SEC-DNX(F) / DNH,DNHS Type

High Efficiency Face Milling Cutters for Cast Iron and Cast Steel

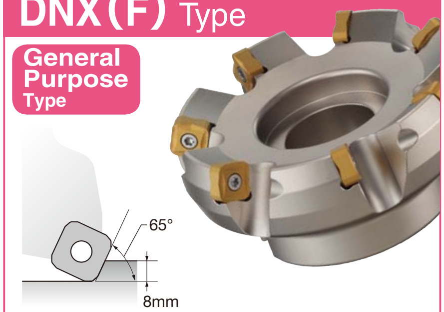
Characteristics

- Achieves high efficiency milling with a max. 8 mm depth of cut!
- Employs negative inserts with chipbreakers that have a strong cutting edge on the double negative type body! Economical, uses 8 corners!
- Supports general to high-efficiency high feed milling with three body types! Inserts can be shared on all types!

Negative inserts with a rake angle achieve low cutting force and high feed milling!!

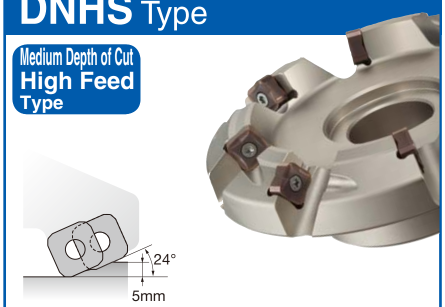
Series

DNX(F) Type — General Purpose Type



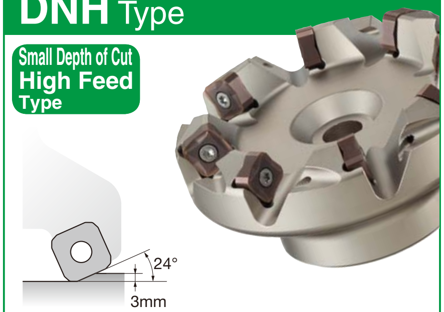
Max. Depth of Cut		8mm
Approach Angle		65°
Cutter	DNX 12000R(S) General Purpose Type	ø80 to ø250mm
	DNXF 12000R(S) General Purpose Fine Pitch Type	ø80 to ø160mm

DNHS Type — Medium Depth of Cut High Feed Type



Max. Depth of Cut		5mm
Approach Angle		24°
Cutter	DNHS 12000R Medium Depth of Cut High Feed Type	ø80 to ø160mm

DNH Type — Small Depth of Cut High Feed Type

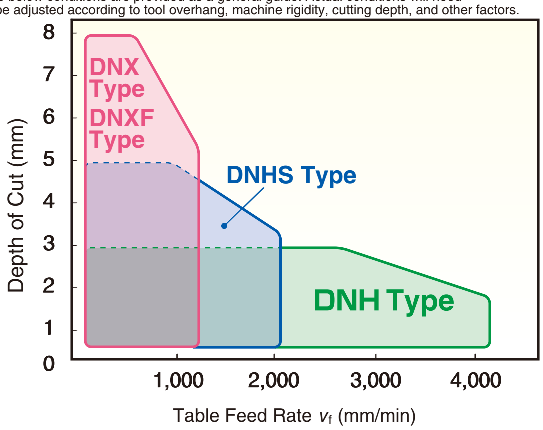


Max. Depth of Cut		3mm
Approach Angle		24°
Cutter	DNH 12000R Small Depth of Cut High Feed Type	ø80 to ø160mm

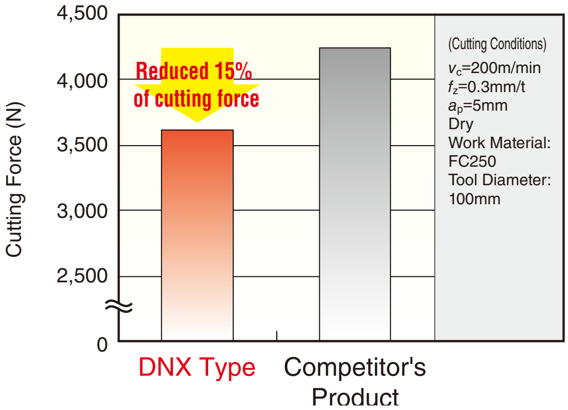
Application Range (Cast Iron)

Cut carbon steel at 20 to 30% reduction.

* The below conditions are provided as a general guide. Actual conditions will need to be adjusted according to tool overhang, machine rigidity, cutting depth, and other factors.



