

Distributor Sales Manual

Nitto Kohki's Annular Cutters

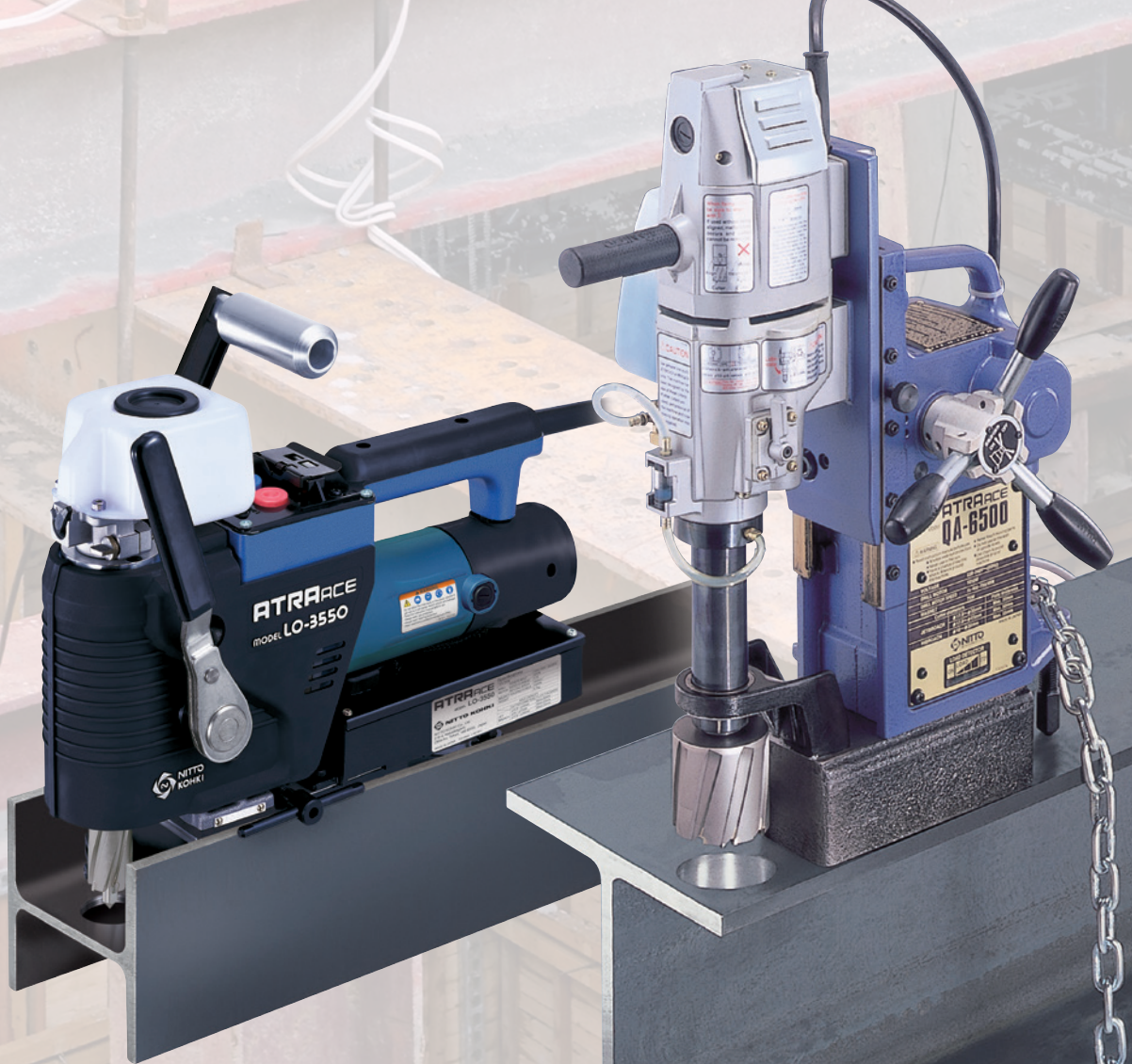
JETBROACH CUTTERS

&

HI-BROACH CUTTERS



How to get the best from
Annular cutters.



Basic information _____ 3

- **What is an Annular Cutter** _____ 3
- **Features of Annular Cutters** _____ 3
- **What is a Jetbroach Cutter** _____ 4
- **Features of Jetbroach Cutters** _____ 4
- **Features of “One-touch” system** _____ 4
- **Basic construction** _____ 5
- **Comparison with twist drills** _____ 6
- **Annular cutter product range** _____ 7
- **Names of parts of Annular Cutters** _____ 8
- **Equipment to use Annular Cutters** _____ 9
- **Accessories** _____ 10
- **Cutter selection chart** _____ 11
- **List of available sizes** _____ 13

Troubleshooting _____ 15

- **Causes for Poor Magnet Adhesion**
- **Causes for Poor Cutting Performance**
- **Causes for Cutter Damage**

Questions & Answers _____ 16

About us _____ 17

Basic information

What is an Annular Cutter ?

An annular cutter is a specialized cutting tool used to drill holes in metal more efficiently than using conventional twist drills.

An annular cutter removes only the circumference of the hole and ejects the center portion as a slug, significantly reducing the amount of material required to make the hole.

Features of Annular Cutters

Less power required

A conventional twist drill requires complete removal of the material to make a hole. Annular cutters utilize a centerless, thin kerf design to remove as little material as possible, reducing the power required to complete the hole.

Shorter drilling time

Since annular cutters only remove the circumference of the material compared to twist drills, holes are completed much faster.

The low cutting resistance makes it possible to broach larger holes in less time.

No pre-drilling or step-drilling

Annular cutters can make large diameter holes in a single pass. Twist drills require smaller pilot holes to be drilled, sometimes requiring three or four passes to reach the maximum size.

Higher accuracy

Holes made by annular cutters tend to be more accurate as they do not float off center like twist drills do.

What is a Jetbroach Cutter ?

A Jetbroach cutter is a multi-toothed annular cutter which has tungsten carbide brazed to the tips (aka TCT cutter).

A Hi-Broach cutter is a multi-toothed cutter made from High Speed Steel (aka HSS cutter).

