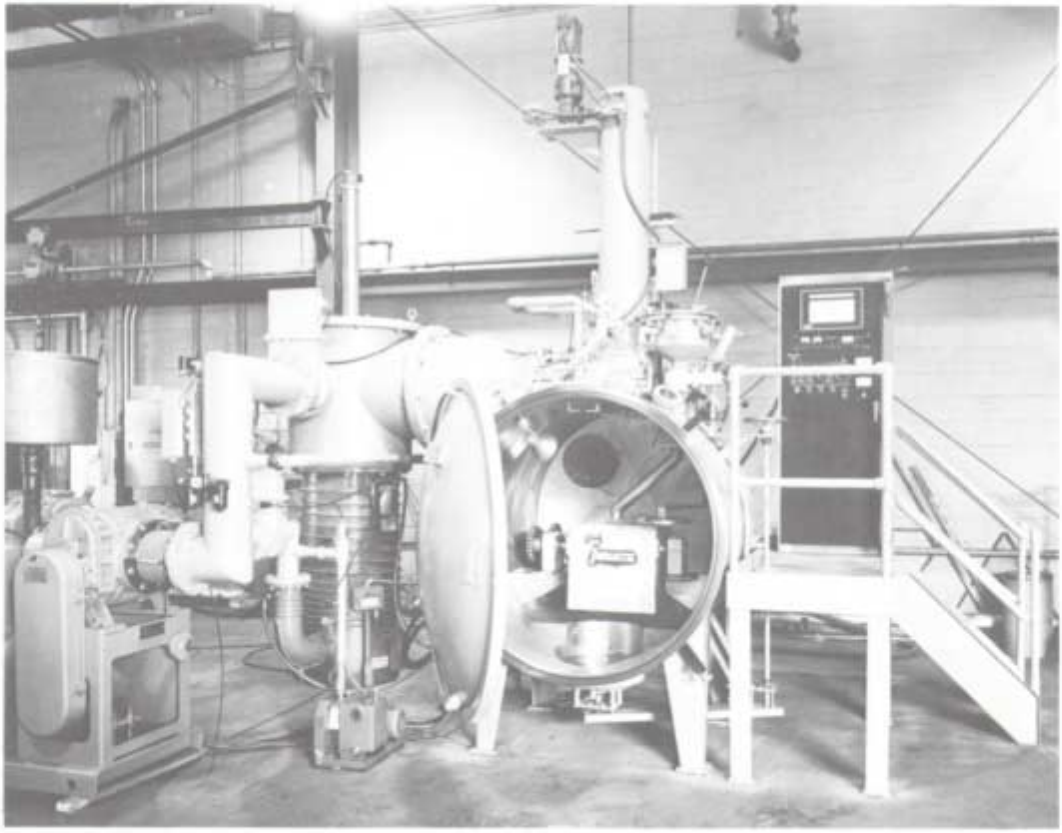
Product Information

Vacuum Industries

100 LB. (45 kg) VACUUM INDUCTION MELTING AND CASTING FURNACE SERIES 4300 MODEL 5452-1



100 lb. (45 kg) vacuum induction melting furnace equipped with thermocouple probe, pyrometer sight tube, six cup additions maker, bulk charger. Interior equipped with box type induction melting furnace, tilt mechanism, baffled pumping port, multiple mold turntable, lighting. Chamber interior is stainless steel with carbon steel jacket. Control cabinet contains graphic display of pumping system, semi-automatic controls, recorder and vacuum gauging. Photo 1403

CAPABILITY Batch operation for melting and pouring ferrous and non-ferrous metals and alloys in vacuum, partial or positive pressure inert gas atmospheres. Used for ingot production, precision investment casting; charging by scrap recycle or a prealloyed billet.

CAPACITY 100 lb. (45 kg) with tilting coil assembly; 100 lb. ferrous alloy melting time can be 50 to 10 minutes using from 50 to 225 kW power supplies. Pumping system produces $4X10^{-5}$ torr in 18 minutes. Mold size up to 20″ maximum diameter and 22″ high or multiple molds in the equivalent space.

CHAMBER Horizontally oriented, 54″ diameter x 52″ straight length Type 304 stainless steel interior, 100% jacketed with mild steel and water cooling baffles. Hinged, full opening door, two 4″ clear vision sight ports, 24″ ID jacketed mold well, 20″ pumping port, stainless steel induction power port.

INTERNALS Induction melting furnace, 100 lb. (45 kg) trunnion mounted, box construction, high frequency water-cooled power leads, furnace tilting mechanism, additions chute assembly, crucible cover, chamber illumination and mold platen turntable.

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SERIES 4300 MODEL 5452-1 100 LB. (45 kg) VACUUM INDUCTION MELTING AND CASTING FURNACE

EXTERNALS Elevated operator platform, supports power supply and vacuum control cubicle. Hydraulic furnace tilt, six-cup late alloy additions chamber, valved bulk charger, immersion thermocouple, bridge breaker, hydraulic power package.

PUMPING SYSTEM 20″ oil diffusion pump (18,000 l/s), Stokes 1722 (1300/300 CFM) roughing and backing mechanical booster pump, and a 15 CFM hold pump complete with manifolding, vibration isolation joints and remotely operated vacuum valves.

CONTROLS AND INSTRUMENTATION Vertical, free-standing, front access, NEMA-1 cubicle; mode selector switch and keylocking override switches for sequence controlled, semi-automatic pumping system. Vacuum monitors include one thermocouple gauge, (1 to 1000 microns range), and one two-station thermocouple gauge (1 to 100 microns range) for chamber or foreline pressures plus one ionization (hot filament) gauge for chamber submicron range. Components are interlocked to avoid undesirable operating conditions (such as oil migration in the pumping system and inadequate cooling water), to avoid electrical hazards for operating personnel and to prevent loss of vacuum.

Component	Condition	Safety Interlock
Diffusion pump	Insufficient cooling water -	Water pressure switch
	Vacuum on foreline -	Mechanical pump must be running
Induction Melt Coil	Insufficient cooling water -	Water pressure switch
Vacuum Valves	Loss of power -	Valves close

POWER SUPPLY Normally recommended - 225 kW, 3000 Hz solid state frequency inverter; contains controls and output meters; feedback circuits to maintain a regulated power output throughout a melting cycle without manually changing transformer taps or capacitor steps; capacitors, circuit breaker, high frequency transformer; interlocked cutout for low pressure water supply, limiting circuits function to protect against overload.

UTILITIES AND SPACE REQUIRED

Power — 460 volt, 3 phase, 60 Hz, three-wire service through user's fused disconnect.
Water — 40 to 60 psig, 70° to 80°F, filtered, total consumption including induction furnace and power supply is 38 gpm piped to drain bosh.
Air — 80 to 100 psig, filtered and lubricated.
Space — 14 ft. wide x 14 ft. long x 11 ft. high (4.2m x 4.2m x 3.3m).

ACCESSORIES

(a) Bridgebreaker with replaceable tip, mounted on angular displacement seal
(b) Temperature and pressure indicating, recording or control instruments
(c) Thermocouple probe with valved lock for tip changing
(d) Six cup, valved additions mechanism
(e) Air/oil or full hydraulic furnace tilt (remotely operated)
(f) Interchangeable furnace assemblies
(g) Centrifugal casting mold turntable
(h) Manually indexed mold turntable
(i) Valved optical sight glass
(j) Induction mold preheater
(k) Radiation pyrometer
(l) Sample taker

Description and illustrative material may include accessories which are ordinarily considered optional.

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VIM-100B 2M 8/91 93979
Printed in U.S.A.

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