Performance Comparison



Recommended Cutting Conditions

DNX Type／DNXF Type

ISO	Work Material	Hardness	Cutting Speed v_c(m/min) Min.- **Optimum** -Max.	Feed Rate f_z(mm/t) Min.- **Optimum** -Max.	Grade
K	Cast Iron	250HB	150-**225**-300	0.10-**0.20**-0.30	ACK200 ACK300
K	Ductile Cast Iron	250HB	150-**200**-250	0.10-**0.18**-0.25	ACK200 ACK300
P	Carbon Stee	180 to 280HB	150-**175**-200	0.10-**0.15**-0.20	ACP200
P	Alloy Steel	180 to 280HB	150-**175**-200	0.10-**0.15**-0.20	ACP200

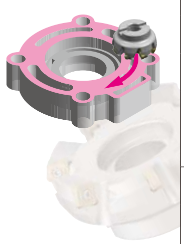
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, cutting depth, and other factors.

DNHS Type／DNH Type

ISO	Work Material	Hardness	Cutting Speed v_c(m/min) Min.- **Optimum** -Max.	Feed Rate f_z(mm/t) Min.- **Optimum** -Max.	Grade
K	Cast Iron	250HB	150-**225**-300	0.10-**0.55**-1.00	ACK200 ACK300
K	Ductile Cast Iron	250HB	150-**200**-250	0.10-**0.55**-1.00	ACK200 ACK300
P	Carbon Stee	180 to 280HB	150-**175**-200	0.10-**0.45**-0.80	ACP200
P	Alloy Steel	180 to 280HB	150-**175**-200	0.10-**0.35**-0.60	ACP200

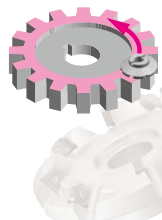
Note For the DNHS, insert heights are alternatively located, so the actual feed rate per tooth is doubled. Use with f_z=0. 5mm/t (actual feed rate 1.0 mm/t) as the upper limit. The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, cutting depth, and other factors.

■ Application Examples



		Sumitomo	Conventional Tool
Part/Work Material		Automotive Component/FC250	
Used Equipment		Machining Centre (BT30)	
Tool	Manufacturer	Sumitomo	Conventional Tool
	Body	DNXF 12080R	General Purpose Cutter
	Inserts	G Type	Negative Insert
	Tool Diameter(mm)	80	80
	No. of Flutes	8	8
	Insert	ACK200	K Series CVD
Cutting Conditions	Cutting Speed (m/min)	200	200
	Feed (mm/t)	0.069 (v_f=420mm/min)	0.069 (v_f=420mm/min)
	Axial Cutting Depth (mm)	1.6	1.6
	Cutting Width (mm)	60	60
	Dry/Wet	Wet	Wet

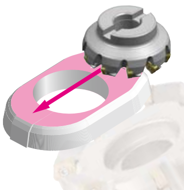
2x longer tool life than conventional tools under the same conditions.



		Sumitomo	Conventional Tool
Part/Work Material		Construction Machine Component/Cast Steel	
Used Equipment		Machining Centre (BT50)	
Tool	Manufacturer	Sumitomo	Conventional Tool
	Body	DNHS 12100R	General Purpose Cutter
	Inserts	H Type	Negative Insert
	Tool Diameter(mm)	100	100
	No. of Flutes	8(4)*	7
	Insert	ACP200	P Series CVD
Cutting Conditions	Cutting Speed (m/min)	140	200
	Feed (mm/t)	0.25 (v_f=450mm/min)	0.095 (v_f=300mm/min)
	Axial Cutting Depth (mm)	3 to 4	3 to 4
	Cutting Width (mm)	50	50
	Dry/Wet	Dry	Dry

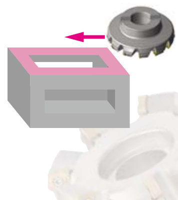
Compared to the conventional tool, 1.5x high efficiency milling is possible.

* ( ) indicates no. of effective teeth



		Sumitomo	Conventional Tool
Part/Work Material		Electrical Appliance Component/FC250	
Used Equipment		Machining Centre (BT50)	
Tool	Manufacturer	Sumitomo	Conventional Tool
	Body	DNXF 12100R	General Purpose Cutter
	Inserts	H Type	Negative Insert
	Tool Diameter(mm)	100	100
	No. of Flutes	10	10
	Insert	ACK200	K Series CVD
Cutting Conditions	Cutting Speed (m/min)	314	314
	Feed (mm/t)	0.15 (v_f=1,500mm/min)	0.11 (v_f=1,100mm/min)
	Axial Cutting Depth (mm)	1.5	1.5
	Cutting Width (mm)	80	80
	Dry/Wet	Wet	Wet

Compared to the conventional tool, 1.4x high efficiency milling, 1.3x tool life.



