Shot Blasting Machine

I. Working Process

The shot blasting machine is a high-efficiency surface treatment and strengthening equipment for metal workpieces. It relies on the centrifugal force generated by the high-speed rotation of the blast wheel to propel steel grit, steel shot, and other abrasives at high speed against workpiece surfaces, simultaneously achieving surface cleaning, impurity removal, and workpiece strengthening. It combines the functions of sand shakeout, core removal, and cleaning, making it an indispensable surface pre-treatment equipment in the metal casting and processing industries.

The complete machine consists of four core components: the blast wheel, the shot collection-separation-conveying system, the workpiece carrier, and the dust collection system, forming a closed and efficient operation flow. During operation, workpieces run smoothly and continuously tumble on the carrier to ensure all-round shot blasting coverage; the blast wheel accelerates shots and propels them at high speed onto the workpiece surface, rapidly removing burrs, scale, rust, casting slag, and other impurities through powerful impact, while optimizing surface profile to improve subsequent coating adhesion, eliminating internal stress, and strengthening the workpiece structure to extend service life. Throughout the process, scattered shots are collected, screened, and purified for recycling, avoiding abrasive waste; the dust collection system operates simultaneously to collect and treat dust generated during blasting, keeping the working environment clean and preventing dust leakage. Equipment is classified as batch-type or continuous-type according to operating mode, accommodating different batch processing requirements.

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II. Key Parameters

Core Process: High-speed shot centrifugal blasting impact; integrated surface cleaning + workpiece strengthening

Equipment Classification: By carrier structure: crawler-type, belt-type, turntable-type, hanger-type, roller-conveyor-type;

By operating mode: batch-type, continuous-type

Core Components: Blast wheel, shot collection-separation-conveying system, workpiece carrier, dust collection system Processing Effects: Rapid removal of rust, scale, burrs, and casting slag; elimination of internal stress; improved coating adhesion and workpiece strength

Applicable Abrasives: Steel grit, steel shot, and other standard blasting consumables; selection adapted to workpiece material

Operating Mode: Batch-type (small batches, irregular-shaped workpieces), continuous-type (large batches,mass production)

Supporting Functions: Automatic shot recovery and recycling; integrated dust purification treatment

III. Operating Instructions

1. Pre-Start Preparation: Check the operating condition of the blast wheel and whether the shot supply is sufficient; confirm that the carrier, shot collection-separation system, and dust collection system are free of faults and blockages. Select appropriate shots and blasting parameters according to workpiece material and specifications; adjust the carrier speed to ensure smooth workpiece conveyance.

2. Start-Up Operation: Start the dust collection system first, then activate the shot conveyor and blast wheel. Once the equipment runs stably, load workpieces onto the carrier and start the conveying device so workpieces enter the blasting zone at a constant speed and tumble for all-round blasting treatment. Continuous-type equipment allows continuous loading; batch-type equipment completes processing per batch before unloading.

3. Operation Monitoring: Monitor the blast wheel speed, shot supply, carrier operation, and dust collection effectiveness in real time during operation. If shot blockage, uneven blasting, or dust leakage occurs, shut down immediately for inspection. Fine-tune blasting parameters based on surface treatment results to ensure processing standards are met.

4. Daily Maintenance: Regularly inspect blast wheel wear and replace consumable parts promptly; regularly clean impurities from the shot separation system, screen out damaged shots, and replenish new shots; regularly clean filter media and accumulated dust in the dust collection system to ensure effectiveness; regularly lubricate the carrier and transmission components to extend equipment service life.

5. Safety Precautions: Never open the blasting chamber door while the equipment is running; personnel must stay away from the blasting zone to prevent shot splatter injuries. Operators must wear professional protective gear. When shutting down, first stop loading and the blast wheel; after shots are fully recovered and dust purification is complete, shut down the dust collection system and main power supply.

IV. Product Advantages

1. **Efficient and fast processing**: Compared with sand blasting, manual grinding, and other surface treatment processes, shot blasting is faster and more thorough, simultaneously completing sand shakeout, core removal, rust removal, and deburring in a

single pass, greatly shortening surface treatment time and suitable for large-scale production.

2. **Versatile and practical**: Not only efficiently cleans workpiece surface impurities and improves appearance integrity, but also eliminates internal stress, strengthens workpiece structure, and extends service life; simultaneously optimizes surface roughness to significantly enhance coating adhesion for long-term corrosion protection.

3. **Comprehensive models, wide adaptability**: Multiple models available including crawler-type, belt-type, and hanger-type; batch and continuous operating modes can be flexibly switched to accommodate small castings, large workpieces, irregular parts, and batch parts of various specifications, meeting all types of production requirements.

4. **Energy-saving, low operating cost**: The automatic shot collection, screening, and recycling system greatly reduces shot consumption and lowers consumable costs; robust equipment structure with few wear parts, easy daily maintenance, low operation and maintenance costs, and high long-term cost performance.

5. **Environmentally friendly and compliant**: Equipped with a dedicated dust collection system for fully enclosed operation, effectively collecting blasting dust, eliminating dust leakage and workshop contamination, compliant with industrial environmental protection and occupational health and safety requirements, providing a friendlier working environment.

V. Applicable Industries

Widely applied in **foundry, machinery manufacturing, automotive components, steel structure processing, shipbuilding and heavy industry, hardware processing, mold manufacturing, rail transit, and construction machinery** and other industries, primarily for surface rust removal, scale removal, deburring, sand shakeout, and core removal of various castings, forgings, stampings, structural steel components, hardware parts, and irregular workpieces, as well as workpiece strengthening and coating adhesion improvement processes. Particularly suitable for production environments with high requirements on surface treatment efficiency and quality, such as foundries, machinery plants, automotive parts factories, and steel structure manufacturers.