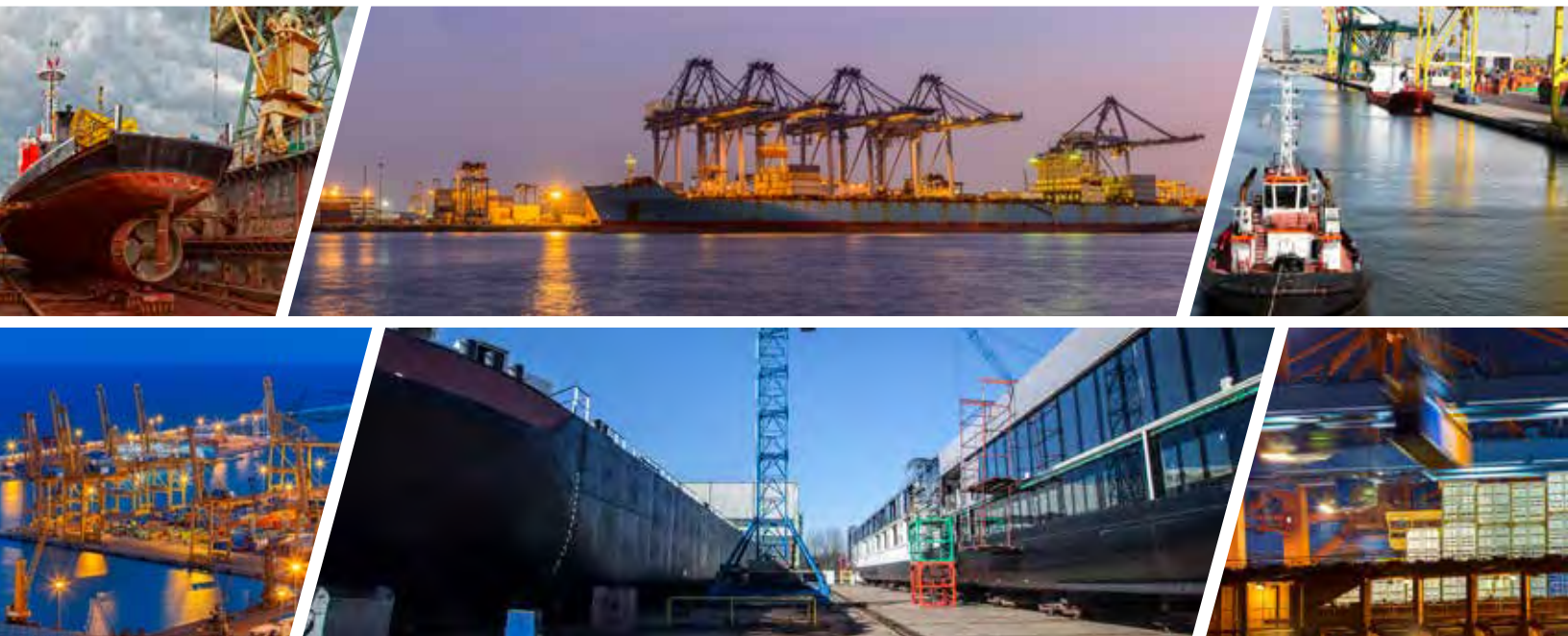


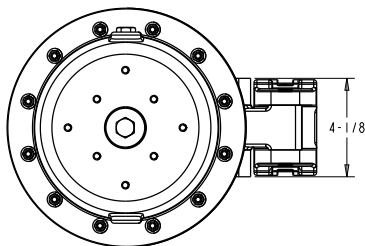
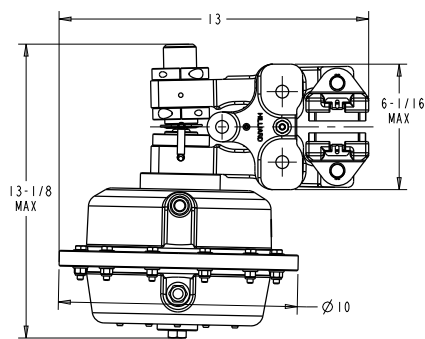
HILLIARD MARINE BRAKE SYSTEMS



SAFETY. RELIABILITY. PERFORMANCE.