		Sumitomo	Conventional Tool
Part/Work Material		Housing/FC250	
Used Equipment		Machining Centre (BT50)	
Tool	Manufacturer	Sumitomo	Conventional Tool
	Body	DNX 12160R	General Purpose Cutter
	Inserts	G Type	Negative Insert
	Tool Diameter(mm)	160	160
	No. of Flutes	10	10
	Insert	ACK200	K Series CVD
Cutting Conditions	Cutting Speed (m/min)	200	200
	Feed (mm/t)	0.15 (v_f=597mm/min)	0.10 (v_f=398mm/min)
	Axial Cutting Depth (mm)	3.5	3.5
	Cutting Width (mm)	135	135
	Dry/Wet	Wet	Wet

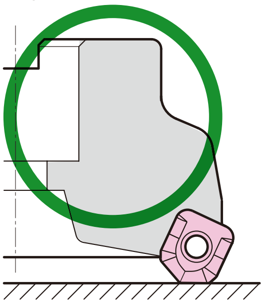
1.5x longer tool life than conventional tools.

■ Important Notes About Wiper Inserts

- When attaching the wiper insert, attach it as shown in Fig 1. When attached as shown in Fig 2, the normal roughness cannot be obtained.
- Wiper inserts are single-cornered and double-sided.
- Refer to Technical Guidance page N17 in the General Catalogue for details about wiper inserts.
- Do not use with DNHS and DNH types.

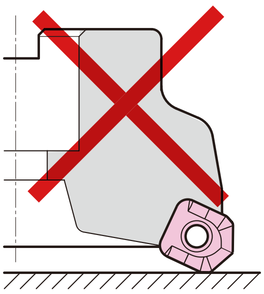
DNX(F) Type

Fig 1



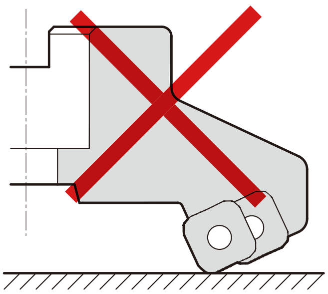
Correct Attachment

Fig 2



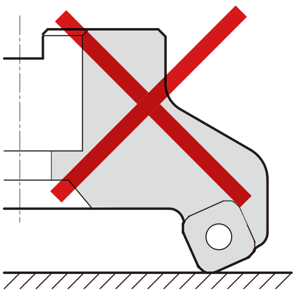
Incorrect Attachment

DNHS Type



Inappropriate

DNH Type



Inappropriate

SEC-DNX(F)12000 Type

Rake Angle	Radial	−6°
	Axial	−5°

Max. Depth of Cut 8mm 65°

P Steel ◎ | M Stainless Steel | K Cast Iron ◎ | N Non-Ferrous Metal | N Aluminium | S Exotic Alloy | H Hardened Steel

High Efficiency Cast Iron/Cast Steel Milling

Fig 1

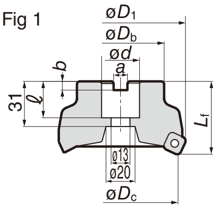


Fig 2

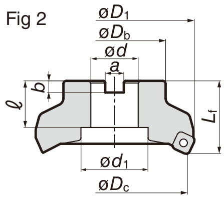


Fig 3

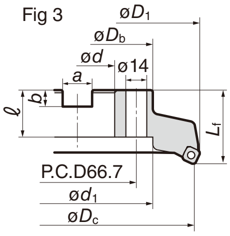
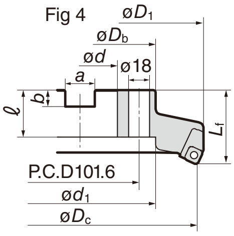


Fig 4



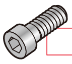
■ Body (DNX 12000R) Approach Angle 65° General Purpose Type

