



ABOVE AND BEYOND HONING

SV-2400 SERIES

PRECISION VERTICAL HONING SYSTEM



SUNNEN'S SV-2400 SERIES

FAST, ECONOMICAL LARGE BORE PRECISION

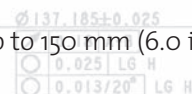


The SV- 2400 Series honing machines combine power, precision, durability and technology to make vertical honing more economical and productive than ever before.

This innovative solution incorporates a patent-pending stroking system that produces a true vertical stroke and can dwell in any part of the hole, end-to-end, producing the straightest, roundest bore possible with a consistent crosshatch pattern.

With its 7.5 kW (10 HP) spindle motor and powerful tool stroking motor, the SV-2400 Series can handle almost any job. It is perfect for mid- to high-volume production in large bores 14 mm to 200 mm (.50 in. to 8.0 in.) and is well suited for a wide range of applications, including:

- 2-cycle engines
- Diesel liners up to 150 mm (6.0 in.)



HONING



- All types of engine blocks
- Gear hobs
- Refrigeration compressors
- Landing gear components
- Large connecting rods
- Construction machinery and military tank hydraulic blocks
- Bearing sleeves

For ease of setup, the SV-2400 Series features a multi-axis hand wheel for fine-tuning the vertical stroke, honing tool position, column position (SV-2410 only) and optional cradle position. And, because it's built on a proven, modular platform, this system can be automated or otherwise customized to meet your exact requirements.



Your Sunnen Technical Specialist will work with you to determine the best solution for your needs – it's all part of the added value you get with Sunnen. Plus, our worldwide sales and service team provides comprehensive support for the installation and operation of every system we make.

Whatever your need, we have the expertise and product range to create the right solution for you and the dedication to support you for the long run.

*To find the Sunnen representative nearest you, visit our website:
www.sunnen.com*



SUPERIOR FEATURES PUT THE SV-2400 IN A CLASS BY ITSELF.

STANDARD & OPTIONAL FEATURES

- Attractive, long-life, low-maintenance stainless steel enclosure provides a clean working environment and ensures operator safety.
- Multiple-spindle configurations available.
- Flexible modular column design allows ease of customization for your specific application.
- Precision spindle with high torque output belt drive delivers superior bore quality.
- Servo rotary feed system and superior tooling choices (GHSS; GHTS; PH; CV/CK; P20/P28; MPS) deliver extremely precise bores.
- T-Slot table and optional elevated fixture frame allow optimal fixturing versatility. T-slot table standard on SV-2460/SV-2490 and optional on SV-2410.
- “Lubed-for-life” vertical slide and horizontal slide stroke guide ways ensure superior performance and long, trouble-free life. Auto lubrication system is standard for critical components.
- The “wide-open” door design allows full access to the work area for either manual or fully automated robotic parts loading, allowing the operator to step into the machine if needed to help with heavy or awkward parts.
- Synchronized servo stroke and spindle maintain constant crosshatch finishing throughout the bore from end to end.
- Add an optional coolant system – paper bed, magnetic-over paper bed – or connect the system to a central coolant system. Eight models available.
- Optional tool guide pot assembly aligns tool with bore as tool is indexed (SV-410 only).
- Hone longer bores with the SV-2400 series featuring a vertical stroke travel rate of: 762 mm/30 in. (SV-2410) ; 1475 mm /58 in. (SV-2460); and 2285 mm/90 in. (SV-2490).
- Heavy-duty cast iron base.
- Optional servo rolover cradle (pictured right, available on the SV-2410 only).
- Optional in process air gaging.
- Latest in safety technology with safety PLC and safe drive systems.