BRAKE TYPE:

A300-T300 AS

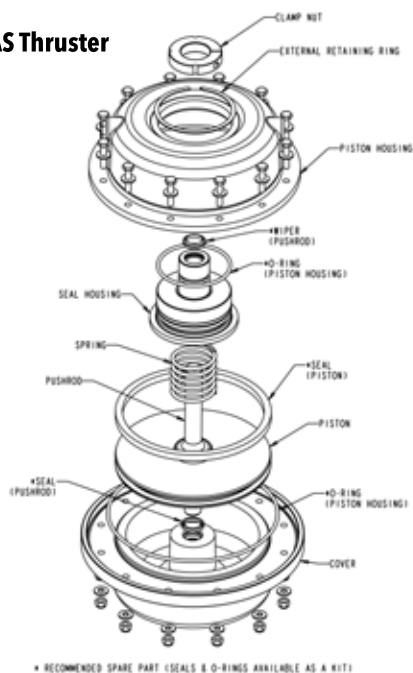


**Max Braking Force
3200 lbf @ 66 psi**

BRAKE TYPE:

A400-T400 AS

AS Thruster

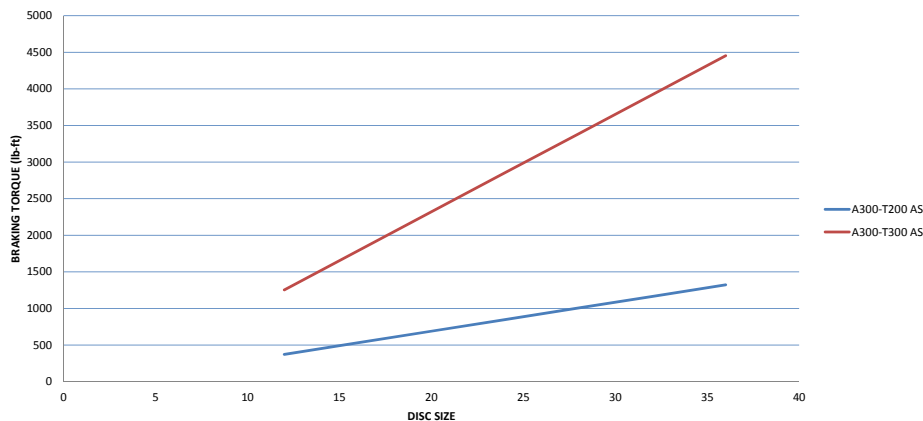


* RECOMMENDED SPARE PART (SEALS & O-RINGS AVAILABLE AS A KIT)

**Max Braking Force
8400 lbf @ 67 psi**

(This thruster is only to be used on the A400 caliper)

A300-T200 AS / A300-T300 AS



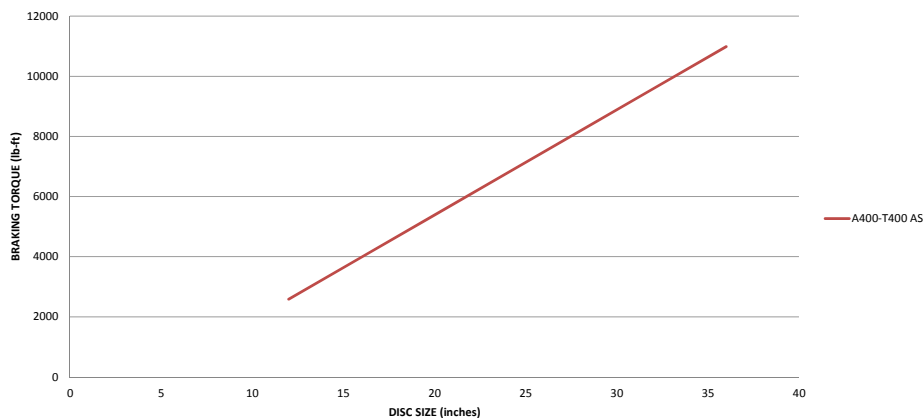
The **A300** is an arm style caliper brake designed to accept a large selection of Hilliard thrusters. The A300 requires a minimum disc diameter of 12" and is offered in 4 sizes to accommodate a 1/2", 1", 1-3/16", and 1-1/2" thick disc. The design of the caliper allows the user to quickly convert between right and left handed designs eliminating the need for multiple part numbers.



