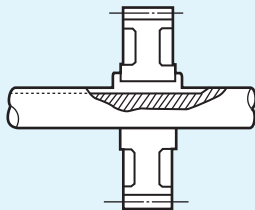
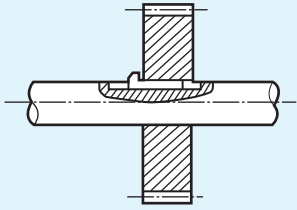
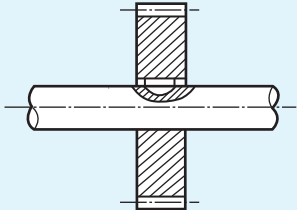
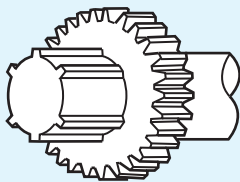
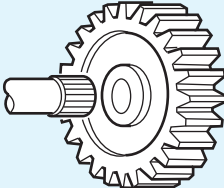
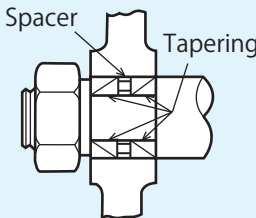
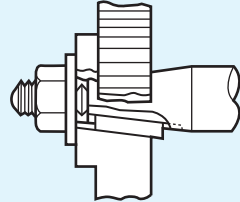
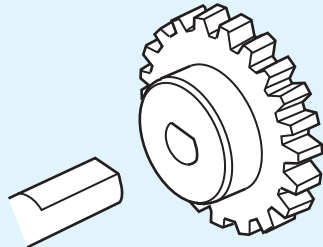
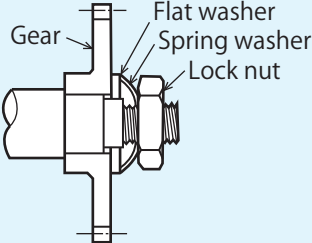
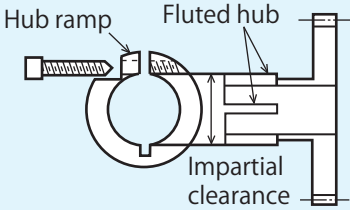
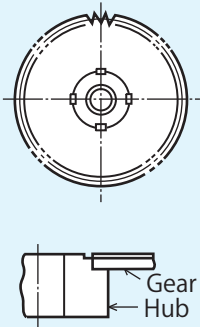
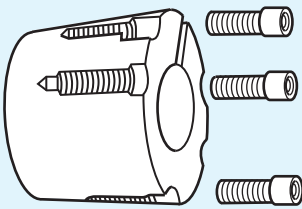
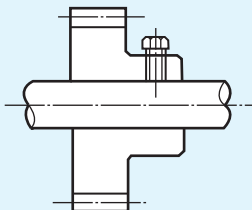


2.7 Locking fixtures for gear shaft

Types of element (1)

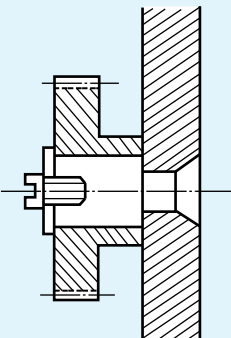
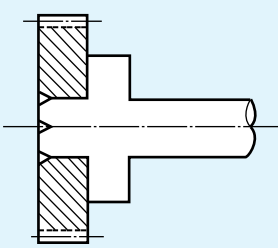
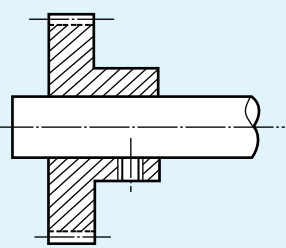
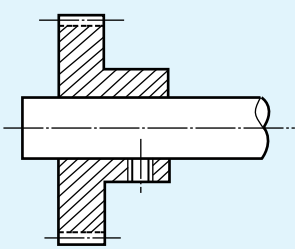
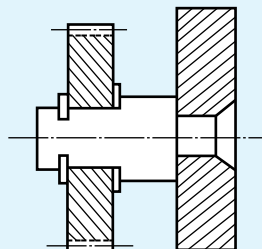
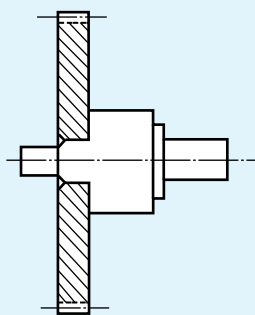
1		Feather Key. Location of key can be shifted in axial direction. Fabricate amount of effective length for shifting on the shaft.
2		Parallel Key. Used for fixing the gear at designated location.
3		Woodruff Key. Used for fixing the gear at designated location.
4		Spline. There are types of square and Involute spline. There are types of fixed gear and shifting gear to axial direction. Usage of Spline is for bigger transfer torque compared with Key.
5		Knurling. Shaft with Knurling press fit into bore of gear. If designed so that it slips when a specific load is applied, it can be used as a safety device.
6		Tapering. When gear is tightened to shaft, parts of tapering extend to interlock. This is for easy installation and improves concentricity between bore and shaft.
7		Taper shaft. When using bigger transfer torque, it is necessary to design Key way and Nut for fixing between gear and taper shaft. It is easy to obtain concentricity and to dismantle gear.

8		D bore. Made with combination of D-bore and D-cut shaft. Process of D-bore uses round broach with chamfering.
9		Spring washer. Lock nut is used for tensioning the spring washer, which is necessary for adjustment. However gear will slip when load to the gear is excessive.
10		Clamp. Generally used for dashboard to obtain level clearance between bore and shaft.
11		Caulking
12		Taper bush. Use for dimension $\phi 12.7$ or more of bore.
13		Thread screw. The most commonly used fixture element due to easy installation. However during operation, beware of slacking of screw and off-centre.

Dr. Masataka Senba, "Miniature size gear" partially extracted from newspaper company Nikkan Kogyo Shimibun, 1969.

Types of element (2)

For small module

① Fitted with Washer and screw	② Fitted with Caulking	③ Fitted with Pinning
		
④ Fitted with Thread screw	⑤ Fitting with Clamping washer	⑥ Fitting with Pressure punching
		
⑦ Fitting with Pressure pinning	⑧ Fitting with flat spring	⑨ Fitting with coiled spring
