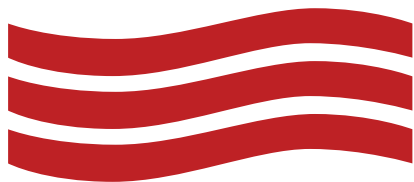


# AIRFOIL



GRILLES  
DUCT  
FITTINGS

*making it happen sooner...*



**AUSTRALIAN MADE  
AND OWNED**



Quality  
Endorsed  
Company

ISO 9001



**FIXED CORE  
HALF CHEVRON GRILLE  
3AR**



## **FIXED CORE HALF CHEVRON GRILLE** **3AR**

### **PRODUCT DESCRIPTION AND APPLICATION**

Airfoil's Fixed Core Half Chevron Grille (3AR), proudly Australian Made and designed, is meticulously crafted from premium aluminium extrusion profiles. Tailored to any size, this grille features its distinctive fixed slimline 45-degree blades, spaced at 19mm intervals, providing a total free area of approximately 70%. Ideal for wall return or transfer applications, the 3AR achieves a no-sight effect below or above eye level by simply inverting the grille.

The slimline half-chevron blades are securely housed within its 40mm deep frame. Supported by mullions, spring-loaded steel wires, and knock-on star washers, the fixed blades ensure strength and rigidity.

Featuring a sleek and aesthetically pleasing 32mm frame, the 3AR grille is available with an optional Opposed Blade Damper (OBD) for air balancing and commissioning purposes. Additionally, it can be fitted with insect vermin mesh at the rear for pest control.

Available in our standard white range, the 3AR also comes in our Natural Anodised silver finish or can be custom powder-coated to any desired colour upon request. Rigorously tested to meet Australian standards, Airfoil's Fixed Core Half Chevron Grille (3AR) is well-suited for various commercial return or exhaust air transfer applications.

## FIXED CORE HALF CHEVRON GRILLE 3AR

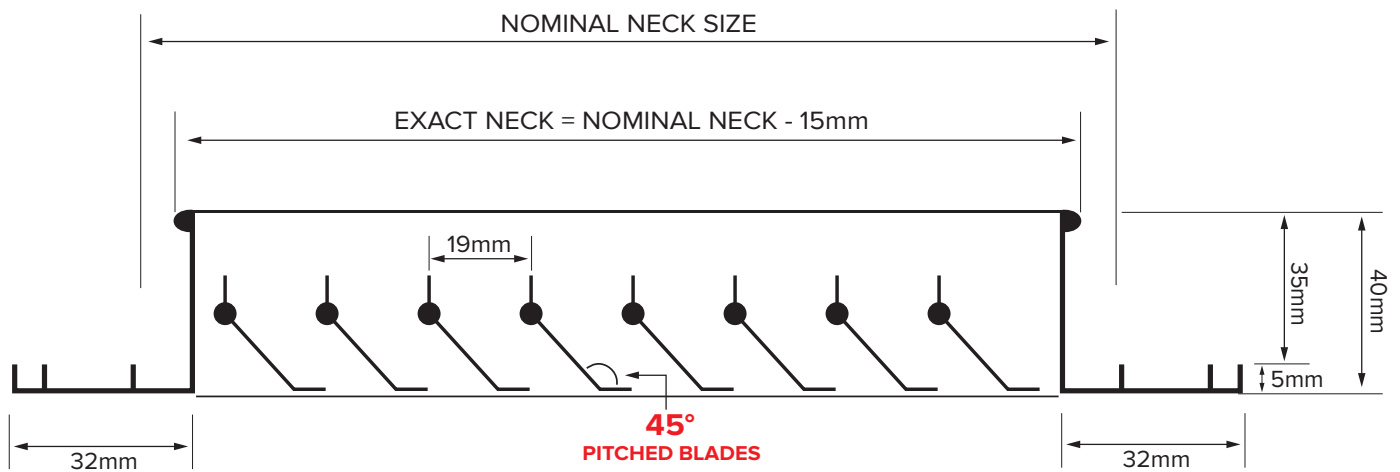
### PRODUCT SPECIFICATIONS AND INFORMATION

