1.4 Terminology of each part of the gear

Terminologies of gears are defined in **JIS B 0102:1999** Vocabulary of gear terms-Related to geometry.
The vocabularies for gear numerical formula and gear drawings are defined in **JIS B 0121:1999** International gear notation - Symbols for geometrical data.
Comparison table 2 for common gear terms of **JIS B 0102:1993**(old) and **JIS B 0102:1999** are confirmed. The names are changed but meanings are retained.

Table 2. Comparison between new and old for gear terms.

JIS B 0102:1999	JIS B 0102: 1993 confirmed
Reference circle (1)	Reference pitch circle
Reference diameter	Reference pitch diameter
Tooth depth	Tooth depth
Tooth thickness	Circular tooth thickness
Working depth	Working depth
Standard basic rack	Basic Rack (2)
Datum line of Rack	Pitch line for rack
Virtual cylindrical gear of Bevel gear	Virtual spur gear for Bevel gear
Pitch angle	Pitch angle
Tip angle	Tip cone angle
Root angle	Root angle
Spiral angle for Bevel gear	(Bevel gear) Spiral angle
Locating distance for Bevel gear	(Bevel gear) Location distance
Centre distance modification coefficient	Coefficient of increment Centre distance

Note (1) Pitch diameter is stipulated in **JIS B0102:1999**. Reference circle is classified with Pitch circle. Pitch circle is diameter of geometrical circle for gear described by moment of relative motion of axis with mating gear.

Note (2) Definition of Basic rack is "imaginary rack with Standard basic rack" under the Normal section in **JIS 0102:1999**

In addition, the gears terms have been updated but not outlined.

Standard basic rack tooth profile

Rack tooth profile is stipulated in **JIS B 0102:1999**, Standard tooth profile dimension in Involute tooth profile group. Therefore the gear and dimensions of tool are established while compatibility is kept.
The details of Standard basic rack tooth profile are shown in Fig. 5 and Table 3. According to the **JIS B1701-1:1999 Involute tooth profile Article 1: Standard basic rack tooth profile** and **it's recommended attached supplement articles adds Tooth profile and Usage of Basic rack** for reference, which is ommitted here.

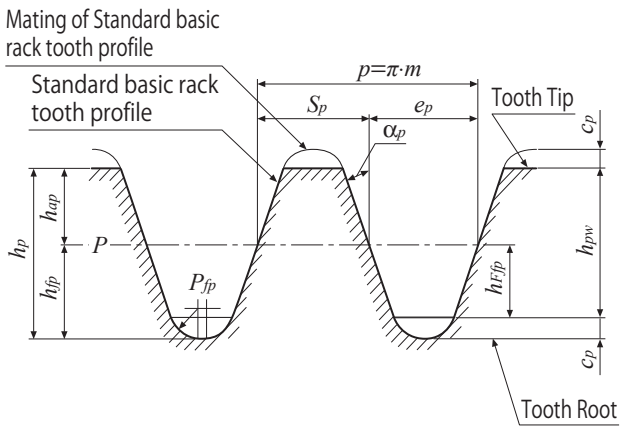

Fig. 5 Standard basic rack tooth profile and Mating of Standard basic rack tooth profile

Table 3. Dimensions of Standard basic rack

Vocabulary	Dimension of Standard basic rack
α_p	20°
h_{ap}	1.00mm
C_p	0.25m
h_{fp}	1.25m
P_{fp}	0.38m

Gear terms and Vocabularies for Involute gear

(JIS B 0102:1993 confirmed and extracted from JIS B 0121:1999)

Fig. 6 indicates the names (gear terms) for parts of Tooth profile.

Standard is a defined term of an applicable limited word from Reference surface of gear, defined in **JIS B 0102:1999**. Normally "Standard" and "Working" are distinguished. When it is not necessary to classify between Standard and Working, it is common knowledge that the word "Standard" can be omitted.

Centre distance—a	Centre distance is defined as the shortest distance between axes of Parallel gear pair or pair of crossed gear. Reference centre distance is defined in **JIS B 0121:1999** which is not outlined here.
Circular pitch* — p	Circular pitch is the distance of Pitch between adjacent teeth as measured on the Reference circle or Reference line.
Base pitch* — p_b	Base pitch is perpendicular line to Pitch between any section of Tooth profile in Involute gear.
Tooth depth — h	Tooth depth is radial distance between Tip and Root circle.
Addendum — h_a	Addendum is radial distance between Tip and Reference circle.
Dedendum — h_f	Dedendum is radial distance between Root and Reference circle.
Working depth — h'.	Working depth is distance along the centre line between Tip surface of two engaging gears.
Bottom clearance — c	Bottom clearance is distance along the centre line between Tip surface of a Gear and Root surface of its Mating gear.
Tooth thickness — s.	This is length of Arc on Reference circle between the two profiles of a tooth.
Tip diameter — d_a	This is diameter of Tip circle.
Reference diameter — d.	This is diameter of Reference circle.
Root diameter — d_f.	This is diameter of Root circle.
Transverse line of action	This is normal line common to two Transverse profiles at their point of contact. For Involute gear pairs, the lines of action are also common tangents to their Base circles.
Pressure angle —α.	Angle drawn when centre connection line and profile crosses pitch point upon the reference circle.

The term of ∗-mark is not define in **JIS B 0121:1999**. The Pressure angle is supplemented due to insufficient description in this JIS. An Addendum and Dedendum of Worm wheel is defined for classification of " Reference" and " Mating", which omitted here.

Fig. 6 Name of the each parts of Tooth profile

a = Centre distance
p = Circular pitch
p_b = Base pitch
h = Tooth depth
h_a = Addendum
h_f = Dedendum
h' = Working depth
c = Bottom clearance
s = Tooth thickness
d_a = Tip (Out side) diameter
d = Reference diameter
d_b = Base diameter
d_f = Root diameter
α = Pressure angle