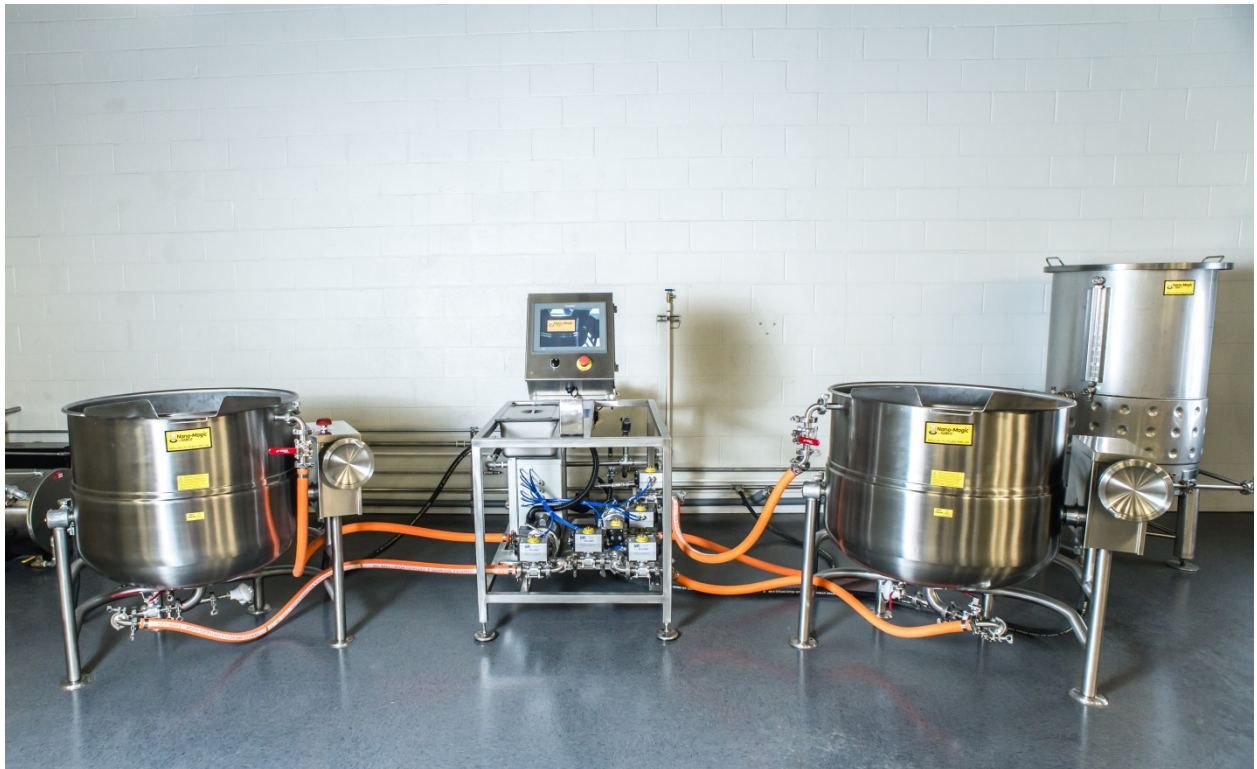


**INTRODUCING:**  
**NANO-MAGIC**<sup>®</sup>  
**RIMS 2BBL, Brewing System**  
**by SABCO**

*.. with design collaboration by Dogfish Head Brewery*



Nano-Magic by SABCO is a fully automated brewery with an intuitive software package. MagicSoft(TM) technology allows datalog storage of multiple recipes and USB laptop connectivity. You'll discover visual and audible brewer assistance and large, full color touch screen accessible brewer notes, as well as ingredient listings and mash and boil time schedules. Graphical temperature gradients can be plotted for precision temperature control and exacting repeatability. Brewers may track two consecutive batches simultaneously to allow rapid transitions to the next brew, and a more productive brew-day.

NANO-MAGIC employs a full complement of pneumatic valves which are fully PLC controlled for automated sequencing of several functions including: Auto-Priming, CIP Clean, HLT Auto-Filling, Bottom or Top Mash fill, RIMS circulation, Sparge operations, Boil blend/whirlpool, Manual touch-screen valve operations, and more.

The optional and cost saving electric steam boiler can be installed without gas-related venting or permitting in most states. It's compact, yet extremely capable and energy efficient. All kettles are steam jacketed and have independent temperature controls via the PLC touch screen controller. Set your desired target temperature and NANO-MAGIC will automatically acquire, blend, and report the temperature to the brewer.