- **Product ordering code – 3AR**
- Australian Made
- Aluminium Construction
- Manufactured to any size
- Order by **blade length first** and then by **height**
- Slim line 45 degree half chevron blade
- 19mm spaced centres
- 70% Free Area
- 32mm outer frame size
- 40mm deep frame
- Wall mounted return air
- Ideal for wall return or transfer applications where a no-sight effect is to be achieved below or above eye level
- Optional Opposed Blade Damper (OBD) for air balancing.
- Optional Vermin Mesh (pest control)
- Available in standard white powder-coated range
- Available in our Natural Anodised Silver
- Can be powder-coated to any colour on request
- Product suitable for any domestic or commercial return or exhaust air transfer applications
- Airfoil tested information available
- **The following metric performance data has been derived from exhaustive testing in elaborate laboratories of acoustic and vibrational engineers Louis A. Challis and Associates Proprietary Limited. Darling Street, Sydney 2000**



## FIXED CORE HALF CHEVRON GRILLE 3AR

### CROSS SECTIONAL DIAGRAM



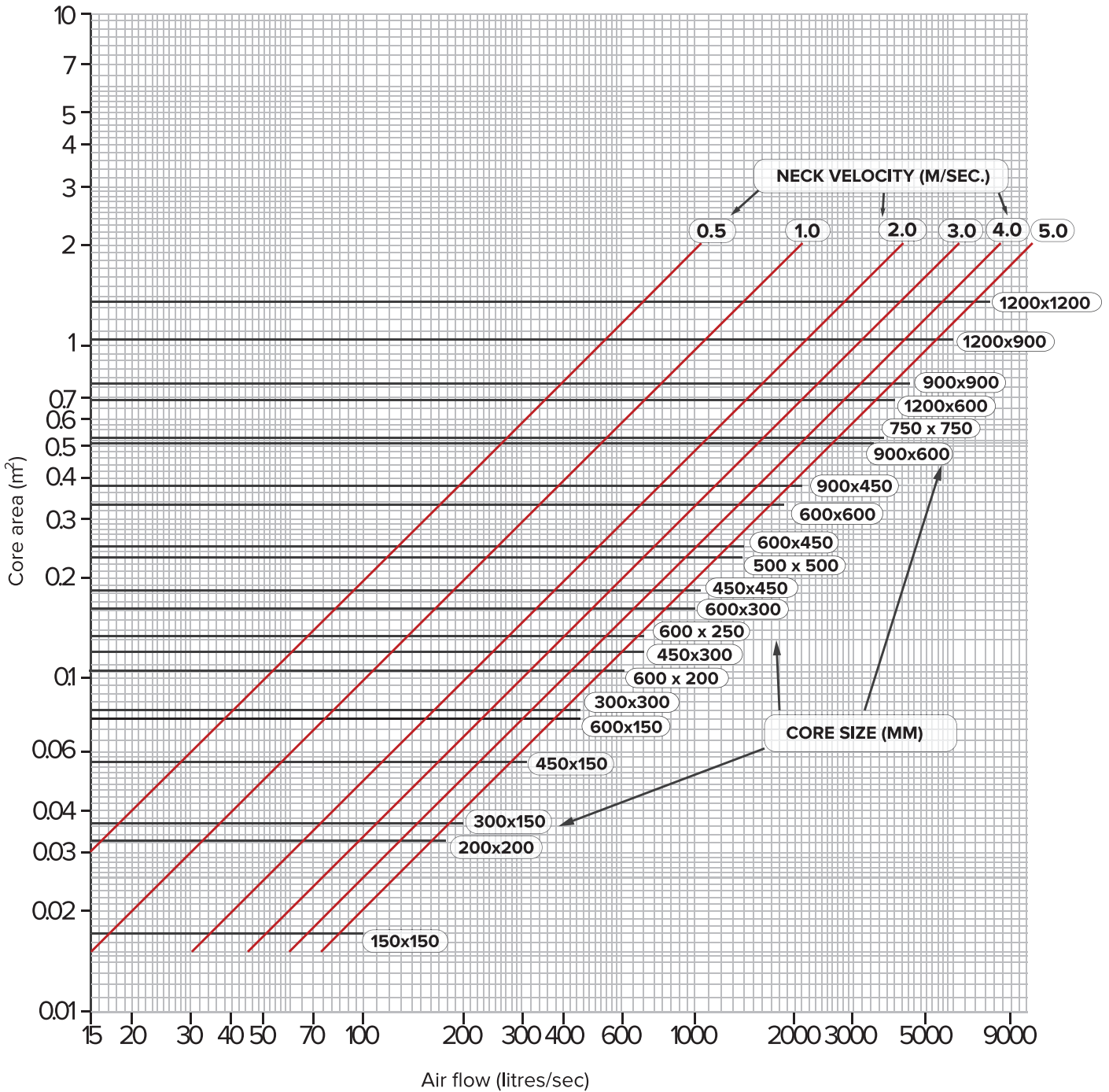
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## FIXED CORE HALF CHEVRON GRILLE 3AR