Features of Jetbroach Cutter

Broaching speeds are up to three times faster than that of twist drills. By reducing broaching time, Jetbroach cutters can help lower the customer's cost-per-hole.

The eccentricity of the 'Jetbroach' inner diameter cuts the outer diameter of the slug, smaller than the 'Jetbroach' internal diameter, this prevents scoring between the slug and the cutter - resulting in a large reduction in load, thus facilitating a quick broaching speed with less effort.

This eccentric design also helps provide ample coolant supply around the slug and directly to the cutting surface, extending cutter life.

Features of "one-touch" cutter replacement system

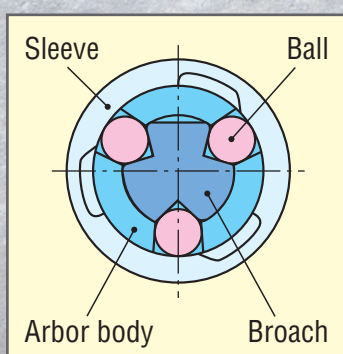
Nitto Kohki's original "One-Touch" cutter replacement system enables the attaching and removal of cutters without the use of any tools.

Correctly attaching a cutter happens by simply aligning the small white line on the chuck sleeve to any of the ball dents on the cutter and inserting.

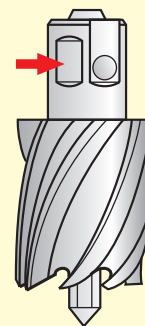
The cutter can be attached correctly regardless of the skill of the operator.

This system is standard on all Nitto Kohki machines equipped with a $\frac{3}{4}$ " arbor. It consists of three ball bearings and a spring loaded sleeve to automatically lock onto the cutter creating a self-centering effect to improve cutter performance and life.

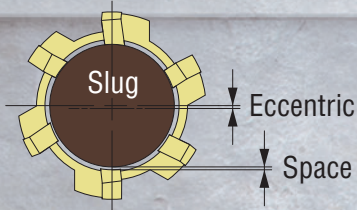
After a cutter is installed, simply twist the chuck sleeve to eject.



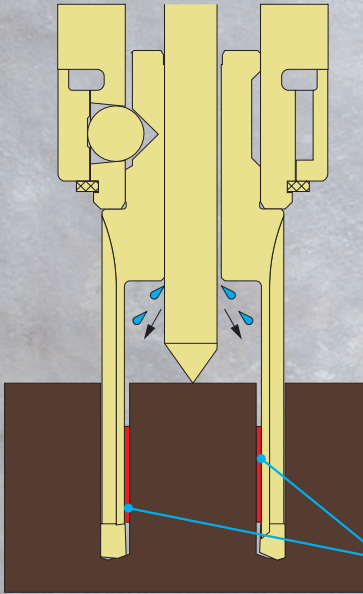
Note : When fixing with a hexagon socket set-screw on Weldon type arbors, be sure to fix at the flat area (see arrow) and not at any of the three dimples.



Basic construction

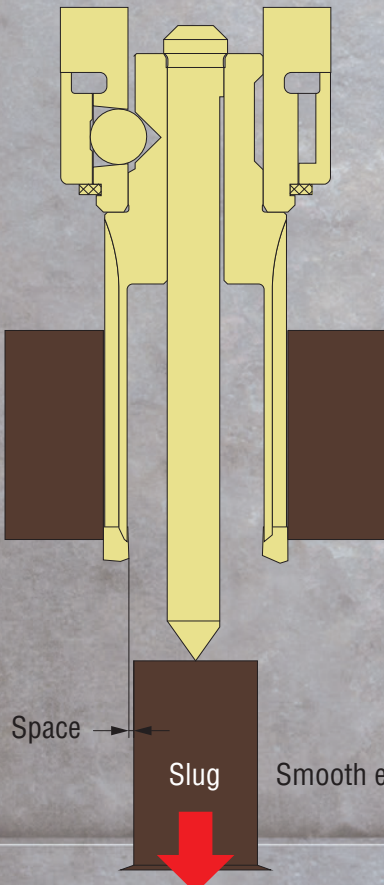


The inner body of the Jetbroach is eccentrically cut. This produces a smaller diameter slug than the inner body of the cutter.



If this is not done, the slug can expand due to excessive heat buildup during the cutting process and jam itself inside the cutter. The drag of the slug contacting the inner body of the cutter can slow down the coolant flow exacerbating the heat buildup and cause the drill motor to overload, potentially damaging the machine and cutter.

Cutting oil reaches the cutter edges of Jetbroach



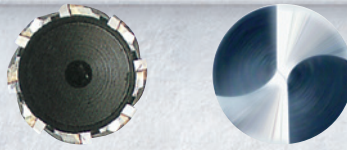
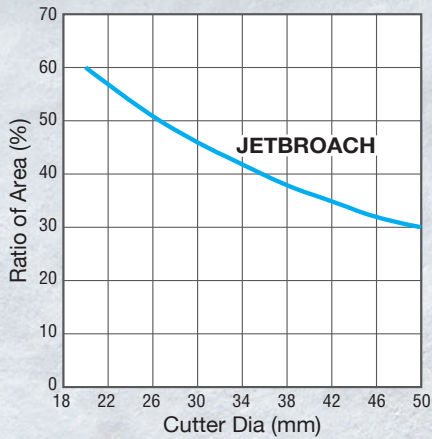
Proper clearance around the slug provides ample coolant flow to the cutting tips and ensures proper cutter life.

Smaller slugs result in cleaner ejection at the end of the hole.

Smooth ejection of slug

Comparison with twist drills

Cutting surface



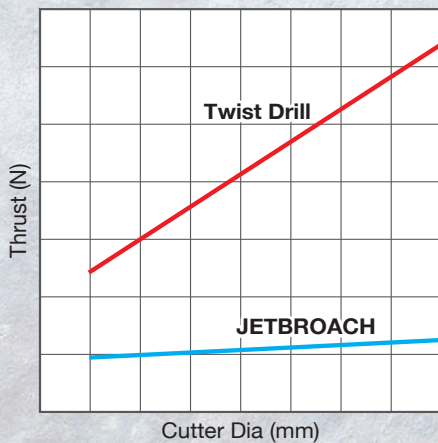
When compared to conventional twist drills:

- Cutting surface 50% less
- There is no dead point
- Pilot hole is not required

Thereby provides efficient cutting operation.

