

CoroMill® 300

Light cutting face and profile milling cutters

Application

- Full slot milling
- Face milling
- Ramping
- Profiling
- Pocket milling

ISO application area:



Benefits and features

- Universal product with a wide application window
- Large assortment covering many applications
- Cutters with positive design have light cutting action and generates low cutting forces, which allows for extra close pitched face mill versions with small inserts for high productivity at high speeds combined with high table feeds
- End mills with great accessibility and cutting action in all feed directions for multi-axis machining of complicated forms

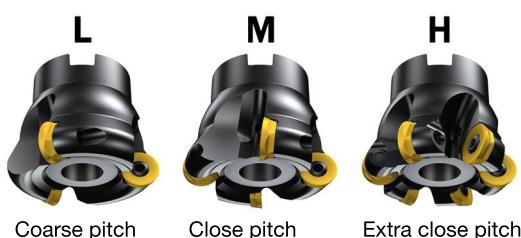
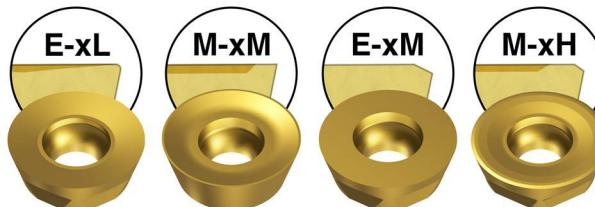
www.sandvik.coromant.com/coromill300

Couplings

- Coromant Capto®
- Arbor
- Cylindrical shank
- Weldon
- Coromant EH
- Threaded couplings and grades for all materials

Inserts

- Insert geometries and grades for all materials



Specific insert indexing solution for size 20 inserts prevents insert movement and enables all cutting edges to be utilized.



I83



I90



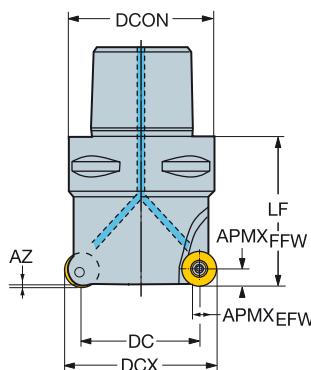
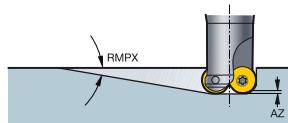
N6

Tailor Made

CoroMill® 300 face milling cutter

Coromant Capto® - Internal coolant supply

Positive design



| DC | CZC _{MS} | APMX _{EFW} | APMX _{FFW} | RMPX | AZ | CNSC | Ordering code | Dimensions, mm | | | | | CICT | MIID | | |
|------|-------------------|---------------------|---------------------|-------|--------|------|---------------|----------------|------|-----------------|------|------|------|-------|---------------|----------------|
| | | | | | | | | DCON | DCX | BD _I | LF | (NM) | (KG) | | | |
| 23.0 | 12 | C3 | 9.0 | 6.00 | 10.50° | 3.0 | 3 | 32.0 | 35.0 | 28.3 | 43.0 | 3.0 | 0.36 | 32900 | 3 R300-1240.. | |
| | 12 | C3 | 9.0 | 6.00 | 10.50° | 3.0 | 3 | 32.0 | 35.0 | 28.3 | 43.0 | 3.0 | 0.30 | 32900 | 4 R300-1240.. | |
| 25.0 | 10 | C3 | 7.5 | 5.00 | 7.00° | 2.3 | 3 | 4 | 32.0 | 35.0 | 29.1 | 40.0 | 3.0 | 0.36 | 43200 | 4 R300-1032.. |
| 27.0 | 08 | C3 | 6.0 | 4.00 | 4.00° | 1.9 | 3 | 4 | 32.0 | 35.0 | 30.3 | 40.0 | 1.2 | 0.31 | 33800 | 4 R300-0828.. |
| | 08 | C3 | 6.0 | 4.00 | 4.00° | 1.9 | 3 | 5 | 32.0 | 35.0 | 30.3 | 40.0 | 1.2 | 0.31 | 33800 | 5 R300-0828.. |
| 30.0 | 12 | C4 | 9.0 | 6.00 | 7.50° | 3.0 | 3 | 3 | 40.0 | 42.0 | 35.3 | 50.0 | 3.0 | 0.60 | 28300 | 3 R300-1240.. |
| | 12 | C4 | 9.0 | 6.00 | 7.50° | 3.0 | 3 | 4 | 40.0 | 42.0 | 35.3 | 50.0 | 3.0 | 0.58 | 28300 | 4 R300-1240.. |
| 32.0 | 10 | C4 | 7.5 | 5.00 | 5.00° | 2.3 | 3 | 5 | 40.0 | 42.0 | 36.1 | 50.0 | 3.0 | 0.58 | 37200 | 5 R300-1032.. |
| 34.0 | 08 | C4 | 6.0 | 4.00 | 3.00° | 1.9 | 3 | 6 | 40.0 | 42.0 | 37.3 | 50.0 | 1.2 | 0.49 | 29800 | 6 R300-0828.. |
| 36.0 | 16 | C5 | 12.0 | 8.00 | 7.00° | 3.8 | 3 | 4 | 50.0 | 52.0 | 40.9 | 60.0 | 5.0 | 1.04 | 20600 | 4 R300-1648.. |
| | 16 | C5 | 12.0 | 8.00 | 7.00° | 3.8 | 3 | 5 | 50.0 | 52.0 | 40.9 | 60.0 | 5.0 | 1.04 | 20600 | 5 R300-1648.. |
| 40.0 | 12 | C5 | 9.0 | 6.00 | 5.00° | 3.0 | 3 | 4 | 50.0 | 52.0 | 45.3 | 50.0 | 3.0 | 0.98 | 24400 | 4 R300-1240.. |
| | 12 | C5 | 9.0 | 6.00 | 5.00° | 3.0 | 3 | 5 | 50.0 | 52.0 | 45.3 | 50.0 | 3.0 | 0.99 | 24000 | 5 R300-1240.. |
| 44.0 | 08 | C5 | 6.0 | 4.00 | 2.00° | 1.9 | 3 | 8 | 50.0 | 52.0 | 47.3 | 50.0 | 1.2 | 1.00 | 26100 | 8 R300-0828.. |
| 46.0 | 20 | C6 | 15.0 | 10.00 | 9.40° | 6.0 | 3 | 4 | 63.0 | 66.0 | 80.0 | 7.5 | 7.5 | 1.88 | 18478 | 4 R300-2060.. |
| | 20 | C6 | 15.0 | 10.00 | 9.40° | 6.0 | 3 | 5 | 63.0 | 66.0 | 80.0 | 7.5 | 1.83 | 18478 | 5 R300-2060.. | |
| 50.0 | 16 | C6 | 12.0 | 8.00 | 4.50° | 3.8 | 3 | 5 | 63.0 | 66.0 | 54.9 | 60.0 | 5.0 | 1.77 | 17600 | 5 R300-1648.. |
| | 16 | C6 | 12.0 | 8.00 | 4.50° | 3.8 | 3 | 6 | 63.0 | 66.0 | 54.9 | 60.0 | 5.0 | 1.75 | 17600 | 6 R300-1648.. |
| 54.0 | 12 | C6 | 9.0 | 6.00 | 3.50° | 3.0 | 3 | 5 | 63.0 | 66.0 | 59.3 | 50.0 | 3.0 | 1.65 | 21700 | 5 R300-1240.. |
| | 12 | C6 | 9.0 | 6.00 | 3.50° | 3.0 | 3 | 7 | 63.0 | 66.0 | 59.3 | 50.0 | 3.0 | 1.67 | 21700 | 7 R300-1240.. |
| 58.0 | 08 | C6 | 6.0 | 4.00 | 1.50° | 1.9 | 3 | 10 | 63.0 | 66.0 | 61.3 | 50.0 | 1.2 | 1.65 | 23100 | 10 R300-0828.. |
| 60.0 | 20 | C6 | 15.0 | 10.00 | 6.70° | 6.0 | 3 | 5 | 63.0 | 80.0 | 80.0 | 7.5 | 2.24 | 15622 | 5 R300-2060.. | |
| | 20 | C6 | 15.0 | 10.00 | 6.70° | 6.0 | 3 | 6 | 63.0 | 80.0 | 80.0 | 7.5 | 2.20 | 15622 | 6 R300-2060.. | |
| 64.0 | 16 | C6 | 12.0 | 8.00 | 3.50° | 3.8 | 3 | 5 | 63.0 | 80.0 | 68.9 | 60.0 | 5.0 | 2.02 | 15400 | 5 R300-1648.. |
| | 16 | C6 | 12.0 | 8.00 | 3.50° | 3.8 | 3 | 7 | 63.0 | 80.0 | 68.9 | 60.0 | 5.0 | 2.02 | 15400 | 7 R300-1648.. |
| 68.0 | 12 | C6 | 9.0 | 6.00 | 2.50° | 3.0 | 3 | 6 | 63.0 | 80.0 | 73.3 | 50.0 | 3.0 | 1.82 | 18900 | 6 R300-1240.. |
| | 12 | C6 | 9.0 | 6.00 | 2.50° | 3.0 | 3 | 8 | 63.0 | 80.0 | 59.3 | 50.0 | 3.0 | 1.72 | 18900 | 8 R300-1240.. |
| 72.0 | 08 | C6 | 6.0 | 4.00 | 1.00° | 1.9 | 3 | 12 | 63.0 | 80.0 | 75.3 | 50.0 | 1.2 | 1.84 | 20500 | 12 R300-0828.. |
| 80.0 | 20 | C8 | 15.0 | 10.00 | 4.80° | 6.0 | 3 | 6 | 80.0 | 100.0 | 80.0 | 7.5 | 3.72 | 12843 | 6 R300-2060.. | |
| | 20 | C8 | 15.0 | 10.00 | 4.80° | 6.0 | 3 | 7 | 80.0 | 100.0 | 80.0 | 7.5 | 3.48 | 12843 | 7 R300-2060.. | |

