

**CASTING CONTRACTION, MACHINING RIDGES AND DIMENSIONS AND  
GEOMETRIC TOLERANCES**

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## 1. Casting Contraction

When the metal solidifies, takes on the shape and dimensions of the mould; it is at a temperature of 1,150°C, and during cooling until room temperature, contraction takes place. In general, contraction is approximately 1%, corresponding to 10 mm per metre.

According to studies performed by Fumbarri, the contraction of the metal to be solidified varies between 0.8% and 1.3%. The factors influencing these variations in contraction are:

- Mould rigidity.
- Model.
- Part geometry.
- Metal.

## 2. Machining Ridges

The objective of the mechanization ridges is for, upon mechanizing these surpluses of the standard measurement, the casting residue to disappear and for the material to remain clean (exempt from inclusions). Due to the fact that the process to obtain casting parts with the lost polystyrene model generates ash from polystyrene combustion, it is necessary to have more ridges than other casting processes. Even so, you should be forewarned that with these ridges, we cannot ensure a perfect finish, taking into account that upon casting with polystyrene, there is always a risk that a few ashes appear in the areas of the part on the top section according to the position wherein the part is cast. **If a surface free from all impurities is required**, it is recommended to increase mechanization, consulting the casting for each individual case. Generically, it is recommended to apply the following surpluses:

### 1. GENERIC RIDGES ON SIDES TO MECHANISE FOR ALL SORTS OF PARTS

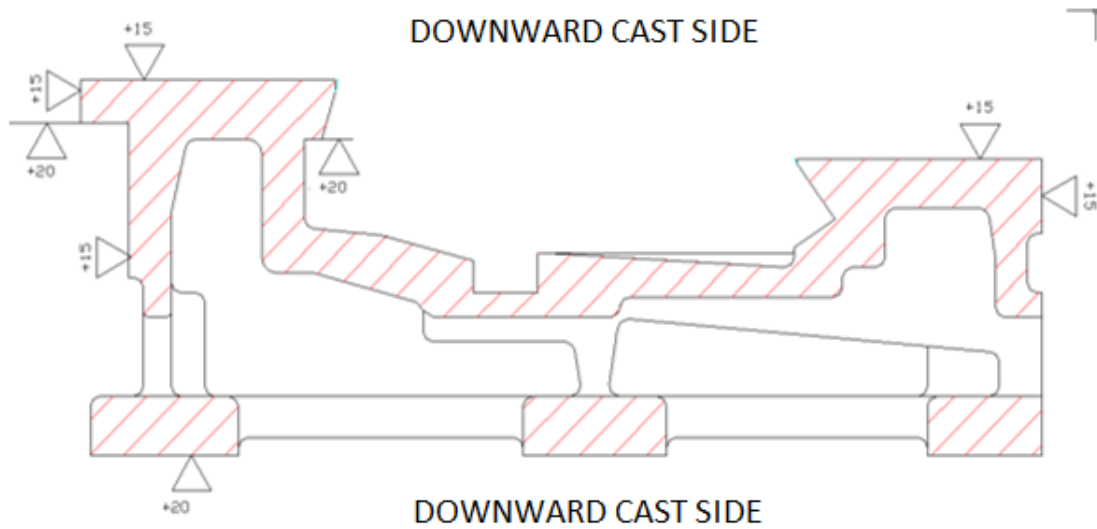
LENGTHS		SURPLUS ZONES TO MECHANISE		
		*DOWNWARD CAST SIDE	**UPWARD CAST SIDE	LONGITUDINAL AND TRANSVERSAL SIDES
MORE THAN	UP TO			
0	1.000	+8	+13	+8
1.001	3.000	+12	+17	+12
3.001	5.000	+15	+20	+15
5.001	10.000	+18	+23	+18

\* DOWNWARD CAST SIDE: In Tool Machine, Guide or slide zone. In die cut, settlement of males, matrices, carts, etc.

\*\*DOWNWARD CAST SIDE: Settlement of part to the ground (Zone of lesser importance).

**Take care** with carts and wedges that do not have false sliding elements. Apply 20 mm surplus to sliding sides. In addition, Fumbarri recommends to mark the less good face (CM in relief), which allows easier repair. to be placed as the bad face in its fusion

Example: Part from 5,001 to 10,000 mm in length.



### 3. Dimensional and Geometric Tolerances

Geometric and dimensional tolerances for casting parts are regulated according to regulation UNE-EN ISO 8062-3. According to this regulation, deviations permitted for straightness in horizontal and vertical planes are:

TABLE ON FLATNESS TOLERANCES FOR MOULDED PART ACCORDING TO UNE-EN ISO 8063-3	
RATED DIMENSION OF GROSS PART	FLATNESS TOLERANCE ACCORDING TO GCTG 6
From 1,000 to 3,000	6
From 3,000 to 6,000	12
From 6,000 to 10,000	24

TABLE ON STRAIGHTNESS TOLERANCES OF THE MOULDED PART ACCORDING TO UNE-EN ISO 8063-3	
RATED DIMENSION OF GROSS PART	FLATNESS TOLERANCE ACCORDING TO GCTG 6
From 1,000 to 3,000	4
From 3,000 to 6,000	8
From 6,000 to 10,000	16