



BeaverMatic

IQF
Internal Quench
Furnaces
Single and Double Zone Designs



IQF Features and Benefits



The BeaverMatic® Internal Quench Furnace is the workhorse of every heat treat shop.

Known for its reliability since the early 1960s when it was first introduced, this proven performance furnace has a unique design concept which focuses on three basic objectives: 1) ease of operation; 2) maximum uptime; and 3) the ability to meet specific customer needs.

The Internal Quench Furnace, known as IQF, offers process versatility designed for carburizing, carbonitriding, through hardening, bright annealing and normalizing with various atmospheres.

Unique IQF design features include the quench tank, heating configuration, load transfer mechanism, and controls.

Many advantages for choosing a BeaverMatic IQF include:

- Low initial or installed cost
- Simplified design for ease of operation
- Smooth load transfer
- Minimum maintenance
- Engineered for reliability to maximize uptime
- Zero water requirements with air-cooled fan
- Proven performance equipment



Quench Tank

Oil quenching is accomplished in a sealed integral tank. The oil is circulated through a distribution system, up through the load, by means of uniform high velocity agitation. The oil is cooled by an optional oil to air fin-type heat exchanger.

Shelf-mounted agitators recirculate oil through the load at high velocity to assure a uniform quench.



Large oil quench tanks provide the volume of oil required to meet specific needs. A double-decked elevator in the quench chamber facilitates recharging the furnace while a load is being quenched. Atmosphere quench chambers are optionally available.

Load Transfer Mechanism

The IQF's unique load transfer mechanism consists of rams that push the workload for precise point-to-point positioning and allow for ease of maintenance due to their location. A ramless (push-push) load transfer mechanism allows for less floor space especially when replacing a unit in-line.



Heating Configuration

The ruggedly-built BeaverMatic IQF utilizes vertical radiant tubes positioned along each of the heating chamber's sidewalls. These tubes are sealed both at the top and bottom, leaving them free to expand while eliminating warping. Radiant tubes are positioned along each of the sidewalls, recuperative single ended and U-tube type burner heating systems are available upon request.



Atmosphere is circulated throughout the heating chamber by a belt-driven air-cooled alloy fan located in the roof of the furnace. The design reduces downtime and replacement costs, thus curtailing atmosphere gas and energy requirements.



Control System

The heart of the automatic control mechanism is located at the front side of the furnace for operator convenience. The furnace is designed for both automatic and manual operation. Any part of the cycle can be manually controlled through one of a series of pushbuttons. Programmable Logic Controllers are used for recipe and furnace sequencing.



All units arrive complete and ready for operation.

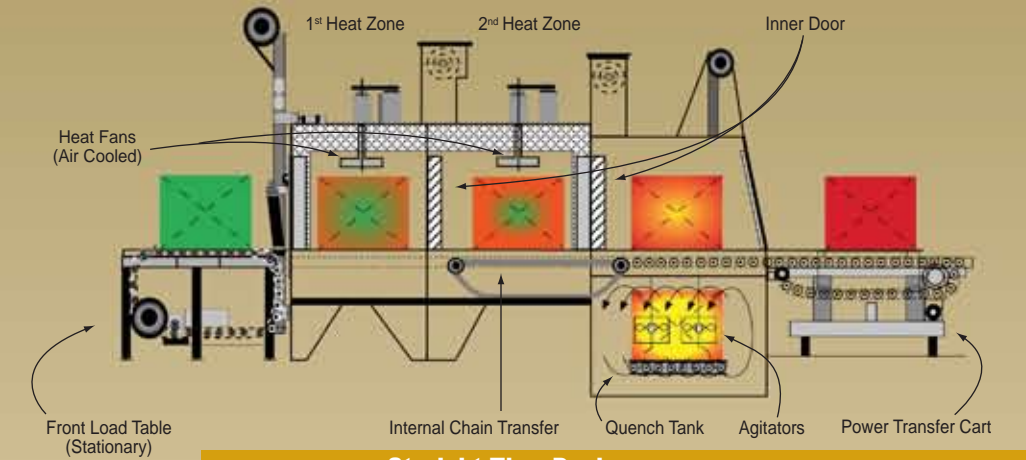
Instrumentation

With performance standards having become increasingly more challenging, microprocessor-based control instrumentation is now standard on all BeaverMatic IQF Furnaces. These systems provide finite control of furnace temperature, atmosphere, and other critical aspects of the treatment process.

Multiple furnace/tempering installations can also be controlled by one central system, on a touch screen operator interface. This advanced system controls and monitors all heat treat functions, providing comprehensive documentation on a single screen.

