

Balcrank[®]

27-GALLON COMBINED OIL SUCTION & GRAVITY COLLECTION UNIT Model: 4110-030



Thoroughly read and understand this manual before installing, operating or servicing this equipment.

OPERATION, INSTALLATION, MAINTENANCE AND REPAIR GUIDE



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1. WARNINGS AND PRECAUTIONS

GENERAL OVERVIEW - PROFESSIONAL USE ONLY



- The Combined Oil Suction and Gravity Collection Unit is intended solely for professional maintenance operations involving the collection and transfer of used lubricating oil.
- Read and understand this Service Guide, all labels and safety decals before putting the unit into service; keep the manual with the equipment at all times.
- Operate the system strictly within the limits given in Section 2 – Technical Data. Do not modify, bypass or remove any component, especially the safety (relief) valve.
- Disconnect the compressed-air supply, depressurize the tank to at or below atmospheric pressure (≤ 0 bar g / 0 psi g), and allow all components to cool to ambient temperature before storage, transport, or maintenance.
- Use only genuine Balcrank spare parts; the use of non-approved parts or unauthorised modifications voids the warranty and may invalidate regulatory compliance.

PERSONAL SAFETY PRECAUTIONS — OPERATOR AND WORK-AREA REQUIREMENTS



- Qualified personnel only – Operate or service the Combined Oil Suction and Gravity Collection Unit solely by trained, authorised technicians. Training shall include operating principles, functional limits, emergency shut-off, spill-control and fire-response procedures.



- **Mandatory personal protective equipment (PPE)** – Select, issue and maintain PPE in accordance with OSHA 29 CFR 1910 Subpart I (USA) and Regulation (EU) 2016/425 (EU). As a minimum:
 - Heat-resistant gloves certified to EN 407 (contact heat ≥ 250 °C / 482 °F)
 - Impact- and splash-rated safety goggles with side shields, EN 166 Class B or ANSI Z87.1-“D3”
 - Protective footwear, ASTM F2413 (USA) or EN ISO 20345 S1P (EU)
 - Durable long-sleeved work clothing of low-flammability material.
- Hot-oil handling – When processing oil at temperatures ≥ 60 °C (140 °F), add:
 - Full-face shield meeting EN 166 3 B or ANSI Z87.1-“D3, D4”
 - Heat-insulated forearm or gauntlet protection (minimum contact heat level 2 per EN 407).
 - Waste oil shall be stored and disposed of in accordance with Directive 2008/98/EC (EU) or EPA 40 CFR 279 (US) and all local environmental regulations.
- **Ventilation and exposure limits** – Provide local or general ventilation whenever the waste oil may contain volatile solvents. Maintain airborne hydrocarbon concentrations below the applicable OSHA Permissible Exposure Limit (PEL) and the European Occupational Exposure Limit (OEL)— typically 5 mg m⁻³ for oil mist (8-h TWA).
- **Hearing protection** – If air-ejector noise exceeds 80 dB (A) (per EN ISO 11201 measurement), wear ear defenders conforming to EN 352 / OSHA 29 CFR 1910.95.
- Inspect PPE before each use; replace damaged items immediately.

REGULATORY COMPLIANCE STATEMENT



- **Equipment description** – Combined Oil Suction and Gravity Collection Unit consisting of a welded carbon-steel vessel with a gross volume of 100 L (26.4 US gal). The maximum allowable pressure (PS) is factory-limited to 0.5 bar g (7.3 psi g) by a spring-loaded relief valve. The resulting PS × V value is 50 bar·L (≈ 190 psi·gal).

EUROPEAN UNION

- **Pressure Equipment** – Because PS ≤ 0.5 bar g, the vessel is excluded from the Pressure Equipment Directive (PED) 2014/68/EU, Article 1 (2)(a).
- **Simple Pressure Vessels** – Design complies with EN 286-1, Class 3 (PS × V < 200 bar·L) and is placed on the market under the Simple Pressure Vessels Directive (SPVD) 2014/29/EU.
- **Machinery** – The unit contains no powered moving parts and is therefore outside the scope of the Machinery Directive 2006/42/EC (Art. 1 (2)(g)).
- **Work Equipment** – Installation, inspection and use must follow Directive 2009/104/EC and its national transpositions.

UNITED STATES

- **ASME Boiler & Pressure Vessel Code** – Operating pressure remains below the 15 psi g (0.103 MPa g) exemption limit of ASME BPVC Section VIII, Division 1, §U-1(c)(2)(a); the vessel is therefore exempt from (“non-code”) ASME Section VIII construction.
- **Occupational Safety & Health** – Operation, maintenance and PPE shall comply with OSHA 29 CFR 1910 (notably Subparts F, H and I) and NFPA 30 for flammable/combustible liquids.
- **Environmental Protection** – Waste oil must be stored and disposed of in accordance with EPA 40 CFR 279 and applicable state regulations.
- **NFPA 30 – Flammable & Combustible Liquids Code.** Used crankcase oil handled by this drainer is a Class IIIB combustible liquid (flash point > 93 °C / 200 °F) per NFPA 30 §4.3.1. The 100 L (26.4 US gal) tank is a portable tank (< 250 gal) under Chapter 4 and may be pressurised to ≤ 0.50 bar g (7.3 psi g) provided it is fitted with:
 - a normal vent and an emergency vent sized in accordance with §22.7;
 - a spring-loaded relief valve set ≤ 0.50 bar g and protected against tampering (§22.7.3.5);
 - carbon-steel shell thickness ≥ 1.2 mm (0.047 in) (§22.5.1).
- During transfer, the unit must be bonded and grounded to the receiving container (§18.5.4) and kept ≥ 0.9 m (3 ft) from ignition sources. Indoor storage is limited to two units (≈ 53 gal total) per control area unless a 110 % spill-containment sump is provided (§9.6.2).

