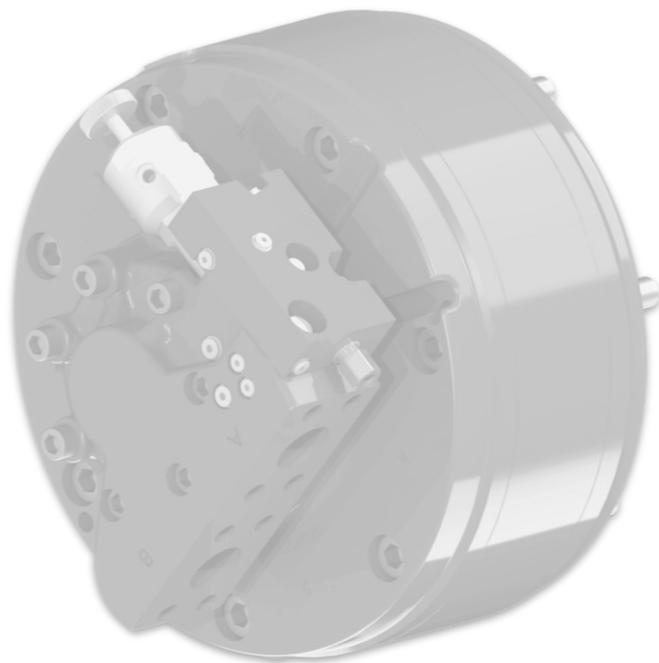
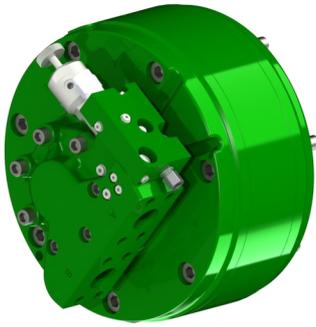