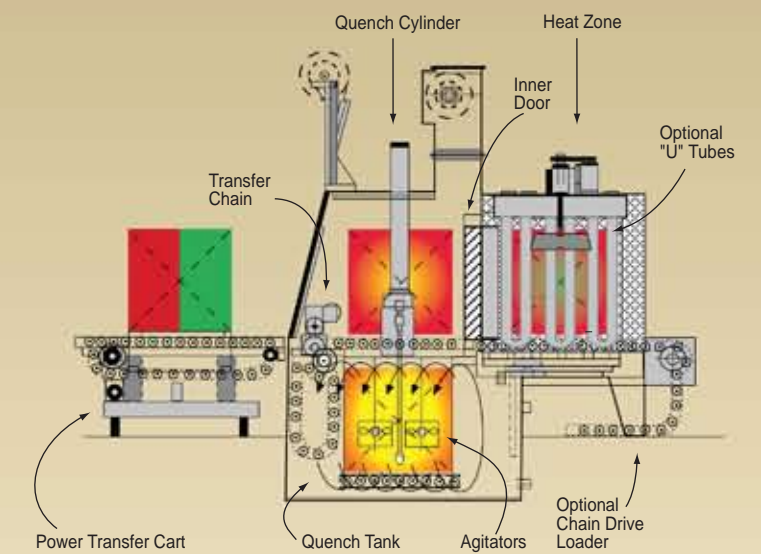
Gas or electric heating available for all designs.

Gas-fired furnace (2-zone) using "grids or baskets" with a roller hearth



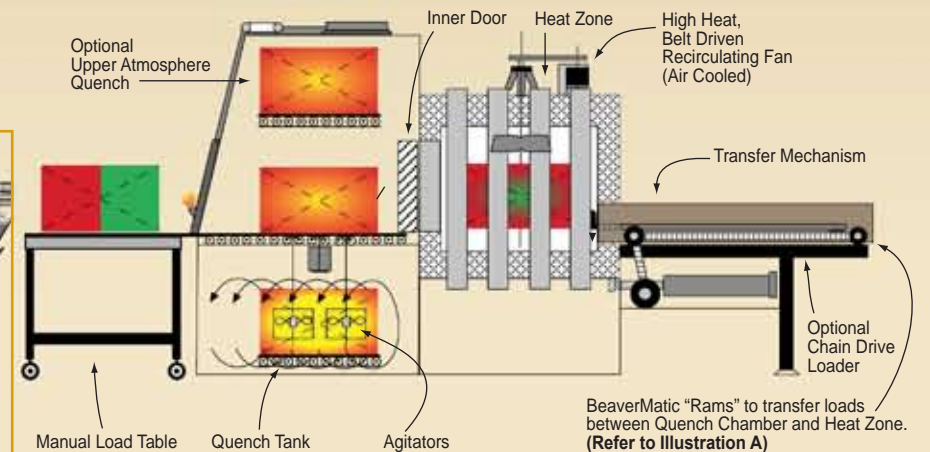
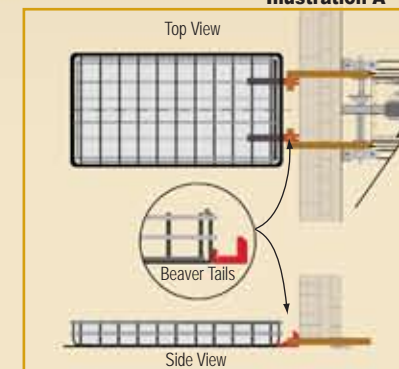
Straight-Thru Design

Gas-fired furnace using "grids" with a roller hearth



In and Out Design

Furnace using "baskets" with refractory hearth



In and Out Design

BeaverMatic "Rams" to transfer loads between Quench Chamber and Heat Zone. (Refer to Illustration A)

Furnace Sizes and Specification Guideline

* Additional Sizes Available

Working Dimensions			Load Lbs.	Pump H.P.	Quench Tank Capacity Gal.	Overall Dimensions		
Width	Length	Height				Width	Length	Height
18"	24"	20"	400	3	600	5'- 6"	19'	8'
24"	36"	20"	500	3	675	6'	21'	9'
24"	36"	26"	750	3	750	6'	21'	12'- 6"
30"	48"	20"	1,000	5	1,000	6'- 6"	24'	12'- 6"
30"	48"	26"	1,500	5	1,500	7'- 6"	24'	13'- 6"
30"	48"	32"	2,000	5	2,000	8'	24'	15'- 6"
36"	48"	26"	2,000	7-1/2	2,000	10'	24'	13'- 4"
36"	48"	32"	3,000	7-1/2	3,000	11'	24'	15'-6"
48"	48"	32"	5,000	10	5,000	11'- 6"	25'	15'- 6"
48"	48"	38"	4,500	15	4,500	12'	25'	15'-10"
48"	48"	48"	5,000	15	5,000	12'	25'	16'- 6"
36"	72"	36"	6,000	15	6,000	12'	29'	15'- 6"



IQF working dimensions: 36"W x 48"L x 32"H



World's **Largest** Internal Quench Furnace with **15,000** pound workload.

BeaverMatic manufactures equipment that has proven its ability to meet the needs of heat treaters, both large and small. We measure success in terms of performance: reliable, ease of operations, low maintenance, and uptime versus the competition.