

JIS

JAPANESE INDUSTRIAL STANDARD

Glossary of terms for milling cutters

JIS B 0172—1993

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JAPANESE INDUSTRIAL STANDARD

J I S

Glossary of terms for milling cutters

B 0172-1993

1. Scope This Japanese Industrial Standard specifies the terms and definitions relating to the milling cutters⁽¹⁾ generally to be used mainly for metal cutting.

Note (¹) The milling cutter means the tool for rotary cutting, having cutting edge at its outer peripheral face, end face or side face, to be used mainly for milling machine.

Remarks: The standards cited in this Standard are given in the following:

JIS B 0170 Cutting tools - Vocabulary - Common terms

JIS B 1011 Centre holes

JIS B 4003 Morse taper shanks and sockets - Dimensional characteristics

JIS B 4005 Parallel shanks for milling cutters - Dimensional characteristics

JIS B 4107 Side milling cutters brazed with cemented carbide tips

JIS B 4115 Cemented carbide metal slitting saws

JIS B 4201 Cutter bores

JIS B 4204 Slotting cutters

JIS B 4205 Plain milling cutters

JIS B 4206 Side milling cutters

JIS B 4211 End mills with parallel shanks

JIS B 4212 End mills with taper shanks

JIS B 4217 T-slot cutters

JIS B 4219 Metal slitting saws

JIS B 4220 Screw slotting cutters

JIS B 4221 Angle milling cutters

JIS B 4226 Form milling cutters with constant profile

JIS B 4230 Woodruff keyseat milling cutters

JIS B 4231 Countersinks

JIS B 4232 Involute gear milling cutters

JIS B 4233 Machine screw counterbores and countersinks

JIS B 4236 Counterbores for hexagon socket head bolts

JIS B 6101 7/24 tapers for spindle noses and tool shanks

2. Classification The classification of terms shall be in accordance with the following:

(1) Types of milling cutters

(1.1) Classification according to cutting part materials and surface treatments

(1.2) Classification according to structure

(1.3) Classification according to attaching methods

(a) Bore type milling cutters

(b) Shank type milling cutters

(1.4) Classification according to functions or uses

(a) Bore type milling cutters

(b) Shank type milling cutters

(2) Elements of milling cutter

(3) Angles of milling cutter

(4) Accuracies of milling cutter

(5) Damage of cutting part of milling cutter

(6) Milling cutter in general

3. Designation of name of milling cutter The types of the milling cutter shall be designated by combining the equivalent terms in the order of number of the types [2. (1)] of the milling cutter.

The milling cutter using high speed tool steel for cutting part material and the milling cutter of solid⁽²⁾ and welded shall be designated by omitting these (terms in parentheses of the following example).

In addition, when it can be judged by function or use only, attaching method may be omitted.

Note ⁽²⁾ When the cutting part material is other than high speed tool steel, "solid" shall not be omitted.

Examples:

Designation	Cutting part material and surface treatment	Structure	Attaching method	Function or use
Cemented carbide solid plain milling cutter	Cemented carbide (alloy)	Solid	(Bore)	Plain milling cutter
Cemented carbide inserted face milling cutter	Cemented carbide (alloy)	Inserted	(Direct attaching)	Face milling cutter
Coated straight shank two flute end mill	Coating (high speed tool steel)	(solid)	Straight shank	Two flute end mill
Cemented carbide brazed Morse taper shank multi-flute end mill	Cemented carbide (alloy)	Brazed	Morse taper shank	Multi-flute end mill

4. Terms and definitions The terms and definitions of the milling cutters shall be in accordance with the following:

For informative reference, quantity symbols, units and English equivalent are given.

- Remarks 1. Those of a part of the term are given in () may be omitted.
2. The Figure in the column of definition indicates an example of structure.