	Cat. No.	Stock	Dimensions (mm) øDc	øD1	øDb	ød1	Lf	ød	a	b	ℓ	No. of Teeth	Effective Teeth	Weight (kg)	Fig
Metric	DNX 12080RS	●	*80	88	60	13.5	50	27	12.4	7	25	6	6	1.2	1
	12100RS	●	100	108	80	46	50	32	14.4	8.5	29	7	7	1.6	2
	12125RS	●	125	133	80	56	63	40	16.4	9.5	29	8	8	2.8	2
	12160RS	●	160	168	100	88	63	40	16.4	9.5	29	10	10	4.4	3
	12200RS	●	200	210	150	130	63	60	25.7	14	35	16	16	8.0	4
	12250RS	●	250	260	180	160	63	60	25.7	14	35	20	20	12.2	4
Inch	DNX 12080R	●	*80	88	60	13	50	25.4	9.5	6	25	6	6	1.2	1
	12100R	●	100	108	70	46	50	31.75	12.7	8	32	7	7	1.6	2
	12125R	●	125	133	80	56	63	38.1	15.9	10	38	8	8	2.8	2
	12160R	●	160	168	100	72	63	50.8	19.1	11	38	10	10	4.4	2
	12200R	●	200	210	150	130	63	47.625	25.4	14	35	16	16	8.0	4
	12250R	●	250	260	180	160	63	47.625	25.4	14	35	20	20	12.2	4

■ Body (DNXF 12000R) Approach Angle 65° General Purpose Fine Pitch Type

	Cat. No.	Stock	øDc	øD1	øDb	ød1	Lf	ød	a	b	ℓ	No. of Teeth	Effective Teeth	Weight (kg)	Fig
Metric	DNXF 12080RS	●	*80	88	60	13.5	50	27	12.4	7	25	8	8	1.2	1
	12100RS	●	100	108	80	46	50	32	14.4	8.5	29	10	10	1.6	2
	12125RS	●	125	133	80	56	63	40	16.4	9.5	29	11	11	2.7	2
	12160RS	●	160	168	100	88	63	40	16.4	9.5	29	12	12	4.4	3
Inch	DNXF 12080R	●	*80	88	60	13	50	25.4	9.5	6	25	8	8	1.2	1
	12100R	●	100	108	70	46	50	31.75	12.7	8	32	10	10	1.6	2
	12125R	●	125	133	80	56	63	38.1	15.9	10	38	11	11	2.7	2
	12160R	●	160	168	100	72	63	50.8	19.1	11	38	12	12	4.4	2

*Cutters with sizes of ø200 mm or above come with locators. Inserts are not included.



*Please use hexagonal bolt (JISB1176) M12 x 30-35 mm for securing ø80 cutter to the arbor.

■ Identification Details

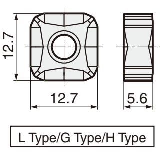
DNX	F	12	080	R	S
(1) Cutter Series	(2) Fine-Pitch Indication	(3) Insert Size	(4) Cutter	(5) Direction	(6) Metric Bore

■ Inserts

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel

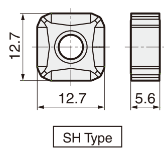
Grade		Coated Carbide							
Application	High Speed/Light	K	K						
	General Purpose	K	K		PM	PM			
	Roughing			K	PM	PM			
Cat. No.		ACK100	ACK200	ACK300	ACP200	ACP300	Holder Style	Application	Fig
SNMT 1205ZNEN-L			●	●	●		V-shaped Cutting Edge Type	Light Cutting	5
1205ZNEN-G		●	●	●	●			General Purpose	5
1205ZNEN-H		●	●	●	●			Heavy Cutting	5
SNMT 1205ZNEN-SH		●	●	●	●	●	Straight Type	Chip Management	6
XNGT 1205ZNEN-W			●	●			Wiper Type	Improved Surface Roughness	7

Fig 5



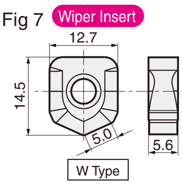
L Type/G Type/H Type

Fig 6



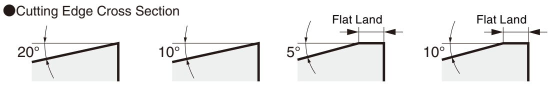
SH Type

Fig 7 Wiper Insert



W Type

●Cutting Edge Cross Section



L Type G Type H Type SH Type

■ Spare Parts

Locator (*)	Cap Screw (*)	L Type Spanner (*)	Screw		Spanner	Anti-seizure Cream
DNXK12R	BX0515	LH040	BFTX0412IP	N·m 3.0	TRDR15IP	SUMI-P

* Included with cutters ø200 mm or larger

N·m Recommended Tightening Torque (N·m)

■ Recommended Cutting Conditions H42

Rake Angle	Radial	−6°
	Axial	−5°

Max. Depth of Cut 3mm 24° (DNH Type)
Max. Depth of Cut 5mm 24° (DNHS Type)

P Steel ◎ | M Stainless Steel | K Cast Iron ◎ | N Non-Ferrous Metal | N Aluminium | S Exotic Alloy | H Hardened Steel

