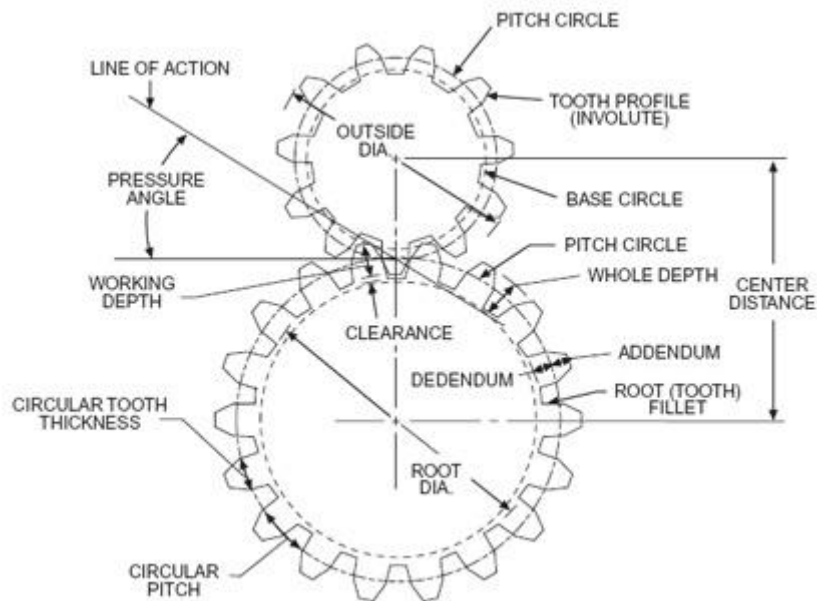




Manufacturing quality transmission products

A to Z of Gear Terminology



(A)

Active Profile - Active profile refers to the part of the gear tooth that actually comes into touch with the profile of its mating tooth somewhere along the line of action.

Addendum - Addendum is radial or the perpendicular distance that is measured between the tip of the teeth and pitch circle.

Arc of Action - Arc of action is the arc of a pitch circle via which the tooth moves from the time it first makes any contact with a mating tooth until the time the contact with mating tooth stops.

Axial Pitch - Axial Pitch is referred to as the distance measured in an axial plane surface between two corresponding and adjacent tooth profiles.



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(B)

Backlash - Backlash is the point of measure of the quantum of width of a tooth space by which it exceeds the thickness of the engaging tooth on pitch circles.

Base Circular Thickness - Base circular thickness is the length of arc on a base circle between two involute curves resulting in the profiles of a tooth.

Base Radius - Base radius refers to the radius of the circle, the involute is generated from here only.

Basic Rack - Basic Rack is there for every pair of a conjugate involute profile. This basic rack is essentially the profile of the conjugate gear that has infinite pitch radius.

(C)

Circular Pitch - Circular Pitch means the distance along the pitch circle or a pitch line, in between corresponding profiles of teeth that are placed adjacently.

Circular Thickness - Circular thickness is the length of an arc on a pitch circle that is in between the two sides of the gear tooth.

Contact Ratio - Contact ratio is the ratio formed by the arc of action to a circular pitch.

Conjugate Action - Conjugate Action is a smooth type of driving action which produces a constant and uniform angular velocity in a driven member.

(D)

Dedendum - Dedendum refers to the perpendicular or radial distance covered between a pitch circle and the tooth space's bottom portion.

Diametrical Pitch - Diametrical pitch refers to a ratio that is formed by the number of teeth to the number of inches in a pitch diameter. The relation is fixed between a diametrical pitch (P) and a circular pitch (p), denoted by $p=P$.

Double-Helical Gear - Double Helical Gear is the gear of a cylindrical form that has two sections of teeth, one is at the right hand and the other is on the left hand, They engage in tandem with the teeth of an identically designed mating gear.

(E)

Effective or (Active) Face Width - This is the actual width of a face which comes into touch with a mating gear.

Equal-Addendum Teeth - This is the teeth of two Gears that are engaged and having similar addendum.

External Gear - External Gear is the gear that has a teeth formed on an outer surface of a cylinder or even a cone.



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(F)

Face Advance - Face advance refers to the distance on a pitch circle which a gear tooth travels from the time when at one end the pitch point contact is made until at the other end another pitch point contact is made.

Face Contact Ratio - Face contact ratio refers to the contact ratio made in an axial plane. It also refers to the ratio of the face width to an axial pitch. In case of bevel and hypoid gears, it refers to the ratio of face advance to a circular pitch.

Face Width - Face width is the length of a tooth in an axial plane.

Fillet Curve - Fillet curve refers to a tooth profile's concave portion, where it is able to join the bottom of a tooth space.

(G)

Gear Blank - Gear Blank is the work piece which is applied for manufacturing a gear, before the gear teeth are machined.

Gear Centre - Gear centre is the centre of pitch circle.

Gear Ratio - Gear ratio is the ratio of the number of teeth in mating gears.

Groove Depth - Groove depth is the depth of clearance groove between the helices of two helical gears.

Groove Width - Groove width refers to clearance groove between the helices of two helical gears.

(H)

Helical Gear - A type of cylindrical gear that has helical teeth.

Helical Rack - A type of rack that has teeth obliquely placed to the direction of motion.

Helix Angle - It refers to the angle formed between a tangent to a helix and the element of a cylinder.

Herringbone Gears - Herringbone is a type double helical gear, with no clearance groove.

