non-insulated

Reports Generated from Track Testing

- Exception locations tagged with DGPS data, ALDs, and/or MP + footage
- Printed reports available in real-time for geometry
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- Rail profile reports available in 3 days

Reporting Storage

All reporting for rail profile and track geometry is stored in electronic form for comparison with successive run data over several years.

- Wear rates and rail replacement planning is available through Rangecam software application.
- Comparison profile views over successive runs shows rail wear progression over time.
- Comparison strip charts graphically show wear change over time and geometry changes over time.
- Database query capability allows location of complex combinations of conditions using conditional query.
- Parameters available from track measurement can be displayed in metric or imperial units.
- Distance measurement units can be miles, kilometers or engineering station (chains) units.

Rangecam Software

Rangecam software is capable of presenting the following measured or calculated parameters. Limitations may exist related to collected rail profile images, track testing speed, or other various impacts to data collection and imaging.

- 1. Rail Type** (section is automatically calculated by software, but dependant on “seeing” full sectional view of rail)
- 2. Vertical Wear**
- 3. Gauge Face Wear**
- 4. Field Face Wear** (locates all transposed rail)
- 5. Gauge Face Angle** (user programmable measurement points; find wheel climb risk locations)
- 6. Rail Cant** (degrees)
- 7. Gauge Lip**
- 8. Field Lip**
- 9. Combined Wear**
- 10. Hi-Gauge Wear** (referenced to new rail profile instead of gauge point)

11. Rail Wear Classification

- a. User defined number of classifications
- b. User defined wear classification names
- c. User defined wear limits for each rail type
- d. Parameters used for rail wear class calculation (any combination of one or more)
 - i. Vertical wear
 - ii. Gauge Face Wear
 - iii. Field Wear
 - iv. Combined Wear
 - v. Percent Head Loss
 - vi. Gauge Face Angle
 - vii. Or Complex macro capability with user defined formula

12. Geometry Defects

13. Rail Defects (current version of software imports this data)

14. Geometry Defect Index (calculated)

15. Rail Defect Index (calculated)

16. Unloaded Gauge (not available from TTV)

17. Loaded Gauge

18. Delta Gauge (not available from TTV)

19. Curvature

20. Cross level

21. Testing Speed

22. Surface

23. Alignment 31

24. Alignment 62

25. Twist – Variable

26. Warp 31

27. Warp 62

28. Transport Canada Warp 31

29. Transport Canada Gauge Change

30. Max Velocity Freight

31. Max Velocity Passenger

32. Track Class Posted

33. Track Class Safe

34. As APTA standards are established, the resulting parameters shall be added if not already addressed in the above measurement parameters.



Max Width ----- 96 in (8 ft)

Max Length ----- 26 ft

Front to Rear Hi-rail (wheel base) ----- 11 ft 10 in

Front Hi-Rail to Load Axle (wheel base) ----- 16 ft 6 in

Front Inside Hi-Rail Wheel Flange (back to back) ----- 53-3/8 in

Front Throat of Flange to End of Drum ----- 11 in

Load Axle Wheel Flange (back to back) Unloaded ----- 53-1/2 in

Front Top Body to Top of Rail ----- 11 ft

Exhaust Stack to Top of Body ----- 6 in

Total Max Height ----- 11ft 6 in

Bottom Rear Tire Clearance to Top of Rail ----- 6 in

Bottom Rear Drum Clearance to Top of Rail ----- 7-1/2 in

Bottom Front Tire Clearance to Top of Rail ----- 6-5/8 in

Bottom Front Drum Clearance to Top of Rail ----- 9-3/4 in

Rear Inside Hi-Rail Wheel Flange (back to back) ----- 53-1/2 in

Rear Hi-Rail Back of Flange to End of Drum ----- 20 in or 16 in

Rear HR Throat of Flange to End of Drum ----- 19 in or 15 in

Rail Profile Accuracy (Curvature Dependent) ----- 1/32 in

Geometry Accuracy ----- 1/16 in