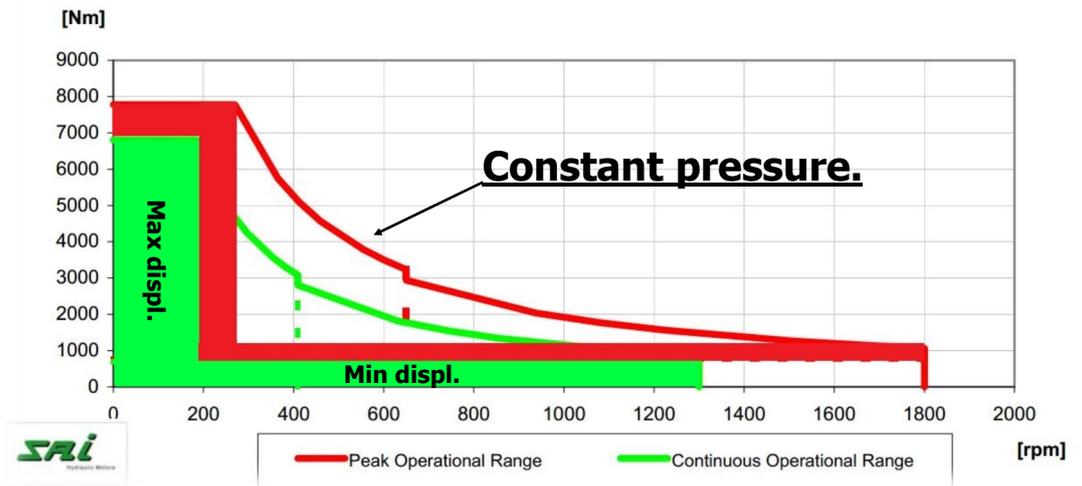


# CONSTANT PRESSURE CONTROL





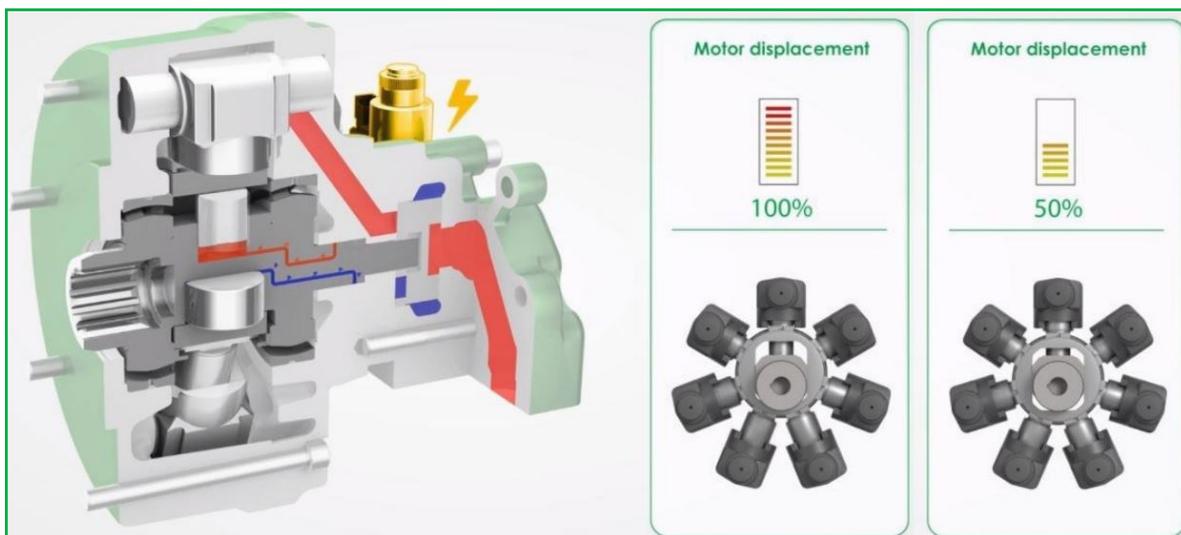
**POWER CONDITION Torque Vs Speed**



## INTRODUCTION:

### Self adjustment system principle:

The SAI variable displacement motor adjust it's displacement by proportionally varying the eccentricity of the crank shaft.



The SAI constant pressure motor has been designed and developed to allow the motor to continually adjust displacement within its maximum and minimum range in order to keep the system operating pressure constant.

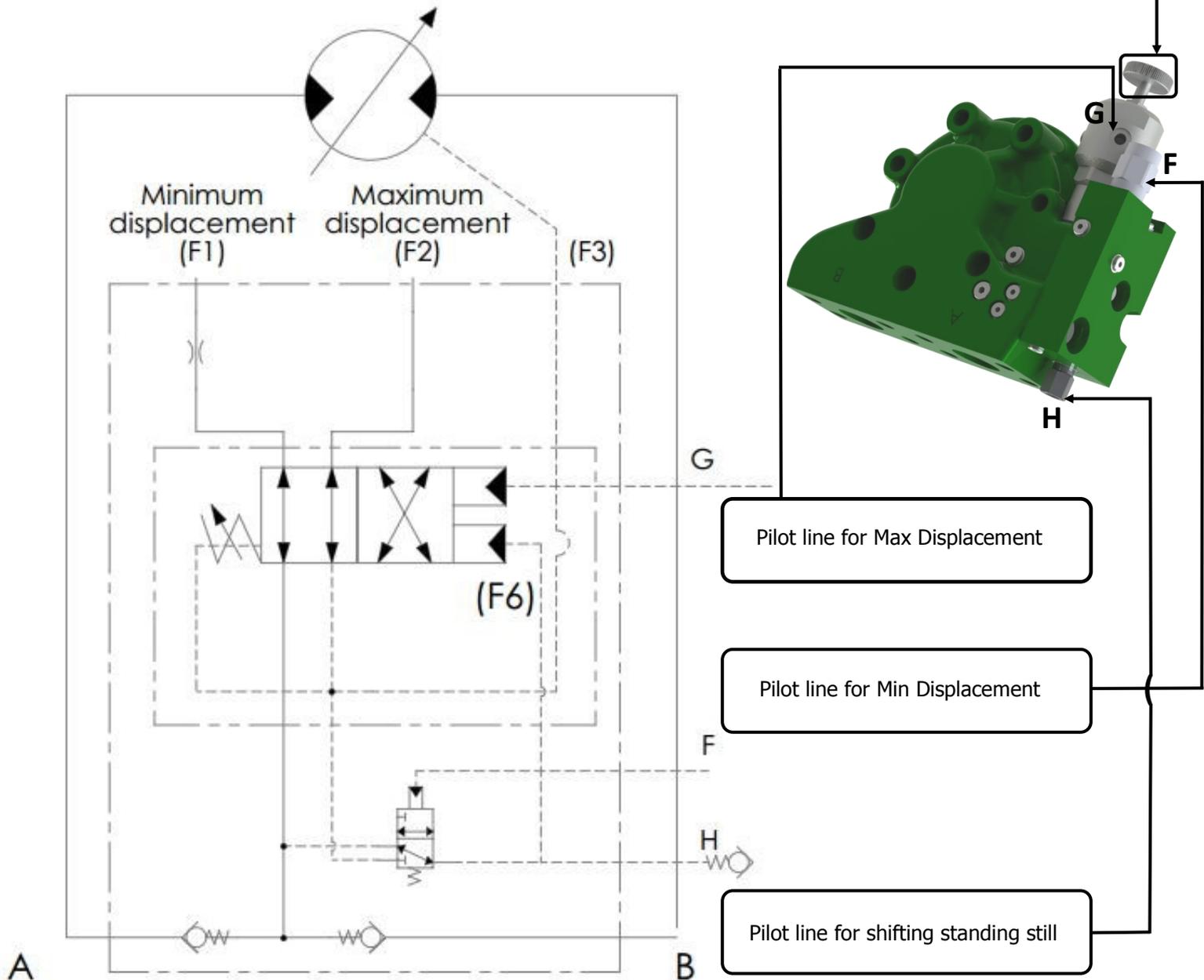
The constant pressure valve senses the differential pressure between A and B ports, upon reaching the set pressure (adjustable between 80-300 Bar) the motor shifts displacement quickly and smoothly to limit the operating pressure to the desired setting.

