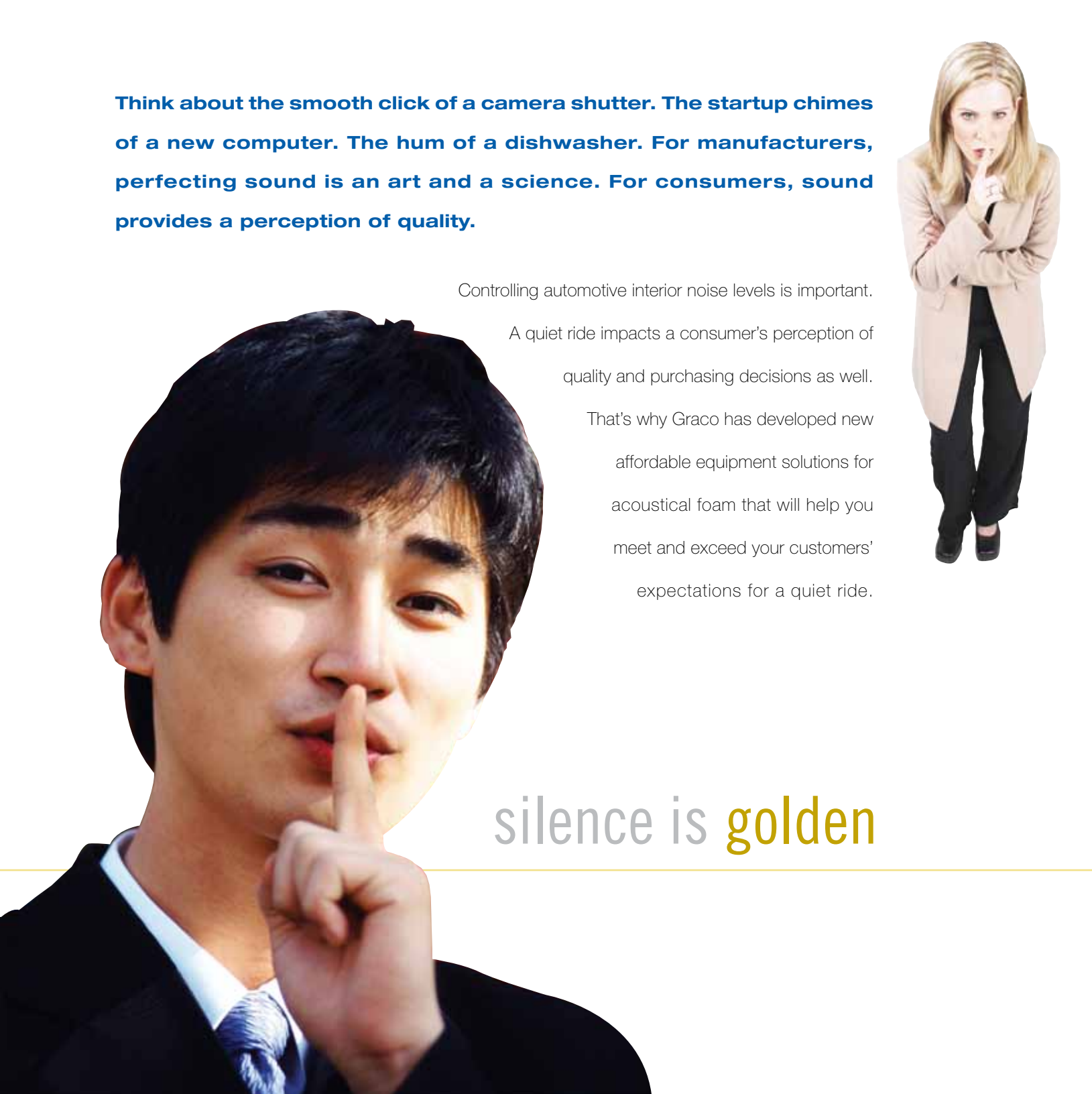




silence is golden

Helping you build a quiet ride with acoustical foam solutions





Think about the smooth click of a camera shutter. The startup chimes of a new computer. The hum of a dishwasher. For manufacturers, perfecting sound is an art and a science. For consumers, sound provides a perception of quality.

Controlling automotive interior noise levels is important. A quiet ride impacts a consumer's perception of quality and purchasing decisions as well. That's why Graco has developed new affordable equipment solutions for acoustical foam that will help you meet and exceed your customers' expectations for a quiet ride.



silence is golden



What is NVH?
To create a quieter ride, many automotive manufacturers are using acoustical foam to minimize noise coming from the tires, wind, exhaust and engine.



In typical noise vibration harshness (NVH) applications, acoustic polyurethane foam is injected into cavities (pillars, cowl bars, rockers, wheel wells and sail panels) where it quickly expands to fill the contour of the empty space. The foam reduces the noise and vibration, providing a quieter ride.