| | Spare parts |
|----|--------------|
| | Insert screw |
| 08 | 5513 020-56 |
| 10 | 5513 020-09 |
| 12 | 5513 020-09 |
| 16 | 5513 020-50 |
| 20 | 5513 020-31 |

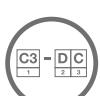
For complete list of spare parts, see www.sandvik.coromant.com



N22



N6



N9

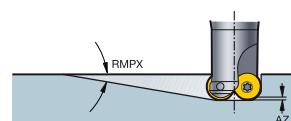


N15

CoroMill® 300 face milling cutter

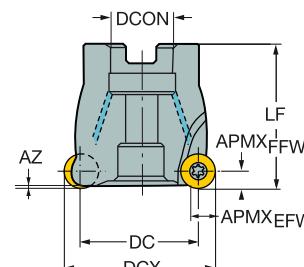
Arbor - Internal coolant supply

Positive design



STDNO

ISO 6462:2011



| | | | | | | | | Dimensions, mm | | | | | | | | | | | |
|-------|-------------------|---------------------|---------------------|-------|-------|------|---------------|----------------|-----------------|------|------|-------|-------|-------|------|-------------|------|-------------|-------------|
| DC | CZC _{MS} | APMX _{EFW} | APMX _{FFW} | RPMX | AZ | CNSC | Ordering code | DCON | ISO | DBC | DCX | LF | (NM) | (KG) | RPMX | ICT | MIID | | |
| | | | | | | | | 16.0 | A | 40.0 | 40.0 | 1.2 | 0.44 | 30800 | 5 | R300-0828.. | | | |
| 32.0 | 08 | 16 | 6.0 | 4.00 | 3.50° | 1.9 | 1 | 5 | R300-040Q16-08M | 16.0 | A | 40.0 | 40.0 | 1.2 | 0.44 | 30800 | 5 | R300-0828.. | |
| | 08 | 16 | 6.0 | 4.00 | 3.50° | 1.9 | 1 | 6 | R300-040Q16-08H | 16.0 | A | 40.0 | 40.0 | 1.2 | 0.44 | 30800 | 6 | R300-0828.. | |
| 38.0 | 12 | 22 | 9.0 | 6.00 | 5.50° | 3.0 | 1 | 4 | R300-050Q22-12M | 22.0 | A | 50.0 | 50.0 | 3.0 | 0.79 | 25000 | 4 | R300-1240.. | |
| | 12 | 22 | 9.0 | 6.00 | 5.50° | 3.0 | 1 | 5 | R300-050Q22-12H | 22.0 | A | 50.0 | 50.0 | 3.0 | 0.70 | 25000 | 5 | R300-1240.. | |
| 40.0 | 12 | 22 | 9.0 | 6.00 | 5.00° | 3.0 | 1 | 4 | R300-052Q22-12M | 22.0 | A | 52.0 | 50.0 | 3.0 | 0.79 | 24400 | 4 | R300-1240.. | |
| | 12 | 22 | 9.0 | 6.00 | 5.00° | 3.0 | 1 | 5 | R300-052Q22-12H | 22.0 | A | 52.0 | 50.0 | 3.0 | 0.70 | 24400 | 5 | R300-1240.. | |
| 42.0 | 08 | 22 | 6.0 | 4.00 | 2.50° | 1.9 | 1 | 8 | R300-050Q22-08H | 22.0 | A | 50.0 | 50.0 | 1.2 | 0.83 | 26700 | 8 | R300-0828.. | |
| 44.0 | 08 | 22 | 6.0 | 4.00 | 2.00° | 1.9 | 1 | 8 | R300-052Q22-08H | 22.0 | A | 52.0 | 50.0 | 1.2 | 0.85 | 26100 | 8 | R300-0828.. | |
| 47.0 | 16 | 22 | 12.0 | 8.00 | 5.00° | 3.8 | 1 | 4 | R300-063Q22-16M | 22.0 | A | 63.0 | 50.0 | 5.0 | 0.72 | 18200 | 4 | R300-1648.. | |
| | 16 | 22 | 12.0 | 8.00 | 5.00° | 3.8 | 1 | 6 | R300-063Q22-16H | 22.0 | A | 63.0 | 50.0 | 5.0 | 0.86 | 18200 | 6 | R300-1648.. | |
| 51.0 | 12 | 22 | 9.0 | 6.00 | 3.50° | 3.0 | 1 | 4 | R300-063Q22-12L | 22.0 | A | 63.0 | 50.0 | 3.0 | 0.97 | 22100 | 4 | R300-1240.. | |
| | 12 | 22 | 9.0 | 6.00 | 3.50° | 3.0 | 1 | 5 | R300-063Q22-12M | 22.0 | A | 63.0 | 50.0 | 3.0 | 0.80 | 22100 | 5 | R300-1240.. | |
| | 12 | 22 | 9.0 | 6.00 | 3.50° | 3.0 | 1 | 7 | R300-063Q22-12H | 22.0 | A | 63.0 | 50.0 | 3.0 | 0.77 | 22100 | 7 | R300-1240.. | |