The SAI constant pressure motor provides a smooth, fast and self adjusting displacement change that reacts to the load in the system.

The SAI constant pressure motor has been designed to make use of all of the power available in the system at any load.

## Working description:

Hydraulic diagram:



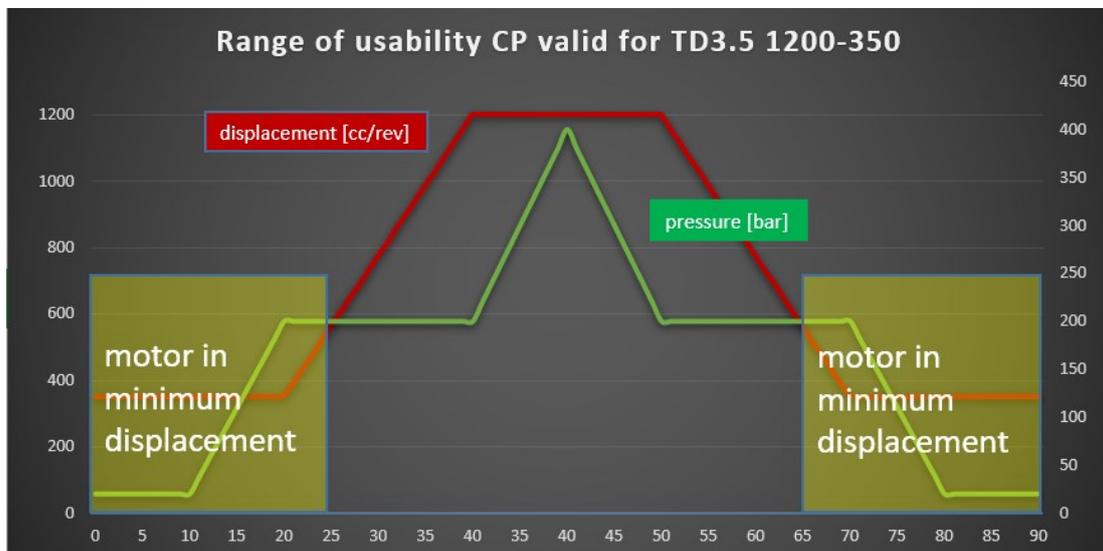
During operation, if the load on the system is low and the pressure is therefore below the set maximum value, the motor will run in its lowest displacement (maximum speed and minimum torque = min displacement).

When the load increases in the system the motor will automatically regulate its displacement to maintain the maximum operating pressure (maximum torque and minimum speed).

