

Material Handling Innovation

30-Ton Chillers installed on a cushion of air

The Todd-Ford Murphy Company (TFM), a mechanical contractor based in St. Louis Missouri, was hired by Toyota USA to install seven (7) large Chiller units weighing 30 tons each in their new San Antonio Texas plant. Each of the 30-ton chiller units stood 13 high x 9 wide x 16 feet/4 x 2.75 x 4.9 meters long.

In his 20+ years as a project manager, Don Billington had observed on past projects other contractors using [Aero-Caster Technology](#) to move extremely heavy loads with virtual ease and at a cost that under cuts other forms of load moving that he had looked into. As Don pursued his search for the correct mix of air caster equipment for his application he quickly concluded that the AeroGo [Load Module System](#) would indeed allow his personnel to install the mammoth chillers on time and under budget.

The “**27-Heavy**” one of AeroGo’s most versatile rigging and machinery moving air caster systems was chosen to move the 30-ton chillers. Rated at a total capacity of 96,000-lbs/43,600 kg the 27-inch heavy duty Load Module system (model number 4K27NHDL) can not only move loads “easily” at full capacity but also light or delicate loads weighing just 5% of total capacity. The versatility of the 27-Heavy’s allowed TFM to enjoy a myriad of future load moving projects.

Application Photos:



The Toyota plant’s dock had not been completed in time for the installation. So the Todd-Ford Murphy company (TFM) worked with ASE in Texas to configure the best solution for the Toyota plant rigging application. They decided to construct a temporary platform where the chillers could start their 150 to 200 foot trek to their final resting positions.



The 27-inch Heavy Duty AeroGo Load Modules and interconnect hoses were laid out so that the load bearing surfaces of each chiller would set directly over the middle of each Load Module. In this application, the chiller’s load bearing frame was extremely narrow thus ½-inch thick metal plates were placed over the top of each load module to help distribute the load evenly over each module.

Partner with AeroGo

1170 Andover Park West, Seattle, WA 98188-3909

Toll Free in the U.S. (800) 426-4757

Phone +1 (206) 575-3344 Fax +1 (206) 575-3505



As each of the chillers was delivered by the transportation company a local crane service would lift them from the low-boy trailers and place them on the adjacent platform with the Load Module System.



Pull cords were used to precisely position the "York" Chillers onto the AeroGo Load Modules and also to keep the workers at a safe distance.



The Control Console and interconnect hoses were placed on top of the load and draped over the chillers where every possible; it is important to have the pathway free of any and all obstructions which could cause the AeroGo Aero-Casters to loose flight. This clearing process also reduces any trip hazards for the workers.



Prior to moving the chillers a forklift was attached to the leading end of the load thus giving the rigging team complete control of the moving process. No floor is absolutely level, if the slope of the floor is in the opposite direction of your intended direction of travel, it is recommended to attached a device of some kind (e.g. a forklift) to provide weighted control for all job-site rigging applications.



Due to the ease with which the AeroGo Load Module system moves a heavy load, it is important to move at a very low speed walking speed ($\frac{1}{4}$ to $\frac{1}{2}$ -inch per minute) is recommended; a slow speed will allow the rigging team to effectively manage any unexpected issues that may present themselves during a move.



Aero-Casters are omnidirectional providing the maneuverability needed for tight corners and spaces traveled during the install. The outside metal platform was built to a height to coincide with the floor surface of the building's interior. A 22 gauge strip of sheet metal with it's leading edged taped with standard carton sealing tape allowed the Load Module system to pass over the small gap between the platform and the building's floor.



Once the chillers were inside the building they were immediately side shifted onto the special concrete foundation where they will remain throughout their useful life cycle. TFM used a polystyrene overlay to negotiate the gap between the special foundation and the temporary interior metal deck.

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With the forklift reattached to the load and spotters at the ready, the first chiller was effortlessly moved to the far end of the special foundation.



Maximum capacity of each Aero-Jack System is achieved at low lift height. Maximum lift height is achieved at reduced capacity, which is why cribbing materials are used in conjunction with the Air Jack System when lifting extremely heavy loads. Utilizing the hand held controller a TFM team member inflated the air jack system thus lifting one end of the chiller allow other team members to remove the air caster Load Modules on that end. The air jack system was deflated and moved to the opposite end of the chiller along with the cribbing materials and the process was repeated.



TFM's rigging team used an AeroGo Aero-Jack System to remove the air caster load modules from underneath the chillers. A structurally sound insertion space under the chiller was chosen. Wooden 4 x 4-inch and 6 x 6-inch blocks were used to crib the space between the chiller and the flooring surface. A 2J2424L air jack system with a total capacity of 64 tons and a lowered height of 7/8-inch is ideally suited for lifting duties of this nature.

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