



ILLUSTRATIVE CONCEPT VISUAL

REFERENCE CONFIGURATION: 1-100 mL

Essential Oils Dropper Bottle Filling & Capping System

About

This compact monoblock system is configured for small-volume, low-viscosity products such as essential oils, hair oils, cosmetic serums, tinctures, liquid vitamins and ear drops. It combines bottle handling, dual-head filling, dropper feeding and positioning, screw capping and finished-product discharge within one automated platform.

The reference design uses a cam-driven indexing system for synchronized movement and can operate independently or connect with bottle washing, turntable, labelling and cartoning equipment to form a complete packaging line.

Technical Specifications

Category	Published Reference Specification
Applications	Essential oils, hair oils, serums, tinctures, liquid vitamins, ear drops
Working Capacity	60-70 bottles/min, dependent on product and fill volume
Recommended Fill Volume	1-100 mL; customizable
Filling Heads	2 filling heads
Filling Accuracy	Up to +/-1%
Filling Pump	316 stainless-steel magnetic pump; peristaltic option
Maximum Flow Rate	3 L/min, based on water
Bottle and Cap Size	Customizable
Controls	PLC and touchscreen HMI
Air Pressure	0.6-0.8 MPa
Electrical	220 V / 50 Hz / 5 A; 110 V customizable
Machine Size	2100 x 1460 x 1240 mm
Machine Weight	1500 kg

Essential Oil Applications

- Aromatherapy and therapeutic essential oils
- Hair, beard and scalp oils
- Facial serums and cosmetic concentrates
- Tinctures and liquid botanical extracts
- Liquid vitamins and wellness formulations
- Fragrance oils, diffuser oils and light perfumes

Key Features

1. Small-Volume Liquid Filling

Recommended for 1-100 mL low-viscosity products including essential oils, serums, tinctures and hair oils.

2. Dual-Head Magnetic-Pump Dosing

Two filling heads use 316 stainless-steel magnetic pumps for stable, clean and accurate dosing.

3. Integrated Dropper and Cap Handling

Bottle handling, dropper feeding, dropper positioning and screw capping are combined in one monoblock system.

4. Cam-Driven Starwheel Indexing

The starwheel positions bottles accurately and synchronizes filling, dropper placement and capping.

5. PLC and Touchscreen HMI

The HMI supports parameter setting, speed adjustment and real-time machine monitoring.

6. Production-Line Integration

The system can connect with bottle washing, turntables, labelling and cartoning equipment.

Integrated Process



Published System Features

- Dual-rail cap feeding • Guided cap placement • Torque-controlled tightening • Adjustable bottle guides • Interchangeable starwheel • Real-time HMI monitoring
- Labelling and cartoning line integration

System Advantages

- **Integrated Monoblock:** Combines filling, dropper handling and capping.
- **High-Speed Output:** Published capacity reaches 60-70 bottles per minute.
- **Accurate Small Doses:** Magnetic-pump filling provides accuracy up to +/-1%.
- **Flexible Packaging:** Bottle, cap and filling ranges can be customized.

Published reference configuration based on a comparable commercial essential-oil dropper-bottle filling and capping system. Actual performance varies by product, bottle and closure.