Thrust

(Material: Mild Steel, Feeding speed: 0.1 mm/rev)



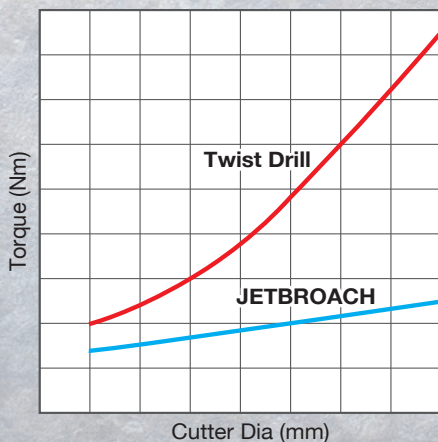
When compared to conventional twist drills:

- Requires less down-force to feed the annular cutter
- Requires less thrust for cutting larger holes

Thereby, lighter drilling operation reduces user fatigue.

Torque

(Material: Mild Steel, Feeding speed: 0.1 mm/rev)

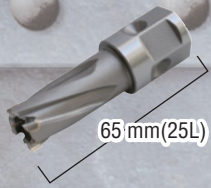


When compared to conventional twist drills:

- Requires less motor torque
 - Smaller motors can complete large diameter holes
- Thereby, enables the equipment to be lightweight and smaller in size, requiring less power from the motor, thus saving energy.

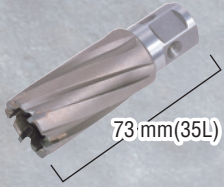
Light drilling with a broaching cutter is up to 3 times faster than conventional twist drills, saving energy.

Annular cutter product range



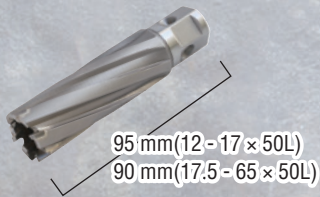
JETBROACH JBO 25L

Tungsten Carbide Tipped Cutters with "One-touch" replacement shank
Depth of Cut 25 mm, Diameter 12 to 17 mm



JETBROACH JBO 35L

Tungsten Carbide Tipped Cutters with "One-touch" replacement shank
Depth of Cut 35 mm, Diameter 17.5 to 40 mm



JETBROACH JBO 50L

Tungsten Carbide Tipped Cutters with "One-touch" replacement shank
Depth of Cut 50 mm, Diameter 12 to 65 mm



JETBROACH JBO 50L(W)

For drilling stacked plates
Tungsten Carbide Tipped Cutters with "One-touch" replacement shank
Depth of Cut 50 mm, Diameter 18 to 35 mm



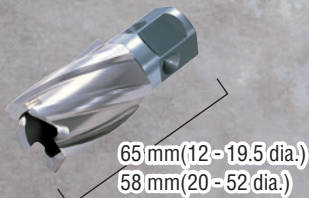
JETBROACH JBO 75L

Tungsten Carbide Tipped Cutters with "One-touch" replacement shank
Depth of Cut 75 mm, Diameter 17.5 to 55 mm



JETBROACH JBS 75L

Tungsten Carbide Tipped Cutters with "Side-lock" replacement shank
Depth of Cut 75 mm, Diameter 50 mm to 100 mm



HI-BROACH HBO 25L

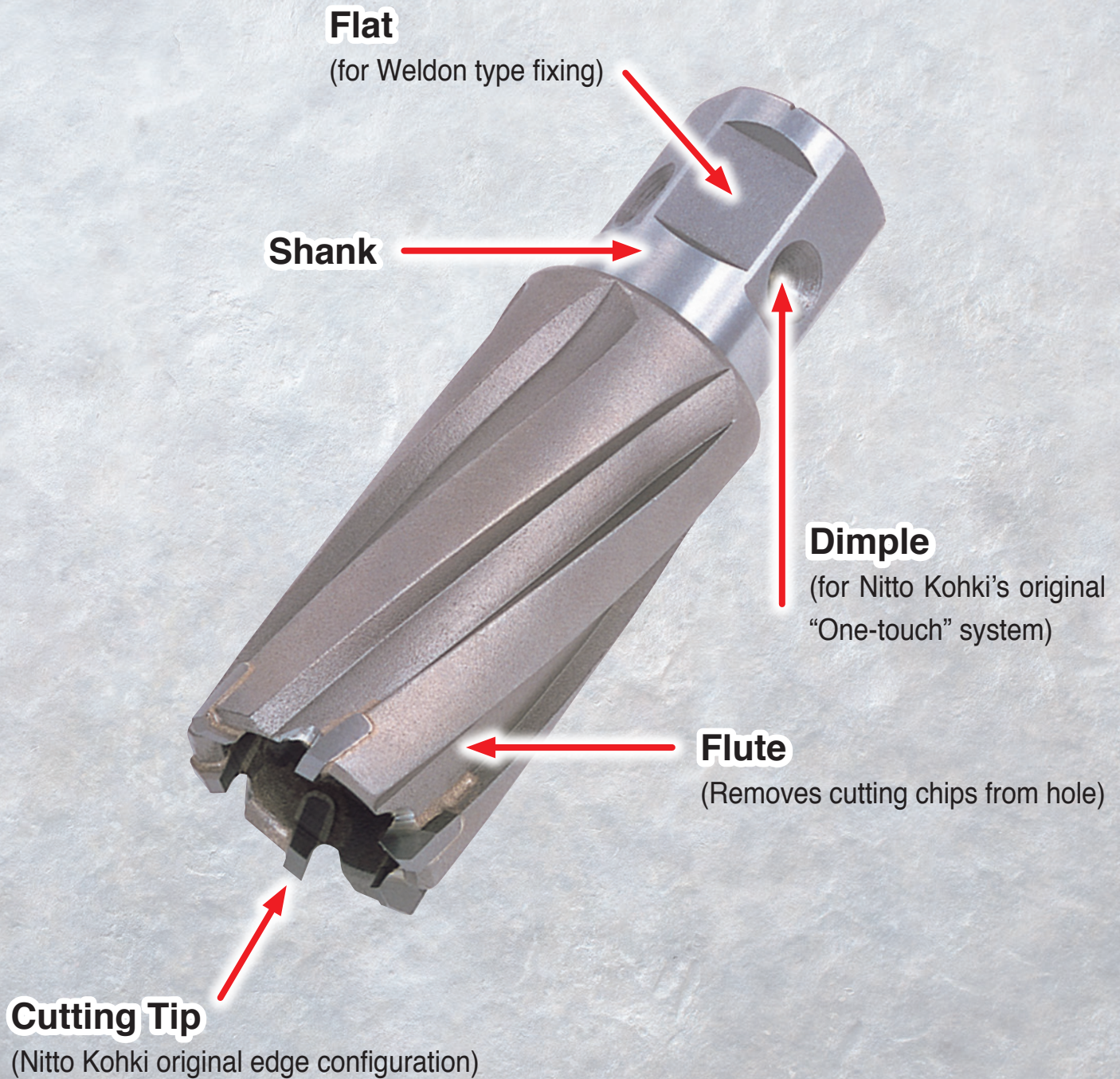
High Speed Steel Cutters with "One-touch" replacement shank
Depth of Cut 25 mm, Diameter 12 to 52 mm



