

## MULTIPLE DYNAMIC FLOW REGULATOR (DFR-ML)

*Accumulation that improves efficiency*



- FIFO accumulation
- Automatic and continuous accumulation
- More than one DFR on the same structure
- No intermediate transfers
- Fully configurable
- Industries:
  - o Food
  - o Pharmacy
  - o Cosmetics and Drugstore
  - o Automotive
  - o Electronics

# MULTIPLE DYNAMIC FLOW REGULATOR (DFR-ML)

## What is it?

The Multiple Dynamic Flow Regulator (DFR-ML) has been designed to balance the manufacturing speeds of two consecutive work stations on the same production line and, more importantly, **to absorb most of the inefficiencies** caused by their potential different or variable production cycles or by any short machine stops that may occur. The DFR-ML **enables manufacturing lines to operate with the planned productivity and uptime thresholds** as it compensates any possible machine stop with its dynamic accumulation capacity. This can be achieved by the DFR-ML as it automatically accumulates products when the subsequent downstream workstation suffers a stop, and releases them back to the manufacturing line when normal working conditions are re-established. The DFR-ML can operate in almost every potential manufacturing environment. This is why its range includes a wide array of sizes, accumulation capacities, speeds and configurations.

## What is offered by the DFR?

The DFR-ML automatically accumulates products from the assembly line as soon as it experiences any stop or speed or cycle alteration and releases them back to the line when the abnormal working conditions are resolved. The DFR-ML can be set up with **product-in and product-out tracks located at the same or at different heights**, thus resolving potential challenges caused by neighbouring workstations operating at different levels in the plant. This DFR has the peculiarity of being able to cover in the same structure more than one regulator, to be able to balance different production lines at the same time, thus optimizing the space and improving efficiency. In addition, the DFR-ML is ideal for both small accumulation needs and significant accumulation needs (up to 400 meters). This is achieved by adapting the length and height of the DFR-ML.

**Accumulation is 100% FIFO at the product unit level, prevents any contact between products and is made with no intermediate transfers**, thus avoiding unwanted manipulation of the products and risk of product jams. Products move along the DFR-ML in a fluid and continuous fashion. These features (for which a patent is pending) make the DFR-ML a very convenient solution for fragile or delicate products of almost any shape or format and allow for the processing of boxes, flowpacks, bags, tubes, bottles, cans, pots, jars, doypacks, industrial components, electronical components, etc...

As a result, the DFR-ML is normally **an investment with a fast or very fast return**.

## How does it work?

The DFR-ML is split into two main parts: the accumulation section and the reserve section.

These two parts are linked by a **continuous single track with no intermediate transfers**. Products are placed and stay on the track, always staying in the same position (avoiding manipulations), and there is no contact between them.

When the manufacturing line is operating normally, the DFR-ML accumulation section is minimised, so that products going through it run along the shortest possible path.

As soon as a line stop or a cycle or speed reduction occurs, the accumulation section automatically starts to extend its length, prompting an equal reduction of the reserve section. This is what makes it possible to accumulate as many product units as required according to the line stop or speed anomaly.

As soon as the manufacturing line gets back to normal working conditions, the DFR-ML accumulation section automatically starts to shorten, releasing accumulated products to the line and recovering its starting minimum length.

**The DFR's software and control parameters are fully integrated with those running the manufacturing line** so that accumulation and release functions are executed automatically and in full coordination with the line.

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## Technical details:

- Accumulation capacity: Until 400 metres
- Independent product-in and product-out speeds (up to 80 m/min)
- Range of track shapes and sizes, up to 300 mm wide
- Maximum size of products to accumulate: dependant on stability and weight
- Adaptable side guiding mechanism
- Single and continuous track with no intermediate transfers
- Product-in and product-out tracks at same or different heights
- FIFO accumulation
- Zero-pressure accumulation
- Control software fully integrated with manufacturing line
- Installation on ground floor or in height
- Accumulation capacity can be fully customised with a combination of channels and levels:

Channels	x	Levels
4	x	1
4	x	4
4	x	6

- Made from stainless steel
- Size: from 2 m x 0.5 m x 0.5 m, to 50 m x 1.8 m x 2.5 m
- Lubrication: recommended
- Power required: from 2 kW to 6 kW
- CE-marked