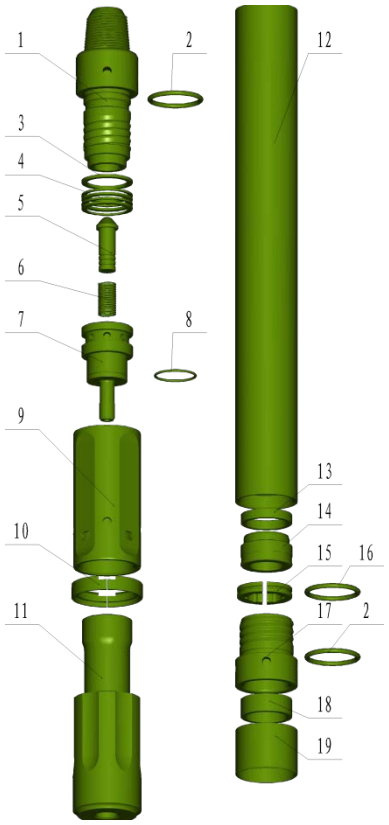
SPM3112 DTH Hammer



部 件 Replacement Parts	编码 Codes	数量 No.
01、后接头 Top sub	275001000	1
02、O-型圈 Top sub with o-ring	275002300	2
03、垫 圈 Steel pad ring	275003000	1
04、碟 簧 Compression ring	275004300	4
05、逆止阀 Check valve dart	275005300	1
06、弹 簧 Check valve dart spring	275006300	1
07、配气座 Rigid valves	275008000	1
08、O-型圈 Rigid valves with o-ring	275009300	1
09、气 缸 Internal cylinder	275010000	1
10、气缸座 Check ring	275011000	1
11、活 塞 Piston	275012000	1
12、外套管 Piston case	275013000	1
13、矩形圈 Rubber ring	275013300	1
14、导向套 Guide sleeve	275014000	1
15、保持环 Bit retainer ring	275015000	1
16、O-型圈 Bit retainer ring with o-ring	275016300	1
17、前接头 Driver sub	275018000	1
18、矩形圈 Rubber ring	275017300	1
19、防落套 Retainer	275019000	1

SPM3112 Hammer Technical Parameters

钻孔直径 (mm) Drilling diameter	长度 (mm) Hammer length	外径 (mm) External diameter	重量 (Kg) Weight	工作气压 (Mpa) Working pressure	耗风量 (m3/min) Air consumption	冲击功 (N.M) Torque	冲击次数 (次/分) Impact frequency	钻杆联接 方式 Connection thread	钎头联接 方式 Connection thread
Φ311~508	2110	Φ275	641	0.8~2.4	25~78	2940	810~1500	API 7 5/8"P	Φ210×12

SPM3112 Bits

SPM3112 Bits ASSEMBLY

1、 Remove Driver sub17 (275018000) from Hammer.

2、 Coat the bit splines liberally with copper or zinc based thread compound and install the driver sub on the bit.

3、 Driver sub17 (275018000) counterclockwise rotation Angle，Insert drive liner;

4、 Retainer 19 (275019000) onto the bit and;

5、 Install the bit retaining ring and o-ring onto the bit and Driver sub17 (275018000);

6、 Finally the assembly good parts whole screwing in Hammer。

SPM3112 Bits Technical Parameters

件号 Part No.	直径(in.) Dia	单重(Kg) Weight	合金 Buttons	配用冲击器 DTH Hammer
SPM3112 13"	13	225	45×Φ19	SPM3112
SPM3112 15 3/4"	15 3/4	295	66×Φ19	
SPM3112 17 1/2"	17 1/2	325	97×Φ19	
SPM3112 20"	20	400	98×Φ19	

TROUBLESHOOTING GUIDE

The majority of DTH operating problems can be traced to improper operation. These troubleshooting charts will help you by suggesting a probable cause and a recommended remedy.

