

Synopsis of Casting Machines (Project 07-004) (7/07)

Casting machines are an integral part of the equipment used in any dental laboratory. They are used to melt and cast a variety of alloys. It is reported that casting machines produce castings that are denser and more accurate than conventional torch casting methods.

There are a number of casting machines on the market today. They vary in size, shape, construction, and functional casting method (centrifugal, vacuum, injection). Selecting which type of casting machine to purchase can be difficult. One major factor in the selection process is to determine dental laboratory needs and intended uses. For example, a number of casting machines are designed for casting removable partial denture frameworks in the dental laboratory. Others are specifically designed to cast fixed restorations.

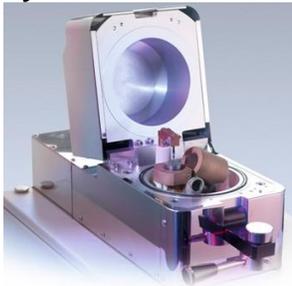
Casting machines use various heating methods to melt an alloy. Arc heating involves the use of an electric arc where heat is transferred by conduction, convection, or radiation. Induction heating occurs when an electrically conductive material is placed in a varying magnetic field. An electrical current is induced directly into the part being heated. It is reported that induction heating can reduce or eliminate the need for skilled operators in applications such as brazing and soldering. In addition, induction heating is a clean form of heating which does not emit unpleasant odor or heat.

Casting methods may be a concern for a number of laboratories. Centrifugal casting uses an articulated arm that freely spins around a vertical axle, which is driven by an electric motor or a spring. Vacuum casting uses similar methods, however with vacuum casting the molten metal is driven into the mold by atmospheric pressure, while the vacuum removes trapped air that would impede the free flow of the liquid casting material. Gas/air-pressure injection often used with vacuum casting uses a combination of various gases under pressure to improve the quality of the casting and minimize porosity in the metal. A computer program regulates the various cycles involved in the casting process.

Casting machines are available in small tabletop style, recessed style (in-counter mounting) and floor mounted. A number of units are equipped with a digital read out display, a viewing window and an internal memory that holds user-defined programs that specify start temperature, melting temperature, melting time, casting, and cooling time. Additional safety features include a self-monitoring system and diagnostic programs to manage internal operations.

The purpose of this synopsis is to provide useful information giving federal service customers a starting point for researching and purchasing a casting machine. Casting machines with the most features per manufacturer were selected. Additional models, if available from the manufacturer are listed with the item number only. The information in the table has been provided by the manufacturer or obtained from the Internet. Some companies and/or casting machines may not appear in the table. The following [synopsis](#) lists selected casting machines, their manufacturers, and basic information. The casting machines are listed alphabetically by manufacturer.

Synopsis of Casting Machines*

Product	Symbiocast	Nautilus CC Plus	Fundor T
			
Manufacturer	AmannGirrbach America, Inc. 6234 Ikes Cabin Ct. Palmetto, Florida 34221 (800) 851-3719 (352) 398-1409 FAX www.amanngirrbach.com	BEGO 24 Albion Rd., Suite 103 Lincoln, RI 02865 (800) 342-2346 (401) 334-9261 (401) 334-9265 FAX www.bego.com	BEGO 24 Albion Rd., Suite 103 Lincoln, RI 02865 (800) 342-2346 (401) 334-9261 (401) 334-9265 FAX www.bego.com
Other Models	N/A	N/A	N/A
Price (retail/govt)	\$37,307/call for govt price	\$24,995/\$19,996	\$4,345/\$3,476
Warranty	1 year	2 years	2 years
Melting Method	Arc	Electric induction	Flame/torch
Casting Method	Vacuum, gas/air-pressure injection	Vacuum, gas/air-pressure injection	Centrifuge
Vacuum	Internal	Internal	None
Chamber Monitor	Viewing window	Fiberoptic viewing sensor and lens	None
Castable Metals	Precious, semi-precious, non precious, titanium, and titanium alloy	Precious, semi-precious, non precious	Precious, semi-precious, non precious
Crucible Capacity (gm)	20,30,40	100	100
Cooling Method	Air	Water	Air
Max Casting Temperature (°C)	1660	1550	Torch dependent
Melting Time / Cycle (sec)	25–55	30–40	Torch dependent
Casting Time / Cycle (sec)	60	90	Torch dependent
Dimensions WxHxD (cm)	43 x 120 x 85	91 x 66 x 66	77 x 85 x 65

*Data for these tables were obtained from the manufacturer and the Internet. The listing or omission of a product in this table does not imply endorsement, approval, or disapproval by DECS.