HI-BROACH HBO 50L

High Speed Steel Cutters with "One-touch" replacement shank
Depth of Cut 50 mm, Diameter 12 to 52 mm

Names of parts of Annular Cutters



Equipment to use Annular Cutters

MAGNETIC BASE DRILLS



CLA-2720



LO-3550



WOJ-3200



WA-3500



WA-5000



AO-5575



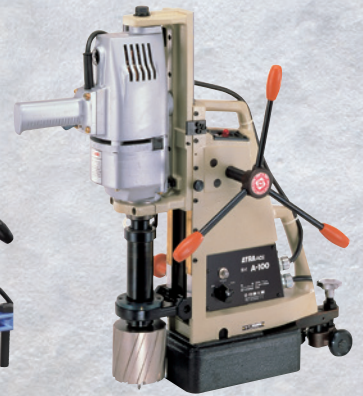
QA-4000



QA-6500

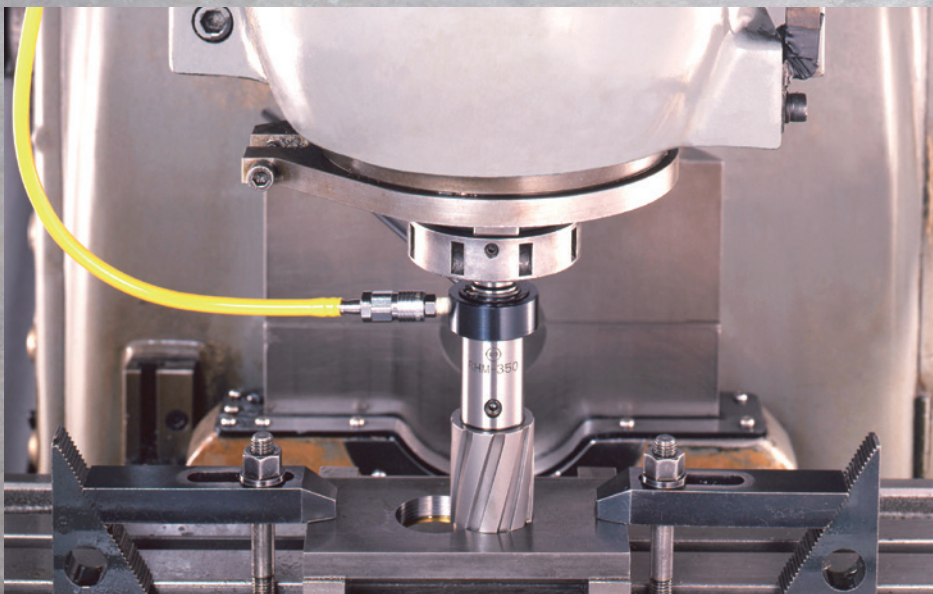


ARA-100A



A-100

STATIONARY BORING MACHINES & MILLING MACHINES

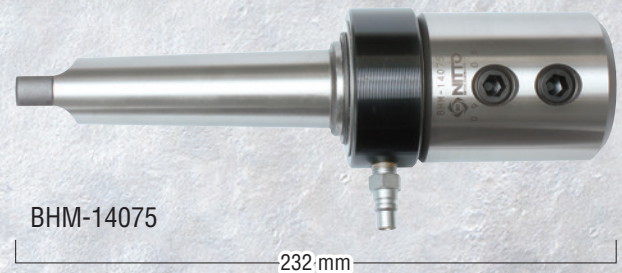
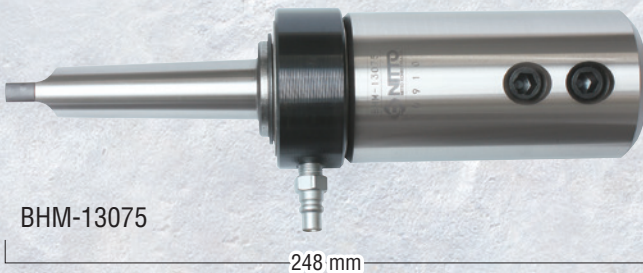
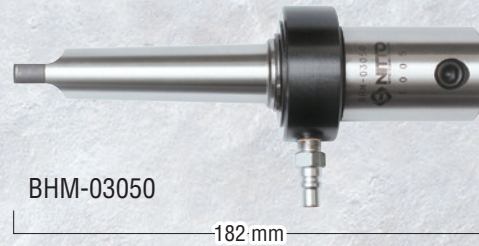
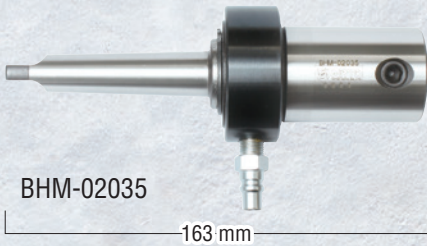