### PERFORMANCE DATA

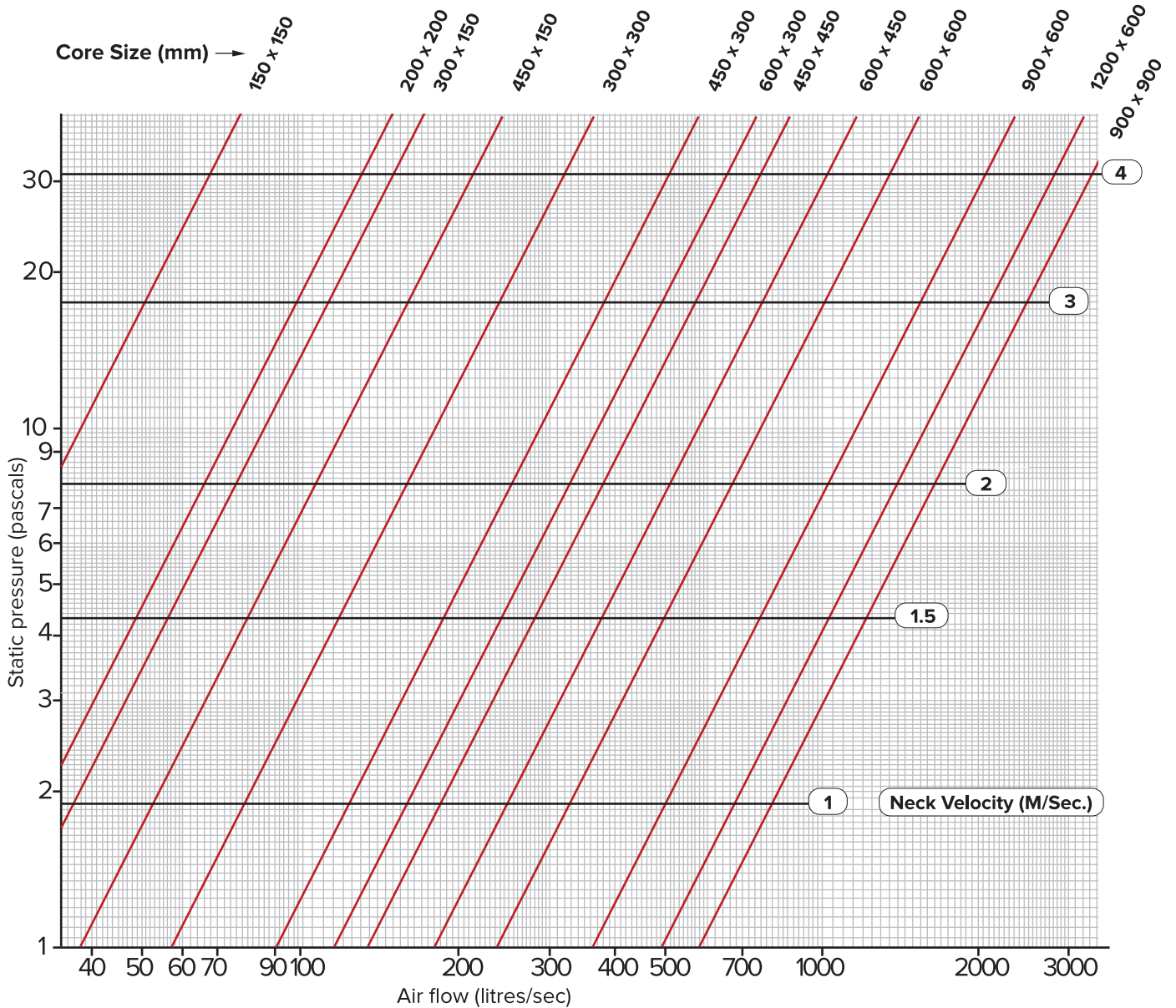
#### AIRFLOW VS CORE AREA FOR VARIOUS NECK SIZES



## FIXED CORE HALF CHEVRON GRILLE 3AR

### PERFORMANCE DATA

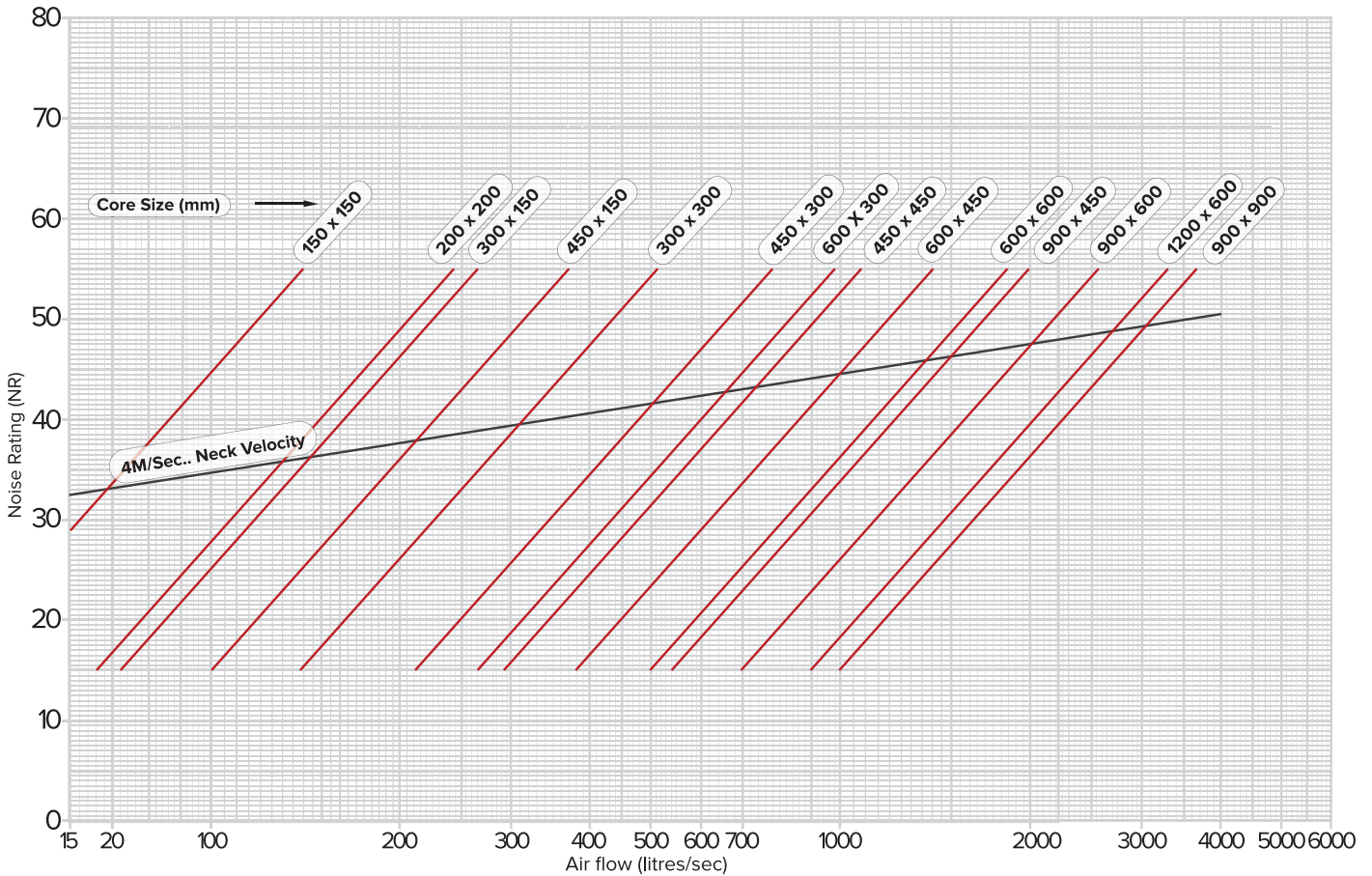
#### STATIC PRESSURE VS AIRFLOW FOR VARIOUS CORE SIZES



## FIXED CORE HALF CHEVRON GRILLE 3AR

### PERFORMANCE DATA

#### NOISE LEVEL VS AIRFLOW FOR VARIOUS CORE SIZES



Selection and performance data have been derived from testing in the laboratories of acoustic and vibration engineers Louis A. Challis & Associates Pty. Ltd. , 246-248 Dowling, Street, Kings Cross, Sydney 2000.

## Measurement Procedures for Return Air Grilles – (3AR)

### 1. Sound pressure level measurements

Sound pressure levels in the chamber were measured using the following equipment:

- Microphone – Bruel & Kjaer 4144
- Preamplifier - Bruel & Kjaer 2619
- Power supply - Bruel & Kjaer 2807
- Rotating boom – (1m radius, 1 min. cycle)
- Precision Laboratory sound level meter HP8052A
- Precision Octave Filter Set– H P8055A
- Integrating voltmeter– Nebula type 1
- Sound Power calibrator– Challis/Torin type 1

The microphone was mounted on a rotating boom which was used to provide space average in the chamber while the integrating voltmeter provided a time average of the sound pressure level. Averaging times ranging between 10 seconds and 100 seconds were used. This system was referenced level checked before and after each series of measurements using a reference source, Bruel & Kjaer type 4230, and system drift did not exceed 0.1 dB.