| 55.0 | 08 | 22 | 6.0 | 4.00 | 1.50° | 1.9 | 1 | 10 | R300-063Q22-08H | 22.0 | A | 63.0 | 50.0 | 1.2 | 0.82 | 23700 | 10 | R300-0828.. | |
| 60.0 | 20 | 27 | 15.0 | 10.00 | 6.70° | 6.0 | 1 | 5 | R300-080Q27-20M | 27.0 | A | 80.0 | 50.0 | 7.5 | 1.11 | 15622 | 5 | R300-2060.. | |
| | 20 | 27 | 15.0 | 10.00 | 6.70° | 6.0 | 1 | 6 | R300-080Q27-20H | 27.0 | A | 80.0 | 50.0 | 7.5 | 1.07 | 15622 | 6 | R300-2060.. | |
| 64.0 | 16 | 27 | 12.0 | 8.00 | 3.50° | 3.8 | 1 | 5 | R300-080Q27-16M | 27.0 | A | 80.0 | 50.0 | 5.0 | 0.98 | 15400 | 5 | R300-1648.. | |
| | 16 | 27 | 12.0 | 8.00 | 3.50° | 3.8 | 1 | 7 | R300-080Q27-16H | 27.0 | A | 80.0 | 50.0 | 5.0 | 1.15 | 15400 | 7 | R300-1648.. | |
| 68.0 | 12 | 27 | 9.0 | 6.00 | 2.50° | 3.0 | 1 | 6 | R300-080Q27-12M | 27.0 | A | 80.0 | 50.0 | 3.0 | 1.16 | 18900 | 6 | R300-1240.. | |
| | 12 | 27 | 9.0 | 6.00 | 2.50° | 3.0 | 1 | 8 | R300-080Q27-12H | 27.0 | A | 80.0 | 50.0 | 3.0 | 1.06 | 18900 | 8 | R300-1240.. | |
| 72.0 | 08 | 27 | 6.0 | 4.00 | 1.00° | 1.9 | 1 | 12 | R300-080Q27-08H | 27.0 | A | 80.0 | 50.0 | 1.2 | 1.31 | 20500 | 12 | R300-0828.. | |
| 80.0 | 20 | 32 | 15.0 | 10.00 | 4.80° | 6.0 | 1 | 5 | R300-100Q32-20L | 32.0 | A | 100.0 | 63.0 | 7.5 | 2.46 | 12843 | 5 | R300-2060.. | |
| | 20 | 32 | 15.0 | 10.00 | 4.80° | 6.0 | 1 | 6 | R300-100Q32-20M | 32.0 | A | 100.0 | 63.0 | 7.5 | 2.40 | 12843 | 6 | R300-2060.. | |
| | 20 | 32 | 15.0 | 10.00 | 4.80° | 6.0 | 1 | 7 | R300-100Q32-20H | 32.0 | A | 100.0 | 63.0 | 7.5 | 2.41 | 12843 | 7 | R300-2060.. | |
| 84.0 | 16 | 32 | 12.0 | 8.00 | 2.50° | 3.8 | 0 | 6 | R300-100Q32-16M | 32.0 | A | 100.0 | 50.0 | 5.0 | 1.68 | 13300 | 6 | R300-1648.. | |
| | 16 | 32 | 12.0 | 8.00 | 2.50° | 3.8 | 0 | 8 | R300-100Q32-16H | 32.0 | A | 100.0 | 50.0 | 5.0 | 1.67 | 13300 | 8 | R300-1648.. | |
| 105.0 | 20 | 40 | 15.0 | 10.00 | 3.50° | 6.0 | 0 | 7 | R300-125Q40-20M | 40.0 | B | 125.0 | 63.0 | 7.5 | 3.03 | 10768 | 7 | R300-2060.. | |
| | 20 | 40 | 15.0 | 10.00 | 3.50° | 6.0 | 0 | 9 | R300-125Q40-20H | 40.0 | B | 125.0 | 63.0 | 7.5 | 2.93 | 10768 | 9 | R300-2060.. | |
| 109.0 | 16 | 32 | 12.0 | 8.00 | 1.50° | 3.8 | 0 | 8 | R300-125Q32-16M | 32.0 | A | 125.0 | 63.0 | 5.0 | 2.55 | 11900 | 8 | R300-1648.. | |
| | 16 | 32 | 12.0 | 8.00 | 1.50° | 3.8 | 0 | 10 | R300-125Q32-16H | 32.0 | A | 125.0 | 63.0 | 5.0 | 2.88 | 11900 | 10 | R300-1648.. | |
| 140.0 | 20 | 40 | 15.0 | 10.00 | 2.00° | 6.0 | 0 | 9 | R300-160Q40-20M | 40.0 | B | 160.0 | 63.0 | 7.5 | 4.93 | 9106 | 9 | R300-2060.. | |
| | 20 | 40 | 15.0 | 10.00 | 2.00° | 6.0 | 0 | 11 | R300-160Q40-20H | 40.0 | B | 160.0 | 63.0 | 7.5 | 4.83 | 9106 | 11 | R300-2060.. | |
| 180.0 | 20 | 60 | 15.0 | 10.00 | 1.20° | 6.0 | 0 | 11 | R300-200Q60-20M | 60.0 | C | 101.6 | 200.0 | 63.0 | 7.5 | 11.20 | 7799 | 11 | R300-2060.. |

