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Apply[Clear, Names["Global`*"]];
Off[General::spell];
Off[General::spell1];

m = 10; (*module*)
N1 = 28;
N2 = 21;
N4 = 16;

r1 = m * N1 / 2;
r2 = m * N2 / 2;
r3 = r1 + 2 * r2;
r4 = m * N4 / 2;
r5 = r1 + r2 + r4;

Print["r1 = ", r1, " mm"];
Print["r2 = ", r2, " mm"];
Print["r3 = ", r3, " mm"];
Print["r4 = ", r4, " mm"];
Print["r5 = ", r5, " mm"];

N3 = 2 * r3 / m;
N5 = 2 * r5 / m;

Print["N3 = ", N3];
Print["N5 = ", N5];

n1 = 370.; (*rpm*)
n2 = -N1 * n1 / N2;
Print["n2 = - N1 n1/N2 = ", n2, " rpm"];
n4 = n2;
Print["n4 = n2 = ", n2, " rpm"];
n5 = N4 * n4 / N5;
Print["n5 = N4 n4/N5 = ", n5, " rpm"];

a = m;
phi = N[Pi] / 9;
Print["====="];
Print["=== exterior gears: 1-2 ==="];
rb1 = r1 Cos[phi];
rb2 = r2 Cos[phi];
ra1 = r1 + a;
ra2 = r2 + a;
Print["ra1 = ", ra1, " mm"];
Print["ra2 = ", ra2, " mm"];
c12 = r1 + r2;
Print["c12 = ", c12, " mm"];
ramax1 = Sqrt[rb1^2 + c12^2 * Sin[phi]^2];
ramax2 = Sqrt[rb2^2 + c12^2 * Sin[phi]^2];
Print["ramax1 = ", ramax1, " mm"];
Print["ramax2 = ", ramax2, " mm"];
If[ramax1 > ra1, Print["ramax1>ra1"], Print["Interference gear 1: ramax1<ra1"]];
If[ramax2 > ra2, Print["ramax2>ra2"], Print["Interference gear 2: ramax2<ra2"]];
If[ramax2 > ra2 && ramax1 > ra1, Print["No interference"], Print["Interference 1-2"]];
CR12 = (Sqrt[ra1^2 - rb1^2] + Sqrt[ra2^2 - rb2^2] - c12 Sin[phi]) / (N[Pi] m Cos[phi]);
Print["Contact Ratio CR 1-2 =", CR12];

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r1 = 140 mm
r2 = 105 mm
r3 = 350 mm
r4 = 80 mm
r5 = 325 mm
N3 = 70
N5 = 65
n2 = - N1 n1/N2 = -493.333 rpm
n4 = n2 = -493.333 rpm
n5 = N4 n4/N5 = -121.436 rpm
=====
=== exterior gears: 1-2 ===
ra1 = 150 mm
ra2 = 115 mm
c12 = 245 mm
ramax1 = 155.977 mm
ramax2 = 129.448 mm
ramax1>ra1
ramax2>ra2
No interference
Contact Ratio CR 1-2 =1.60357

Print["interference 2-3"];
c23 = r3 - r2;
rb2 = r2 Cos[phi];
rb3 = r3 Cos[phi];
ra2 = r2 + a;
ra3 = r3 - a;
Print["ra2=", ra2, " mm"];
Print["ra3=", ra3, " mm"];
ramax2 = Sqrt[rb2^2 + c23^2 * Sin[phi]^2];
ramax3 = Sqrt[rb3^2 + c23^2 * Sin[phi]^2];
Print["ramax3=", ramax3, " mm"];
Print["ramax2=", ramax2, " mm"];
If[ramax2 > ra2, Print["ramax2>ra2"], Print["Interference gear 2: ramax2<ra2"]];
If[ramax3 < ra3, Print["ramax3<ra3"], Print["Interference gear 3: ramax3>ra3"]];
CR23 = (Sqrt[ra2^2 - rb2^2] - Sqrt[ra3^2 - rb3^2] + c23 * Sin[phi]) / (N[Pi] * m * Cos[phi]);
Print["CR23=", CR23];

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interference 2-3  
ra2=115 mm  
ra3=340 mm  
ramax3=339.399 mm  
ramax2=129.448 mm  
ramax2>ra2  
ramax3<ra3  
CR23=1.91971
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A contact ratio between 1 and 2 means that part of the time two pairs of teeth are in contact and during the remaining time one pair is in contact. A ratio between 2 and 3 means 2 or 3 pairs of teeth are always in contact. Such a high contact ratio generally is not obtained with external spur gears, but can be developed in the meshing of an internal and external spur gear pair or specially designed nonstandard external spur gears.