



# DRILLS / TAPPERS

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# INSTRUCTIONS

## DRILL SIZE, CUTTING SPEED AND MATERIAL

When selecting a suitable model of drill for your application, it should be chosen on the basis of drill bit size and suitable cutting speed for the material to be drilled. The table below shows the recommended drill bit sizes for different speeds when drilling some common materials. The figures in the table are based on drill speeds at normal pressure and the minimum torque in conjunction with drill breakthrough. The table only shows which drill bit sizes give the cutting speeds within the ranges stated. Note that it is quite possible to drill with smaller diameter drill bits, i.e. at lower cutting speeds.

In order to obtain a sufficient cutting force when applying feed pressure by hand, pre-drilling is recommended for drill bit sizes above 8 mm when drilling in mild steel, soft cast iron, malleable iron as well as for holes larger than 6 mm in forged steel and stainless steel.

Fuji Drills are light weight with a sturdy construction. Their practical design represents Fuji's latest developments in drills technology. Fuji offers a complete line of drills with a drilling capacity range from 2 mm to 100 mm.

### Suggested Cutting Speed (min<sup>-1</sup>) for Drilling

Material	Stainless Steel	Forged Steel	Mild Steel	Soft Cast Iron	Malleable Iron	Brass or Bronze	Aluminum	Magnesium	Plastic	Wood	Titanium
Drill bit cutting speed	9-12	12-15	24-33	30-45	24-27	60-90	60-90	75-120	30-45	90-120	15-18
3 mm	1100	1400	3000	4000	2700	8000	8000	10400	4000	11000	1750
4 mm	840	1100	2200	3000	2000	6000	6000	7800	3000	8400	1300
5 mm	860	860	1800	2400	1600	4800	4800	6200	2400	6700	1050
6 mm	550	700	1500	2000	1350	4000	4000	5200	2000	5600	880
8 mm	420	540	1100	1500	1000	3000	3000	3900	1500	4200	660
10 mm	330	430	900	1200	800	2400	2400	3100	1200	3300	630
12 mm	280	350	750	1000	700	2000	2000	2600	1000	2800	440
13 mm	260	330	700	920	630	1800	1800	2400	920	2550	400
14 mm	240	300	640	850	580	1700	1700	2200	850	2400	370
16 mm	210	270	560	750	500	1500	1500	1950	750	2100	330
19 mm	180	230	480	630	430	1250	1250	1600	630	1800	280
22 mm	150	200	410	540	370	1100	1100	1400	540	1500	240
23 mm	140	190	390	520	350	1000	1000	1350	520	1450	230
25 mm	130	170	360	480	320	960	960	1250	480	1330	210
28 mm	120	150	320	420	290	850	850	1100	420	1200	190
32 mm	100	130	280	380	250	750	750	980	380	1050	160
44 mm	75	100	210	270	180	550	550	700	270	750	120
50 mm	65	85	180	240	160	480	480	620	240	670	110
75 mm	44	57	120	160	110	320	320	420	160	450	70
100 mm	33	43	90	120	80	240	240	310	120	330	55

## DRILLS FEATURES

### REVERSIBLE



Fuji offer some reversible drills. The reverse action is selected by simply turning the reverse lever.



### PLASTIC COVER

The plastic cover softens the effect of vibration during the drilling application and creates a "warm to touch" feeling to improve operator comfort.

### TWO-STAGE THROTTLE ACTUATION



This mechanism allows slow start smooth operation to full speed allowing the drill bit to be centralised prior to drilling at full speed.



### DEAD HANDLE

The dead handle helps to soften the breakthrough reaction force experienced when drilling "tough holes".



### SELF-RETURN ROLL HANDLE

When the operator releases the handle, it automatically returns to the "OFF" position and the air supply is switched off. When ordering, add "S" to the end of the model name.



### SWIVEL TYPE EXHAUST COVER

The exhaust cover can be rotated to enable the operator to choose a convenient direction of the exhaust air.



### REAR EXHAUST WITH BUILT-IN MUFFLER

The noise level is minimised via the muffler built into the exhaust cover.



### LOCKING HANDLE

The locking handle is designed to reduce the risk of inadvertent starting of the drill. The handle reverts automatically to the locked position when released.