AS Thrusters

The AS thruster is a direct applied thruster that is pneumatically applied spring released. The Pneumatic applied thrusters are offered in multiple sizes to meet the needs of our customers.

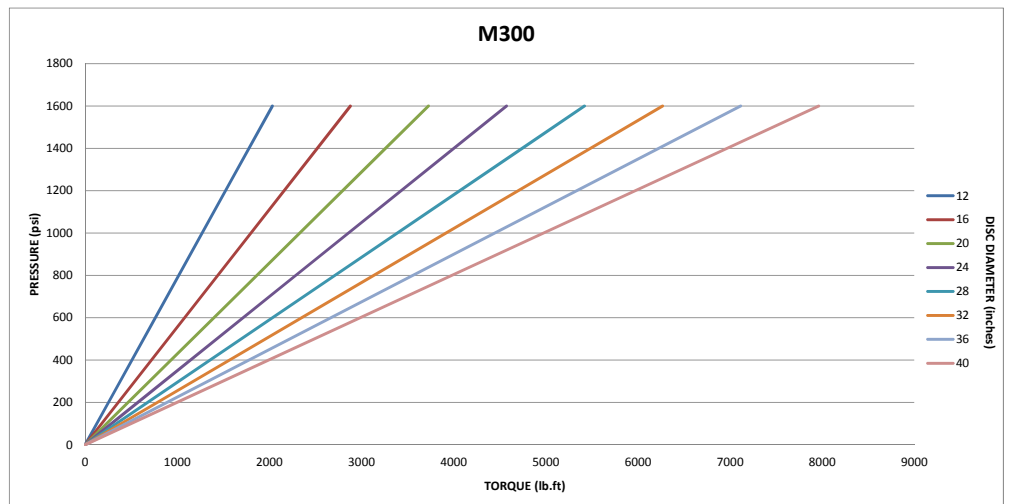
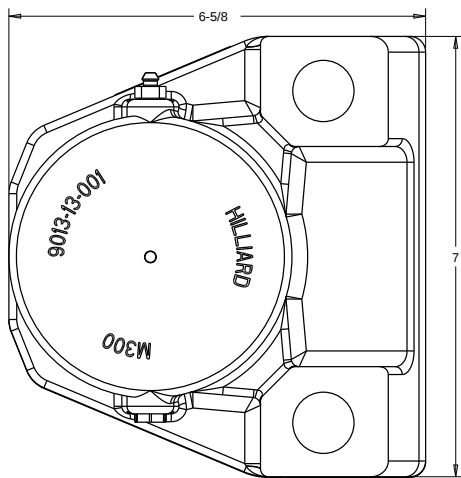
A400-T400 AS



The **A400** is an arm style caliper brake designed to accept a large selection of Hilliard thrusters. The 400 requires a minimum disc diameter of 24" and is offered in 2 sizes to accommodate a 1" and 1-1/2" thick disc. The design of the caliper allows the user to quickly convert between right and left handed designs eliminating the need for multiple part numbers.