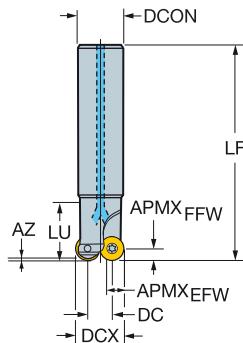
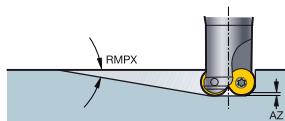
| Spare parts | |
|-------------|--------------|
| | Insert screw |
| 08 | 5513 020-56 |
| 12 | 5513 020-09 |
| 16 | 5513 020-50 |
| 20 | 5513 020-31 |

For complete list of spare parts, see www.sandvik.coromant.com

CoroMill® 300 face milling cutter

Cylindrical shank - Internal coolant supply

Positive design



| Dimensions, mm | | | | | | | | | | | | | | | | | | |
|----------------|-------------------|---------------------|---------------------|------|--------|------|---------------|------|-----------------|-----------------|------|------|-------|------|------|------|---|-------------|
| DC | CZC _{MS} | APMX _{EFW} | APMX _{FFW} | RMPX | AZ | CNSC | Ordering code | DCON | DCX | BD _I | LF | (NM) | (KG) | RPMX | CICT | MIID | | |
| 15.0 | 10 | 20 | 7.5 | 5.00 | 13.50° | 2.3 | 1 | 2 | R300-025A20-10M | 20.0 | 25.0 | 19.1 | 150.0 | 3.0 | 0.50 | 2850 | 2 | R300-1032.. |
| 17.0 | 08 | 20 | 6.0 | 4.00 | 8.00° | 1.9 | 1 | 3 | R300-025A20-08M | 20.0 | 25.0 | 20.3 | 150.0 | 1.2 | 0.44 | 7200 | 3 | R300-0828.. |
| 20.0 | 12 | 25 | 9.0 | 6.00 | 12.00° | 3.0 | 1 | 2 | R300-032A25-12M | 25.0 | 32.0 | 25.3 | 190.0 | 3.0 | 0.82 | 8900 | 2 | R300-1240.. |
| | 12 | 25 | 9.0 | 6.00 | 12.00° | 3.0 | 1 | 3 | R300-032A25-12H | 25.0 | 32.0 | 25.3 | 150.0 | 3.0 | 0.65 | 3550 | 3 | R300-1240.. |
| 22.0 | 10 | 25 | 7.5 | 5.00 | 7.50° | 2.3 | 1 | 3 | R300-032A25-10M | 25.0 | 32.0 | 26.1 | 190.0 | 3.0 | 0.82 | 1470 | 3 | R300-1032.. |
| | 10 | 25 | 7.5 | 5.00 | 7.50° | 2.3 | 1 | 4 | R300-032A25-10H | 25.0 | 32.0 | 26.1 | 150.0 | 3.0 | 0.70 | 2850 | 4 | R300-1032.. |
| 24.0 | 08 | 25 | 6.0 | 4.00 | 5.00° | 1.9 | 1 | 4 | R300-032A25-08M | 25.0 | 32.0 | 27.3 | 190.0 | 1.2 | 0.79 | 9000 | 4 | R300-0828.. |
| | 08 | 25 | 6.0 | 4.00 | 5.00° | 1.9 | 1 | 5 | R300-032A25-08H | 25.0 | 32.0 | 27.3 | 150.0 | 1.2 | 0.63 | 3590 | 5 | R300-0828.. |
| 28.0 | 12 | 32 | 9.0 | 6.00 | 8.00° | 3.0 | 1 | 3 | R300-040A32-12M | 32.0 | 40.0 | 33.3 | 250.0 | 3.0 | 1.78 | 1140 | 3 | R300-1240.. |
| | 12 | 32 | 9.0 | 6.00 | 8.00° | 3.0 | 1 | 4 | R300-040A32-12H | 32.0 | 40.0 | 33.3 | 150.0 | 3.0 | 1.01 | 2850 | 4 | R300-1240.. |

| Spare parts | |
|-------------|----------------|
| DC | Insert screw |
| 17.00-24.00 | 08 5513 020-56 |
| 15.00 | 10 5513 020-43 |
| 22.00 | 10 5513 020-09 |
| 20.00-28.00 | 12 5513 020-09 |

For complete list of spare parts, see www.sandvik.coromant.com



I90



L4



N22



N6



N9

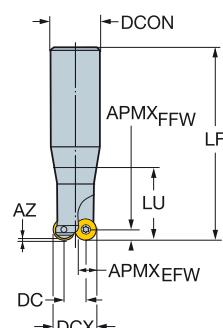
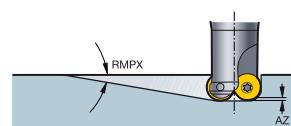