NANO-MAGIC(TM) SYSTEM by SABCO is designed to meet the most rigid requirements of professional brewers in a compact, automated, and highly efficient way. An entire layout including boiler, HLT, 2x kettles and 4x unitanks, can easily fit into a 12' x 24' room. Full digital, data-logged recipe information can be retrieved, and pre-set for an exacting, repeatable brew session with audio prompting and true 'brewer-assistant' convenience. The following specifications for each component may change without notice. Be sure to request the most recent version of this brochure.

## Mash and Boil Kettles

- 80 Gallon ( 375 liters ) capacity
- Quad-Leg, 304 Stainless, #4 finish, 47"W x 39"D x 43"T
- Full 95 degree.Tilting mechanism ( worm drive ) makes cleaning easy
- 2/3 steam jacket with 50psi rating
- 50 psi chrome plated Safety Valve
- High capacity pouring lip
- Condensate drain valve with insulated handle
- NSF and ASME approvals
- SS lift off covers ( Boil & Mash )
- 2" Tri-Clamp (TC) end, center drain outlet plumbing
- Stainless, false bottom with drain support in Mash kettle
- Mash & Boil are temperature monitored /controlled via PLC touchscreen
- Each vessel utilizes a Class A, RTD sensor for accurate temp. target acquisition
- Variable stand pipes in boil for effective trub separation



## Electronics Control Touchscreen

- 304 stainless Nema 4 enclosure on swivel pedestal for convenient user viewing
- V1210 Unitronics OPLC, V200 Snap I/O module, circuit breaker
- Safety E-stop shut-off
- Micro SD ( SanDisk ) memory storage for the data-log files of hundreds of complete brewing sessions
- 16 bit color touchscreen, 12.1" viewing area, SVGA TFT, White LED backlit, LCD type
- Virtual keyboard for convenient brewer note entry
- 24VDC input, 7 year battery backup
- Preprogrammed operator control of system pneumatic valves for fully automated step functions
- MagicSoft® Nano programming per SABCO for full monitoring of all vessels & pump sequences
- Both Recipe and notes data-log and file recall along with verbal and visual prompting

## Mechanical Package

- 2x Sanitary type 316 Stainless, Centrifugal Pumps
- 6x pneumatic control valves, direct mount actuators
- Nema 4 enclosure, full wash-down capable, electronics package
- Positioner type steam valve to regulate mash kettle temperature
- 2x modulating steam valves on HLT and Boil kettles
- Full temperature control via touchscreen display
- 9x manifold with 4 way solenoid valves, 24 VDC
- Digital display and RTD sensor control of Boil, Mash & HLT vessels
- Brewer hosing, with sanitary connections for flexible vessel location
- HLT whirlpool blending via touchscreen
- Stainless accessible framework for all mechanical components
- Automated mechanical activation/sequencing of brewing steps via PLC:
  - Automatic filling to desired gallon capacity via touchscreen
  - Programmable HLT temperature with full monitoring via touchscreen
  - Bottom-up filling of mash from HLT with pump deactivated.
  - Top filling of mash from HLT with pump activated
  - Mash proportional temp control . Monitoring via touchscreen
  - Mash RIMS recirculation
  - Complete flow rate control of sparge during mashout
  - Boil kettle whirlpool at brewer preferred speed.
  - Manual and automated Boil temperature control via touchscreen.
  - Pre-programmed temperature control, prompted brewer notes.
  - Timed activities and temperature gradient graphics, via data-logged recipes.



## Hot Liquor Process Tank (HLT)

- Stainless, 150 US gallon capacity
- Steam jacketed. Maximum pressure 15 psi
- 6" deep coned bottom
- 1-1/2" Tri-Clamp (TC) bottom outlet
- 1" TC inlet with horizontal interior nozzle for whirlpool liquid blending
- 1" TC inlet with 45 deg. downward nozzle for water connection
- Auto water fill metering for programmed touchscreen filling of HLT
- 30" OD, 5'2" overall height plus SS pads & height adjusters
- 14" legs
- Removable stainless lid
- RTD temp. monitored and controlled via PLC touchscreen
- Sight glass viewing of content over 50%
- Directional auto-whirlpool liquid blending via included circulation pump
- Sanitary plumbing and connections.