BRAKE TYPE:
M300
 HYDRAULIC

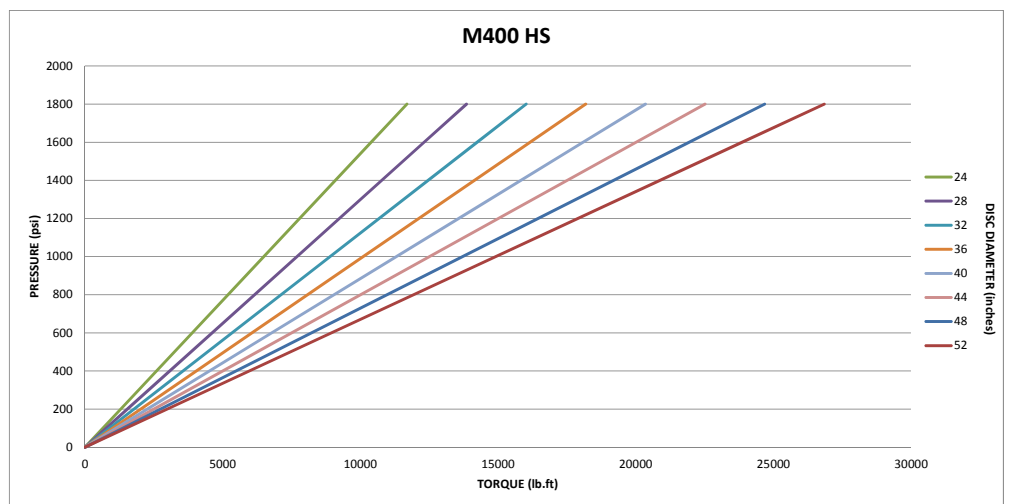
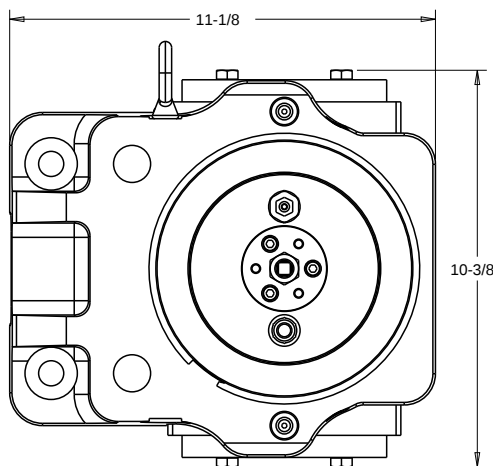


The **Hilliard M300** brake caliper is a hydraulic applied, spring retracted brake caliper for use in heavy duty industrial applications. The brake comes standard with marine grade epoxy paint suitable for extreme environments. The M300 brake caliper is capable of producing a maximum 10,600 lbf of braking force at 1600 psi. Positive retraction mechanism maintains consistent air gap throughout the life of the brake pads.



All dimensions are nominal in inches.

BRAKE TYPE:
M400 HS
 HYDRAULIC APPLIED/
 SPRING RELEASED



The **Hilliard M400HS** brake caliper is a hydraulic applied, spring retracted brake caliper for use in heavy duty industrial applications. The brake comes standard with marine grade epoxy paint suitable for extreme environments. The M400HS brake caliper is capable of producing a maximum 12,960 lbf of braking force at 1800 psi. Positive retraction mechanism maintains consistent air gap throughout the life of the brake pads.



Brake Systems for Propulsion

When Hilliard brakes are installed on the main propulsion drive, they provide the fast propeller retardation and shaft locking required for speedy maneuverability when changing from ahead to astern.

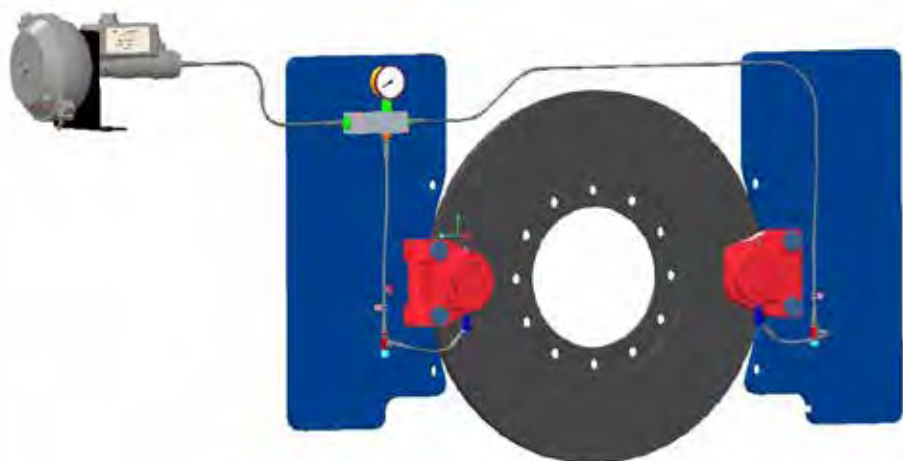
BRAKE APPLICATIONS

- Suction Dredger
- Main Propulsion
- Bow Thruster
- Diesel Pump
- Fan Drive
- Marine Pump
- Marine Propulsion
- Pump Drive
- Compressor Drive