**For example, pressure value set to 200 Bar:**

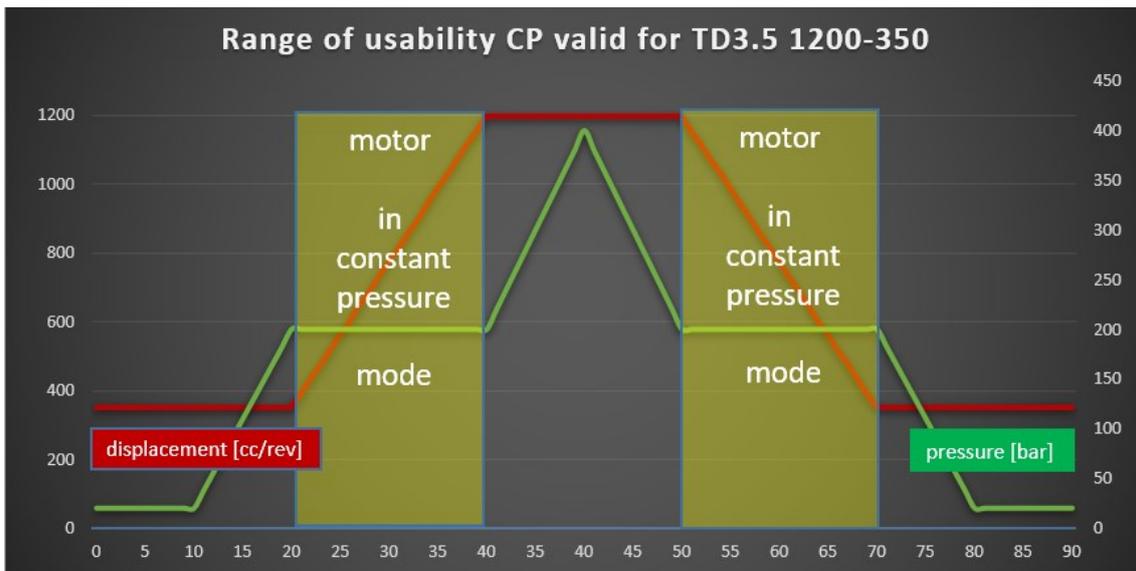
When the external load is low, and therefore pressure is below its set value of 200 Bar the motor maintains minimum displacement and maximum speed.

When the external load increases, the pressure will increase up to 200 Bar with the motor set to its minimum displacement. The motor will not change displacement if the pressure does not exceed the 200 bar set value.