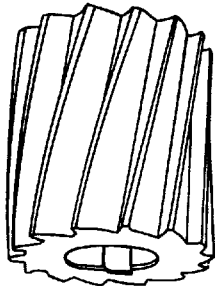
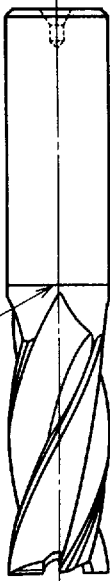
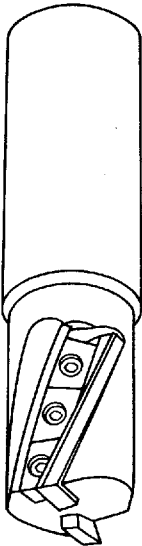
(1) Type of milling cutters

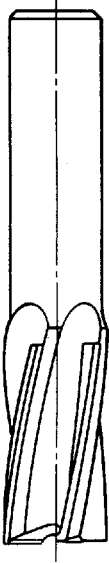
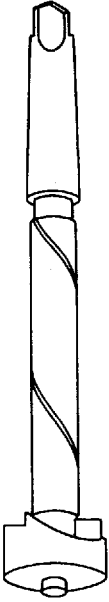
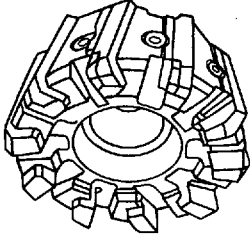
(1.1) Classification according to cutting part materials and surface treatments

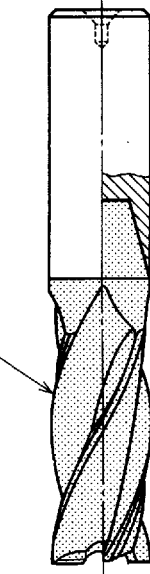
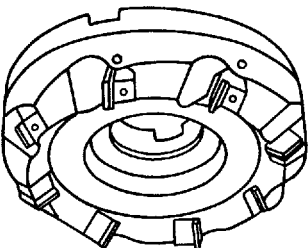
No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
1101	合金工具鋼フライス	GŌKINKŌGUKŌ HURAI SU	The milling cutters used alloy tool steel for the material of cutting part.	alloy tool steel	milling cutter
1102	高速度 (工具) 鋼フライス	KŌSOKUDO (KŌGU) - KŌ HURAI SU	The milling cutters used high speed tool steel for the material of cutting part.	high speed (tool) steel	milling cutter
1103	超硬質工具材料フライス	TYŌKŌSITU KŌGU ZAI RYŌ HURAI SU	Generic name of milling cutters used cemented carbide tool material (cemented carbide alloy, cermet, ceramic, BN sintered body, diamond, diamond sintered body, etc.) for material of cutting part. Remarks: Cemented carbide milling cutter, cermet milling cutter, ceramic milling cutter, BN milling cutter (boron nitride milling cutter), diamond milling cutter, etc.	hard tool material	milling cutter
1104	超硬 (合金) フライス	TYŌ (GŌKIN) HURAI SU	The milling cutters used cemented carbide alloy (sintered material composed mainly of tungsten carbide) for material of cutting part.	carbide milling cutter, cemented carbide milling cutter, hardmetal milling cutter	
1105	サーメットフライス	SĀMETTO HURAI SU	The milling cutters used cermet (sintered material composed mainly of titanium compound, tantalum compound or niobium compound) for the material of cutting part.	cermet milling cutter	

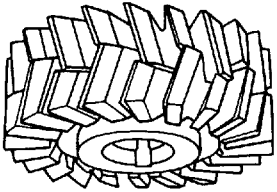
No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
1106	表面処理フライ ス	HYŌMEN SYORI HURAI SU	The milling cutters processed surface treatment of nitriding, oxidation, nitro-oxidation treatment or the like for the material of cutting part.	surface-treated milling cutter	
1107	コーティングフライ ス	KŌTINGU HURAI SU	The milling cutters used tool materials of which material of cutting part has been adhered of carbide, nitride, oxide or the like to the surface in one layer or multi-layers chemically or physically. Remarks: According to the types of the coated materials, there are coated high speed tool steel milling cutter, coated carbide milling cutter, coated cermet milling cutter, etc. According to the quality of coating materials, there are TiN coating, TiC coating, TiCN coating, Al₂O₃ coating, BN coating, diamond coating, etc.	coated milling cutter	