Accessories

BROACH HOLDERS

Industrial cutters for faster and better finished holes

- The Spring-loaded pilot pin picks up the hole location quickly, and ejects the slug automatically at the end of cut
- Available with No. 2 to 4 Morse taper shanks
- Oil cup complete Ass'y (PN TB00350) is available as an optional attachment which provides continuous and adjustable cutting oil flow to the cutting area



Model	BHM-02035		
Morse Taper No.	M.T.No.2		
PN	TB00390		
Cutter	HBO-25L	JBO-35L	
Cutter Diameter	12 - 17 dia.	17.5 - 35 dia.	17.5 - 35 dia.
Pilot Pin	06025	08025	08035
	Optional		Included

Model	BHM-03050					
Morse Taper No.	M.T.No.3					
PN	TB00392					
Cutter	HBO-25L	HBO-50L		JBO-35L	JBO-50L	JBO-50L(W)
Cutter Diameter	12 - 17 dia.	17.5 - 52 dia.	12 - 18 dia.	19 - 52 dia.	17.5 - 40 dia.	17.5 - 65 dia. 18 - 35 dia.
Pilot Pin	06025	08025	06050	0850 / 08050	08035	08050
	Optional			Included	Optional	

Model	BHM-13075
Morse Taper No.	M.T.No.3
PN	TB00352
Cutter	JBS-75L
Cutter Diameter	50 - 100 dia.
Pilot Pin	12075
	Included

Model	BHM-14075
Morse Taper No.	M.T.No.4
PN	TB00354
Cutter	JBS-75L
Cutter Diameter	50 - 100 dia.
Pilot Pin	12075
	Included

HBO: HI-BROACH One-touch Type, JBO: JETBROACH One-touch Type, JBS: JETBROACH Side-lock Type

Cutting Oil 2L

Genuine Coolant





PN TB01507

Jet Oiler



PN TQ10581

Cutter selection chart

					
Series		HI-BROACH 25L	HI-BROACH 50L	JETBROACH 25L	JETBROACH 35L
Diameter Range (mm)		12 - 52	12 - 52	12 - 17	17.5 - 40
Max. Depth of Cut (mm)		25	50	25	35
Mounting method		Push-to-connect	Push-to-connect	Push-to-connect	Push-to-connect
Cutter material		HSS	HSS	TCT	TCT
Material	Aluminum*	✓	✓	✓	✓
	Mild steel	✓	✓	✓	✓
	Stainless steel*			✓	✓

*Please note that magnetic base drills will not properly adhere to non-ferrous materials.

					
Series		JETBROACH 50L	JETBROACH 50L(W) for Stacked Plates	JETBROACH 75L	JETBROACH 75L
Diameter Range (mm)		12 - 65	18 - 35	17.5 - 55	50 - 100
Max. Depth of Cut (mm)		50	50	75	75
Mounting method		Push-to-connect	Push-to-connect	Push-to-connect	Set screw
Cutter material		TCT	TCT	TCT	TCT
Material	Aluminum*	✓	✓	✓	✓
	Mild steel	✓	✓	✓	✓
	Stainless steel*	✓	✓	✓	✓

*Please note that magnetic base drills will not properly adhere to non-ferrous materials.