### JACOBS TAPERED MODELS WITH YUKIWA CHUCK

Fuji offer special models with Jacobs tapered spindles and chucks for very precise drilling application.

Especially FRD-6PH series provides run-out (0,02mm for FRD-6PH-2 & 3, 0,06mm for FRD-6PH-5 & 7) For more versatile applications the series provides 3/8"-24 spindles models (FRD-6PH TH).



FRD-6PH-3



Yukiwa tapered chucks



FRD-6PH-5

## STRAIGHT TYPE

FRD-5S



FRD-6S



## GLOBAL SPECIFICATIONS

Model		Drilling Capacity		Stall Torque		Free Speed	Type and Size of Spindle		Chuck Capacity		Side to Center			Power		Overall Length		Weight		Max. Air Consumption		Air Hose Size	
Thread Type	Taper Type	mm	in	N.m	ft.lb	min <sup>-1</sup>	Thread	Taper	mm	mm	in	W	hp	mm	in	kg	lb	m <sup>3</sup> /min	ft <sup>3</sup> /min	mm	in		
FRD-5S-1		5	3/16	2	1.5	3200	3/8-24UNF		6.5	18.5	3/4	180	0.24	188	7.4	0.6	1.32	0.60	21.2	6.3	1/4		
	FRD-5S-2T	5	3/16	0.3	0.2	24000		Jacobs Taper D	5	18.5	3/4	180	0.24	174	6.85	0.5	1.1	0.60	21.2	6.3	1/4		
	FRD-6S-1T	3	1/8	0.6	0.44	21000		Jacobs Taper 1	6.5	21	17/20	290	0.39	177	6.97	0.7	1.52	0.54	19.2	9.5	3/8		
FRD-6S-2		5	3/16	2.5	1.8	4300	3/8-24UNF		6.5	21	17/20	290	0.39	209	8.23	0.9	1.98	0.68	24	9.5	3/8		
FRD-6S-3		8	5/16	2.9	2.1	2800	3/8-24UNF		8	21	17/20	290	0.39	218	8.56	1	2.21	0.68	24	9.5	3/8		
FRD-6S-5		10	7/16	7	5.2	1300	3/8-24UNF		10	23	29/32	290	0.39	237	9.31	1.1	2.43	0.68	24	9.5	3/8		
● FRD-6S-7		13	1/2	16	11.8	600	1/2-20UNF		13	21	17/20	290	0.39	271	10.7	1.7	3.75	0.68	24	9.5	3/8		

\* Marked ● are furnished with Dead Handle

## TOOL SELECTION GUIDE

### Standard models

Model	Throttle	
	Lever	Locking Lever (F)
FRD-5S-1 E	541 205 3306	541 207 2178
FRD-5S-2T	541 205 3310	
FRD-6S-1T	541 207 2214	
FRD-6S-2 E	541 205 3331	541 205 3332
FRD-6S-3 E	541 205 3337	541 205 3340
FRD-6S-5 E	541 205 3343	541 205 3346
FRD-6S-7 E	541 205 3348	541 205 3350

### CE certified models

Model	Throttle
	Locking Lever (F)
FRD-5S-1F EC	541 207 2179
FRD-6S-2F EC	541 207 2216
FRD-6S-3F EC	541 207 2221
FRD-6S-5F EC	541 207 2225
FRD-6S-7F EC	541 207 2229

For CE region availability of non CE models, please inquire to your Fuji representative.

### NPT models

Model	Throttle
	Lever
FRD-5S-2T N	541 205 3311
FRD-6S-3 N	541 205 3335

For possibility of NPT inlet for other models, please inquire to your Fuji representative.

## ACCESSORIES

### DRILL CHUCKS



AC Number	Part Number	Models	Chuck Capacity	Type and Size of Spindle
DCK-6J	541 205 2006	FRD-5S-2T	5mm	J.T.#D
DCK-6.5	541 205 2007	FRD-5S-1 series, 5P-1 series, 6S-2 series, 6PH-2 series	6.5mm	3/8"-24 (Thread)
DCK-6.5J	541 205 2009	FRD-6PH-3 series	6.5mm	J.T.#1
DCK-8	541 205 2010	FRD-8PX-1 series	8mm	3/8"-24 (Thread)
DCK-8J	541 205 2011	FRD-6PH-3 series	8mm	J.T.#1
DCK-10	541 205 1997	FRD-8PX-2 series	10mm	3/8"-24 (Thread)
DCK-10J	541 205 2000	FRD-6PH-5 series	10mm	J.T.#2S
DCK-13	541 205 2001	FRD-8PX-3 series	13mm	1/2"-20 (Thread)
DCK-13J	541 205 2003	FRD-6PH-7 series	13mm	J.T.#6
DCK-16	541 205 2004	FRD-16Z series	16mm	5/8"-16 (Thread)