(1.2) Classification according to structure

No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
2101	むくフライス	MUKU HURAIISU	The milling cutter made of the same material as the cutting part and body or shank. 	Solid milling cutter	
2102	溶接フライス	YŌSETU HURAIISU	The milling cutter welded body with shank. Welded position 	welded milling cutter	
2103	クランプフライス	KURANPU HURAIISU	The milling cutter mechanically clamped tip to the body. 	clamped milling cutter	

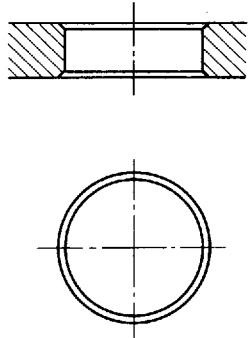
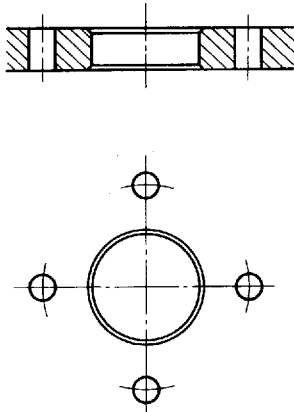
No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
2104	ろう付けフライス	ROZUKE HURAI SU	The milling cutter brazed the material of cutting part to the body. 	brazed milling cutter, tipped milling cutter	
2105	組立フライス	KUMITATE HURAI SU	The milling cutter assembling constructed cutting part, body or shank. 	constructed milling cutter	
2106	植刃フライス (うえぼふらいす)	UEBA HURAI SU	The milling cutter mechanically attached the blade to the body. 	inserted milling cutter	

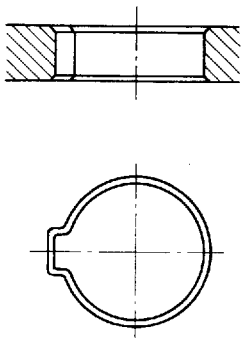
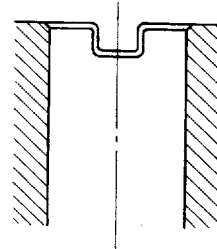
No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
2107	差込みフライス	SASIKOMI HURAI SU	The milling cutter being fixed by brazing or other methods inserting the body into the shank.  Cemented carbide tool material	-	
2108	スロ-アウェイフラ イス	SURŌAU EI HURAI SU	The milling cutter mechanically clamped throw-away tips to the body. 	throw-away milling cutter	

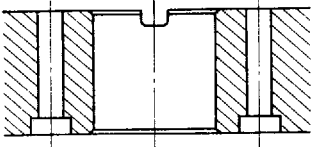
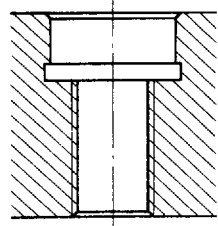
No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
2109	組合セフライス	KUMIAWASE HURAI SU	The milling cutter capable of adjusting the width by combining two milling cutters in the left and right. 	interlocking milling cutter, combination milling cutter	

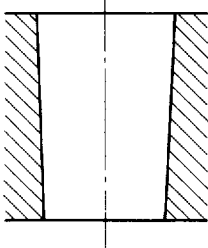
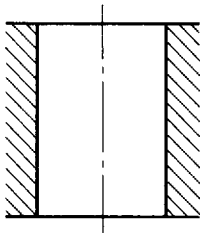
(1.3) Classification according to attaching methods(a) Bore type milling cutters

