DETERMINING THE TYPE OF PRODUCTION

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The manufacturing technology of parts largely depends on the type of production, therefore, when starting the design, it is necessary to first determine which the type will be the production of this part, taking into account its mass and the size of the annual production.

According to GOST 14.004–83, the type of production is the classification category of production, distinguished by the characteristics breadth of the nomenclature, regularity, stability and volume of output. There are types of production: single, serial, mass.

According to the requirements of GOST, the type of production is characterized by the coefficient of consolidation of operations $K_{c.o}$ which is determined by the formula

$$K_{c.o} = \frac{O}{P} \qquad (1)$$

O is the number of different operations performed per month; P is the number of jobs that perform operations.

If $K_{c.o} = 1$, then production is considered to be mass production,
$1 < K_{c.o} \leq 10$ - large-scale,
$10 < K_{c.o} \leq 20$ - medium series,
$20 < K_{c.o} \leq 40$ - small-scale.
For a single production, $K_{c.o}$ is not regulated.

When executing the project, we accept the average production type management, since there are no data to determine $K_{c.o}$, since real production conditions are unknown, in which prepare detail.

The volume of annual output, using the Table 1, determined by the following relationship:

$$y_i = \frac{yk(xi - xk+1) - yk+1(xi - xk)}{xk - xk+1}, \qquad (2)$$

where y_i is the annual output of the part; y_{k+1} and y_k are interval boundaries the annual output of a part of a given mass for a medium-scale production; x_i is the mass of the part; x_{k+1} and x_k are the boundaries of the interval, which falls the calculated mass of the part for the average production.

Table 1

Dependence of the type of production on the volume of output and mass

Detail weight, kg	Volume of annual output N, pcs.,depending on the type of production		
	medium series	large-scale	massive
< 1	2000…75000	75000…200000	> 200000
1…2,5	1000…50000	50000…100000	> 100000
2,5 …5	500…35000	35000…75000	> 75000
5…10	300…25000	25000…50000	> 50000
> 10	200…10000	10000…25000	> 25000

In mass production, it is necessary to determine the batch size parts launched simultaneously into production. For this purpose the following formula is used, pcs.:

$$n=\frac{a*N}{260}, \qquad (3)$$

n is the number of parts in the batch; N is the annual production of parts, pieces; a is stock factor of parts in stock before assembly (Table 2); 260 – the number of working days in a year with a 5-day working week.

Table 2

Spare parts in stock, pcs

Details characteristics	Production type	
	Small-scale	Medium and large series
Small	10	5
Medium	5	3
Heavy	5	3

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