Synopsis of Casting Machines*

Product	Fornax T	Modular 4	EccoCast D2
			
Manufacturer	BEGO 24 Albion Rd., Suite 103 Lincoln, RI 02865 (800) 342-2346 (401) 334-9261 (401) 334-9265 FAX www.bego.com	CMP Industries Inc. 413 N. Pearl Street Albany, NY 12202 (800) 833-2343 (800) 888-5868 (518) 434-1288 FAX www.cmpindustry.com	Ecco High Frequency 2360 Hamburg Tnpk. Wayne, NJ 07470 (973) 248-3366 (973) 248-3304 FAX www.glowtestertechnologies.com
Other Models	N/A	N/A	EccoCast D1, D3
Price (retail/govt)	\$14,450/\$11,561	\$16,650/\$14,281	\$18,200/\$15,490
Warranty	2 years	1 year	1 year
Melting Method	Electric induction	Electric induction	Electric induction
Casting Method	Centrifuge	Centrifuge	Centrifuge, chamber inert-gas infiltration
Vacuum	None	None	Internal
Chamber Monitor	Observation window	Electric eye	Pyrometer
Castable Metals	Precious, semi-precious, non precious, except titanium	Precious, semi-precious, non precious	Precious, semi-precious, non precious
Crucible Capacity (gm)	Not available	80	35
Cooling Method	Water	Water	Water
Max Casting Temperature (°C)	1550	2100	1800
Melting Time / Cycle (sec)	20	45	45
Casting Time / Cycle (sec)	N/A	65	75
Dimensions WxHxD (cm)	47 X 52 X 35	60 X 104 X 27	69 X 101 X 69

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Synopsis of Casting Machines*

Product	EccoCast MiniCast	Manfredi Smallcast	Reitel Induret Compact
			
Manufacturer	Ecco High Frequency 2360 Hamburg Tnpk Wayne, NJ 07470 (973) 248-3366 (973) 248-3304 FAX www.glowtestertechnologies.com	Harris Discount Supply 7506 W. Melrose Ln, Ste 101A Oklahoma City, OK 73127 (405) 440-2229 (800) 227-8524 (405) 440-2299 FAX www.harrisdiscount.com	IS2 International Support System 19895 Beach Blvd., Ste. 200 Huntington Beach, CA 92648 (714) 374-4077 (800) 560-2424 (714) 374-5810 FAX www.internationals2.com
Other Models	EccoCast D1, D3	Manfredi Tabby Cast, Manfredi Millennium, Ney Motorcas	TITACAST
Price (retail/govt)	\$15,500/\$12,500	\$9,895/\$9,895	\$23,000/ call for govt price
Warranty	1 year	1 year	1.5 years
Melting Method	Electric induction	Electric induction	Electric induction
Casting Method	Centrifuge	Centrifuge	Vacuum, gas/air-pressure injection
Vacuum	Chamber inert-gas infiltration	Chamber inert-gas infiltration	Internal, external, chamber inert-gas infiltration
Chamber Monitor	Viewing window	Electric eye	Viewing window, temp sensor
Castable Metals	Precious, semi-precious, non precious	Precious, semi-precious, non precious and chromium cobalt	Precious, semi-precious, non precious
Crucible Capacity (gm)	35	Not available	120
Cooling Method	Water	Water	Water
Max Casting Temperature (°C)	1800	2000	1650
Melting Time / Cycle (sec)	55	30	35–45
Casting Time / Cycle (sec)	85	90	60
Dimensions WxHxD (cm)	56 X 40 X 51	64 X 52 X 55	35 X 40 X 60