# DRILLS

## PISTOL/REAR EXHAUST TYPE



FRD-6PH-3



FRD-6PH-7



FRD-8PX

## GLOBAL SPECIFICATIONS

Model		Drilling Capacity		Stall Torque		Free Speed	Type and Size of Spindle		Chuck Capacity		Side to Center		Power		Overall Length		Weight		Max. Air Consumption		Air Hose Size	
Thread Type	Taper Type	mm	in	N.m	ft.lb	min <sup>-1</sup>	Thread	Taper	mm	mm	in	W	hp	mm	in	kg	lb	m <sup>3</sup> /min	ft <sup>3</sup> /min	mm	in	
FRD-5P-1		5	3/16	2	1.5	3200	3/8-24UNF		6.5	18	18/25	180	0.24	155	6.1	0.6	1.32	0.40	14.1	6.3	1/4	
	FRD-6PX-1T	3	1/8	0.6	0.44	21000		Jacobs Taper 1	6.5	21	17/20	290	0.39	182	7.17	1	2.21	0.68	24	9.5	3/8	
FRD-6PH-2 TH	FRD-6PH-2	5	3/16	2.7	2	4300	3/8-24UNF	Jacobs Taper 1	6.5	21	0.85	340	0.46	198	7.8	0.9	1.98	0.58	20.6	9.5	3/8	
FRD-6PH-3 TH	FRD-6PH-3	6.5	1/4	4.3	3.2	2800	3/8-24UNF	Jacobs Taper 1	6.5	21	0.85	340	0.46	198	7.8	0.89	1.96	0.58	20.6	9.5	3/8	
FRD-6PH-3 8 TH	FRD-6PH-3 8	8	5/16	4.3	3.2	2800	3/8-24UNF	Jacobs Taper 1	8	21	0.85	340	0.46	198	7.8	0.89	1.96	0.58	20.6	9.5	3/8	
● FRD-6PH-5 TH	● FRD-6PH-5	10	7/16	7.5	5.5	1300	3/8-24UNF	Jacobs Taper 2S	10	21	0.85	320	0.43	243	9.54	1.4	3.09	0.58	20.6	9.5	3/8	
● FRD-6PH-7 TH	● FRD-6PH-7	13	1/2	15.8	11.7	600	1/2-20 UNF	Jacobs Taper 6	13	22.5	0.9	320	0.43	258	10.1	1.5	3.31	0.58	20.6	9.5	3/8	
FRD-8PX-1		8	5/16	5.9	4.4	2600	3/8-24UNF		8	25	1	440	0.59	198.5	7.81	1.7	3.75	0.76	26.8	9.5	3/8	
● FRD-8PX-2		10	7/16	12	8.9	1300	3/8-24UNF		10	26.5	1 1/10	440	0.59	220	8.64	2.1	4.63	0.76	26.8	9.5	3/8	
● FRD-8PX-3		13	1/2	20	14.8	900	1/2-20UNF		13	25.5	1	400	0.54	253.5	9.95	2.9	6.39	0.76	26.8	9.5	3/8	

\* Marked ● are furnished with Dead Handle

## TOOL SELECTION GUIDE

### Standard models

Model	Jacobs Taper Models	Threaded Models (TH)	
		with chuck	without chuck (W/O C)
FRD-5P-1		541 205 3302	
FRD-6PX-1T	541 207 2192		
FRD-6PH-2	541 207 7834	541 210 4338	541 210 4359
FRD-6PH-3	541 207 2186	541 210 4341	541 210 4362
FRD-6PH-3 8	541 207 2187	541 210 4344	
FRD-6PH-5	541 207 2188	541 210 4347	541 210 4365
FRD-6PH-7	541 207 2190	541 210 4350	541 210 4368
FRD-8PX-1		541 205 3363	
FRD-8PX-2		541 205 3366	
FRD-8PX-3		541 205 3368	