Think about the smooth click of a camera shutter, the hum of a new computer. The perfecting sound is an art and a science. Acoustical foams provides a perception of quality.

Controlling a

A quiet

sil

Advantages of acoustical foams*

- Low-density formulations form high-performance acoustical seals to prevent noise from resonating through vehicle cavities
- Cost and mass-efficient solutions compared with traditional approaches
- Offers flexibility for automotive design since foam fills even the most complex cavity shapes – no re-design is required after sheet metal changes
- Low material cost and reduced or eliminated tooling cost
- New low-MDI formulations may relieve ventilation requirements and ease operations in assembly

*Source: Dow Automotive, Form No. 299-50612-904 HMC/GG500

The challenge

Expensive

Custom-designed polyurethane processing equipment for NVH foam can be expensive.

Large footprint

These sizeable polyurethane processing machines take up a large amount of valuable space.

High cost of ownership

Custom repair parts are expensive. Specialized technicians usually travel to conduct on-site maintenance and repairs.





Graco's NVH solution

The versatility of the Graco HFR™ Metering System promises to re-define automotive NVH. That's because its modular design, combined with Graco technologies and precision dispensing capabilities give you a system that is advanced, reliable and affordable.



Twice the technology, half the investment

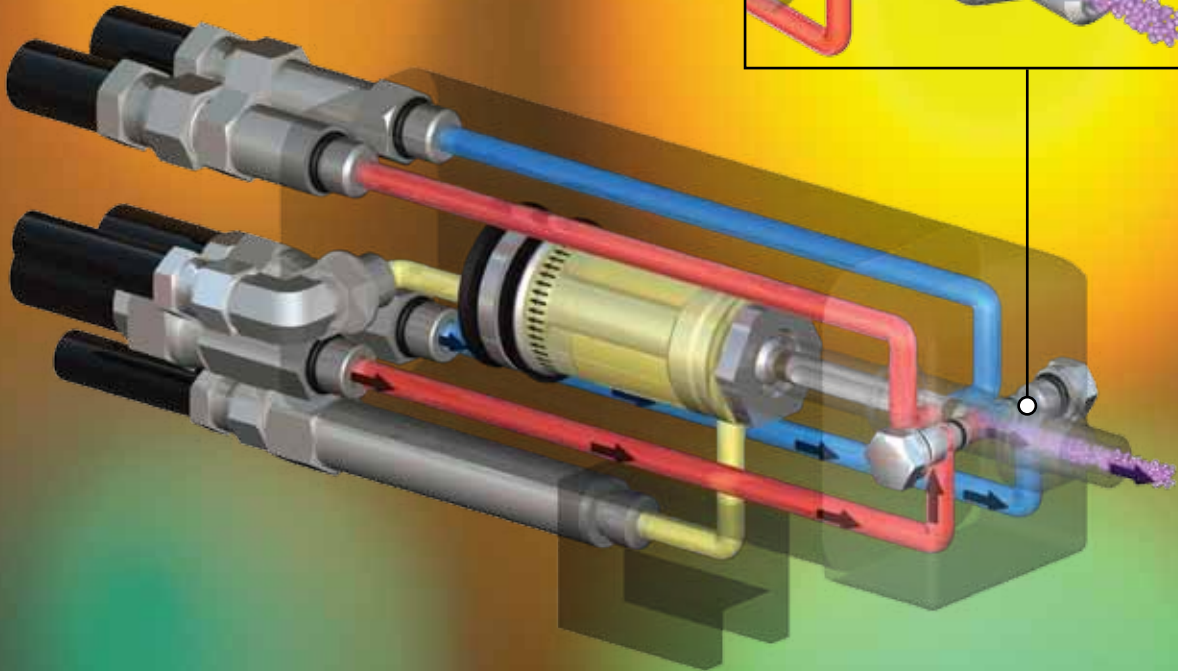
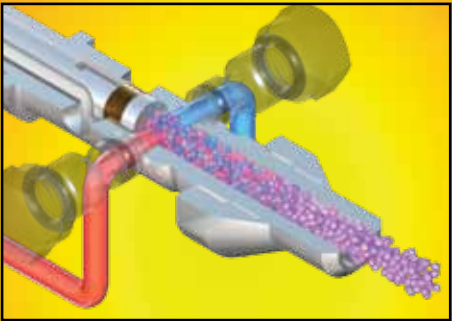
The compact Graco HFR Metering System is a high-quality meter, mix and dispense system that offers more technology and functionality – at a lower price than traditional custom systems. It is a standard configured product, not a custom-built machine. A lower initial investment allows you to use acoustical foam applications where it may not have been possible before.



