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Nota di contenuto	Robot Grippers; Preface; Contents; 1 Introduction to Prehension Technology; 1.1 Grippers for Mechanization and Automation; 1.2 Definitions and Conceptual Basics; 1.3 Grasping in Natural Systems; 1.4 Historical Overview of Technical Hands; 2 Automatic Prehension; 2.1 Active Pair Mating; 2.2 Strategy and Procedures; 2.2.1 Prehension Strategy; Example of a prehension strategy; 2.2.2 Gripping Procedure, Conditions and Force; 2.2.3 Gripper Flexibility; 2.3 Gripper Classification; 2.4 Requirements and Gripper Characteristics; 2.5 Planning and Selection of Grippers; 3 Impactive Mechanical Grippers 3.1 Gripper Drives3.1.1 Electromechanical Drives; 3.1.2 Pneumatic Drives; 3.1.3 Electrostrictive and Piezoelectric Actuation; 3.2 Design of Impactive Grippers; 3.2.1 Systematics and Kinematics; 3.2.1.1 Parallel Impactive Grippers; 3.2.2 Angular Impactive Grippers; 3.2.3 Radial Impactive Grippers (Centring Grippers); 3.2.4 Internal Grippers; 3.2.5 Gripper with Self-blocking Capability; 3.2.6 Rotatable Jaw Grippers; 3.2.7 Gripper Finger and Jaw Design; 3.2.8 Self Securing Grippers; 3.2.8.1 Securing Through Spring Forces; 3.2.8.2 Securing Through Object Mass; 3.2.9 Three-finger Grippers

3.2.10 Four-finger Grippers and Four-point Prehension
4 Ingressive Grippers; 4.1 Flexible Materials; 4.1.1 Pinch Mechanisms; 4.1.2 Intrusive Mechanisms; 4.1.3 Non-Intrusive Mechanisms; 5 Astrictive Prehension; 5.1 Vacuum Suction; 5.1.1 Vacuum Production; 5.1.2 Vacuum Suckers; 5.1.3 Passive Suction Caps; 5.1.4 Air Jet Grippers; 5.2 Magneto adhesion; 5.2.1 Permanent Magnet Grippers; 5.2.2 Electromagnetic Grippers; 5.2.3 Hybrid Electromagnetic Grippers; 5.4 Electro adhesion; 5.4.1 Electro adhesive Prehension of Electrical Conductors; 5.4.2 Electro adhesive Prehension of Electrical Insulators
6 Contigutive Prehension
6.1 Chemoadhesion; 6.2 Thermo adhesion; 7 Miniature Grippers and Micro grippers; 7.1 Impactive Micro grippers; 7.1.1 Electromechanically Driven Impactive Micro grippers; 7.1.2 Thermally Driven Impactive Micro grippers; 7.1.3 Electro statically Driven Impactive Micro grippers; 7.2 Astrictive Micro grippers; 7.2.1 Vacuum Micro grippers; 7.2.2 Electro adhesive Micro grippers; 7.3 Contigutive Micro grippers; 8 Special Designs; 8.1 Clasp ing (Embracing) Grippers; 8.2 Anthropomorphic Grippers; 8.2.1 Jointed Finger Grippers; 8.2.2 Jointless Finger Grippers; 8.3 Dextrous Hands
9 Hand Axes and Kinematics
9.1 Kinematic Necessities and Design; 9.2 Rotary and Pivot Units; 10 Separation; 10.1 Separation of Randomly Mixed Materials; 10.2 Separation of Rigid Three Dimensional Objects; 10.3 Separation of Rigid Sheet Materials; 10.3.1 Gripping of Thin Blanks from a Magazine; 10.3.2 Air Flow Grippers; 10.4 Separation of Non-Rigid Sheet Materials; 10.4.1 Roller Grippers; 11 Instrumentation and Control; 11.1 Gripper Sensor Technology; 11.2 Perception Types; 11.2.1 Tactile Sensors; 11.2.2 Proximity Sensors; 11.2.3 Measurement sensors; 11.2.4 Finger Position Measurement
11.2.5 Measuring Procedures in the Gripper

Sommario/riassunto

Since robotic prehension is widely used in all sectors of manufacturing industry, this book fills the need for a comprehensive, up-to-date treatment of the topic. As such, this is the first text to address both developers and users, dealing as it does with the function, design and use of industrial robot grippers. The book includes both traditional methods and many more recent developments such as micro grippers for the optoelectronics industry. Written by authors from academia, industry and consulting, it begins by covering the four basic categories of robotic prehension before expanding into