No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
3100	ボアタイプフライス	BOATAIPU HURAI SU	Generic name of milling cutters using arbor or with bore to be attached to machine directly.	bore type milling cutter, arbor type milling cutter	

No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
3101	ブレインボアフライ ス	PUREINBOA HURAI SU	The bore type milling cutter with plain bore. 	plain bore milling cutter, plain taper bore milling cutter, plain tapered bore milling cutter	
3102	ドライブ穴付きボア フライス	DORAIBU ANATUKI BOA HURAI SU	The bore type milling cutter with driving holes. 	bore milling cutter with driving holes	

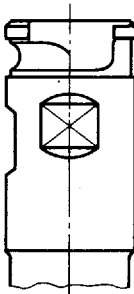
No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
3103	キー溝付きボア イス	KĪMIZOTUKI BOA HURAI SU	The bore type milling cutter with keyway. 	bore milling cutter with keyway	
3104	端面キー溝付きボア フライス	TANMENKĪ MIZO TUKI BOA HURAI SU	The bore type milling cutter with side keyway. 	bore milling cutter with side keyway, bore milling cutter with key slot, bore milling cutter with tenon	

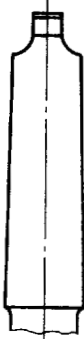
No.	Term (Japanese character)	Reading	Definition	(Informative reference) English equivalent
3105	じか(直)付けフラ イス	ZIKAZUKE HURAI SU	The bore type milling cutter with bolt holes for clamping. To be mounted directly to the spindle end of the milling machine. 	direct mounting milling cutter
3106	ねじ付きボアフライ ス	NEZI TUKI BOA HURAI SU	The bore type milling cutter with threaded hole. 	bore milling cutter with internal thread

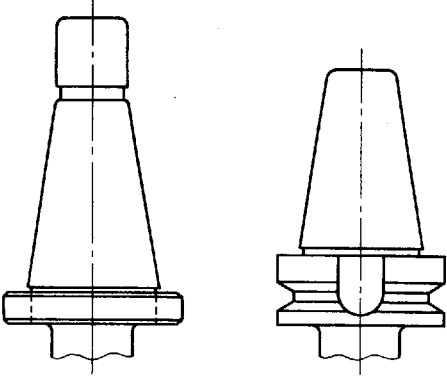
No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
3107	テーパボアフライス	TEPA BOA HURAI SU	The bore type milling cutter with tapered bore. 	taper bore milling cutter, tapered bore milling cutter	
3108	ストレートボアフライス	SUTOREITO BOA HURAI SU	The bore type milling cutter with straight bore. 	cylindrical parallel bore milling cutter, cylindrical straight bore milling cutter	

(b) Shank type milling cutters

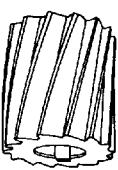
No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
3200	シャンクタイフライス	SYANKU TAIPU HURAI SU	Generic name of milling cutters having shanks. These are used by attaching the shanks to the milling chucks (milling holders) or directly to the machine.	Shank type milling cutter	

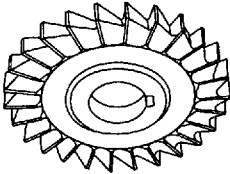
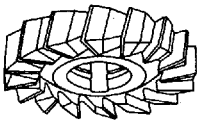
No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
3201	ストレートシャンク フライス	SUTOREITO SYANKU HURAIKU	Generic name of the shank type milling cutters having straight shanks.	cylindrical parallel shank milling cutter, parallel shank milling cutter, straight shank milling cutter	
3202	ブレインストレート シャンクフライス	PUREIN SUTOREITO SYANKU HURAIKU	The straight shank milling cutter with plain straight shank. This is also called straight shank milling cutter simply. 	plain cylindrical parallel shank milling cutter	
3203	フラット付きスト レートシャンクフ ライス	HURATTO TUKI SUTOREITO SYANKU HURAIKU	The straight shank milling cutter having straight shank with flat. 	flatted cylindrical parallel shank milling cutter	
3204	コンビネーション ストレートシャンク フライス	KONBINEISYON SUTOREITO SYANKU HURAIKU	The straight shank milling cutter with combination straight shank. 	combination cylindrical parallel shank milling cutter	