## Plate and Frame Wort Chiller

- Solid 304SS tie-bar frame closure
- 31 Plates, 316ss, with FDA NBR clip gasket design
- 1" / 1-1/2", 304SS Tri-Clamp wort connections
- 3/4" 304SS GHT water connections
- Flow rate 4 GPM, 212F to 68F using average ambient cooling water
- BTU/HR 288,000



## Bright Beer Serving Vessel

- 4 bbl., glycol cooled, 139 gallons total capacity
- 124 gal. working capacity. 0% excess capacity
- 6' overall height, 30" inside diameter, 33" OD
- 14.7 psig maximum operating pressure.
- Flanged & dished top & bottom heads
- Top manway with 15.75" opening diameter. Add 14" for open hatch
- 1.5" Tri-Clamp(TC) fitting for carb stone. Allows external removal
- Sample valve on 1.5" TC fitting (compatible for Z&N CO2 tester)
- SS pressure gauge (0-30psi)
- CIP sprayball & downtube. CIP end spool for pressure.gauge / gas inlet
- Removable clear PVC sight gauge hose with isolation ball-valve
- Calibration volume strip
- Tassalini adjustable pressure relief/vacuum breaker on 1.5 TC fitting
- Outlet fitting with SS butterfly valve
- Locking standpipe with O'ring
- Thermowell
- Two dimple plate glycol cooling jackets on bottom and side
- Three stainless steel legs with SS pads and height adjusters
- Glycol fittings, 1.5" insulation, and stainless-steel cladding



## Fermenter

- 4 barrel Unitank design and dimension guideline
- 30" inside diameter, 33"outside diameter, 44" straight sidewall
- 6'10" overall height, Add 16" to completely open manway hatch.
- 170 gal. total capacity , 28% excess capacity
- 14.7 psig maximum operating pressure
- Cyllindro-conical design, 70 degree cone angle
- Flanged & dished tank top
- Adjustable pressure relief, vacuum breaker on 1.5" Tri-Clamp (TC) fitting
- Stainless steel pressure gauge ( 0-30 psi )
- CIP with spray-ball and down-tube
- DIP end spool for pressure gauge and gas inlet
- Top man-way. 15.75" opening diameter
- Sample valve on 1.5" TC clamp
- Bottom racking assembly with integral standpipe for beer racking
- 1.5" stainless steel butterfly valve for yeast cropping
- 1.5" stainless steel butterfly valve for beer racking
- Thermowell with strain relief
- Dimple plate glycol cooling jackets ( one on cone, one or more on straight side )
- 4 stainless steel legs with stainless pads and height adjusters for legs
- Glycol fittings ( hose not included )
- 1.5" insulation
- Clad in #4 Stainless Steel



## Carbonation Stone Adapter for Bright or Unitank

- SMS stainless steel fixture with 1.5" Tri-Clamp fitting to mate to vessel
- Fitting 1" diameter x 6" long sintered stainless stone
- Uses unitank entry port. Micromatic gas check valve
- Includes "T" fitting for attaching sample valve





## Electric Boiler

- Smart, automatic food service design, compact size
- Miniature boiler max. vessel volume 1.5ft<sup>3</sup>
- Maximum safety valve setting 100psi
- ASME CSD-1 boiler & pressure vessel codes
- Operating pressure range 0-85psi
- All controls accessible from boiler front.
- Vessel jacket and electric enclosure is 316 SS
- Closed system heating with condensate tank and pump
- Large selection of optional equipment
- Suggested 208V or higher, 3 phase, 200A service
- 60KW, 208LB/HR, MBTU/HR 202, 6.0 BHP
- Dimensions: 32"L x 27"W x 24"H
- Fuel gas plumbing is NOT required



## Connection & Convenience Hardware

- Brewers & Vintners, Uniflex 725 hosing for all wort transfers
  - Tri-Clamp (TC) hose barb, TC clamps (65x various), TC gaskets, Frame
  - Two frame service/storage trays, Setup / Instructions Manual
- **Freight Expense:** All equipment is F.O.B. Toledo, OH. SABCO shall seek the best freight rate based upon components requested. Estimated freight charges shall be forwarded with final proposal for approval. Final freight charge by carrier may change prior to shipping.
- **Installation:** SABCO provides detailed installation, setup and user instructions in digital format for printing as necessary. Nano-Magic is designed for easy utility connection by qualified professionals and has an intuitive, 'plug-n-play' automation to shrink the learning curve of most any experienced brewer. Seek a local and licensed plumber, electrician, boiler and refrigeration specialist in order to assure that all state and local codes are met and also to assure that quick, local assistance will be on hand in the event of a future connection issue. SABCO shall be happy to advise and assist all chosen service providers via telephone, in order to better assess the location/destination and to suggest preferred utility configurations for the Nano-Magic System prior to purchase. Due to the pre-wired and pre-plumbed design of the system, most every installation question following purchase, can typically be handled immediately and remotely by SABCO in coordination with your chosen service contractors.
- **Items / Services Not Included above:**
- Material handling equipment to unload and position components
  - Electrical service installation and connections, outlets, etc.
  - Steam and condensate piping/hosing and installation to and from boiler and kettles
  - Water service line, pre-treatment, filtration systems or related plumbing services
  - Cooling/glycol system, glycol piping to fermenters, bright tanks and/or heat exchanger, controls and installation, or refrigeration engineer service
  - Clean, filtered air and/or oxygen sources, and pressure controls for use with system
  - Ventilation, ducting and installation for steam removal.
  - Lab equipment
  - Keg or bottle filling and cleaning equipment
  - Milling or malt handling equipment
  - Filter and/or filter media for beer clarification