N15

CoroMill® 300 face milling cutter

Cylindrical shank

Neutral design



| | | | | | | | Dimensions, mm | | | | | | | | | | | |
|------|-------|---------------------|---------------------|------|--------|---------------|----------------|------------------|-----------------|-------|------|-------|------|-------|------|-------------|---|-------------|
| DC | CZCMS | APMX _{EFW} | APMX _{FFW} | RMPX | AZ | Ordering code | DCON | DCX | BD ₁ | LF | LU | NM | KG | RPMX | CICT | MIID | | |
| | | | | | | | 16.0 | 10.0 | 9.1 | 160.0 | 25.4 | 0.6 | 0.32 | 15900 | 2 | R300-0517.. | | |
| 5.0 | 05 | 16 | 3.8 | 2.50 | 20.00° | 1.8 | 2 | R300-010A16L-05L | 16.0 | 12.0 | 10.4 | 200.0 | 37.8 | 0.9 | 0.38 | 8900 | 2 | R300-0720.. |
| | 07 20 | 16 | 5.3 | 3.50 | 20.00° | 1.0 | 2 | R300-012A16L-07L | 20.0 | 15.0 | 13.4 | 200.0 | 43.8 | 0.9 | 0.54 | 12700 | 2 | R300-0724.. |
| 8.0 | 07 24 | 20 | 5.3 | 3.50 | 20.00° | 0.9 | 2 | R300-015A20L-07L | 20.0 | 16.0 | 14.1 | 200.0 | 51.9 | 1.2 | 0.54 | 12700 | 2 | R300-0828.. |
| | 08 | 20 | 6.0 | 4.00 | 20.00° | 1.8 | 2 | R300-016A20L-08L | 25.0 | 20.0 | 18.1 | 250.0 | 48.8 | 3.0 | 1.16 | 8100 | 2 | R300-1032.. |
| 10.0 | 10 | 25 | 7.5 | 5.00 | 20.00° | 3.4 | 2 | R300-020A25L-10L | 25.0 | 24.0 | 22.1 | 250.0 | 76.0 | 3.0 | 1.20 | 8900 | 2 | R300-1240.. |
| | 12.0 | 25 | 9.0 | 6.00 | 20.00° | 2.7 | 2 | R300-024A25L-12L | 32.0 | 25.0 | 23.1 | 250.0 | 42.9 | 3.0 | 1.69 | 15800 | 2 | R300-1240.. |
| 13.0 | 12 | 32 | 9.0 | 6.00 | 20.00° | 1.4 | 2 | R300-025A32L-12L | 32.0 | 32.0 | 29.0 | 250.0 | 72.2 | 5.0 | 1.76 | 8700 | 2 | R300-1648.. |
| | 16.0 | 16 | 32 | 12.0 | 8.00 | 20.00° | 4.8 | R300-032A32L-16L | 32.0 | 32.0 | 29.0 | 250.0 | 72.2 | 5.0 | 1.76 | 8700 | 2 | R300-1648.. |

| | | Spare parts |
|-------------|-------|--------------|
| DC | | Insert screw |
| 5.00 | 05 | 5513 020-40 |
| 5.00 | 07 20 | 5513 020-41 |
| 8.00 | 07 24 | 5513 020-42 |
| 8.00 | 08 | 5513 020-36 |
| 10.00 | 10 | 5513 020-43 |
| 12.00-13.00 | 12 | 5513 020-39 |
| 16.00 | 16 | 5513 020-50 |

For complete list of spare parts, see www.sandvik.coromant.com



I90



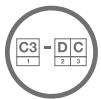
L4



N22



N6

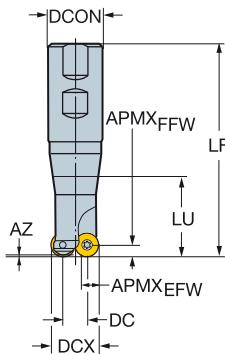
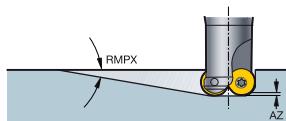


N9

CoroMill® 300 face milling cutter

Weldon

Neutral design



| DC | CZC _{MS} | APMX _{EFW} | APMX _{FFW} | RMPX | AZ | Ordering code | Dimensions, mm | | | | | CICT | MIID | | | | |
|------|-------------------|---------------------|---------------------|------|--------|---------------|----------------|------------------|-----------------|------|------|-------|------|------|------|-------|---------------|
| | | | | | | | DCON | DCX | BD ₁ | LF | LU | (NM) | (KG) | RPMX | | | |
| 5.0 | 07 20 | 16 | 5.3 | 3.50 | 20.00° | 1.0 | 2 | R300-012B16L-07L | 16.0 | 12.0 | 10.4 | 109.0 | 37.6 | 0.9 | 0.24 | 34000 | 2 R300-0720.. |
| 8.0 | 07 24 | 20 | 5.3 | 3.50 | 20.00° | 0.9 | 2 | R300-015B20L-07L | 20.0 | 15.0 | 13.4 | 131.0 | 43.6 | 0.9 | 0.38 | 25000 | 2 R300-0724.. |
| | 08 | 20 | 6.0 | 4.00 | 20.00° | 1.8 | 2 | R300-016B20L-08L | 20.0 | 16.0 | 14.1 | 131.0 | 51.6 | 1.2 | 0.38 | 24700 | 2 R300-0828.. |
| 10.0 | 10 | 25 | 7.5 | 5.00 | 20.00° | 3.4 | 2 | R300-020B25L-10L | 25.0 | 20.0 | 18.1 | 137.0 | 48.4 | 3.0 | 0.58 | 34000 | 2 R300-1032.. |
| 13.0 | 12 | 32 | 9.0 | 6.00 | 20.00° | 1.4 | 2 | R300-025B32L-12L | 32.0 | 25.0 | 23.1 | 141.0 | 42.8 | 3.0 | 0.82 | 20200 | 2 R300-1240.. |

| Spare parts | |
|-------------|-------------------|
| DC | Insert screw |
| 5.00 | 07 20 5513 020-41 |
| 8.00 | 07 24 5513 020-42 |
| 8.00 | 08 5513 020-36 |
| 10.00 | 10 5513 020-43 |
| 13.00 | 12 5513 020-39 |

For complete list of spare parts, see www.sandvik.coromant.com



I90



L4



N22



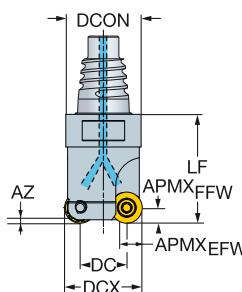
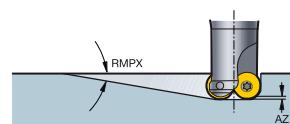
N6