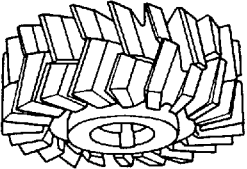
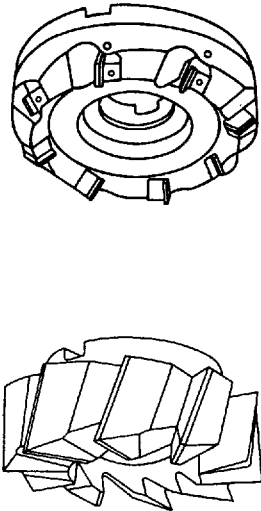
No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
3205	ねじ付きストレート シャンクフライス	NEZITUKI SUTOREITO SYANKU HURAI SU	The straight shank milling cutter with threaded straight shank. 	threaded cylindrical parallel shank milling cutter, screwed cylindrical parallel shank milling cutter	
3206	テーパシャンクフライス	TĒPA SYANKU HURAI SU	Generic name of shank type milling cutters with taper shank.	taper shank milling cutter	
3207	モールステーパーシャンクフライス	MŌRUSU TĒPA SYANKU HURAI SU	The taper shank milling cutter with Morse taper shank.	Morse taper shank milling cutter	
3208	ブラウンシャンクフライス	BURAUNSYĀPU TĒPASYANKU HURAI SU	The taper shank milling cutter with Brown & Sharpe taper shank.  	Brown & Sharpe taper shank milling cutter	

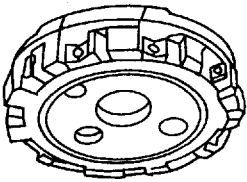
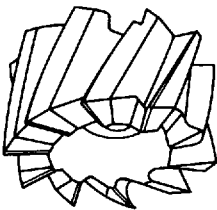
No.	Term (Japanese character)	Reading	Definition	(Informative reference)
3209	$\frac{7}{24}$ テーパーシャंक フライス	7/24 TĒPA SYANKU HURAIKU	The taper shank milling cutter with 7/24 taper shank. 	English equivalent 7/24 taper shank milling cutter

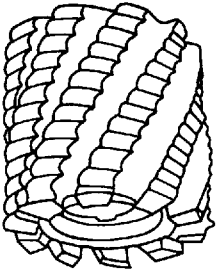
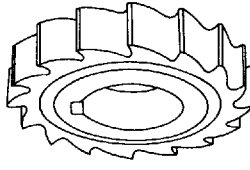
(1.4) Classification according to functions or uses(a) Bore type milling cutters

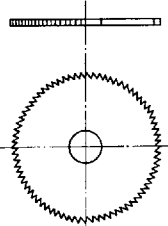
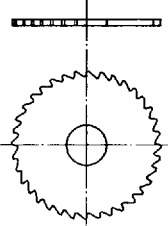
No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
4101	平フライス	HIRA HURAI SU	The milling cutter, having cutting edges on the outer peripheral face, which finishes plane. There are ordinary edges, rough edges type 1 and rough edges type 2. This is also called plain cutter. See JIS B 4205. 	plain milling cutter, cylindrical cutter	
4102	スラフカッタ	SURABU KATTA	The milling cutter for cutting the surface of the slab, being provided with nicks on the spiral flutes of the plain milling cutter so as to have the function to separate the chips. 	slab milling cutter	

