

Grinding Mill Braking System



TWIFLEX


Hilliard
MOTION CONTROL DIVISION

The Hilliard/Twiflex Partnership

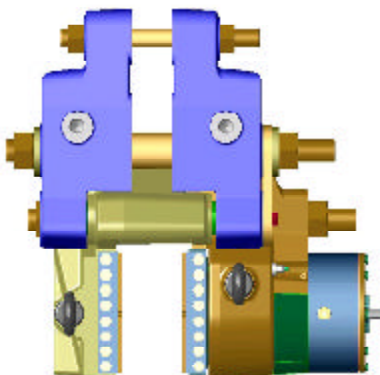
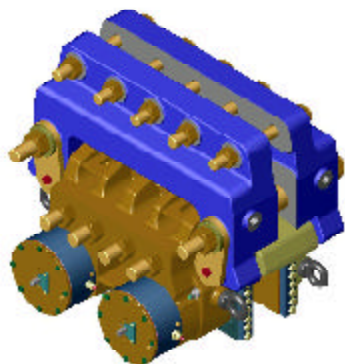
The partnership between Hilliard and Twiflex was formed over 50 years ago when Arthur Nicol, the former chairman of Sheepbridge Engineering England, visited Elmira, New York. He was interested in finding an American company to manufacture a centrifugal clutch made by one of his subsidiaries, and was introduced to The Hilliard Corporation. The meeting eventually resulted in Twiflex Ltd. of England granting a manufacturing license to Hilliard and the association was born. Since then, the relationship has strengthened, particularly in the mining sector.

Over the years, the experience and product knowledge of both companies have led to advances in the following areas:

- braking technology applications on the world's deepest and fastest man riding hoists
- advanced braking systems for longer conveyor systems where controlled deceleration is vital for safe stopping and holding
- development of tailored conveyor systems including overspeed control, fast approach for emergency stopping, dual back-up, and controlled stopping by an alternative power source.

VMS-DP Caliper Brake

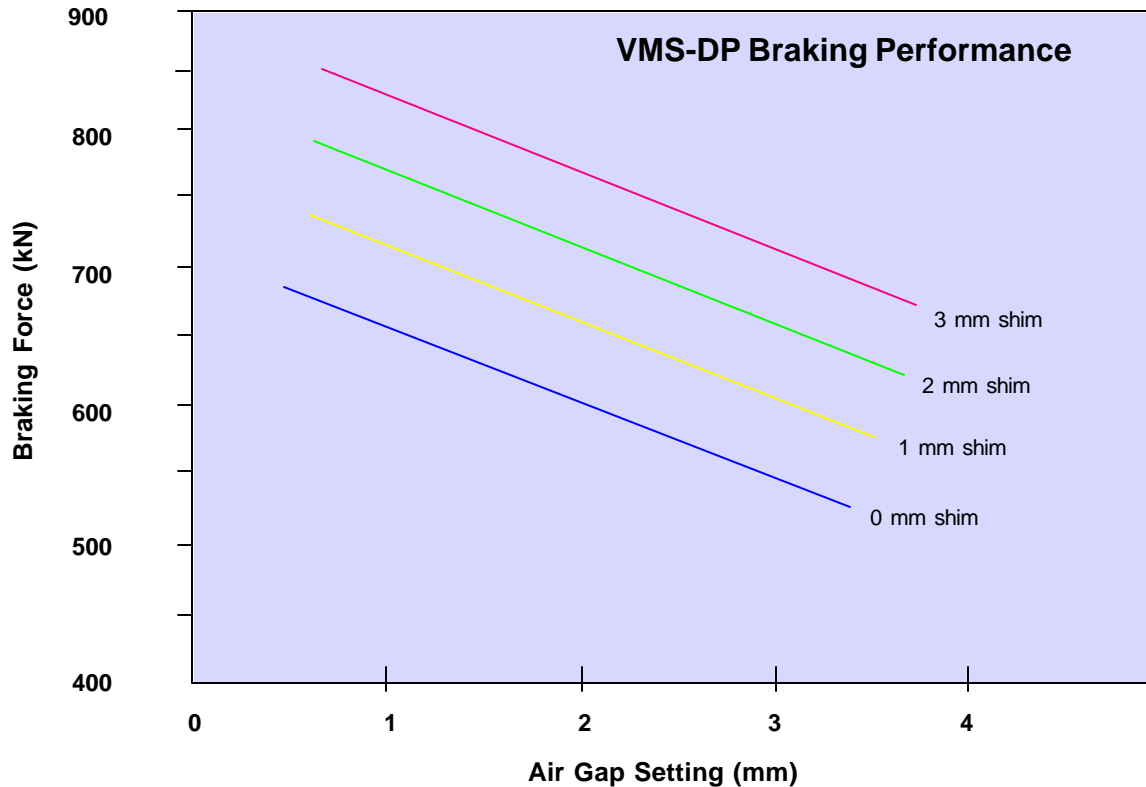
The VMS-DP caliper is a “floating” spring applied, hydraulically retracted brake which may be used on any grinding mill installation, having a braking path of at least 4.5 m outside diameter and 3.9 m inside diameter. The maximum disc outside diameter which can be accommodated is 20 m. The VMS-DP caliper may be used on a minimum disc thickness of 117 mm, and maximum disc thickness of 130 mm.



