

HAND OUT 01: GROUP TECHNOLOGY – PARTS CLASSIFICATION & CODING**TABLE 10.3. THE VUOSO-PRAHA CODE**

Vüoso-Praha

Workpiece classification system

Kind of workpiece	Rotational workpieces					Flat and irregular	Box-like	Other mainly non-machined	Materials														
	Hole in axis		Geared and splined						Plan steel STL														
	None	Blind	Trough	Hole in hole					Quality and alloy steel - 19														
	1	2	3	4	5	6	7	8	Bars, tubes, sheets, wires - 19														
Class of workpiece	D	L/D	Rough form			Rough form	Lmax mm	Rough weight	Made of														
0		→ 1				Gib-like L/B → 5	mm 0-200	0-30 kg	Extruded forms														
1	0-40	1-6					mm 200-	30-200 kg	Bars														
2		→ 6				Platforms L/B → 5	mm 0-200	200-500 kg	Tubes														
3		→ 1					mm 200-	500-1000 kg	Sheets														
4	40-80	1-4				Lever-like 	mm 0-200	1000 - kg	Wires														
5		→ 4					mm 200-																
6	80-200	→ 3				Irregular 	mm 0-200																
7	80-	→ 3					mm 200-																
8	200-	→ 3				Prism-like 	mm 0-200																
9	Various	→ 30					mm 200-																
Group of workpiece	0 Smooth		Spur geared	Spined		Flat Parallel		Boxes Spindlestocks Frames	Flat	Non mach	Example of a class number 3 3 7 2 Kind Class Group Material												
	1 Thread in axis					Flat Other		Columns															
	2 Holes not in axis					Rotat Parallel		Beds Bridges															
	3 Splines or grooves		Taper geared	Spined		Rotat Other		Outriggers Knees	Bent	Part mach													
	4 Comb. 1+2					Flat Parallel Rotat Parallel		Tables Slides															
	5 Comb. 1+3					Flat Parallel Rotat Other		Lids															
	6 Comb. 2+3		Wormgeared	Spined		Flat Other Rotat Parallel		Basins Containers	Formed	Non mach													
	7 Comb. 1+2+3					Flat Other Rotat Other																	
	8 Taper					Geared																	
	9 Unround		Other			Other			Welded	Part mach													

Source: Gallagher and Knight, 1973.

Form Code Digits for Rotational Parts in the Opitz System – Part Classes 0, 1, 2

Digit 1		Digit 2			Digit 3			Digit 4		Digit 5			
Part Class		External Shape			Internal Shape			Plane Surface Machining		Auxiliary Holes and Gear Teeth			
0	$L/D \leq 0.5$	0	Smooth, no shape elements		0	No hole or breakthrough		0	No surface machining	0	No gear teeth		
1	$0.5 < L/D < 3$	1	Stepped to one end	No shape elements	1	No shape elements		1	Surface plane and/or curved in one direction, external	1	With gear teeth		
2	$L/D > 3$	2		Thread	2	Thread		2	External plane surface related by graduation around a circle	2			
3	With deviation $L/D \leq 2$	3	Or smooth	Functional groove	3	Functional groove		3	External groove and/or slot	3			
		4	Stepped to both ends	No shape elements	4	No shape elements		4	External spline (polygon)	4			
		5		Thread	5	Thread		5	External plane surface and/or slot, external spline	5			
		6		Functional groove	6	Functional groove		6	Internal plane surface and/or slot	6			
6	$A/B \leq 5$ $A/C \leq 4$	7	Functional cone		7	Functional cone		7	Internal spline (polygon)	7			
7	$A/B > 5$	8	Operating thread		8	Operating thread		8	Internal and external polygon, groove and/or slot	8			
9	Special	9	All others		9	All others		9	All others	9			

Form Code Digits for Rotational Parts in the Opitz System – Part Classes 3, 4

Digit 1		Digit 2			Digit 3			Digit 4		Digit 5		
Part Class		Overall Shape			Rotational Machining			Plane Surface Machining		Auxiliary Holes, Gear Teeth, Forming		
0	$L/D \leq 0.5$	0	Around one axis, no segments		0	No rotational machining	External shape	0	No surface machining	0	No auxiliary holes, gear teeth, forming	No forming, no gear teeth
1	$0.5 < L/D \leq 1$	1			1	Machined		1	External plane surface and/or surface curved in one direction	1	Axial hole(s) not related by drilling pattern	
2	$L/D > 1$	2			2	With screw threads	Internal Shape	2	External planed surfaces related to one another by graduation around a circle	2	Holes axial and/or radial and/or in other directions, not related	Related by a drilling pattern
3	With deviation $L/D \leq 2$	3			3	Smooth		3	External groove and/or slot	3	Axial holes	
4	With deviation $L/D > 2$	4	Segments after rotational machining		4	Stepped toward one or both ends (multiple increases)	External and Internal shape	4	External spline and/or polygon	4	Holes axial and/or radial and/or in other directions	Forming, no gear teeth
5	Special	5	Segments before rotational machining		5	With screw threads		5	External plane surface and/or slot and/or groove, spline	5	Formed, no auxiliary holes	
6	$A/B \leq 4$ $A/C > 4$	6	Around more than one axis		6	Rotational components with curved axis	External shape elements	6	Internal plane surface and/or groove	6	Formed, with auxiliary holes	Gear teeth, no auxiliary holes
7	$A/B > 4$	7			7	Rotational components with two or more parallel axes		7	Internal spline and/or polygon	7		
8	$A/B \leq 3$ $A/C \leq 4$	8			8	Rotational components with intersecting axes	Other shape elements	8	External and internal spline and/or groove and/or slot	8	Gear teeth with auxiliary hole(s)	Other
9	Special	9	Others		9	Other shape elements		9	Other	9		

Supplementary Code Digits for Parts in the Opitz System

Digit 6			Digit 7		Digit 8		Digit 9	
Diameter D or Edge Length A			Material		Initial Form		Diameter D or Edge Length A	
0	mm	inches	0	Cast iron	0	Round bar, black	0	No accuracy specified
1	> 20, ≤ 50	> 0.8, ≤ 2.0	1	Nodular graphitic cast iron and malleable cast iron	1	Round bar, bright drawn	1	2
2	> 50, ≤ 100	> 2.0, ≤ 4.0	2	Mild steel ≤ 26.5 tonf/in. ² not heat treated	2	Bar: triangular, square, hexagonal, others	2	3
3	> 100, ≤ 160	> 4.0, ≤ 6.5	3	Hard steel > 26.5 tonf/in. ² heat-treatable low-carbon and case-hardening steel, not heat treated	3	Tubing	3	4
4	> 160, ≤ 250	> 6.5, ≤ 10.0	4	Steels 2 and 3 heat treated	4	Angle, U-, T-, and similar sections	4	5
5	> 250, ≤ 400	> 10.0, ≤ 16.0	5	Alloy steel (not heat treated)	5	Sheet	5	2 and 3
6	> 400, ≤ 600	> 16.0, ≤ 25.0	6	Alloy steel heat treated	6	Plate and slabs	6	2 and 4
7	> 600, ≤ 1000	> 25.0, ≤ 40.0	7	Non-ferrous metal	7	Cast or forged components	7	2 and 5
8	> 1000, ≤ 2000	> 40.0, ≤ 80.0	8	Light alloy	8	Welded assembly	8	3 and 4
9	> 2000	> 80.0	9	Other materials	9	Pre-machined components	9	2 and 3 and 4 and 5