Equipment was calibrated in the Challis laboratory which currently holds N.A.T.A. certificates for compliance with AS1259 and ASZ41.

The volume of the reverberation is such as to allow measurements to be made with a high accuracy down to the 63Hz octave band. The accuracy claimed for the measurements of sound pressure level is +/-2 dB at 60Hz, +/- 1.5dB at 125Hz and 8kHz; and +/-1.0dB in octave bands from 250Hz to 4kHz.

The background noise levels due to external noise and system noise were measured at each test air flow and where necessary, corrections for background noise have been applied to the measured sound pressure levels.

In some cases, at the lowest air flows, the measured levels of regenerated noise at 63Hz and in the higher frequency bands were indistinguishable from the system noise level, and in these cases the sound power levels have been quoted as being 10dB below the measured value.

The background and their system noise level in the chamber was typically as follows:-

#### Sound Pressure Levels in dB (re 2x10<sup>-5</sup> Pascals)

Octave Band Centre Frequency (Hz)	63	125	250	500	1K	2K	4K	8K
Typical Air System Noise	45	36	27	20	16	14	8	9

The system allowed accurate measurements for the determination of NR figures down to NR 15.

### 2. Air flow measurements

Each unit was tested at three air flows, using either of two fan configurations:-

#### (a). Air flow is less than 1400 litres per second

These flows were provided by means of axial a series of axle fans or a large centrifugal fan. The desired airflows were measured by means of an ASTM triple nozzle system, installed in an acoustic plenum box incorporating an air straightening grid. The nozzle box was installed in the 600 mm x 600mm ductwork leading to the reverberation chamber, and provided air flows of an overall accuracy of better than +/- 5%.

#### (b). Air flows greater than 1400 litres per second

These flows were provided by means of the centrifugal fan, with air flows measured by means of a series of orifice plates installed in the 600 mm diameter inlet duct leading to the fan. This system is capable of measuring air flows over the range of 500 litres per second to 10,000 litres per second with an overall accuracy of +/- 5%.

### 3. Static pressure drop measurements

The static pressure drop across the test item was measured from a tapping point in the discharge duct of approximately 500 mm upstream of the unit, using an Inclined Manometer. This reads in steps of five Pascals (0.02"WG) and provides an overall accuracy of +/- 2.5 Pascals.