High Efficiency Cast Iron/Cast Steel Milling

Fig 1

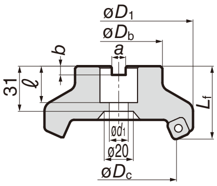


Fig 2

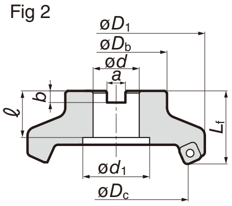


Fig 3

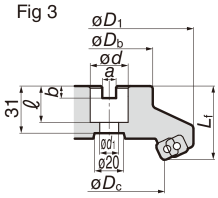
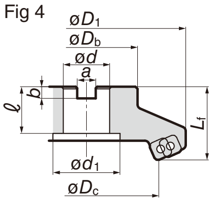


Fig 4



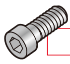
■ Body (DNH 12000R) Approach Angle 24° Small Depth of Cut High Feed Type | Inch

Cat. No.	Stock	Dimensions (mm) øDc	øD1	øDb	ød1	Lf	ød	a	b	ℓ	No. of Teeth	Effective Teeth	Weight (kg)	Fig
DNH 12080R	●	*80	104	60	13	50	25.4	9.5	6	25	6	6	1.5	1
12100R	●	100	124	70	46	50	31.75	12.7	8	32	7	7	1.9	2
12125R	●	125	149	80	56	63	38.1	15.9	10	38	8	8	3.2	2
12160R	●	160	184	100	72	63	50.8	19.1	11	38	10	10	5.1	2

■ Body (DNHS 12000R) Approach Angle 24° Medium Depth of Cut High Feed Type | Inch

Cat. No.	Stock	øDc	øD1	øDb	ød1	Lf	ød	a	b	ℓ	No. of Teeth	Effective Teeth	Weight (kg)	Fig
DNHS 12080R	●	*80	116	60	13	50	25.4	9.5	6	25	6	3	1.7	3
12100R	●	100	136	70	46	50	31.75	12.7	8	32	8	4	2.3	4
12125R	●	125	161	80	56	63	38.1	15.9	10	38	10	5	3.2	4
12160R	●	160	196	100	72	63	50.8	19.1	11	38	12	6	6.2	4

*Cutters with sizes of ø200 mm or above come with locators. Inserts are not included.



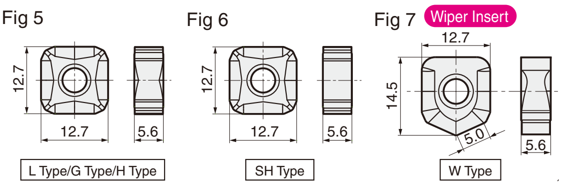
*Please use hexagonal bolt (JISB1176) M12 x 30-35 mm for securing ø80 cutter to the arbor.

■ Inserts

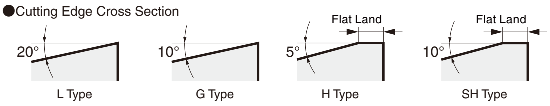
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy | H Hardened Steel

Grade		Coated Carbide							
Application	High Speed/Light	K	K						
	General Purpose	K	K		P M	P M			
	Roughing			K	P M	P M			
Cat. No.		ACK100	ACK200	ACK300	ACP200	ACP300	Holder Style	Application	Fig
SNMT 1205ZNEN-L			●	●	●		V-shaped Cutting Edge Type	Light Cutting	5
1205ZNEN-G		●	●	●	●		V-shaped Cutting Edge Type	General Purpose	5
1205ZNEN-H		●	●	●	●		V-shaped Cutting Edge Type	Heavy Cutting	5
SNMT 1205ZNEN-SH		●	●	●	●	●	Straight Type	Chip Management	6
XNGT 1205ZNEN-W			●	●			Wiper Type	Improved Surface Roughness	7

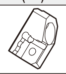
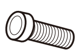
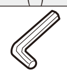
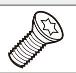
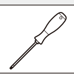
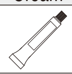
Fig 5 Fig 6 Fig 7 Wiper Insert



●Cutting Edge Cross Section



■ Spare Parts

Locator (*)	Cap Screw (*)	L Type Spanner (*)	Screw		Spanner	Anti-seizure Cream
				N·m		
DNXK12R	BX0515	LH040	BFTX0412IP	3.0	TRDR15IP	SUMI-P

* Included with cutters ø200 mm or larger

N·m Recommended Tightening Torque (N·m)

■ Recommended Cutting Conditions

☞ H42