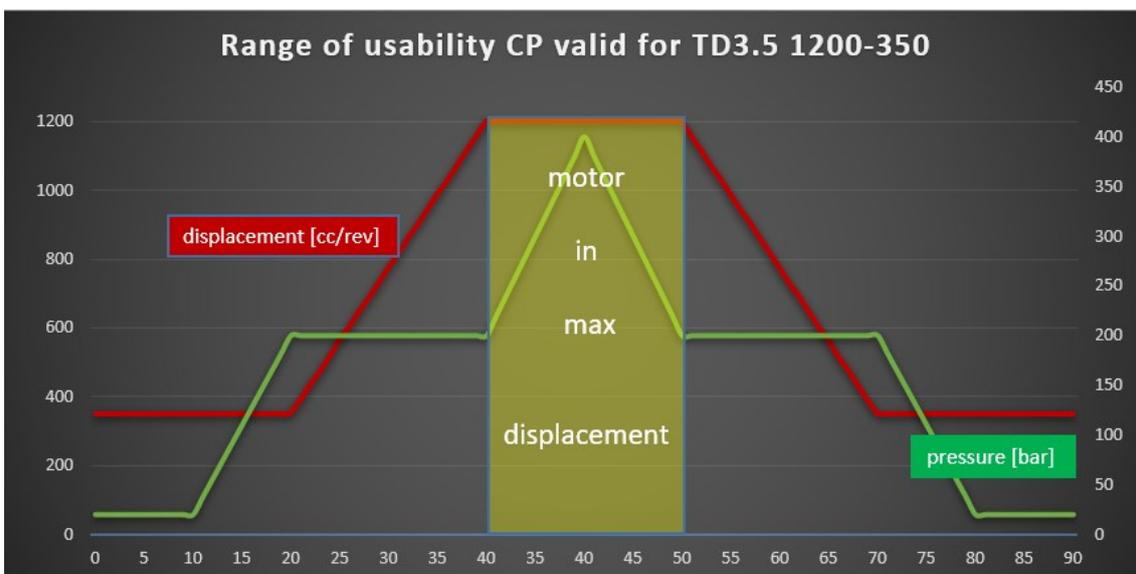


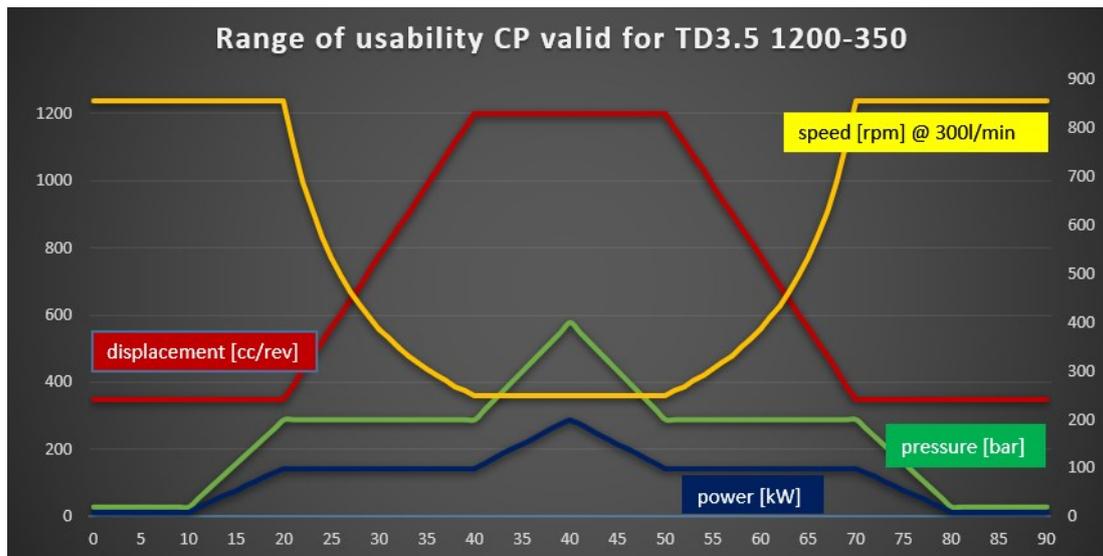
If external load is increasing further, the motor will increase displacement in order to keep the pressure constant at the set value of 200 Bar.

With this working principle, the motor can regulate its displacement from minimal to maximum directly proportional to the load.



During operation, the motor will continue to react to the load of the system in order to maintain the set pressure value. The operational window of the constant pressure system is dependant on the motor displacement range, therefore if the load continues to increase beyond the maximum displacement range, the system pressure will also increase.





The motor is supplied with a pilot override system that can force the motor to shift into maximum displacement, as an option the override can be applied to force the motor into minimum displacement.

The motor can be supplied with an additional pilot line to allow displacement change when the motor is not rotating as an option.

## Performance features:

- **High Displacement Ratio:** due to the high efficiency the motor ratio between max and min can be up to 1:10 that represent the biggest range of usability of hydraulic motor available today in the market.
- **Perfect displacement stability:** due to the system design the motor in the intermediate displacement is very stable with virtually no hysteresis when the same working point is reached from 2 different directions (min to max and max to min).
- **Shifting time:** the shifting time is of course depending from the motor series from the ratio (max and min) and its specific working condition (pressure and flow), generally within few seconds (2-3) the motor is capable to shift from minimum to maximum displacement and viceversa.

## Functionalities option:

- **Self adjustment mode** (no pilot line to be pressurized) (Standard).
- **Dual displacement mode** (override max /override min) hydraulic controlled (only possible with OV min valve block).
- **Shifting standing still** (EP+ override max/ EP+ override min).

## Technical characteristics:

- **Setting pressure:** manual adjustment → 20 bar/ turn.
- **Setting Pressure Range of CP control:** from 80-300 bar.
- **Standard setting:** 150 bar.
- **Override port for Max displacement:** included as standard 1/8" BSP.
- **Pressure for override in max:** from 100 to 300 bar.
- **Pressure for override in min:** from 15 to 300 bar.

Volume of oil about 70cc.

- **Override port for min displacement:** available only as option 1/8" BSP.

Volume of oil about 60cc.

- **Extra Pressure line shifting standing still:** available only as option 1/4" BSP.
- **Pressure for EP line:** from 15 to 300 bar: to shift in standing still condition, the pressure on EP line have to be at least 5 bar higher than the biggest pressure between A and B port.