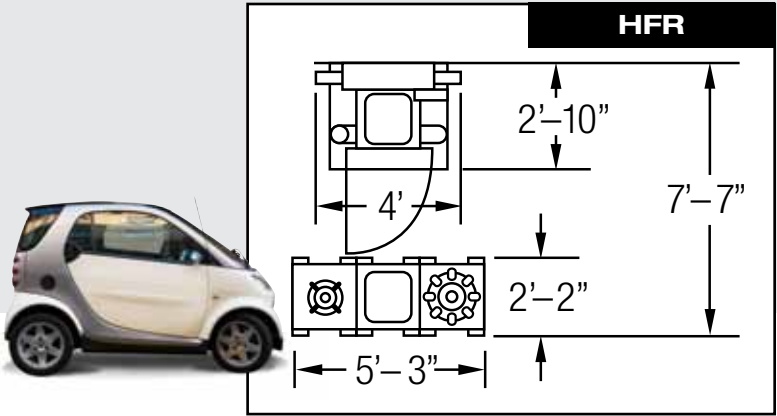
GX16 Gun

Designed for NVH applications, the GX16 applicator is lightweight and ergonomic for easy handling. It is designed so that fluids continuously recirculate to ensure accurate conditioning and eliminate cold start-ups.

- Manual or robotic application
- Lightweight and ergonomic for easy handling – 3.8 lb (1.7 kg)
- Able to be assembled and disassembled without exposing the chemical to the atmosphere
- Flow rates: 4.6 to 20 lb/min (2 to 9 kg/min)



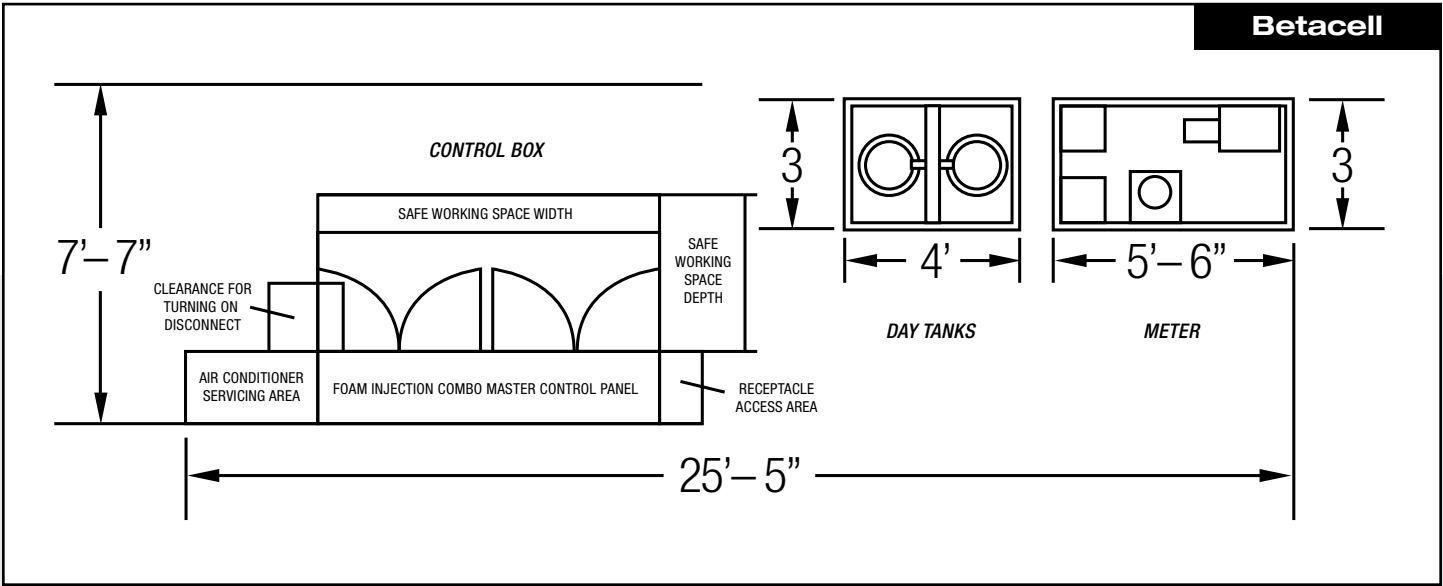
Our Footprint



Smaller footprint saves valuable space

The Graco HFR takes up about 50 square feet (4.6 square meters), while a traditional RIM system needs about 175 square feet (16.3 square meters).

HFR vs Betacell



Graco's roots are in the automotive industry

In 1926 a parking lot attendant named Russell Gray figured there had to be a better way to lubricate cars than by using hand-operated grease guns. The temperature that winter day had dropped so low, the grease was impossible to move.



To meet that need, he developed a grease gun powered by air pressure. Favorable reaction from service station owners and a growing automobile market led Russell and his brother, Leil, to form a business to market Russell's new grease gun. The result was Gray Company, Inc., which generated sales of \$35,000 during its first year of operation.