### CE certified models

Model	Jacobs Taper Models	Threaded Models (TH)	
		with chuck	without chuck (W/O C)
FRD-5P-1		541 207 2176	
FRD-6PH-2	541 210 3166	541 210 4339	541 210 4360
FRD-6PH-3 8		541 210 4345	
FRD-6PH-3	541 210 3169	541 210 4342	541 210 4363
FRD-6PH-5	541 210 3147	541 210 4348	541 210 4366
FRD-6PH-7	541 210 3170	541 210 4351	541 210 4369
FRD-8PX-1		541 207 2236	
FRD-8PX-2		541 207 2238	541 207 2239
FRD-8PX-3		541 207 2241	541 207 2242

For CE region availability of non CE models. Please inquire to your Fuji representative.

### NPT models

Model	Jacobs Taper Models	Threaded Models (TH)	
		with chuck	without chuck (W/O C)
FRD-5P-1		541 205 3301	
FRD-6PH-2	541 210 2865	541 210 4340	541 210 4361
FRD-6PH-3 8	541 210 3221	541 210 4346	
FRD-6PH-3	541 207 8455	541 210 4343	541 210 4364
FRD-6PH-5	541 207 8454	541 210 4349	541 210 4367
FRD-6PH-7	541 207 8453	541 210 4352	541 210 4370
FRD-8PX-1		541 205 3361	
FRD-8PX-2		541 205 3364	
FRD-8PX-3		541 205 3367	

For possibility of NPT inlet for other models, please inquire to your Fuji representative.



GRIP HANDLE MEDIUM SIZE DRILLS



FRD-12Z-1~ 16Z-1  
(OUTSIDE LEVER)



FRD-12Z-1C~ 16Z-1C  
(INSIDE LEVER)

GLOBAL SPECIFICATIONS

Model	Drilling Capacity		Stall Torque		Free Speed	Type and Size of Spindle		Chuck Capacity		Side to Center			Power		Overall Length		Weight		Max. Air Consumption		Air Hose Size	
	mm	in	N.m	ft.lb	min <sup>-1</sup>	Thread	Taper	mm	mm	in	W	hp	mm	in	kg	lb	m <sup>3</sup> /min	ft <sup>3</sup> /min	mm	in		
FRD-12Z-1	12	1/2	22	16.2	1200	1/2-20UNF	-	13	34	1 11/32	660	0.88	372	14.6	3.3	7.28	1.20	42.4	12.7	1/2		
FRD-16Z-1	16	5/8	34.3	25.3	800	5/8-16UNF	-	16	34	1 11/32	660	0.88	364	14.3	3.7	8.16	1.20	42.4	12.7	1/2		

TOOL SELECTION GUIDE

Standard models

Model	Trigger	
	Outside trigger	Inside trigger (C)
FRD-12Z-1 E	541 205 3255	
FRD-12Z-1C E		541 205 3257
FRD-16Z-1 E	541 205 3261	
FRD-16Z-1C E		541 205 3264

CE certified models

Model	Trigger
	Inside trigger (C)
FRD-12Z-1C EC	541 207 2133
FRD-16Z-1C EC	541 207 2139

For CE region availability of non CE models, please inquire to your Fuji representative.

NPT models

Model	Trigger	
	Outside trigger	Inside trigger (C)
FRD-12Z-1 N	541 205 3253	
FRD-16Z-1 N	541 205 3259	
FRD-16Z-1C N		541 205 3262

For possibility of NPT inlet for other models, please inquire to your Fuji representative.