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Synopsis of Casting Machines*

Product	Reitel Induret S	Robo Cascom	Neo Super Cascom
			
Manufacturer	IS2 International Support System 19895 Beach Blvd., Ste 200 Huntington Beach, CA 92648 (714) 374-4077 (800) 560-2424 (714) 374-5810 FAX www.internationals2.com	KDF U.S., Inc. 2301 W. 205 St. Ste. 107 Torrance, CA 90501 (310) 320-6633 (310) 320-6116 FAX www.kdfus.com	KDF U.S., Inc. 2301 W. 205 St. Ste. 107 Torrance, CA 90501 (310) 320-6633 (310) 320-6116 FAX www.kdfus.com
Other Models	N/A	N/A	N/A
Price (retail/govt)	\$28,000/call for govt price	\$89,000/call for govt price	\$16,999/\$14,449
Warranty	1.5 years	2 years	2 years
Melting Method	Electric induction	Resistance melting	Resistance melting
Casting Method	Vacuum, gas/air-pressure injection	Vacuum, inversion, gas/air pressure injection	Vacuum, inversion, gas/air pressure injection
Vacuum	Internal, external, chamber inert-gas infiltration	Internal, external, chamber inert-gas infiltration	External, chamber inert-gas infiltration
Chamber Monitor	Viewing window, temp sensor	Viewing window, thermocouple	Viewing window, thermocouple
Castable Metals	Precious, semi-precious, non precious	Precious, semi-precious, non precious	Precious, semi-precious, non precious
Crucible Capacity (gm)	120	100	150
Cooling Method	Water	Air	Air
Max Casting Temperature (°C)	1650	1500	1500
Melting Time / Cycle (sec)	35–45	180	120
Casting Time / Cycle (sec)	60	360	360
Dimensions WxHxD (cm)	67 X 47 X 60	75 X 180 X 91	50 X 53 X 50

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Synopsis of Casting Machines*

Product	EasyCast	Supercast 2	Dor-A-Matic AI
			
Manufacturer	Microstar 11635 Lakes Pkw., Ste. J Lawrenceville, GA 30043 (770) 339-5757 (800) 313-6427 (770) 339-3188 FAX www.microstardental.com	RDO Induction LLC 50 East Johnston St. Washington, NJ 07882 (908) 835-7222 (908) 835-7272 FAX www.rdoinduction.com/index.htm	Schutz Dental Group Inc. 2301 W. 205 St. Ste. 107 Torrance, CA 90501 (310) 320-6633 (310) 320-6116 FAX www.schuetz-dental.com
Other Models	N/A	Supercast 1, 3,11,12,13	Dor-A-Matic Universal, Macrotronic 2000
Price (retail/govt)	\$3,918/call for govt price	\$22,500/call for govt price	\$21,995/call for govt price
GSA Contract	No	No	No
Warranty	1 year	1 year	2 years
Melting Method	Flame/torch	Electric induction	Arc
Casting Method	Vacuum	Vacuum, centrifuge	Vacuum, inversion, gas/air-pressure injection
Vacuum	Internal	Internal, chamber inert gas infiltration	Internal, chamber inert gas infiltration
Chamber Monitor	Viewing shield	Viewing window, pyrometer	Viewing window, pyrometer
Castable Metals	Precious, non precious, except titanium	Precious, semi precious, non precious	Precious, semi-precious, non precious
Crucible Capacity (gm)	No crucible required	50 (chromium cobalt), 100 (gold)	No crucible required
Cooling Method	Air	Water	Air
Max Casting Temperature (°C)	Torch dependent	2000	2000
Melting Time / Cycle (sec)	Torch dependent	45–60	30–180
Casting Time / Cycle (sec)	60	60-90	17/hr
Dimensions WxHxD (cm)	37 X 90 X 49	56 X 102 X 69	45 X 73 X 50

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