

Impax Percussion Hammers

Driller operational guide and specifications

MAKEUP TORQUE

(Hammer and API connections)

Recommended makeup torque, driver sub and top sub	
Hammer size, in	Torque, ft.lbf
6	8,000–10,000
8	18,000–20,000
10	30,000–35,000
12	40,000–45,000

Recommended makeup torque, API connection	
Connection	Torque, ft.lbf
3½ Reg Pin	9,000
4½ Reg Pin	21,000
6¾ Reg Pin	47,000

ROTATION SPEEDS & WEIGHT ON BIT

For makeup, always rotate clockwise (CW), even if stuck in hole. Counter clockwise rotation can cause backoffs. When entering and exiting the wellbore, rotation should always be clockwise and limited to between 10 and 20 rpm. Excessive rpm will damage bit inserts.

“Kessler Method” for establishing WOB & Rotary Speed (Recommended)

- Off bottom rotate hammer CW at rate of approximately (300/bit diameter inches). Apply air
- Tag bottom and increase feed force until rotation pressure spikes slightly, then back off on feed force until rotation pressure smooths out

- Check advancement per revolution of the drill string using chalk or soap stone
- Make necessary changes to feed and rotation speed to obtain 1/2–3/4 in advancement per revolution

Remember to zero your WOB measurement at least every 3 pipe stands.



Adjust RPM to give 3/4–1 in

LUBRICATION RATE:

2 quarts per hr; per 1,000 SCFM used[†]

Suggested types and viscosities

Company	Medium SAE 40	Heavy SAE 60 [‡]
Exxon/Esso	Aroc 150	Aroc 302
Shell	Torcula 150	Torcula 320
Texaco/Caltex	Rock Drill Lube 100	Rock Drill Lube 320
Chevron	Vistac 150	Vistac 320
Bioblend ^{††}	RDP 150	RDP 320

[†]Double when misting

[‡]Use when ambient temperature is 80 degF or higher

^{††}Biodegradable

MIST DRILLING

Proper water and soap combination is trial and error process. Good starting point is:

- 6–12 BPH water (4–8 gpm)
- 0.5–4 GPH soap (0.1% to 0.25% by volume in the water)

Minimum 30% increase in air volume required over that for dusting

Impax Percussion Hammers

AIR VOLUME REQUIREMENTS FOR HOLE CLEANING

Caution: The air volume required for bore-hole cleaning may be much higher than that required to operate the air hammer. If the excess air is not bypassed, it may cause excessive hammer operating pressures resulting in bit or hammer failure. To prevent this situation, a choke is often installed in the hammer to bypass excess air. In situations that require unusually high air volumes (e.g., a large hole drilled with relatively small drillpipe) it may be necessary to run a bypass sub above the hammer.

Air volume requirements for dust drill, scf/m

Hole size, in	Drillpipe size, in	Depth, ft						
		1,000	2,000	4,000	6,000	8,000	10,000	12,000
16–17½	6¾	6863	7205	7942	8755	9651	10640	11729
16– 7½	5½	6863	7579	8355	9210	10153	11193	12339
16– 7½	4½	7481	7854	8658	9544	10520	11599	12786
14¾–15	4½	5356	5624	6201	6837	7537	8310	9162
12¼	6¾	2777	2915	3214	3543	3905	4305	4746
12¼	5½	3134	3290	3627	3998	4407	4859	5356
14¼	4½	3395	3565	3929	4332	4775	5264	5803
11	5½	2373	2492	2747	3028	3338	3680	4057
11	4½	2635	2766	3049	3362	3706	4086	4504
97/8	4½	2021	2121	2339	2578	2842	3133	3454
8½–8¾	4½	1473	1546	1704	1879	2071	2283	2517
7¾	4½	1092	1147	1264	1393	1536	1693	1867
6¾	3½	871	914	1008	1111	1225	1351	1489
6½	3½	701	736	811	894	986	1087	1198

Note: Increase by 30% for directional drilling

BYPASS AIR THROUGH CHOKE

Bypass air through choke, scf/m

Gauge pressure, psi	Choke diameter, in					
	⅛	⅜	¼	⅜	½	⅝
250	37	83	147	330	588	919
300	44	100	175	396	705	1094
350	51	116	203	462	822	1267
400	58	130	230	519	929	1440
450	65	146	258	585	1036	1610
200	72	162	586	644	1144	1787

LOADING RATES

If it is necessary to load the hole with fluid, while the hammer is downhole, use the flow rates shown below.

Impax air hammer loading rates

Hammer	Maximum flow rate, galUS/min
Impax 8	250
Impax 10	250
Impax 12	500