PULSE Array Acoustics Wideband Holography BZ-5644

PULSE™ LabShop > Array Acoustics, Acoustic Holography Type 8607 and Beamforming Type 8608 > Option BZ-5644


150109

Uses
- Noise source identification for engines and gearboxes where close-range measurements are often not possible
- Calculations on stationary and quasi-stationary noise sources

Features
- Patented method
- Available option for sliced wheel array systems
- Works with application packages Acoustic Holography Type 8607 and Beamforming Type 8608

Benefits
- Saves time by eliminating the need for two measurements
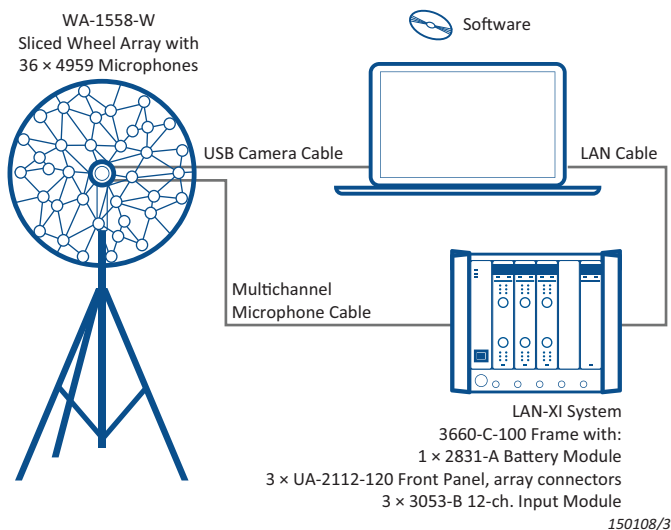- Good sound power estimates over a wide frequency range
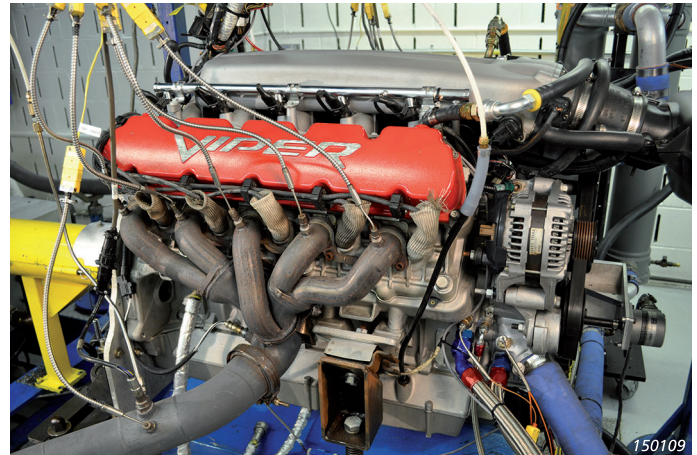
Description
Development and troubleshooting engines and gearboxes frequently uses noise source identification techniques based on acoustic holography and beamforming. The two methods require measurements at different distances and require separate processing. Furthermore, it can be difficult to combine the results to form a complete representation of the full frequency range. With PULSE Array Acoustics Wideband Holography BZ-5644, a single measurement at a relatively short distance produces a single result that covers the full frequency range.
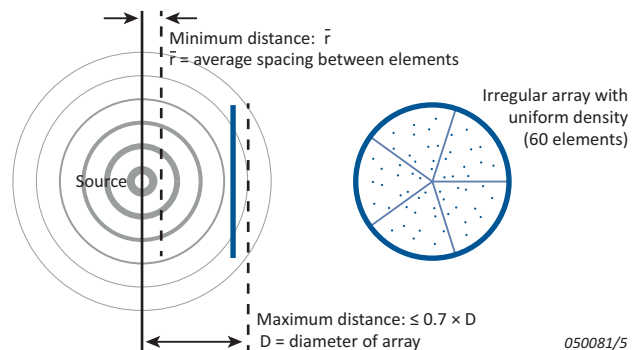
Measurement Distance for WBH
Wideband holography (WBH) requires the use of an optimized random or pseudo-random array geometry. The placement of the array is very important to the quality of the results. The optimal distance from the array to the surface of the sound source is between the minimum and maximum array placement distances (see Table 1). Within this range, a comparison of the sound power determined from WBH and a direct measurement of the sound power using a sound intensity probe exhibits good agreement.

Fig. 2 *Measuring distance for wideband holography*

Minimum distance: $\bar{r}$
$\bar{r}$ = average spacing between elements

Source

Irregular array with uniform density (60 elements)

Maximum distance: ≤ 0.7 × D
D = diameter of array

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System Setup
Fig. 1 *Typical noise source identification system*

WA-1558-W
Sliced Wheel Array with
36 × 4959 Microphones

Software

USB Camera Cable

LAN Cable

Multichannel
Microphone Cable

LAN-XI System
3660-C-100 Frame with:
1 × 2831-A Battery Module
3 × UA-2112-120 Front Panel, array connectors
3 × 3053-B 12-ch. Input Module

150108/3

Sliced Wheel Array Placement Specifications

Table 1 Recommended placement distance of various sliced wheel arrays from a sound source. Measurements given in metres.