Hub Diameter - Hub diameter refers to the diameter of a central part of the gear body that encloses the bore and extends the web, spokes, or the body.



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(I)

Inside Cylinder - Inside cylinder is the surface which coincides with the top of a tooth of a gear of the nature internal cylindrical.

Interference - It refers to any type of contact made between the mating teeth at any other point than that made along the line of action.

Internal Diameter - It is basically the diameter of a circle that consists of the top of teeth of internal gears.

Involute Curve - This is a very important term and is referred to as the curve described by the end of a line which is unwound from a circle's circumference. Base circle is the circle from where the said line is unwound.

(L)

Lead - Lead is the axial advance made by the helix for one complete turn. This is typified in the threads of a cylindrical worm or in teeth of helical gears.

Lead Angle - The angle formed between a tangent to a pitch helix and the rotational plane.

Length of Action - It is the distance measured on an involute line of action via which the point of contact travels during the action of tooth profiles.

Line of Action - It is the path of contact in case of involute gears. A straight line that passes via the pitch point and tangent to the base circles of two mating gears.

(M)

Modified Addendum Teeth - It refers to teeth of two engaging gears, one or sometimes both of which have addendum that are nonstandard.

Modified Contact Ratio - It is the contact ratio of improvised tooth surfaces.

(N)

Normal Helix - It refers to a helix on a pitch cylinder which is normal to a pitch helix.

Normal Plane - The plane that is perpendicular to a straight line or that forms a tangent to the curved line.

Normal Pressure Angle - It is the pressure angle in a plane which is normal to the pitch line element.

Normal Tooth Profile - Normal tooth profile is the outline taking place by the intersection of a tooth surface and a plane which is perpendicular to a pitch line element.



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(O)

Outside Diameter of Gear - It is essentially the diameter of a circle, comprising the top of the teeth of an external type of gear.

Operating Pitch Diameters - It is the diameter of the circle on a gear. It is proportional to the gear ratio and the centre distance (actual) at which there will be operation of the gear pair.

Operating Pressure Angle - Operating pressure angle is ascertained by the centre distance at which the gears operate.

Outside Helix Angle - This is the helix angle formed on the outside cylinder.

(P)

Pinion - Pinion is a gear where number of teeth is small. In two gears that mesh together the one with the smaller number of teeth is known as the pinion.

Pitch, Circular - It is the distance measured on the circumference of a pitch circle between the corresponding points of teeth that are placed adjacently.

Pitch Circle - It is the circle via which the pitch point has its centre on the axis of a gear.

Pitch Cylinder - Pitch cylinder is an imaginary cylinder drawn in a gear which rolls without any slip on a pitch cylinder or a pitch plane of the other gear.

Pitch Helix - Pitch helix is formed as a result of the intersection of the thread or surface of a helical tooth with a pitch cylinder.

(R)

Rack, General - A gear that has its teeth spaced along a straight line. It is perfect for straight-line motion.

Root Circle - The circle comprising the bottom of tooth spaces.

Root Cylinder - An imaginary cylinder which is tangent to the bottom of tooth spaces in a cylindrical type of gear.

Root Radius - Refers to the radius of a root circle.

(S)

Single-Helical Gears - Helical gears that has teeth of one hand on each of the gear.

Spur Rack - A rack that has a straight teeth and at 90° to the direction of motion.

Surface of Action - An imaginary surface where a contact takes place between two of the engaging tooth surfaces.



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(T)

Tangent Plane - It refers to the plane tangent formed at the tooth surface at the line of contact.

Tolerance, Tooth Alignment - It is the maximum permissible amount of variation in tooth alignment. Values are normal to the surface of tooth.

Tooth Bearing - The part of the tooth surface that actually comes in touch.

Transverse Circular Thickness - It refers to the thickness of the circular tooth in the plane of rotation.

(U)

Undercut - A sort of condition that is generated in gear teeth when a part of the fillet curve is lying inside of a line. It is drawn as a tangent to a true involute form at its lowest point. Undercut may be introduced for facilitating the process of finishing.

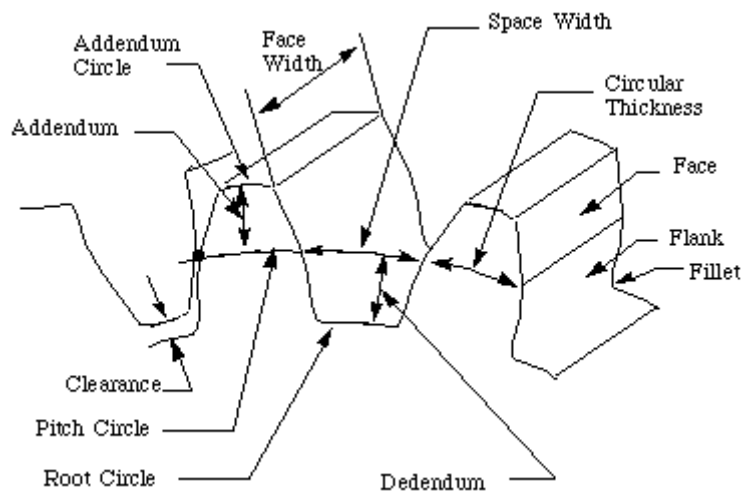
(W)

Whole Depth (total depth) - It is the radial distance between an outside circle and a root circle.

Working Depth - It is the extent of greatest depth to which a tooth of a gear can move into the tooth space of the mating gear.

(Z)

Zone of Action – It is the area (rectangular) in a plane of action. It is restricted by the length of action or the face width.



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