

QSR[®]

TECHNICAL SPECIFICATION

The Quantitative Short Range guided wave scanning system was developed by GUL to measure remaining pipe wall thickness without direct contact with the area under inspection, using a patented frequency-based analysis method.

The ePOD is the common electronics unit for all configurations. Circumferential propagation is designed for locations where access is available around the pipe, while axial propagation is intended for areas that require access from the side.

Application Areas

Designed for	Inspection of inaccessible areas, such as support contact areas.
Sensor Technology	EMAT (Electromagnetic Acoustic Transducers)

Inspection Capabilities

Pipe Wall Thickness	6 to 13 mm [0.24" to 0.51"]
Surface Preparation	Surface must be wiped clean of loose debris Coatings thicker than 1 mm must be removed under the sensor Sharp protruding features greater than 1 mm should be removed

Software

Controlling Software	WaveProQSR [™]
Analysis Method	Uses frequency based, patented, QSR quantitative analysis method
Assisted Interpretation	Via online Scanning Studio.

QSR[®] ePOD (electronics POD)



QSR[®] ePOD ON PIPE STAND (1)

Physical Characteristics

Dimensions: W x D x H	25 x 25 x 9 cm [10" x 10" x 3.5"]
Unit Weight (approx.)	< 4 kg [9 lbs]

Communication Interfaces

USB (2)	USB 2.0
LAN	10/100 Base-T Ethernet

Power Ratings

Battery type (Removable)	6.6 Ah, 14.8 V Li-Ion
External power supply to charge instrument	18-20 VDC (60W min)

CIRCUMFERENTIAL PROPAGATION

QSR[®] SENSOR CART



Physical Characteristics

Dimensions: W x D	35 x 11 cm [14" x 4.5"]
Radial Height	5 cm [2"]
Weight (approx.)	3.45 kg [7.6 lbs]

QSR1[®]



Inspection Capabilities

Pipe Diameter (3)	6" to 24" (DN 150 to 600)
Pipe Orientation	Horizontal (±15°)

Physical Characteristics

Unit Weight (approx.) (4)	12 kg [26.5 lbs]
Radial Clearance (5)	Varies from 21 to 17 cm [8.3" to 6.7"]

Frames

Frames Sizes (3)	6", 8", 10", 12", 14", 16", 18", 20", 24"
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QSR1[®] Kit Components

- QSR [®] ePOD	- QSR [®] Transmitter Sensor Cart	- Frames Set
- ePOD to Sensor Cables	- QSR [®] Receiver Sensor Cart	- Rugged Packing/Transport Case
- USB Cable & Ethernet Cable		

QSR® ALF



QSR® AXIAL



QSR® ALF (Adjustable Large-diameter Frame)



Inspection Capabilities

Pipe Diameter	12" (DN 300) to flat
Circumferential Inspection Range	5 to 50 cm [2" to 20"] from the sensor
Pipe Orientation	Horizontal ($\pm 15^\circ$)

Physical Characteristics

Frame Dimensions: W x L x H	39 x 32 x 7 cm [15.4" x 12.6" x 2.8"]
Frame Weight (approx.)	2 kg [4.4 lbs]
Unit Weight (approx.) ⁽⁶⁾	9 kg [19.8 lbs]
Radial Clearance ⁽⁷⁾	Varies from 14 to 12 cm [5.5" to 4.7"]

LDF Kit Components

- QSR® ALF (Adjustable Large-diameter Frame)
- Frame to QSR® ePOD Adapter Cable

AXIAL PROPAGATION

QSR® AXIAL



Inspection Capabilities

Pipe Diameter - Manual Scan	4" to 36" (DN 100-900)
Pipe Diameter - Motorised Scan	6" to 16" (DN 150-400)
Axial Inspection Range	5 to 50 cm [2" to 20"] from the sensor
Pipe Orientation	Any

Physical Characteristics

Sensor Dimensions: W x L x H	39 x 20 x 2.8 cm [15.4" x 7.9" x 1.1"]
Sensor Weight (approx.)	3.20 kg [7 lbs]
Unit Weight (approx.) ⁽⁸⁾	10 kg [22 lbs]

QSR® AXIAL TRACTION UNIT



Physical Characteristics

Dimensions: W x L	26 x 19 cm [10.2" x 7.5"]
Radial Height (Unit Clearance) ⁽⁹⁾	Less than 8.5 cm [3.4"]
Weight (approx.)	3.45 kg [7.6 lbs]

Frames

Frames Sizes (Motorised) ⁽³⁾	6", 8", 10", 12", 14", 16"
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Axial Kit Components

- Axial Sensor Unit
- Axial Traction Unit
- Traction Unit to ePOD Cable
- Traction Unit to Sensor Harness
- Frame Release Mechanism
- **Motorised Frames Set**
- Rugged Packing/Transport Case

- (1) SLT & STEP files for 3D printing the ePOD Pipe Stand are available on the GUL Community website.
- (2) Instrument appears as a disk drive on the PC.
- (3) Pipes sizes are nominal API 5L. Frames are diameter specific.
- (4) Unit Weight includes ePOD, Frames, and both Sensor Carts (Transmitter, Receiver).
- (5) Clearance varies according to diameter and is only required on approximately half of the pipe circumference.
- (6) Unit Weight includes the ALF Frame and both Sensor Carts (Transmitter, Receiver).
- (7) Clearance varies according to diameter and is only required along the circumferential position where the frame will run.
- (8) Unit Weight includes Axial Sensor, Frame, and Traction Unit.
- (9) Radial Height of the Traction Unit is the clearance required at the QSR® Axial installation location during motorised scanning.



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