Features

The VMS-DP caliper has a special operational feature called the “parked-off” position. This is made possible by having a piston stroke long enough to ensure that no internal spring loads exist, with the following advantages:

- The caliper can be installed without the need for hydraulic pressure.
- The friction pads can be changed in complete safety without fitting the retraction tool and with the hydraulics at zero pressure.
- The spring module, including spring pack, can be safely and easily disassembled and reassembled.
- The total pad area for each caliper (4 pads) is 3378 cm².
- Permissible pad wear is 7 mm.
- Electronic monitoring units indicate brake on/off and pad wear.



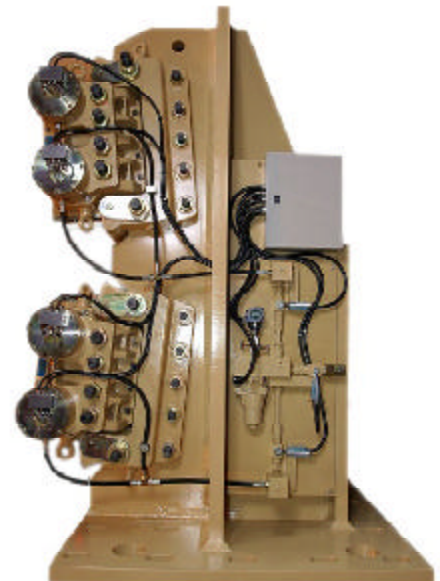
The VMS-DP Caliper has been designed to provide a range of braking forces which are controlled by a combination of the air gap setting and thickness of the shim pack fitted. The brake rating can be varied by removing or adding shims between the cylinder and end cover.

Mill Braking System

The Twiflex VMS-DP Mill Brake System is comprised of VMS-DP calipers mounted on a pedestal, a hydraulic power unit, and a remote control panel. The system has been principally designed for both static and dynamic operation for use on grinding mill installations in the mining industry.

In static operation, the braking system is used to hold the mill during liner replacement and mill maintenance. In dynamic operation, the system has been designed to operate in two modes:

1. A controlled application of the brakes to stop the mill rotating at full speed, such as an emergency stop.
2. A quick application of the brakes to accurately stop the mill during inching and creeping operations (required during incidents of mill bearing lubrication system or power failure).



The hydraulic power unit offers an advanced and flexible means of brake control by providing an inching/creeping facility and automatic time delayed “brake-on” due to power loss or bearing lubrication failure. A remote control panel can be supplied to provide these functions. For more information, contact Hilliard at its headquarters in Elmira, New York.

Applications



Twiflex 6 Caliper Mill Braking System installed on a Metso 40' SAG Mill at Collahuasi Copper Mine in Chile.



Twiflex 4 Caliper Mill Braking System installed on a Metso 38' SAG Mill at CVRD's Sossego Copper Mine in Brazil.

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