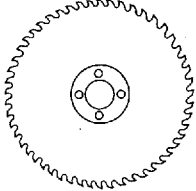
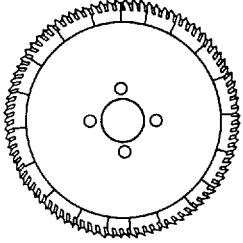
No.	Term (Japanese character)	Reading	Definition	(Informative reference) English equivalent
4103	側フライス (がわふらいす)	GAWA HURAI SU	The milling cutter having cutting edges on outer peripheral face and both side faces. There are ordinary cutting edges, rough cutting edges and staggered cutting edges according to the shapes of the cutting edges. This is also called side cutter. See JIS B 4107 and JIS B 4206. 	side milling cutter, side and face milling cutter
4104	片刃側フライス (かたはがわふらい す)	KATAHA-GAWA HURAI SU	The milling cutter having cutting edges on the outer peripheral face and on one side face. 	half side milling cutter

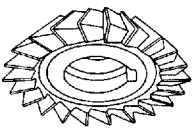
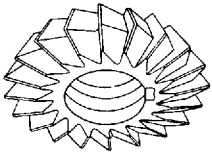
No.	Term (Japanese character)	Reading	Definition	(Informative reference) English equivalent
4105	組合せ側フライス	KUMIYASE-GAWA HURAI SU	The side milling cutter being capable of adjusting the width of cutter, by combining two milling cutters of left and right. 	interlocking side milling cutter
4106	正面フライス	SYŌMEN HURAI SU	The milling cutter used mainly for plain cutting with vertical mill, having cutting edges on one end face and outer peripheral face. 	face milling cutter, face mill

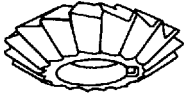
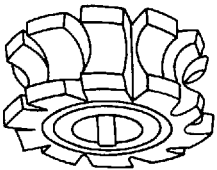
No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
4107	カッタボデー	KATTA BODĪ	The body of UEBA or clamp bore type milling cutter. 	cutter body, cutter head	
4108	シェルエンドミル	SYERUENDO MIRU	The end mill to be used inserting the body into the shank, having the cutting edges on the outer peripheral face and end face. 	shell end mill, shell mill	

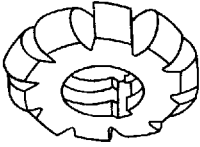
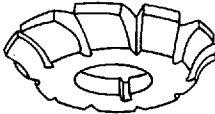
No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
4109	荒削りシェルのエンドミル	ARAKEZURI SYERUENDO MIRU	The shell end mill having peripheral cutting edge of wave shape. To be used for rough cutting. 	roughing shell end mill, roughing shell mill	
4110	溝フライス	MIZO HURAI SU	The milling cutter to be used for processing the groove, having the cutting edges on the outer peripheral face. See JIS B 4204. 	slotting milling cutter, slotting cutter	

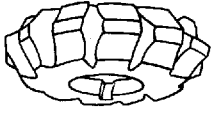
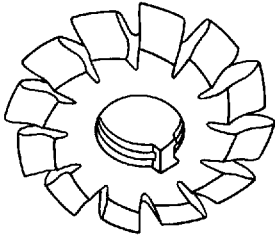
No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
4111	すりわりフライス	SURIWARI HURAI SU	The milling cutter to be used for processing the slotting of machine screw head, having cutting edges on the outer peripheral face. See JIS B 4220. 	screw slotting cutter	
4112	メタルソー	METARU SŌ	The milling cutter to be used for cutting of material and groove working, having cutting edges on outer peripheral face. There are ordinary edge and roughing edge according to uses. See JIS B 4219 and JIS B 4115. 	metal slitting saw	

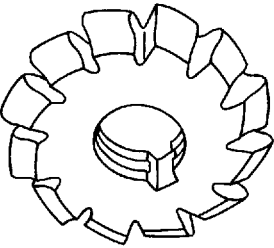
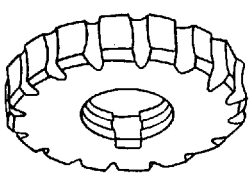
No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
4113	コールドソー	KORUDO SŌ	Generic name of the milling cutters to be used for cold cutting of material, having the cutting edges on the outer peripheral face. There are solid saw, segmental circular saw and tip saw according to structure. 	cold circular saw	
4114	セグメントソー	SEGUMENTO SŌ	The cold circular saw of which segmented blade is clamped to the body with rivet. Generally to be used for cutting of large sized materials. 	segmental circular saw	