➤ **Terms:**

- Prices shall hold for 30 days from the date of the proposal
- Payments shall be:
  - 50% within 10 days of acceptance of proposal
  - 50% prior to shipment date
  - Billed Freight charges (actual cost to be determined), payable prior to shipment date. Equipment is FOB Toledo, Ohio 43615.
  - Changes ( additions, deletions, modifications ) to the proposal must be in writing and signed by purchaser and SABCO

➤ **Warranty:**

- Full one year Limited Warranty
- SABCO has served the brewing industry for over 51 years since 1961
- Expect high quality products and unexpected great service!

➤ **Dependability:**

- All vessels are made in North America. All pre-assembly, testing & quality assurance is performed by SABCO/Kegs.Com Ltd., Toledo, Ohio, USA



 **Nano-Magic**  
by **SABCO**



**Conversations with:**  
**Sam Calagione, President and Founder of Dogfish Head Brewery**  
**Dogfish Head Master-Brewer, Tim Hawn.**

And . . . Bob Sulier, President/Owner - SABCO/Kegs.Com Ltd.

**Sam:** We started with the Brew-Magic System in 1995 and have fortunately grown into the largest craft brewer in the mid-Atlantic. Because of our roots, we really believe in the R & D opportunities that come with small, flexible brewing systems. Today, breweries are literally opening every day. I get emails daily from new brewers who wish to either start with a Brew-Magic like I did, or who wish to move from small scale to brew-pub or 'nano' production volumes. I asked my friends at SABCO to work with me to design a flexible, fully automated, 2 BBL system with modern digital controls. The plan was to beta test and use the new system here at the Dogfish Pub in Rehoboth Beach. As with the Brew-Magic System that came before it, we now suggest the Nano-Magic to others as a perfect small-scale production system. In similar fashion, Nano-Magic is 'light-years' forward with automation and computer assistance for the brewer. Temp. controls, valve sequences, CIP, recipe data, etc. are all there for brewers who tend to be multi-tasking at this level. Nano-Magic is also flexible in its configuration. We were able to move the boil and HLT where it best suited our pub's small brewing area.

**TIM:** 6-8 brews per day with good efficiency ( +/-85 ) is very achievable with this system when producing up to 5 ABV beers. That's upwards of 3,000 bbls. per year. Bigger beers will be a little slower when using only the mash for fermentables. We often use both mash & boil to achieve desired ABV levels in certain beers. The automation demonstrated by Nano-Magic is important at this level to assure flavor profile consistency, particularly when multiple brewers are utilizing the system. Bigger is not necessarily better! Both large and small audiences expect the product to be as good this week as it was last week. Automation at the Nano-Magic level to assure consistency and quality, is just as important for future success and is very much worth the price.

**Sam:** I intentionally struck a 'crappy' deal with SABCO. Dogfish will get one dollar for every Nano-Magic they sell! My ultimate goal here is to see the continuation of a vibrant craft brewing community. It's more about pride and less about money. We were happy to revisit our roots with SABCO and to become involved in the Nano-Magic project. I now look forward to watching others succeed in this great industry. Repeatable high quality blended with a bit of off-centered passion, will help to assure this continued growth. Cheers.

**Bob:** Sincere thanks go out to Sam and the entire Dogfish Head team who graciously spent time and talent to make trips to SABCO in Toledo, and assist with valuable suggestions not only during the initial design phase of the Nano-Magic project, but also later on during beta tasting trials conducted at the Dogfish Head Pub & Eats in Rehoboth Beach, DE. We hope that their amazing passion for high quality products along with their continuing desire to assist others in finding success in this great industry, shines through as you consider the Nano-Magic System for your own use. Trust me when I say without hesitation, that Sam truly knows how to 'Brew-Up-A-Business'!