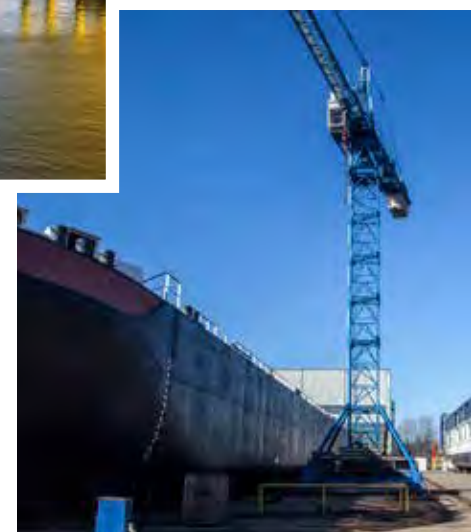
FEATURES & BENEFITS

- Eliminates engine stall during high-speed maneuvers and last-minute reversals
- Easy to install and service
- Self-adjusting, spring retracting calipers reduce pad wear
- Stops the propeller shaft from full speed in approximately 2-5 seconds (quickly and efficiently)
- Economical to maintain
- Automatically stops the propeller shaft with every change of direction

INSTALLATION EXAMPLE



Made in America... Built for the World
HilliardBrakeSystems.com



Shaft Brake Selection Procedure

To determine proper caliper/disc size, the following must be known:

1. Type of Vessel (A or B)
2. Maximum Engine Horsepower @ Rated Speed (HP)
3. Rated RPM of Engine (RPM_e)
4. Reduction Ratio of Transmission (Ratio)

Note: Maximum air pressure available and maximum expected end float of brake shaft must be considered in final caliper selection.



FORMULA A: For Type A Vessels

Tug boats, tow boats, work boats, push boats, utility/supply boats and bow thruster brakes.