Problem	Cause(s)	Remedy(s)
Rough-erratic operation	1. Too much water injection.	1. Reduce level of water injection. Consider installing a Hydrocyclone.
	2. Chuck has worn too much.	2. Inspect chuck length for correct body length. A short chuck will restrict air needed to return piston. Note that body length is the distance from the shoulder which contacts the casing to the shoulder that contacts the bit.
	3. Rotation speed too slow.	3. Increase rotation speed to get at no more than 1/2 in. (12.7 mm) advance per revolution. Watch flat on carbide; if it´s on the leading edge of the insert rotation´s too slow.
	4. Feed too hard.	4. Set feed pressure (decrease holddown or increase holdback) just until pulsation in rotation pressure falls and pressure is steady.
	5. Valve lift too large.	5. Inspect valve lift and replace valve assembly if needed. Valve lift should be .045 - .055 in. (1.14 - 1.9 mm) or, .075 - .085 in. (1.9 - 2.16 mm) for high flow S60 valve.
	6. Worn/leaking valve seal.	6. Check for axial wear of outside valve seal groove. Replace valve assembly if groove has worn more than .06'' (1.5 mm).
	7. Worn bit bearing.	7. Replace bit bearing. Leakage past bit bearing may cause piston to lack upstroke force making cycle erratic.
	8. Worn piston exhaust tube	8. Inspect piston bore and exhaust tube vs. bore or exhaust tube. specification. Replace if needed. Leakage past this clearance can reduce piston upstroke force making cycle erratic.
	9. Worn non-lube seals	9. Replace seals and bearings.
Low Penetration/high pressure	1. Worn/leaking valve seal.	1. 1Check for axial wear of outside valve seal groove. Replace valve assembly if groove has worn more than .06 in. (1.524 mm).
	2. Chuck has worn too much.	2. Inspect chuck length for correct body length. A short chuck will restrict air needed to return piston.
	3. Too much water injection.	3. Reduce level of water injection. Consider installing a Hydrocyclone.
	4. Contamination (rubber hose, etc.) jammed hammer.	4. Remove obstruction which may be holding the in valve closed or restricting the air flow.
	5. Exhaust tube projection too long.	5. Check projection vs. specifications repair tube.
	6. Valve lift too small.	6. Measure valve lift. Replace parts as needed to correct. This problem usually means that standoff has been lost and internal parts are loose. Check standoff of backhead.
Low penetration/low pressure	1. Lack of oil.	1. Insure lubricator is working and hammer is getting coated with oil. Check bit blow ports for oil film.
	2. Worn drill clearances.	2a. Inspect piston for wear particularly on large diameter just beneath scallops. This is the most sensitive diameter. Check other diameters; tail bore and tail diameter for wear. Compare all to specification. 2b. Inspect guide diameter for wear. Compare with specification and replace if necessary. 2c. Check cylinder bore for wear. Compare to specification and replace if necessary. 2d. Check casing bore for wear. Compare to specification and reverse or replace if necessary. 2e. Check bearing bore for wear. Compare to specification and replace if necessary.
	3. Large valve gap.	3. Inspect valve lift and replace valve assembly if needed. Valve lift should be .045 - .055 in. (1.14 - 1.9 mm) or, .075 - .085 in. (1.9 - 2.16 mm) for high flow S60 valve.
	4. Damaged valve seat.	4. Inspect valve seat surface for damage or wear which could cause leakage. Replace valve is suspect.
	5. Worn non-lube seals.	5. Replace seals.

Drill running off bottom	1. Worn piston. 2. Excessive water injection.	1. Inspect large diameter of piston for wear. Leakage past the large diameter can cause the piston to cycle when off bottom. 2. Try reducing water injection level. Water inhibits the air venting process which is needed to shut the hammer off.
Component failures	1. Lack of oil. 2. Worn drill clearances. 3. Large valve gap.	1a. Lack of lubrication could cause frictional cracks. Check lubricator and insure oil film is developed on bit blow holes. 1b. Wrenching over wrong location distorts casing and causes frictional rubbing with piston. Apply tong wrench pressure in correct location. 1c. Fighting or getting stuck in hole heats and distorts casing bore causing frictional heat and cracks on piston. Flood tool with water when stuck. 1d. Collaring on an angle or feeding hard through voided, faulted or broken ground can cause casing to distort and rub piston causing cracks. Use light feed when going through tough conditions. 2a. Usually a sign of underfeeding. Increase feed until rotation pressure pulses and then back down till smooth. 2b. Cavitation from excess water injection can cause small pits in piston face. These pits turn into cracks. Avoid excessive water injection. 3a. Hammering, welding and wrenching in wrong location can fail casings; avoid these practices & use sharp tong jaws to loosen connections. 3b. Corrosion from internal undercuts and threads; use good quality (neutral pH) water and flush with oil when finished drilling. If possible, coat threaded areas undercuts and bore of casing with corrosion protector such as LPS Hardcoat. 3c. Look for beat in chuck which could allow the piston to stroke far enough to contact air distributor and overstress the casing. Replace chuck if worn more than specification. 3d. Look for leaking or loose fitting large dia valve seal which could make piston stroke too far and contact distributor. Replace the valve assembly. 3e. Casing has worn beyond discard point. Measure casing OD about 2 in. (50.8 mm) from chuck end. Compare to specification and replace if needed.
	4. Rolled over chuck. 5. Cracked backhead-body. 6. Cracked backhead threaded connection.	4. Underfeeding can cause the bit to rebound into shoulder. the chuck and generate a rolled up edge. Increase feed force. 5. Fighting from hole and pulling backhead through caved-in materials creates frictional heat. Rotate slowly and/or flood with water when stuck. 6. Look for evidence of connection moving on contact shoulder. Connection shoulder may be worn allowing movement. Replace/repair adapter sub or rod.
Breaking xhaust tubes	1. Erosion. 2. Damage. 3. Bit tube bore small.	1a. Water jetting erodes base of bit tube at striking surface. Reduce level of water injection. 1b. Contaminants in water mix and cause abrasive blast at base of exhaust tube. Use clean water. 2a. Damaging tubes when changing bits. Be careful to thread casing onto chuck while vertical and in alignment. 2b. Use care when transporting bits to avoid damage to tube. Keep bit in box until needed. 3. The tube bore of a bit can become deformed and pinch the tube. Look for a rolled over edge or deformation at the top of the bit bore. Remove by grinding away lip.
Chuck loosening in hole	1. Running loose. 2. Improper make up torque.	1a. Refer to proper feed settings 1b. Avoid feathering feed in loose ground or at end of rod. 2a. Tong chuck tight before drilling.
Chuck hard to loosen	1. Gripping poor. 2. Conditions	1a. Don´t grip over threads. 1b. Insure tong jaws are sharp. 2a. Try using breakout washer.