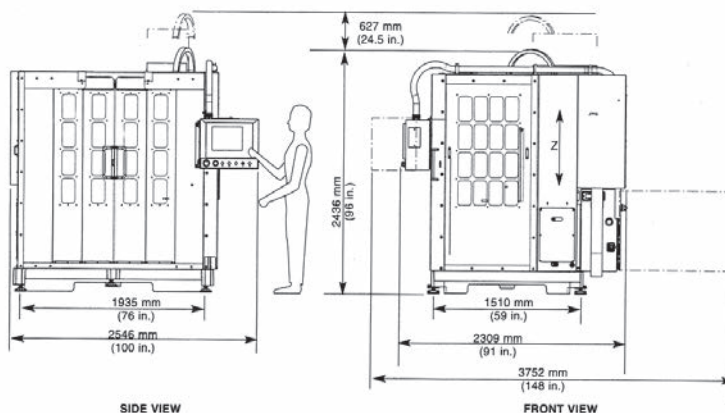




OPERATOR INTERFACE & SOFTWARE FEATURES

- Windows®-based industrial PC control panel features color touch screen, easy-to-use drop-down menus, unlimited storage capacity for job setups, programmable custom tools, and multiple language display.
- Bore profile display shows bore straightness during the cycle.
- Servo Control X-axis (left-right 1143 mm/45 in. travel) allows programming positions for multiple in-line bore honing. (Sv-2410 only, not available on the SV-2460/Sv-2490.)
- Optional, in-process air gage feedback control provides optimal bore size and geometry.
- Optional post-process gaging system with industry leading SPC software allows data collection and machine process control to sub-micron tolerances.
- “Automation-ready” machine and system control are designed for integration.
- Fast, simple setup using hand wheel control for tool feed, vertical, servo left-to-right position (SV-410 only) and optional servo cradle.
- Advanced servo stroke control delivers a consistent crosshatch pattern and allows the machine to short stroke or dwell in any part of the bore, end-to-end for incredibly precise honing.
- Patent pending load-sensing feed can operate in either constant spindle load or constant rate mode.
- Auto-Dwell feature corrects bore straightness automatically (great for blind holes).
- Improved automatic bore detection reduces cycle time.

SV-2410 FLOOR PLAN LAYOUT
(OTHER MODELS AVAILABLE ON REQUEST)





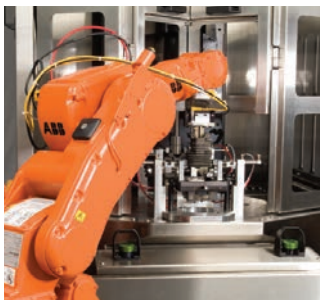
CUSTOMIZE THE SV-2400 SERIES TO YOUR EXACT REQUIREMENTS

Sunnen's high-precision honing systems represent the very finest solutions available anywhere in the world. They are reliable, durable, and flexible systems designed to deliver the production quality and precision our customers have grown to expect.

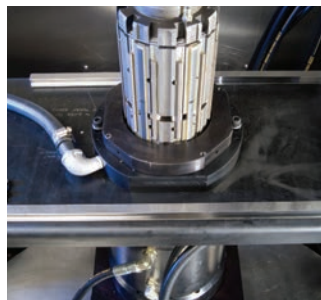
From design to delivery, you have the Sunnen commitment to service and quality assurance. Our technical experts will work with you to determine the number of spindles, style of tooling, fixturing, abrasives, in-process and/or post-process gaging, and method of parts loading and unloading (including robotics) you require. Then we'll provide you a written proposal.

After your system is built, we'll set up a live run-off demonstration at our facility. Once it meets all specifications, we'll commission your system and train your staff.

SV-2400 SERIES AUTOMATION OPTIONS



A TWO-AXIS OR MULTI-AXIS SERVO ROBOT CAN BE INTEGRATED INTO A SUNNEN MODULAR HONING SYSTEM.



INTEGRATED AIR SIZING SYSTEMS CONTROL THE ACCURACY OF BOTH ROUGHING AND FINISHING PROCESSES.

MACHINE OPTIONS

- Elevated fixture frame
- Air gage wand with size control feedback
- Robot interface
- Automation PLC
- Multiple columns
- Custom risers for long parts
- Light stack
- Work area light
- Mist elimination system
- Pneumatic panel for control of pneumatic fixturing on in-process air gaging
- Guide pot assembly
- In-process air gaging
- Servo and manual rollover cradles
- Custom guarding
- MPS, SV-3 and SV-4 style tooling adapters

SPECIFICATIONS:

DIAMETER RANGE (ID): *

19 - 203 mm (.75 - 8 in.)

WORKPIECE WEIGHT:* 900 kg (2000 lbs.)

WORK AREA ENVELOPE:

1016 x 1778 mm (40 x 70 in.)

STROKE TRAVEL:*

SV-2410 - Up to 762 mm (30 in.)

SV-2460 - Up to 1475 mm (58 in.)

SV-2490 - Up to 2285 mm (90 in.)

RECIPROICATION RATE (STROKE - Z AXIS):

SV-2410 - Up to 160 strokes per minute

SV-2460 - Up to 186 strokes per minute

SV-2490 - Up to 130 strokes per minute

STROKE MOTOR: DC Servo 7.5 kW (10 hp)

SPINDLE SPEEDS:

SV-2410: 10 to 600 RPM

SV-2460: 10 - 600 RPM

SV-2490: 5 - 500 RPM

SPINDLE MOTOR: 7.5 kW (10 hp)

FEED: Rotary Servo Control

X-AXIS (SV-2410 ONLY):

TRAVEL: 1143 mm (45 in.)

SPEED: .001 - .095 mps

COOLANT SUMP PUMP: 0.5 kW (.67 hp)
centrifugal pump/ 205 LPM (68 GPM)

FLOOR SPACE (WITHOUT COOLANT TANK OPTION)

SV-2410: 2546 W x 2309 D x 2436 H mm
(100 x 91 x 96 in.)

SV-2460: 2508 W x 2558 D x 3786 H mm
(99 x 101 x 149 in.)

SV-2490: 2508 W x 2558 D x 3786 H mm
(99 x 101 x 149 in.)