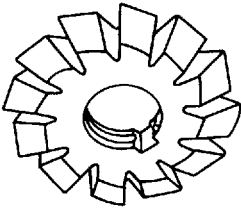
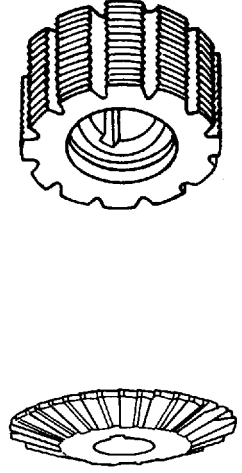
No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
4115	角度フライス	KAKUDO HURAI SU	Generic name of the milling cutters to be used mainly for groove works of which two cutting edges have respective angles.	angle milling cutter	
4116	片角フライス	KATAKAKU HURAI SU	The angle milling cutter of which one side cutting edge has single angle. See JIS B 4221. 	single angle milling cutter	
4117	不等角フライス	HUTOKAKU HURAI SU	The angle milling cutter having cutting edges of unequal angle on both sides. 	unequal double angle milling cutter	

No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
4118	等角フライス	TŌKAKU HURAI SU	The angle milling cutter having cutting edges of equal angle on both sides. See JIS B 4221. 	double angle milling cutter	
4119	総形フライス	SŌGATA HURAI SU	Generic name of milling cutter to be used for the working of special shape.	form milling cutter	
4120	二番取りフライス	NIBANTORI HURAI SU	Generic name of the milling cutters of which cutting part shapes do not change when regrinding of the face is carried out, the relieving has been processed from directly behind of the edge line of the cutting edge.	form-relieved milling cutter, form milling cutter with constant profile	
4121	内丸フライス	UTIMARU HURAI SU	The form-relieved milling cutter having concave cutting edges on outer peripheral face. See JIS B 4226. 	concave milling cutter	

No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
4122	外丸フライス	SOTOMARU HURAI SU	The form-relieved milling cutter to be used for working of round groove, having the convex cutting edge on the outer peripheral face. See JIS B 4226. 	convex milling cutter	
4123	片面取りフライス	KATAMENTORI HURAI SU	The form-relieved milling cutter to be used for working of corner rounding, having concave cutting edge on the single side of the outer peripheral face. See JIS B 4226. 	corner rounding milling cutter	

No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
4124	両面取りフライス	RYOMEN-TORI HURAI SU	The form-relieved milling cutter to be used for working of corner rounding, having concave cutting edges on the both faces of the outer peripheral face. See JIS B 4226. 	double corner rounding milling cutter	
4125	インボリユートフロ イス	INBORYŪTO HURAI SU	The form-relieved milling cutter to be used for gear cutting work of involute gear. See JIS B 4232. 	involute gear milling cutter	

No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
4126	スプロケットフライ ス	SUPUROKETTO HURAI SU	The form-relieved milling cutter to be used for the working of sprocket gear. 	sprocket milling cutter	
4127	スプラインフライス	SUPURAIN HURAI SU	The form-relieved milling cutter to be used for the working of spline grooves. 	spline milling cutter	

No.	Term (Japanese character)	Reading	Definition	(Informative reference)	
				English equivalent	
4128	セレーションフライス	SERESYON HURAI SU	The form-relieved milling cutter to be used for the working of serration grooves. 	serration milling cutter	
4129	ねじ切りフライス	NEZIKIRI HURAI SU	The milling cutter to be used for screw thread cutting, having the cutting edge of leadless screw thread shape on the cylindrical face. There are the single thread milling cutter and multi-thread milling cutter. 	thread milling cutter	