List of available sizes

HI-BROACH One-touch Type									HI-BROACH One-touch Type					JETBROACH One-touch Type																				
Depth	mm dia.	PN	AO-5575	WA-3500	WA-5000	QA-4000	QA-6500	CLA-2720	ARA-100A	Pilot Pin	Depth	mm dia.	PN	AO-5575	WA-5000	ARA-100A	Pilot Pin	Depth	mm dia.	PN	LO-3550	WOJ-3200	AO-5575	WA-3500	WA-5000	QA-4000	QA-6500	CLA-2720	ARA-100A	Pilot Pin				
25 mm	12	TK00698	•							06025	12	TK00721	•				06050	12	TK01148	•	•	•								06025				
	13	TK00699	•								13	TK00722	•						13	TK01149	•	•	•											
	14	TK00700	•	•	•	•					14	TK00723	•	•					14	TK01150	•	•	•											
	15	TK00701	•	•	•	•					15	TK00724	•	•					15	TK01151	•	•	•											
	16	TK00702	•	•	•	•					16	TK00725	•	•					16	TK01152	•	•	•											
	17	TK00703	•	•	•	•					17	TK00726	•	•					17	TK01153	•	•	•											
	17.5	TK00335	•	•	•	•					18	TK00727	•	•	•				17.5	TK00301	•	•	•	•	•	•	•	•	•		•	•	•	
	18	TK00336	•	•	•	•					19	TK00728	•	•	•				18	TK00302	•	•	•	•	•	•	•	•	•		•	•	•	
	19	TK00337	•	•	•	•					20	TK00729	•	•	•				18.5	TK00303	•	•	•	•	•	•	•	•	•		•	•	•	
	19.5	TK00338	•	•	•	•					21	TK00730	•	•	•				19	TK00304	•	•	•	•	•	•	•	•	•		•	•		
	20	TK00339	•	•	•	•					22	TK00731	•	•	•				19.5	TK00305	•	•	•	•	•	•	•	•	•		•	•		
	21	TK00340	•	•	•	•					23	TK00732	•	•	•				20	TK00306	•	•	•	•	•	•	•	•	•		•			
	21.5	TK00341	•	•	•	•					24	TK00733	•	•	•				20.5	TK00307	•	•	•	•	•	•	•	•	•		•			
	22	TK00342	•	•	•	•					25	TK00734	•	•	•				21	TK00308	•	•	•	•	•	•	•	•	•		•			
	22.5	TK00343	•	•	•	•					26	TK00735	•	•	•				21.5	TK00309	•	•	•	•	•	•	•	•	•		•			
	23	TK00344	•	•	•	•					27	TK00736	•	•	•				22	TK00310	•	•	•	•	•	•	•	•	•					
	23.5	TK00345	•	•	•	•					28	TK00737	•	•	•				22.5	TK00311	•	•	•	•	•	•	•	•	•					
	24	TK00346	•	•	•	•				29	TK00738	•	•	•			23	TK00312	•	•	•	•	•	•	•	•	•							
	24.5	TK00347	•	•	•	•				30	TK00739	•	•	•			23.5	TK00313	•	•	•	•	•	•	•	•	•							
	25	TK00348	•	•	•	•				31	TK00740	•	•	•			24	TK00314	•	•	•	•	•	•	•	•	•							
	26	TK00349	•	•	•	•				32	TK00741	•	•	•			24.5	TK00315	•	•	•	•	•	•	•	•	•							
	27	TK00351	•	•	•	•				33	TK00742	•	•	•			25	TK00316	•	•	•	•	•	•	•	•	•							
	28	TK00352	•	•	•	•				34	TK00743	•	•	•			25.5	TK01169	•	•	•	•	•	•	•	•	•							
	29	TK00353	•	•	•	•				35	TK00744	•	•	•			26	TK00317	•	•	•	•	•	•	•	•	•							
	30	TK00354	•	•	•	•				36	TK00745	•	•	•			26.5	TK00318	•	•	•	•	•	•	•	•	•							
	31	TK00355	•	•	•	•				37	TK00746	•	•	•			27	TK00319	•	•	•	•	•	•	•	•	•							
	32	TK00356	•	•	•	•				38	TK00747	•	•	•			28	TK00320	•	•	•	•	•	•	•	•	•							
	33	TK00357	•	•	•	•				39	TK00748	•	•	•			29	TK00321	•	•	•	•	•	•	•	•	•							
	34	TK00359	•	•	•	•				40	TK00749	•	•	•			30	TK00322	•	•	•	•	•	•	•	•	•							
	35	TK00361	•	•	•	•				41	TK00750	•	•	•			31	TK00323	•	•	•	•	•	•	•	•	•							
	36	TK00704	•	•	•	•				42	TK00751	•	•	•			32	TK00324	•	•	•	•	•	•	•	•	•							
	37	TK00705	•	•	•	•				43	TK00752	•	•	•			33	TK00325	•	•	•	•	•	•	•	•	•							
38	TK00706	•	•	•	•				44	TK00753	•	•	•			34	TK00326	•	•	•	•	•	•	•	•	•								
39	TK00707	•	•	•	•				45	TK00754	•	•	•			35	TK00328	•	•	•	•	•	•	•	•	•								
40	TK00708	•	•	•	•				46	TK00755	•	•	•			36	TK00602	•	•	•	•	•	•	•	•	•								
41	TK00709	•	•	•	•				47	TK00756	•	•	•			37	TK00603	•	•	•	•	•	•	•	•	•								
42	TK00710	•	•	•	•				48	TK00757	•	•	•			38	TK00604	•	•	•	•	•	•	•	•	•								
43	TK00711	•	•	•	•				49	TK00758	•	•	•			39	TK00605	•	•	•	•	•	•	•	•	•								
44	TK00712	•	•	•	•				50	TK00759	•	•	•			40	TK00606	•	•	•	•	•	•	•	•	•								
45	TK00713	•	•	•	•				51	TK00760	•	•	•																					
46	TK00714	•	•	•	•				52	TK00761	•	•	•																					
47	TK00715	•	•	•	•																													
48	TK00716	•	•	•	•																													
49	TK00717	•	•	•	•																													
50	TK00718	•	•	•	•																													
51	TK00719	•	•	•	•																													
52	TK00720	•	•	•	•																													

Pilot Pin		06025		06050		08025		08050	
		PN : TK01167		PN : TJ12696		PN : TK01166		PN : TK00802	
		PN : TJ16019		PN : TJ15859		PN : TJ17436		PN : TA9A207	

JETBROACH One-touch Type			LO-3550	WOJ-3200	AO-5575	WA-3500	WA-5000	QA-6500	ARA-100A	Pilot Pin
Depth	mm dia.	PN								
50 mm	12	TK01154	•	•	•		•			06050
	13	TK01155	•	•	•		•			
	14	TK01156	•	•	•		•			
	15	TK01157	•	•	•		•			
	16	TK01158	•	•	•		•			
	17	TK01159	•	•	•		•			
	17.5	TK00380	•	•	•	•	•	•	•	
	18	TK00381	•	•	•	•	•	•	•	
	19	TK00382	•	•	•	•	•	•	•	
	19.5	TK00383	•	•	•	•	•	•	•	
	20	TK00384	•	•	•	•	•	•	•	
	20.5	TK00385	•	•	•	•	•	•	•	
	21	TK00386	•	•	•	•	•	•	•	
	21.5	TK00387	•	•	•	•	•	•	•	
	22	TK00388	•	•	•	•	•	•	•	
	22.5	TK00389	•	•	•	•	•	•	•	
	23	TK00390	•	•	•	•	•	•	•	
	23.5	TK00391	•	•	•	•	•	•	•	
	24	TK00392	•	•	•	•	•	•	•	
	24.5	TK00393	•	•	•	•	•	•	•	
	25	TK00394	•	•	•	•	•	•	•	
	25.5	TK01147	•	•	•	•	•	•	•	
	26	TK00395	•	•	•	•	•	•	•	
	26.5	TK00396	•	•	•	•	•	•	•	
	27	TK00397	•	•	•	•	•	•	•	
	28	TK00398	•	•	•	•	•	•	•	
	29	TK00399	•	•	•	•	•	•	•	
	30	TK00400	•	•	•	•	•	•	•	
	31	TK00401	•	•	•	•	•	•	•	
	32	TK00402	•	•	•	•	•	•	•	
	33	TK00403	•	•	•	•	•	•	•	
	34	TK00404	•	•	•	•	•	•	•	
	35	TK00405	•	•	•	•	•	•	•	
	36	TK00406		•		•	•	•	•	
	37	TK00407		•		•	•	•	•	
38	TK00408		•		•	•	•	•		
39	TK00409		•		•	•	•	•		
40	TK00410		•		•	•	•	•		
41	TK00411		•		•	•	•	•		
42	TK00412		•		•	•	•	•		
43	TK00413		•		•	•	•	•		
44	TK00414		•		•	•	•	•		
45	TK00415		•		•	•	•	•		
46	TK00416		•		•	•	•	•		
47	TK00417		•		•	•	•	•		
48	TK00418		•		•	•	•	•		
49	TK00419		•		•	•	•	•		
50	TK00420		•		•	•	•	•		
51	TK00442		•		•	•	•	•		
52	TK00443		•		•	•	•	•		
53	TK00444		•		•	•	•	•		
54	TK00445		•		•	•	•	•		
55	TK00446		•		•	•	•	•		
56	TK00447		•		•	•	•	•		
57	TK00448		•		•	•	•	•		
58	TK00449		•		•	•	•	•		
59	TK00450		•		•	•	•	•		
60	TK00451		•		•	•	•	•		
61	TK00607		•		•	•	•	•		
62	TK00608		•		•	•	•	•		
63	TK00609		•		•	•	•	•		
64	TK00610		•		•	•	•	•		
65	TK00611		•		•	•	•	•		