FLOOR WEIGHT: SV-2410: 4350 kg (9590 lbs.)
SV-2460: 5620 kg (12500 lbs.)
SV-2490: 5620 kg (12500 lbs.)

FLOOR LOAD: SV-2410: 1500 kg/sq. meter
(301 lbs./sq. ft.)

SV-2460: 2050 kg/sq. meter
(415 lbs./ sq ft.)

SV-2490: 2050 kg/sq. meter
(415 lbs./ sq ft.)

ELECTRICAL REQUIREMENTS:

- 460V, 60Hz, 3Ph (43 FLA - full load amps)
- 400V, 50Hz, 3Ph (46 FLA - full load amps)

NOISE EMISSION:

Less than 72 dB(A) continuous load (max. noise) condition in a factory environment.

* DIAMETER RANGE, LENGTH RANGE AND WORKPIECE WEIGHT ARE CONTINGENT ON WORKPIECE AND APPLICATION.

SV-2400 TOOLING, ABRASIVES AND LUBRICANTS

The SV-2400 series features the latest technology in vertical honing for bores 15 mm to 200 mm (.50 in. to 8.0 in.)* Tooling choices include diamond or Borazon multi-stone tools and vitrified abrasives tools.

PH PRECISION MULTI-STONE HONING TOOLS

New features on this line of multi-stone honing tools optimize bore geometry and efficiency in mid- and high-volume production applications. Tools can be built to meet any need, and are available in single-stage and two-stage models. PH tools can hold 12 or more stones to produce optimum straightness and roundness. Available with integral plug sizing or in-process air gaging.

CV/CK CYLINDER HONING TOOLS

Two abrasives and two die cast zinc guides provide an effective way to finish a large range of bore diameters. These tools use conventional abrasives and can be fitted with metal bond super abrasives, plus they're well suited for short production runs, engine rebuilding, and other precision honing operations.

GHSS SINGLE-STAGE MULTI-STONE TOOLS

These tools use precision graded Sunnen metal bond CBN and diamond abrasives to provide fast cycle-time, consistent geometry and surface finish accuracy, and utilize multiple abrasive stones to lower costs.

GHTS TWO-STAGE MULTI-STONE TOOLS

These versatile tools perform both rough and fine honing operations (stone or brush) within the same honing tool – without changing stones – to reduce your bore sizing costs.

P20/P28 MANDRELS

These mandrels incorporate multiple stones aligned end-to-end to allow for long bore honing, with the P28 accommodating blind bore honing as well. Both P20 and P28 mandrels have replaceable abrasives and guide shoes.

MPS MODULAR TOOLING

These are the first building block tooling system for honing large pieces. With MPS tooling you can convert any "big work" honing machine into a new bore finishing system and you can tailor tooling to fit your jobs. All components are standard and interchangeable and most are available from stock for immediate delivery.

**Special tooling required below 19 mm (.75 in.)*

** OTHER SIZES AVAILABLE UPON REVIEW.*



BORE DIAMETER RANGE:*
50 - 203 mm (2.00 - 8.0 in.)

BORE DIAMETER RANGE:
CK-2000: 51 mm - 76 mm
(2.0 in - 3.0 in)
CK-2600: 66 mm - 89 mm
(2.60 in - 3.50 in)
CK-3000: 76 mm - 127 mm
(3.0 in - 5.0 in)
CK-4000: 102 mm - 203 mm
(4.0 in - 8.0 in)

BORE DIAMETER RANGE:
37.59 mm - 140.71 mm
(1.480 in - 5.540 in)

BORE DIAMETER RANGE:
62 mm - 140.71 mm
(2.440 in - 5.540 in)

BORE DIAMETER RANGE:
P20: 19 mm - 25.40 mm
(.75 in - 1.000 in)
P28: 25.15 mm - 152.40 mm
(0.990 in - 6.000 in)

BORE DIAMETER RANGE:
25.1 mm - 381 mm
.990 in - 15.00 in)

SUNNEN ABRASIVES & LUBRICANTS

From aluminum oxide to silicon carbide to diamond and CBN, Sunnen offers the industry's largest variety of mounted or un-mounted stick abrasives, bond types, grain sizes and stone configurations.

Before any stone is shipped, it is graded and qualified, maintaining the most exacting quality control standards in the industry to assure you of the most precise honing performance available.

Sunnen's premium honing oils and coolants provide extreme lubricity for higher honing pressure and harder abrasives, delivering faster, lower cost-per-part and ultimately more profitable cutting rates.



A LEGACY OF EXCELLENCE SINCE 1924.

WORLDWIDE

Our global manufacturing, distribution, and sales and service network allows us to deliver quality Sunnen solutions worldwide.

And our state-of-the-art Technical Services Centers allow our technical experts to develop innovative solutions to customer application challenges. The Centers also provide answers for customer questions and training for Sunnen representatives around the world.

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