GANTREX®
A Member of the GANTRY GROUP

OLEO

OLEO Hydraulic Bumpers

2 Type 76 Bumpers
on Stacker/Reclaimer
EndStop in Coal Yard.

INTRODUCTION

Modern, heavy-duty production cranes have increased in size and speed over recent years. The hydraulic bumper was developed to transform the crane's impact or kinetic energy into heat. The device brings the crane to rest in a controlled manner minimizing end forces. This has rendered simple mechanical devices such as springs or rubber bumpers obsolete on all but the lightest crane applications.

Several codes and standards have evolved that specifically identify the criteria for safely decelerating a moving crane or transfer vehicle. Among these are AIST, CMAA, OSHA, DIN, CEM, etc. There has been a rapid development of hydraulic bumpers with capacities and stroke lengths to meet the demands of increasing crane weights and speeds.

The hydraulic bumper is the most economic and reliable method for limiting the forces transmitted during an impact. Structural engineers can now confidently evaluate the forces from longitudinal impact and utilize the hydraulic bumper to reduce overall structural steel costs in a building.

FEATURES AND ADVANTAGES

The hydraulic bumper is a hydro-pneumatic energy absorber that utilizes a tapered metering pin to create a truly variable orifice. Infinitely small increments of stroke or compression yield controlled changes in orifice size to provide an almost constant end force. Unlike conventional "fluidic" piston head designs, full stroke is accomplished at any speed, thereby further reducing end force.

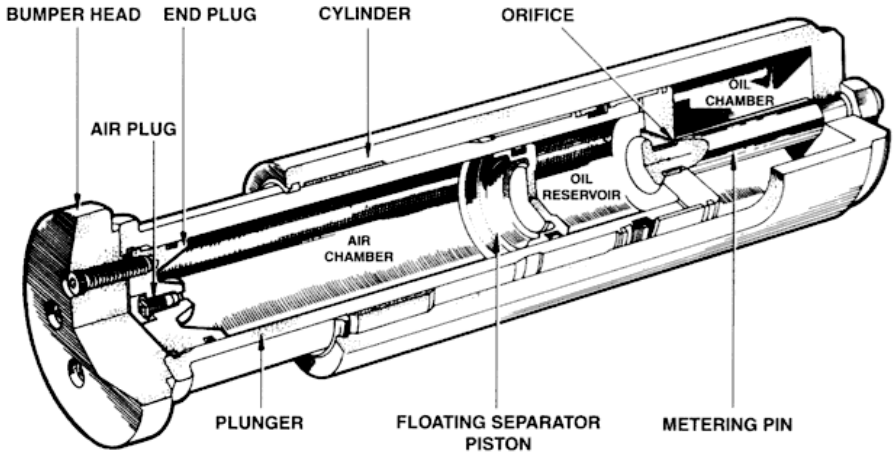
A compressed nitrogen return spring is internal and is fully maintenance free. Its fatigueless design is more reliable than any mechanical spring system and offers a soft ride down. Toward the end of stroke, isothermal compression of the nitrogen increases rapidly to offer an effective cushion instead of hard mechanical "bottoming-out" as with competitive designs. The primary seal is an outwardly sprung steel ring and works exactly the same way piston rings work in an internal combustion engine. The steel ring contains the high pressures and the elastomer seals are exposed to only low return pressures.

Flexible mounting configurations include back flange, front flange and capsule mount to be used with a custom foot mounting bracket. Special bumper heads are available in larger diameters or radiuses to reduce edge contact stresses in rotary applications. Crane end approach can be optimized by using front flange mounting to minimize the projected length on the end truck.

Oleo has provided 6-8 times more heavy duty hydraulic bumpers throughout the world than any other manufacturer. This high volume coupled with a practical range of bumper sizes guarantees very accurate tolerances. The resulting interchangeability of parts allows fast assembly and repairs from components stocked at our Ajax assembly plant.

Oleo International is an ISO 9001 company

OPERATING PRINCIPLE



The Oleo bumper is basically a large oil dashpot, incorporating a variable orifice, and the sectional illustration shows its simple, heavy duty construction. Under impact, the plunger is forced into the cylinder displacing the oil through the orifice into the plunger, moving the separator piston towards the bumper head and compressing the air (nitrogen). The bumper is re-extended by the compressed air (nitrogen) acting through the separator piston onto the oil.

OLEO INDUSTRIAL BUMPER RANGE

TYPE	STROKE	CAPACITY
21-50	(2 ins) 50 mm	(7,840 ft-lb) 10 kJ
21-100	(4 ins) 100 mm	(15,670 ft-lb) 20 kJ
21-150	(6 ins) 150 mm	(23,500 ft-lb) 30 kJ
21-200	(8 ins) 200 mm	(31,300 ft-lb) 40 kJ
4	(4 1/2 ins) 114 mm	(71,500 ft-lb) 97 kJ
52	(10 ins) 250 mm	(78,400 ft-lb) 106 kJ
53	(11 3/4 ins) 300 mm	(94,000 ft-lb) 128 kJ
54	(15 3/4 ins) 400 mm	(117,500 ft-lb) 160 kJ
9	(15 3/4 ins) 400 mm	(175,500 ft-lb) 238 kJ
76	(23 1/2 ins) 600 mm	(263,300 ft-lb) 357 kJ
15	(31 1/2 ins) 800 mm	(351,000 ft-lb) 476 kJ
712	(47 ins) 1200 mm	(526,600 ft-lb) 714 kJ
718	(71 ins) 1800 mm	(790,000 ft-lb) 1,071 kJ
724	(94 1/4 ins) 2400 mm	(1,053,200 ft-lb) 1,428 kJ

WARRANTY

When the operating and design parameters of the application are provided to GANTREX engineers for bumper selection or verification, a one year warranty is offered. This warranty covers materials and workmanship as well as performance longevity of the bumper in the specific application. If the bumper should fail, GANTREX will repair it or replace it at no charge during the 1 year period from date of shipment. Contact GANTREX to find out how to qualify.

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