

Technical Article

Rexroth GFT 45 T2/T3 Dual Ratio Planetary Drive Offers Shift-on-the-Fly Capability



The GFT 45 T2/T3 is capable of a maximum intermittent output torque of 45,000 Newton-meters and maximum output speed of approximately 150 rpm.

www.boschrexroth-us.com

The Hydraulics technology group of Bosch Rexroth Corporation is featuring the GFT 45 T2/T3 dual ratio planetary drive. The basic planetary drive function is to reduce speed and increase torque delivered from a hydraulic motor in order to drive a drum, sprocket or wheel. Its typical application is to propel construction, agriculture and forestry equipment.

A conventional planetary drive is offered in either a two or three stage configuration. A two-stage planetary drive can achieve a reduction ratio from 16:1 to 60:1 and a three-stage planetary drive can achieve a reduction ratio from 66:1 to 215:1. The GFT 45 T2/T3 is both a two- and three-stage planetary drive

Bosch Rexroth Corporation
Mobile Hydraulics
1700 Old Mansfield Road
Wooster, OH 44691
Telephone (330) 263-3434
Fax (330) 202-3734

Technical Article

in one compact package. Its dual-ratio drive functions as a two-stage drive for low-ratio (high-speed) operation and the third stage can be engaged for high-ratio (low-speed) operation. The GFT 45 T2/T3 is capable of a maximum intermittent output torque of 45,000 Newton-meters (33,188 foot-pounds) and maximum output speed of approximately 150 rpm.

There are four major advantages with the GFT 45 T2/T3 dual-ratio design. The first is the wide operable speed range allowed by utilizing two reduction ratios. The second is the ability to offer two different reduction ratios in the same package size as a single reduction ratio drive. The third is the ability to shift-on-the-fly between reduction ratios. The fourth is the ability to operate in high speed without the need for an external cooling circuit.

The high ratio is achieved by use of an input stage that can be disengaged when the low ratio is required. The input stage will increase the low ratio by approximately four times. Therefore, the high ratio will be approximately four times the low ratio. The input stage is engaged and disengaged by use of two clutch packs made up of sintered outer disks and metal inner disks. The two clutch packs are spring applied and hydraulically released and also serve as a static emergency/parking brake. There is a separate hydraulic release port for each clutch pack.

Bosch Rexroth Corporation
Mobile Hydraulics
1700 Old Mansfield Road
Wooster, OH 44691
Telephone (330) 263-3434
Fax (330) 202-3734

Technical Article

There are four possible combinations concerning the positions of the clutch packs:

- With no pressure applied to either clutch pack, the drive is in the braked position. Both clutch packs are engaged by spring force.
- With pressure applied to both clutch packs, the drive is in the free wheel condition. The drive speed is limited in this condition.
- With pressure applied to the inner clutch pack and no pressure applied to the outer clutch pack, the drive will operate in the high ratio, low speed mode. The inner clutch pack is released for driving through the input stage while the outer clutch pack is engaged to secure the input stage ring gear to the stationary spindle.
- With pressure applied to the outer clutch pack and no pressure applied to the inner clutch pack, the drive will operate in the low ratio, high speed mode. The outer clutch pack is released to allow rotation of the input stage ring gear while the inner clutch pack is engaged to secure the input shaft to the input stage ring gear.

Bosch Rexroth Corporation
Mobile Hydraulics
1700 Old Mansfield Road
Wooster, OH 44691
Telephone (330) 263-3434
Fax (330) 202-3734

Technical Article

The dual ratio planetary drive with shift-on-the-fly capability exemplifies Rexroth as a market leader in innovative product design. The wide operable speed range achieved by this innovative planetary drive is further enhanced when utilized with our variable displacement hydraulic motors.

###

Bosch Rexroth Corporation
Mobile Hydraulics
1700 Old Mansfield Road
Wooster, OH 44691
Telephone (330) 263-3434
Fax (330) 202-3734