Number of array channels	Diameter of array (D)	Average spacing between microphones ($\bar{r}$)	Recommended distance (0.6 × D)	Minimum distance (2 × $\bar{r}$)
30	0.35	0.05	0.21	0.10
18	0.40	0.08	0.24	0.16
18	0.55	0.11	0.33	0.22
36	0.55	0.08	0.33	0.16
60	0.55	0.06	0.33	0.12
84	0.55	0.05	0.33	0.10
36	1.05	0.16	0.63	0.32
60	1.05	0.12	0.63	0.24
84	1.05	0.10	0.63	0.20

Specifications – PULSE Array Acoustics Wideband Holography BZ-5644

BZ-5644 is an option for Array Acoustics Acoustic Holography Type 8607 and Beamforming Type 8608, Windows®-based Noise Source Identification (NSI) applications for PULSE LabShop

Software is delivered via installation media (DVD or USB). The licence is either: node-locked to a PC host ID or dongle; or floating, locked to a network server

SYSTEM REQUIREMENTS
- The following BK Connect® applications:
  - Data Viewer Type 8400
  - Hardware Setup Type 8401
  - Hardware Setup (advanced) Type 8401-A
  - Data Processing Type 8403
  - Array Analysis Type 8430 (includes PULSE Acoustic Test Consultant Type 7761)

- One of the following:
  - PULSE Array Acoustics, Beamforming Type 8608
  - PULSE Array Acoustics, Acoustic Holography Type 8607
- Microsoft® Windows® 10 Pro or Enterprise (x64) with either Current Branch (CB) or Current Branch for Business (CBB) servicing model
- Microsoft® Office 2016 (x32 or x64) or Office 2019 (x32 or x64)
- Microsoft® SQL Server® 2017 or SQL Server® 2019

Note: Microsoft SQL Server 2017 is included in BK Connect installation

RECOMMENDED SYSTEM CONFIGURATION
- Intel® Core™ i7, 3 GHz processor or better
- 32 GB RAM

- 480 GB Solid State Drive (SSD) with 20 GB free space, or better
- 1 Gbit Ethernet network*
- Microsoft® Windows® 10 Pro or Enterprise (x64) with CB
- Microsoft® Office 2016 (x32)
- Microsoft® SQL Server® 2017
- Screen resolution of 1920 × 1080 pixels (full HD)

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* A dedicated data acquisition network (LAN or WAN) is recommended. A network that only handles data from the front end improves the stability of the data

Ordering Information

Due to the number and variety of components, systems are ordered through Project Sales.

Licences are either node-locked or floating.

BZ-5644   PULSE Array Acoustics Wideband Holography

SOFTWARE MAINTENANCE AND SUPPORT
M1-5644   Agreement for BZ-5644

Typical 36-channel System

SOFTWARE†
- Type 8400: BK Connect Data Viewer
- Type 8401: BK Connect Hardware Setup
- Type 8401-A: BK Connect Hardware Setup (advanced)
- Type 8403: BK Connect Data Processing
- Type 8430: BK Connect Array Analysis

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† Please visit bksv.com/analysis-software for information about BK Connect applications and Types 8608 and 8607

- One of the following:
  - Type 8607: PULSE Array Acoustics Acoustic Holography
  - Type 8608: PULSE Array Acoustics Beamforming
- BZ-5644: Wideband Holography, option for Type 8607 and Type 8608

DATA ACQUISITION HARDWARE
- Type 7200-C-SE1: DELL Latitude Standard Notebook
- Type 3660-C-100: 5-module LAN-XI Front-end Frame with GPS
- 3 × UA-2112-120: LAN-XI Front Panel with array connectors, 2 × LEMO (7-pin), 12-channel
- 3 × 3053-B-120: LAN-XI 12-channel Input Module, 25.6 kHz (CCLD, V)
- 1 × Type 2831-A Battery Module

36-CHANNEL SLICED WHEEL ARRAY BEAMFORMER
- WA-1558-W: 36-channel sliced wheel array with camera and specified diameter

- WL-1297-W-008: Bundle of 6 LEMO to LEMO cables, 5 m, collected in braided sleeve with individual numbering
- WA-0728: 6-channel Pistonphone Adaptor
- Type 4228: Pistonphone

SOFTWARE MAINTENANCE AND SUPPORT
Available for all software packages. Agreement expiration date to be agreed at time of contract. See Product Data BP 1800 for further details.
- M1-8400: Agreement for Type 8400
- M1-8401: Agreement for Type 8401
- M1-8401-A: Agreement for Type 8401-A
- M1-8403: Agreement for Type 8403
- M1-8430: Agreement for Type 8430
- One of the following:
  - M1-8607: Agreement for Type 8607
  - M1-8608: Agreement for Type 8608
- M1-5644: Agreement for BZ-5644

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