Today, Graco is a global company with over 2000 employees, with manufacturing facilities and offices in China, Belgium, Japan, India, Australia and Korea.

Graco equipment can be found in all areas of automotive manufacturing. Whether it's applying sealants and adhesives, spraying primers, basecoats or topcoats, or dispensing lubricants, Graco provides fluid handling equipment solutions for all phases of automotive component manufacturing.

As the automotive industry has evolved, so has Graco. We've developed product solutions to meet the unique requirements and demands of fluid handling equipment.

Graco is big into foam

- We've sold 1500 foam machines in 2010
- We've sold 10,000 foam units since 2003

Graco has equipment in:



A woman with long dark hair, wearing a black jacket over a white collared shirt, is driving a car. She is looking directly at the camera with a neutral expression. The car's interior, including the steering wheel and dashboard, is visible. The background shows a blurred city street with buildings and traffic lights.

Build a better vehicle.

Build a better process.

It's a win-win situation.

With the Graco HFR Metering System for NVH foam, you can build a better vehicle and at the same time, build a better manufacturing process. Here's how.

You benefit from a lower total cost of ownership

The system's horizontal pumps can be rebuilt at your facility, reducing rebuild costs and the need for backup pumps. Less downtime, reduced maintenance costs, and lower parts inventory mean more profits for your company.

Improved process performance

Material dispensing reaches a new level of precision due to proprietary algorithms and adaptive technology. The Graco HFR Metering System uses advanced controls to monitor the system and control the dispensing and material conditioning processes. The system runs with a constant flow and precisely timed shots to give repeatable dispenses.





Build a better vehicle.

Build a better process.

It's a win-win situation.

With the Graco HFR Metering System for NVH foam, you can build a better vehicle and at the same time, build a better manufacturing process. Here's how.

You benefit from a lower total cost of ownership

The system's horizontal pumps can be rebuilt at your facility, reducing rebuild costs and the need for backup pumps. Less downtime, reduced maintenance costs, and lower parts inventory mean more profits for your company.

Improved process performance

Material dispensing reaches a new level of precision due to proprietary algorithms and adaptive technology. The Graco HFR Metering System uses advanced controls to monitor the system and control the dispensing and material conditioning processes. The system runs with a constant flow and precisely timed shots to give repeatable dispenses.

Remote monitoring and process control

The user controls on the Graco HFR provide reliable factory communications with the line PLC or other systems within your manufacturing process. The plug and play module simplifies monitoring – no complex wiring or programming is required. It supports four common industry standard fieldbus communications: DeviceNet™, EtherNet/IP™, PROFIBUS™, and PROFINET™.

Fixed ratio results in better foam quality

Since the Graco HFR is a fixed ratio machine, there's far less tampering with ratio settings on the production line. That's important because material suppliers validate material for fixed ratio. With a variable ratio machine, any change in ratio affects the end results and the foam may be off-spec.





uild a better process.

It's a win-win situation.

With the Graco HFR Metering System for NVH foam, you can build a better vehicle and at the same time, build a better manufacturing process. Here's how.

You benefit from a lower total cost of ownership

The system's horizontal pumps can be rebuilt at your facility, reducing costly rebuilds and the need for backup pumps. Less downtime, reduced maintenance costs, and lower parts inventory mean more profits for your company.

Improved process performance

Material dispensing reaches a new level of precision due to proprietary algorithms and adaptive technology. The Graco HFR Metering System uses advanced controls to monitor the system and control the dispensing and material conditioning processes. The system is capable of producing either a constant pressure material output or a constant flow rate material output.

Remote monitoring and process control

The user controls on the Graco HFR provide reliable factory communications with the line PLC or other systems within your manufacturing process. The plug and play module simplifies monitoring – no complex wiring or programming is required. It supports four common industry standard fieldbus communications: DeviceNet™, EtherNet/IP™, PROFIBUS™, and PROFINET™.

Fixed ratio results in better foam quality

Since the Graco HFR is a fixed ratio machine, there's far less tampering with ratio settings on the production line. That's important because material suppliers validate material for fixed ratio. With a variable ratio machine, any change in ratio affects the end results and the foam may be off-spec. Any deviation is invalidated and unknown.



Check it out.

More in-depth NVH information is provided for you in this flash drive. Please feel free to share this Graco NVH Solution information with your colleagues.

**For more information:
email nvh@graco.com**

in reality, silence is **profitable**



PROVEN QUALITY. LEADING TECHNOLOGY.



Graco Inc. and Subsidiaries
Worldwide Headquarters
88 – 11th Avenue NE
Minneapolis, MN 55413
www.graco.com/nvh
nvh@graco.com



PROVEN QUALITY. LEADING TECHNOLOGY.