HEAVY-DUTY DRILLS



FRD-40R~50R~65R

FRD-20R~32R

FRD-75R~100R

GLOBAL SPECIFICATIONS

Model	Drilling Capacity		Reaming Tapping		Stall Torque		Free Speed	Socket	Feed Length		Power		Overall Length		Weight		Max. Air Consumption		Air Hose Size	
	mm	in	mm	in	N.m	ft.lb	min <sup>-1</sup>	M.T.#	mm	in	W	hp	mm	in	kg	lb	m <sup>3</sup> /min	ft <sup>3</sup> /min	mm	in
FRD-20R-21	19	3/4	16	5/8	63.7	47	600	2	67	2.64	880	1.18	282	11.1	7	15.4	1.20	42.4	12.7	1/2
FRD-20R-22	19	3/4	16	5/8	63.7	47	600	3	67	2.64	880	1.18	307	12.1	7	15.4	1.20	42.4	12.7	1/2
FRD-23R-21	22	7/8	19	3/4	78.4	57.8	480	2	67	2.64	880	1.18	282	11.1	7.3	16.1	1.20	42.4	12.7	1/2
FRD-23R-22	22	7/8	19	3/4	78.4	57.8	480	3	67	2.64	880	1.18	307	12.1	7.4	16.3	1.20	42.4	12.7	1/2
FRD-25R-11	25	1	22	7/8	147	108	530	3	96	3.78	2100	2.81	353	13.9	14	30.8	3.20	113	19	3/4
FRD-28R-11	28	1 1/8	25	1	177	130	430	3	96	3.78	2100	2.81	353	13.9	14	30.8	3.20	113	19	3/4
FRD-32R-11	32	1 1/4	25	1	196	145	380	3	96	3.78	2100	2.81	353	13.9	14.5	31.9	3.20	113	19	3/4
FRD-32R-12	32	1 1/4	25	1	196	145	380	4	96	3.78	2100	2.81	353	13.9	14.5	31.9	3.20	113	19	3/4
FRD-40R-11	44	1 3/4	32	1 1/4	304	224	220	4	93	3.66	1800	2.41	446	17.6	18.7	41.1	3.20	113	19	3/4
FRD-50R-11	50	2	50	2	431	318	150	4	93	3.66	1800	2.41	446	17.6	18.7	41.1	3.20	113	19	3/4
FRD-65R-1	65	2 9/16	65	2 9/16	608	448	190	5	125	4.92	3300	4.42	487	19.2	32	70.4	5.50	194.2	25.4	1
FRD-75R-1	75	3	75	3	1156	1156	85	5	128	5.04	3100	4.15	600	23.6	43	94.6	5.50	194.2	25.4	1
FRD-100R-1	100	4	100	4	1823	1345	55	5	128	5.04	3100	4.15	600	23.6	43	94.6	5.50	194.2	25.4	1

TOOL SELECTION GUIDE

Standard models

Model	Handle	
	Normal roll handle	Self return type (S)
FRD-20R-21	541 205 3265	541 205 3267
FRD-20R-22	541 205 3269	541 205 3271
FRD-23R-21	541 205 3273	541 205 3275
FRD-23R-22	541 205 3277	541 205 3279
FRD-25R-11	541 205 3282	541 205 3284
FRD-28R-11		541 205 3288
FRD-32R-11	541 205 3290	541 205 3292
FRD-32R-12	541 205 3294	541 205 3296
FRD-40R-11	541 205 3298	541 205 3300
FRD-50R-11	541 205 3313	541 205 3315
FRD-65R-1	541 205 3353	541 205 3355
FRD-75R-1 E	541 205 3358	541 205 3359
FRD-100R-1 E	541 205 3250	

CE certified models

Model	Handle
	Self return type (S)
FRD-20R-21S EC	541 207 2141
FRD-20R-22S EC	541 207 2143
FRD-23R-21S EC	541 207 2148
FRD-23R-22S EC	541 207 2150
FRD-25R-11S EC	541 207 2154
FRD-28R-11S EC	541 207 2157
FRD-32R-11S EC	541 207 2161
FRD-32R-12S EC	541 207 2165
FRD-40R-11S EC	541 207 2168
FRD-50R-11S EC	541 207 2172
FRD-65R-1S EC	541 207 2182
FRD-75R-1S EC	541 207 2234

For CE region availability of non CE models, please inquire to your Fuji representative.

NPT models

Model	Handle
	Self return type (S)
FRD-20R-21 N	541 205 3268
FRD-20R-22 N	541 205 3272
FRD-23R-21 N	541 205 3276
FRD-23R-22 N	541 205 3280
FRD-50R-11 N	541 205 3314
FRD-75R-1 N	541 205 3360

For possibility of NPT inlet for other models, please inquire to your Fuji representative.