N9

CoroMill® 300 face milling cutter

Coromant EH - Internal coolant supply



Neutral design

| DC | CZCMS | APMX _{EFW} | APMX _{FFW} | RMPX | AZ | CNSC | Ordering code | Dimensions, mm | | | | | | CICT | MIID | | |
|-------|-------|---------------------|---------------------|--------|--------|------|---------------|-----------------|-----------------|-----------------|------|------|------|------|-------|---------------|---------------|
| | | | | | | | | DCON | DCX | BD ₁ | LF | (NM) | (KG) | RPMX | | | |
| 5.0 | 05 | E10 | 3.8 | 2.50 | 20.00° | 1.8 | 1 | 2 | R300-10EH10-05L | 9.7 | 10.0 | 9.0 | 20.0 | 0.6 | 0.06 | 20000 | 2 R300-0517.. |
| 07 20 | E12 | 5.3 | 3.50 | 20.00° | 1.0 | 1 | 2 | R300-12EH12-07L | 11.7 | 12.0 | 10.3 | 25.0 | 0.9 | 0.07 | 20000 | 2 R300-0720.. | |
| 7.0 | 05 | E12 | 3.8 | 2.50 | 10.00° | 1.0 | 1 | 3 | R300-12EH12-05M | 11.7 | 12.0 | 11.0 | 20.0 | 0.6 | 0.10 | 20000 | 3 R300-0517.. |
| 8.0 | 07 20 | E12 | 5.3 | 3.50 | 20.00° | 1.1 | 1 | 3 | R300-15EH12-07M | 11.7 | 15.0 | 13.3 | 25.0 | 0.9 | 0.10 | 20000 | 3 R300-0720.. |
| 07 24 | E12 | 5.3 | 3.50 | 20.00° | 0.9 | 1 | 2 | R300-15EH12-07L | 11.7 | 15.0 | 13.3 | 25.0 | 0.9 | 0.10 | 20000 | 2 R300-0724.. | |
| 08 | E16 | 6.0 | 4.00 | 20.00° | 1.8 | 1 | 2 | R300-16EH16-08L | 15.5 | 16.0 | 14.0 | 30.0 | 1.2 | 0.11 | 20000 | 2 R300-0828.. | |
| 9.0 | 07 20 | E16 | 5.3 | 3.50 | 15.00° | 0.9 | 1 | 3 | R300-16EH16-07M | 15.5 | 16.0 | 14.3 | 25.0 | 0.9 | 0.11 | 20000 | 3 R300-0720.. |
| 10.0 | 10 | E20 | 7.5 | 5.00 | 20.00° | 3.4 | 1 | 2 | R300-20EH20-10L | 19.3 | 20.0 | 18.0 | 35.0 | 3.0 | 0.12 | 20000 | 2 R300-1032.. |
| 12.0 | 08 | E20 | 6.0 | 4.00 | 12.00° | 1.5 | 1 | 3 | R300-20EH20-08M | 19.3 | 20.0 | 18.0 | 30.0 | 1.2 | 0.13 | 20000 | 3 R300-0828.. |
| 12 | E20 | 9.0 | 6.00 | 20.00° | 2.7 | 1 | 2 | R300-24EH20-12L | 19.3 | 24.0 | 22.0 | 35.0 | 3.0 | 0.17 | 15000 | 2 R300-1240.. | |
| 15.0 | 10 | E25 | 7.5 | 5.00 | 15.00° | 1.1 | 1 | 2 | R300-25EH25-10L | 24.2 | 25.0 | 23.0 | 35.0 | 3.0 | 0.20 | 15000 | 2 R300-1032.. |
| 10 | E25 | 7.5 | 5.00 | 15.00° | 1.3 | 1 | 3 | R300-25EH25-10M | 24.2 | 25.0 | 23.0 | 35.0 | 3.0 | 0.19 | 15000 | 3 R300-1032.. | |
| 16.0 | 16 | E25 | 12.0 | 8.00 | 20.00° | 4.8 | 1 | 2 | R300-32EH25-16L | 24.2 | 32.0 | 28.9 | 40.0 | 5.0 | 0.23 | 15000 | 2 R300-1648.. |
| 20.0 | 12 | E25 | 9.0 | 6.00 | 15.00° | 1.4 | 1 | 3 | R300-32EH25-12M | 24.2 | 32.0 | 30.0 | 35.0 | 3.0 | 0.21 | 15000 | 3 R300-1240.. |
| 22.0 | 10 | E25 | 7.5 | 5.00 | 10.00° | 1.7 | 1 | 4 | R300-32EH25-10H | 24.2 | 32.0 | 30.0 | 35.0 | 3.0 | 0.23 | 15000 | 4 R300-1032.. |

Positive design

| DC | CZCMS | APMX _{EFW} | APMX _{FFW} | RMPX | AZ | CNSC | Ordering code | Dimensions, mm | | | | | | CICT | MIID | | |
|------|-------|---------------------|---------------------|-------|-------|------|---------------|-----------------|-----------------|-----------------|------|------|------|------|-------|---------------|---------------|
| | | | | | | | | DCON | DCX | BD ₁ | LF | (NM) | (KG) | RPMX | | | |
| 17.0 | 08 | E25 | 6.0 | 4.00 | 5.00° | 0.6 | 1 | 3 | R300-25EH25-08M | 24.2 | 25.0 | 20.3 | 35.0 | 1.2 | 0.17 | 15000 | 3 R300-0828.. |
| 24.0 | 08 | E25 | 6.0 | 4.00 | 5.00° | 2.0 | 1 | 4 | R300-32EH25-08M | 24.2 | 32.0 | 27.3 | 35.0 | 1.2 | 0.21 | 15000 | 4 R300-0828.. |
| 08 | E25 | 6.0 | 4.00 | 5.00° | 2.0 | 1 | 5 | R300-32EH25-08H | 24.2 | 32.0 | 27.3 | 35.0 | 1.2 | 0.20 | 15000 | 5 R300-0828.. | |

Neutral design

| Spare parts | |
|-------------|--------------|
| DC | Insert screw |
| 5.0-7.00 | 05 |
| 5.00-9.00 | 07 20 |
| 8.00 | 07 24 |
| 8.00-12.00 | 08 |
| 10.00-22.00 | 10 |
| 12.00-20.00 | 12 |
| 16.00 | 16 |
| | 5513 020-40 |
| | 5513 020-41 |
| | 5513 020-42 |
| | 5513 020-36 |
| | 5513 020-43 |
| | 5513 020-39 |
| | 5513 020-50 |

Positive design

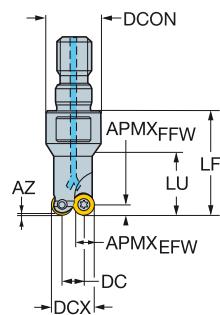
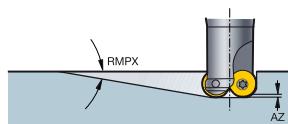
| Spare parts |
|-----------------------------|
| Insert screw 5513 020-56 |