JETBROACH One-touch Type 50L(W) for stacked plates			LO-3550	WOJ-3200	AO-5575	ARA-100A	Pilot Pin
Depth	mm dia.	PN					
50 mm	18	TK01068	•	•	•	•	08050
	22	TK00622	•	•	•	•	
	24	TK00623	•	•	•	•	
	24.5	TK00631	•	•	•	•	
	25	TK00624	•	•	•	•	
	26	TK00625	•	•	•	•	
	26.5	TK00632	•	•	•	•	
	28	TK00626	•	•	•	•	
	32	TK00627	•	•	•	•	
	35	TK00628	•	•	•	•	

JETBROACH One-touch Type			AO-5575	WA-5000	ARA-100A	Pilot Pin
Depth	mm dia.	PN				
75 mm	17.5	TK01036	•	•	•	08075
	18	TK01003	•	•	•	
	19	TK01004	•	•	•	
	20	TK01005	•	•	•	
	21	TK01006	•	•	•	
	22	TK01007	•	•	•	
	23	TK01008	•	•	•	
	24	TK01009	•	•	•	
	24.5	TK01183	•	•	•	
	25	TK01010	•	•	•	
	26	TK01011	•	•	•	
	26.5	TK01182	•	•	•	
	27	TK01012	•	•	•	
	28	TK01013	•	•	•	
	29	TK01014	•	•	•	
	30	TK01015	•	•	•	
	31	TK01016	•	•	•	
	32	TK01017	•	•	•	
	33	TK01018	•	•	•	
	34	TK01019	•	•	•	
	35	TK01020	•	•	•	
	36	TK01021	•	•	•	
	37	TK01022	•	•	•	
	38	TK01023	•	•	•	
	39	TK01024	•	•	•	
	40	TK01025	•	•	•	
	41	TK01026	•	•	•	
	42	TK01027	•	•	•	
	43	TK01028	•	•	•	
	44	TK01029	•	•	•	
	45	TK01030	•	•	•	
	46	TK01031	•	•	•	
	47	TK01032	•	•	•	
	48	TK01033	•	•	•	
	49	TK01034	•	•	•	
50	TK01035	•	•	•		
51	TK01112	•	•	•		
52	TK01113	•	•	•		
53	TK01114	•	•	•		
54	TK01115	•	•	•		
55	TK01116	•	•	•		

JETBROACH Side-lock Type			A-100	ARA-100A	Pilot Pin
Depth	mm dia.	PN			
75 mm	50	TJ17709	•	•	12075
	51	TJ16651	•	•	
	52	TJ16652	•	•	
	53	TJ16653	•	•	
	54	TJ16654	•	•	
	55	TJ16655	•	•	
	56	TJ16656	•	•	
	57	TJ16657	•	•	
	58	TJ16658	•	•	
	59	TJ16659	•	•	
	60	TJ16660	•	•	
	61	TJ16661	•	•	
	62	TJ16662	•	•	
	63	TJ16663	•	•	
	64	TJ16664	•	•	
	65	TJ16665	•	•	
	66	TJ16666	•	•	
	67	TJ16667	•	•	
	68	TJ16668	•	•	
	69	TJ16669	•	•	
	70	TJ16670	•	•	
	71	TJ16671	•	•	
	72	TJ16672	•	•	
	73	TJ16673	•	•	
	74	TJ16674	•	•	
	75	TJ16675	•	•	
	76	TJ16676	•	•	
	77	TJ16677	•	•	
	78	TJ16678	•	•	
	79	TJ16679	•	•	
	80	TJ16680	•	•	
	81	TJ16681	•	•	
	82	TJ16682	•	•	
	83	TJ16683	•	•	
	84	TJ16684	•	•	
	85	TJ16685	•	•	
	86	TJ16686	•	•	
	87	TJ16687	•	•	
	88	TJ16688	•	•	
	89	TJ16689	•	•	
90	TJ16690	•	•		
91	TJ16691	•	•		
92	TJ16692	•	•		
93	TJ16693	•	•		
94	TJ16694	•	•		
95	TJ16695	•	•		
96	TJ16696	•	•		
97	TJ16697	•	•		
98	TJ16698	•	•		
99	TJ16699	•	•		
100	TJ16700	•	•		

Troubleshooting

Causes for Poor Magnet Adhesion

Cause	Measure
The surface of the plate is unsuitable. The magnet base will not properly adhere to uneven, heavily painted, rusty or non-ferrous materials.	Check the magnet for flatness. Machine flat if possible. Clean material to provide a proper surface to attach magnet to.
The setting of the stabilizer is inadequate. The rear stabilizer will not perform properly if it is not in direct contact with the work surface.	Adjust the rear stabilizer bolt (if equipped) to make proper contact with the plate before drilling. If stabilizer is part of magnet, machine flat if possible.
The magnet surface is worn or uneven. Uneven magnet surface will be unstable and possibly result in machine damage or user injury.	Machine flat if possible or replace.
Drilling on thin plate. If the workpiece is thinner than the minimum acceptable thickness the magnet will not adhere properly.	Jig the machine onto a thicker piece of steel if possible. Use vacuum base if possible.