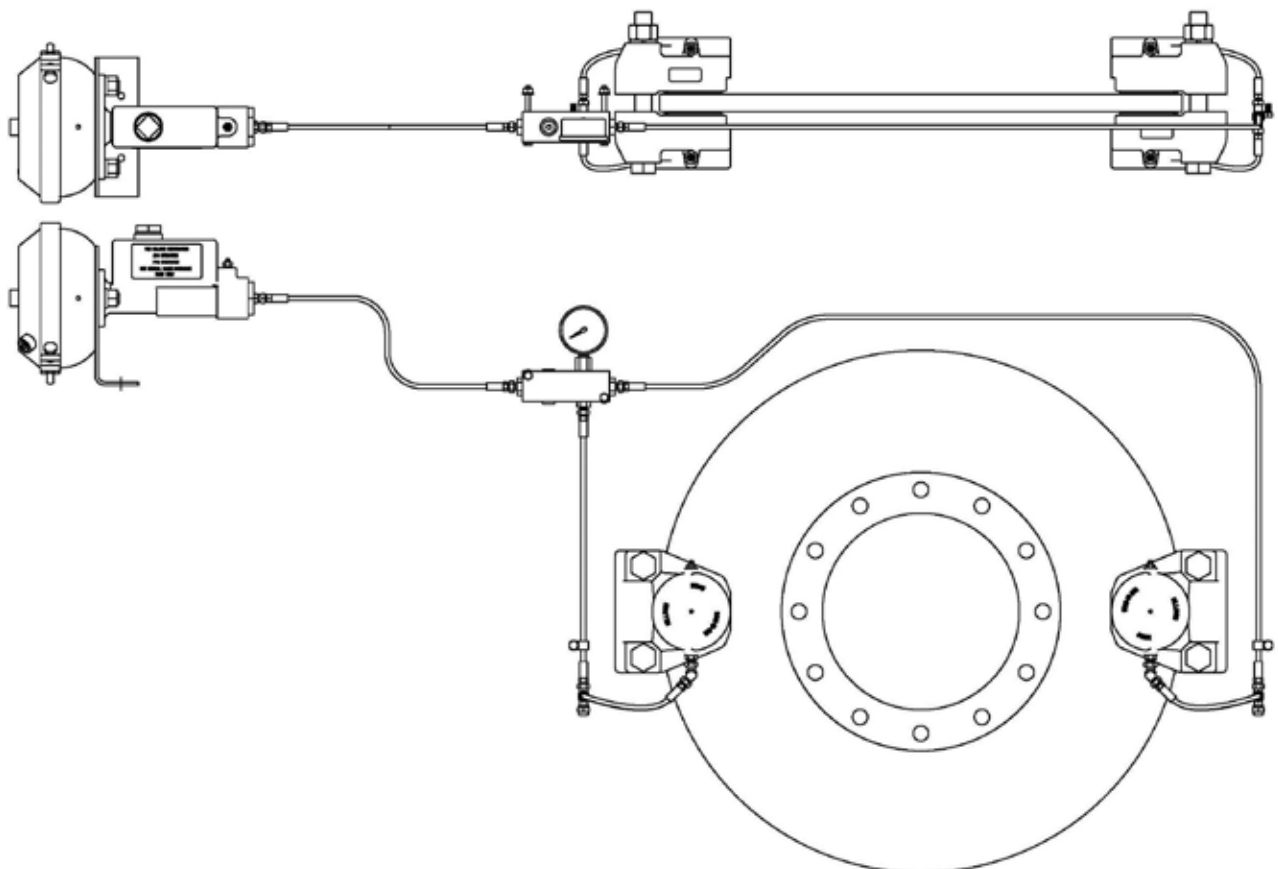
$$\text{BRAKE TORQUE (LB FT): } T = \frac{\text{HP} \times \text{RATIO} \times 4200}{RPM_e}$$

FORMULA B: For Type B Vessels

Less than 100,000 gross tons, such as ferry boats, crew boats, dredges, fish boats, steamships, research vessels, fire boats, passenger and cargo ships.

$$\text{BRAKE TORQUE (LB FT): } T = \frac{\text{HP} \times \text{RATIO} \times 2700}{RPM_e}$$

TYPICAL INSTALLATION SCHEMATIC



SINCE
1905

HISTORY *of* EXCELLENCE

The Hilliard Corporation solves problems. Based on extensive knowledge of motion control and filtration technologies, we make thousands of unique products, reaching markets globally.

Serving the needs of both small businesses and Fortune 500 companies, Hilliard products are found all over the world. We offer a broad line of motion control products, oil-filtration and reclaiming equipment, and plate and frame filter presses used in the food industry. We also manufacture starters for industrial gas and diesel engines and gas turbines. Our filtration systems are sold under the trade names of HILCO* and Star* Filters.

Our products are designed, manufactured, and sold according to our customer's applications. As a result, we have a large portfolio of custom engineered products that can be modified to meet new applications. At Hilliard, we embrace the challenge of product development.

With over 500,000 square feet and more than 500 highly skilled employees, we are able to meet desired requirements cost-competitively, even for short runs. Our experienced technical staff values craftsmanship, manufacturing efficiency, and responsiveness.

In order to meet customer requirements, improve quality, and increase efficiency, Hilliard is continuously investing in new equipment and technologies.

In fact, we measure Hilliard's success based on our customers' ongoing satisfaction with our product and associated services. We are proud of our product reliability and durability. We often collaborate with customers in developing solutions that are integral to their product's profitable niche in the market place.

Made in America... Built for the World

HilliardBrakeSystems.com



The Hilliard Corporation
100 West Fourth Street
Elmira, New York 14902-1504 USA
PHONE: 607.733.7121
FAX: 607.737.1108
www.hilliardbrakesystems.com
hilliard@hilliardcorp.com

YOUR LOCAL REPRESENTATIVE:

HMBS-1
10/16-SBC