For complete list of spare parts, see www.sandvik.coromant.com



CoroMill® 300 face milling cutter

Threaded coupling - Internal coolant supply



Neutral design

| | | | | | | | | Dimensions, mm | | | | | | | | | | |
|------|-------------------|---------------------|---------------------|--------|--------|------|---------------|----------------|----------------|-----------------|------|------|------|------|------|------|-------------|-------------|
| DC | CZC _{MS} | APMX _{EFW} | APMX _{FFW} | RMPX | AZ | CNSC | Ordering code | DCON | DCX | BD ₁ | LF | LU | (NM) | (KG) | RPMX | CICT | MIID | |
| | | | | | | | | 12.8 | 12.0 | 10.4 | 42.5 | 17.3 | 0.9 | 0.09 | 1000 | 2 | R300-0720.. | |
| 5.0 | 07 20 | M8 | 5.3 | 3.50 | 20.00° | 1.0 | 0 | 2 | R300-12T08-07L | 12.8 | 12.0 | 11.1 | 42.5 | 0.6 | 0.05 | 1000 | 3 | R300-0517.. |
| 7.0 | 05 | M8 | 3.8 | 2.50 | 10.00° | 1.0 | 0 | 3 | R300-12T08-05M | 12.8 | 15.0 | 13.4 | 42.5 | 0.9 | 0.10 | 1000 | 2 | R300-0724.. |
| 8.0 | 07 24 | M8 | 5.3 | 3.50 | 20.00° | 0.9 | 0 | 2 | R300-15T08-07L | 12.8 | 16.0 | 14.0 | 42.5 | 1.2 | 0.10 | 1000 | 2 | R300-0828.. |
| 8.0 | 08 | M8 | 6.0 | 4.00 | 20.00° | 1.8 | 0 | 2 | R300-16T08-08L | 17.8 | 20.0 | 18.1 | 49.5 | 3.0 | 0.09 | 1000 | 2 | R300-1032.. |
| 10.0 | 10 | M10 | 7.5 | 5.00 | 20.00° | 3.4 | 1 | 2 | R300-20T10-10L | 17.8 | 20.0 | 18.1 | 49.5 | 1.2 | 0.12 | 1000 | 3 | R300-0828.. |
| 12.0 | 08 | M10 | 6.0 | 4.00 | 12.00° | 1.5 | 1 | 3 | R300-20T10-08M | 17.8 | 20.0 | 18.1 | 49.5 | 3.0 | 0.18 | 1000 | 2 | R300-1240.. |
| 12.0 | 12 | M12 | 9.0 | 6.00 | 20.00° | 2.7 | 1 | 2 | R300-24T12-12L | 20.8 | 24.0 | 22.1 | 57.0 | 3.0 | 0.18 | 1000 | 2 | R300-1240.. |
| 15.0 | 10 | M12 | 7.5 | 5.00 | 15.00° | 1.1 | 1 | 2 | R300-25T12-10L | 20.8 | 25.0 | 23.1 | 57.0 | 3.0 | 0.16 | 1000 | 2 | R300-1032.. |
| 10 | M12 | 7.5 | 5.00 | 15.00° | 1.3 | 1 | 3 | R300-25T12-10M | 20.8 | 25.0 | 23.1 | 57.0 | 3.0 | 0.20 | 1000 | 3 | R300-1032.. | |
| 20.0 | 12 | M16 | 9.0 | 6.00 | 15.00° | 1.4 | 1 | 3 | R300-32T16-12M | 28.8 | 32.0 | 30.1 | 69.0 | 3.0 | 0.31 | 1000 | 3 | R300-1240.. |
| 22.0 | 10 | M16 | 7.5 | 5.00 | 10.00° | 1.7 | 1 | 4 | R300-32T16-10H | 28.8 | 32.0 | 30.1 | 69.0 | 3.0 | 0.33 | 1000 | 4 | R300-1032.. |
| 23.0 | 12 | M16 | 9.0 | 6.00 | 16.00° | 5.0 | 1 | 3 | R300-35T16-12M | 28.8 | 35.0 | 33.1 | 69.0 | 3.0 | 0.34 | 1000 | 3 | R300-1240.. |
| 25.0 | 10 | M16 | 7.5 | 5.00 | 10.00° | 3.6 | 1 | 4 | R300-35T16-10H | 28.8 | 35.0 | 33.1 | 69.0 | 3.0 | 0.38 | 1000 | 4 | R300-1032.. |
| 28.0 | 12 | M16 | 9.0 | 6.00 | 13.20° | 5.0 | 1 | 4 | R300-40T16-12M | 28.8 | 40.0 | 38.1 | 69.0 | 3.0 | 0.38 | 1000 | 4 | R300-1240.. |
| 30.0 | 10 | M16 | 7.5 | 5.00 | 8.30° | 3.6 | 1 | 5 | R300-40T16-10H | 28.8 | 40.0 | 38.1 | 69.0 | 3.0 | 0.40 | 1000 | 5 | R300-1032.. |
| 32.0 | 12 | M16 | 9.0 | 6.00 | 12.10° | 5.0 | 1 | 4 | R300-42T16-12M | 28.8 | 42.0 | 40.1 | 69.0 | 3.0 | 0.44 | 1000 | 4 | R300-1240.. |
| 32.0 | 10 | M16 | 7.5 | 5.00 | 7.70° | 3.6 | 1 | 5 | R300-42T16-10H | 28.8 | 42.0 | 40.1 | 69.0 | 3.0 | 0.41 | 1000 | 5 | R300-1032.. |

Positive design

| | | | | | | | | Dimensions, mm | | | | | | | | | | |
|------|-------------------|---------------------|---------------------|------|-------|------|---------------|----------------|----------------|-----------------|------|------|------|------|------|-------------|------|-------------|
| DC | CZC _{MS} | APMX _{EFW} | APMX _{FFW} | RMPX | AZ | CNSC | Ordering code | DCON | DCX | BD ₁ | LF | LU | (NM) | (KG) | RPMX | CICT | MIID | |
| | | | | | | | | 20.8 | 25.0 | 20.3 | 35.0 | 1.2 | 0.18 | 1000 | 3 | R300-0828.. | | |
| 17.0 | 08 | M12 | 6.0 | 4.00 | 8.00° | 1.9 | 1 | 3 | R300-25T12-08M | 28.8 | 32.0 | 27.3 | 45.0 | 1.2 | 0.30 | 1000 | 4 | R300-0828.. |
| 24.0 | 08 | M16 | 6.0 | 4.00 | 5.00° | 1.9 | 1 | 4 | R300-32T16-08M | 28.8 | 35.0 | 33.1 | 69.0 | 3.0 | 0.38 | 1000 | 5 | R300-0828.. |
| 24.0 | 08 | M16 | 6.0 | 4.00 | 5.00° | 1.9 | 1 | 5 | R300-32T16-08H | 28.8 | 32.0 | 27.3 | 45.0 | 1.2 | 0.30 | 1000 | 6 | R300-0828.. |
| 32.0 | 08 | M16 | 6.0 | 4.00 | 3.50° | 1.9 | 1 | 6 | R300-40T16-08H | 28.8 | 40.0 | 35.3 | 45.0 | 1.2 | 0.38 | 1000 | 6 | R300-0828.. |