Causes for Poor Cutting Performance

Cause	Measure
The feed speed is too fast or too slow. Cutting is overload or the cutting chips get caught between cutter and cause overload.	If manual feed, follow LED guide if applicable. If automatic feed, possible damage to motor or other system resulting in poor feed performance.
The cutting tips are chipped or worn. Will not cut material.	Check for possible re-sharpening. Replace cutter.
Unsuitable cutter. Nitto Kohki's Atra series are designed for use with Nitto Kohki Hi-Broach or Jetbroach cutters only.	Use only Nitto Kohki genuine cutters.
Supply of coolant is insufficient. Excessive friction by lack of lubrication or accumulated cutting chips will reduce the cutting performance.	Use only Nitto Kohki genuine coolant to ensure proper flow. If a blockage does occur, clean and replace necessary components.
Chips wrapping around cutter body or breaking inside the hole.	Adjust the chip breaker to provide smooth flow of chips from hole and prevent it from nesting.

Causes for Cutter Damage

Cause	Measure
The cutter was resting on the surface when the drill was switched on. Impacting the material with the cutter will damage the tips.	Verify the cutter is above the material prior to switching the drill motor on. Contact the surface of the material in a smooth slow operation until it breaks the surface.
Drilling on thin plate. If the workpiece is thinner than the minimum acceptable thickness the magnet may not stabilize the cutter and movement may occur.	Jig the machine onto a thicker piece of steel if possible. Use vacuum base if possible.
Fluctuations in the electric supply. The fluctuations (surging) in electric supply will cause the drill motor to operate inconsistently and damage the cutter tip due to uneven cutting speed.	Use a stable power source.
Material tensile strength is too high. Work-hardening has occurred or wear resistant plate.	Hole output will be greatly reduced or possibly zero when drilling hard materials.

Causes for Cutter Damage

Cause	Measure
Cutter is not secured properly. If the cutter is not attached properly, movement may occur during the cutting process.	Check "One-Touch" or applicable arbor for damage.
The arbor body is not perpendicular to the cutting surface. If the drill is not adjusted properly, the drill will be fed at an angle and will cause damage to the cutter tip due to unbalanced load.	Adjust the arbor to be perpendicular to the magnet.
The bolts that hold the arbor body are not tight enough. Loose arbor body can cause vibration or an unbalanced load that may damage the cutter tip.	Re-adjust the fixing bolts around the Arbor Body.
Slide plate adjustment screws are loose. A loose slide plate can apply an unbalance load to the cutter.	Adjust the slide plate to hold the weight of the motor without it falling. The handles should require one finger pressure to feed down and two fingers to raise it back up.
Arbor bearing bracket loose or damaged. Annular cutters require firm stabilization, if the bracket is damaged or loose, movement may occur.	Check the support bracket for damage or loose. Repair or replace as necessary.
Insufficient coolant supply. Lack of proper cooling or lubricant at the cutting surface will result in reduced cutter life.	Use Nitto Kohki brand coolant. Ensure proper flow of coolant and repair/replace any worn or leaking parts.

Questions & Answers

Q: What is the hole diameter tolerance ?

A: Maximum + 0.2 mm

Q: Can we re-sharpen Jetbroach?

Q: We don't recommend re-sharpening.

Q: What sort of coolants (cutting oil) can we use for Jetbroach?

A: Use Nitto Kohki brand coolant.

Q: What is the life of the Jetbroach cutter?

A: It is too difficult to tell the life of Jetbroach cutter. It heavily depends on the operating environment and applications.

Q: What is the best feed rate for drilling with Jetbroach cutters?

A: Most Nitto Kohki portable magnetic drills are equipped with a load sensor. Adjust the feeding speed so that the overload indication does not show.

About us



Ever since its foundation in 1956, Nitto Kohki has focused on innovation (technology, market and human resources) as the basis of management, and has comprehensively contributed to the development of its business through socially significant business activities based on the theme of "energy and labor-saving operations" focusing on people.

For more than 60 years, we have seriously tackled the pursuits of "one-of-a-kind product development ahead of times" and "highly reliable and sincere technology." Today, as a forerunner of energy and labor-saving equipment, we have established a network of production and sales both in Japan and overseas, with a comprehensive lineup of products covering household use to high-tech industrial applications and enjoy strong trust from a firm customer base.

Our Head Office, R&D Lab and domestic/international subsidiaries have acquired the certification of ISO14001 International environment management standard, promote the evolution of eco-friendly application development of products and focus on green procurement of materials, parts and components. Toward the realization of our management policies, "contribution to society," "employees' well-being" and "corporate development," we will promote further the invigoration of management and keep on acting as a good corporate citizen in the global society.

POWER TOOLS & MACHINE TOOLS



Machines and Tools to Achieve Energy and Labor Savings in Processing Work

Machines and tools are used at various processing sites for such work as cutting, polishing, scaling, drilling and chamfering of steel materials. We have created a product line up of pneumatic, electric and hydraulic machines and tools to match the diversification of processing methods and the conditions of work operations.

CUPLA



Cuplas Enable Flexible, Fast, and secure Connections in Various Fluid Lines

Nitto Kohki's unique technologies and dedicated research have been proven by numerous patents, which led to the development of 25,000 different Cupla variations.

delvo



High Precision "Delvo" Electric Screwdrivers for Professional Use

NITTO KOHKI "delvo" Electric Screwdrivers are high-quality tools for professional use, with special emphasis on precise control of torque and long life. They apply just the correct amount of torque -with sure, positive control always at your fingertips. They are smooth with low torque reaction in operation, too.

LINEAR



Compressors, Vacuum Pumps and Their Applied Products

MEDO pumps are unique products featuring a linear-motor-driven free piston system. NITTO KOHKI has made available a complete series of air compressors and suction pumps that incorporate this uniquely functional design. These are quite appropriate as air sources or suction power units for various pneumatically operated equipment and apparatus in advanced industries.

NITTO KOHKI CO., LTD.

Head Office

9-4, Nakaikagami 2-chome, Ohta-ku, Tokyo 146-8555, Japan

Tel : +81-3-3755-1111 Fax : +81-3-3753-8791 E-mail : overseas@nitto-kohki.co.jp

Web www.nitto-kohki.co.jp/e



This catalog is printed using environmentally friendly paper and vegetable oil inks.