Neutral design

| | | Spare parts |
|-------------|-------|--------------|
| DC | | Insert screw |
| 7.00 | 05 | 5513 020-40 |
| 5.00 | 07 20 | 5513 020-41 |
| 8.00 | 07 24 | 5513 020-42 |
| 8.00-12.00 | 08 | 5513 020-36 |
| 10.00-32.00 | 10 | 5513 020-43 |
| 12.00-30.00 | 12 | 5513 020-39 |

Positive design

| Spare parts | |
|--------------|-------------|
| Insert screw | 5513 020-56 |

For complete list of spare parts, see www.sandvik.coromant.com



N22



N6

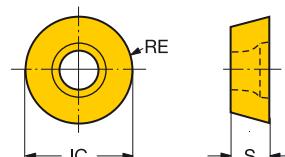


N9



N15

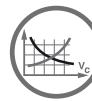
CoroMill® 300 insert for milling



| | | | P | M | K | N | S | H | Dimensions, mm |
|--------|----|--|--|--|--|--------------------------------------|--------------------------------------|--|----------------|
| | RE | Ordering code | 1010 1025 1030 1040 2030 2040 3040 4220 4230 4240 S30T | 1025 1030 1040 2030 2040 4240 S30T | 1010 1020 1025 3040 3330 4220 4240 H13A | 1025 1030 1040 2040 H13A | 1025 1030 1040 2040 H13A | 1010 1025 1030 1040 2030 2040 3040 4220 | IC S |
| Light | 08 | 4.00 R300-0828E-KL 4.00 R300-0828E-PL | ☆ ☆ | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | 8.0 2.78 |
| | 10 | 5.00 R300-1032E-KL 5.00 R300-1032E-PL | ☆ ☆ | ☆ ☆ | ☆ ☆ | ☆ ☆ | ☆ ☆ | ☆ ☆ | 10.0 3.18 |
| | 12 | 6.00 R300-1240E-ML 6.00 R300-1240E-PL | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ★ ★ | 12.0 3.97 |
| | 16 | 8.00 R300-1648E-ML 8.00 R300-1648E-PL | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ★ ★ | 16.0 4.76 |
| | 20 | 10.00 R300-2060E-ML 10.00 R300-2060E-PL | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ★ ★ | 20.0 6.48 |
| | 20 | 10.00 R300-2060E-ML 10.00 R300-2060E-PL | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ★ ★ | 20.0 6.48 |
| | 20 | 10.00 R300-2060E-ML 10.00 R300-2060E-PL | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ★ ★ | 20.0 6.48 |
| | 20 | 10.00 R300-2060E-ML 10.00 R300-2060E-PL | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ★ ★ | 20.0 6.48 |
| Medium | 08 | 4.00 R300-0828E-KM 4.00 R300-0828E-MM 4.00 R300-0828E-PM 4.00 R300-0828M-MM 4.00 R300-0828M-PM | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ☆ ☆ | 8.0 2.78 |
| | 10 | 5.00 R300-1032E-MM 5.00 R300-1032E-PM 5.00 R300-1032M-MM 5.00 R300-1032M-PM | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ☆ ☆ | 10.0 3.18 |
| | 12 | 6.00 R300-1240E-KM 6.00 R300-1240E-MM 6.00 R300-1240E-PM 6.00 R300-1240M-MM 6.00 R300-1240M-PM | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ★ ★ | 12.0 3.97 |
| | 16 | 8.00 R300-1648E-KM 8.00 R300-1648E-MM 8.00 R300-1648E-PM 8.00 R300-1648M-MM 8.00 R300-1648M-PM | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ★ ★ | 16.0 4.76 |
| | 20 | 10.00 R300-2060E-MM 10.00 R300-2060E-PM 10.00 R300-2060M-MM 10.00 R300-2060M-PM | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ★ ★ | 20.0 6.48 |
| | 20 | 10.00 R300-2060E-MM 10.00 R300-2060E-PM 10.00 R300-2060M-MM 10.00 R300-2060M-PM | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ★ ★ | 20.0 6.48 |
| | 20 | 10.00 R300-2060E-MM 10.00 R300-2060E-PM 10.00 R300-2060M-MM 10.00 R300-2060M-PM | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ★ ★ | 20.0 6.48 |
| | 20 | 10.00 R300-2060E-MM 10.00 R300-2060E-PM 10.00 R300-2060M-MM 10.00 R300-2060M-PM | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ★ ★ | 20.0 6.48 |
| Heavy | 08 | 4.00 R300-0828M-KH 4.00 R300-0828M-MH 4.00 R300-0828M-PH | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ☆ ☆ | 8.0 2.78 |
| | 10 | 5.00 R300-1032M-KH 5.00 R300-1032M-MH 5.00 R300-1032M-PH | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ☆ ☆ | 10.0 3.18 |
| | 12 | 6.00 R300-1240M-KH 6.00 R300-1240M-MH 6.00 R300-1240M-PH | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ☆ ☆ | 12.0 3.97 |
| | 16 | 8.00 R300-1648M-KH 8.00 R300-1648M-MH 8.00 R300-1648M-PH | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ☆ ☆ | 16.0 4.76 |
| | 20 | 10.00 R300-2060M-KH 10.00 R300-2060M-MH 10.00 R300-2060M-PH | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ★ ★ | 20.0 6.48 |
| | 20 | 10.00 R300-2060M-KH 10.00 R300-2060M-MH 10.00 R300-2060M-PH | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ★ ★ | 20.0 6.48 |
| | 20 | 10.00 R300-2060M-KH 10.00 R300-2060M-MH 10.00 R300-2060M-PH | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ★ ★ | 20.0 6.48 |
| | 20 | 10.00 R300-2060M-KH 10.00 R300-2060M-MH 10.00 R300-2060M-PH | ☆ ☆ | ☆ ☆ | ★ ★ | ☆ ☆ | ☆ ☆ | ★ ★ | 20.0 6.48 |



I83



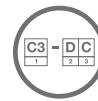
I146



I168



N22



N10