CRITICAL SAFETY RULES



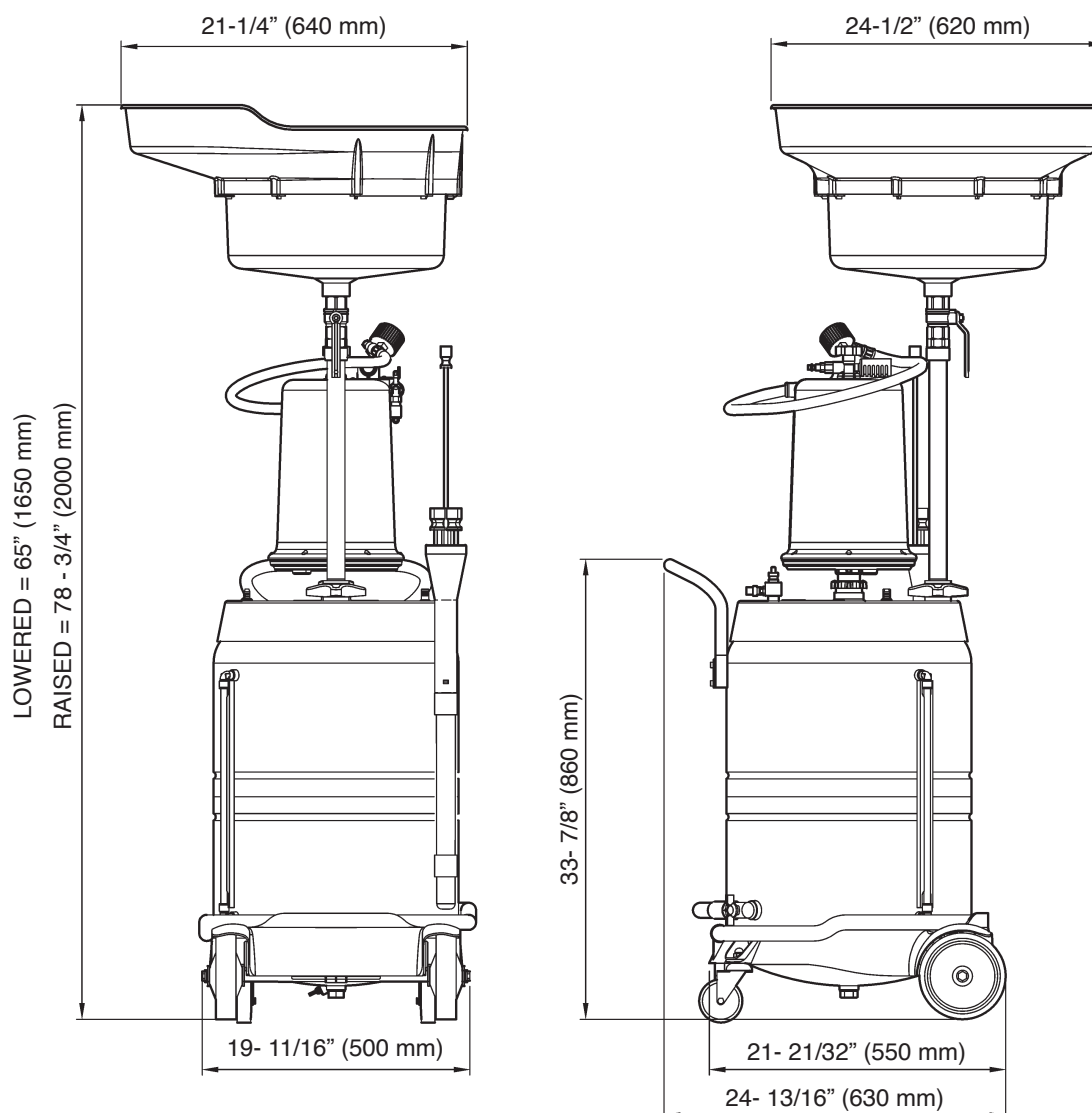
- Never tamper with, block or adjust the relief valve; factory set to 0.5 bar g / 7 psi.
- Verify that tank pressure does not exceed 0.5 bar g before opening the discharge valve.
- Do not subject the transparent sight-glass to a pressure differential outside the limits stated in Section 2 (technical data).
- Follow the procedures in Section 7 – Instructions for Use; deviations may cause over-pressure, hot-oil spray or environmental contamination.
- Report leaks, damaged hoses or missing labels immediately; remove the unit from service until repaired.



2. TECHNICAL DATA

TANK CAPACITY	26.42 gallons (100 liters)
TRANSPARENT CHAMBER CAPACITY	2.64 gallons (10 liters)
TIME TO FULL DISCHARGE	2 minutes and 45 seconds
AIR VOLUME AFTER FULL DISCHARGE	11.09 gallons (42 liters)
TEMPERATURE REQUIRED FOR OIL SUCTION	158 °F (70° C)
MAXIMUM ALLOWABLE WORKING PRESSURE (MAWP)	7.30 psi g (0.50 bar g)
RELIEF-VALVE SET PRESSURE	7.30 psi g (0.50 bar g)
MAXIMUM VACUUM	-10.9 psi g (-0.75 bar g)
PS x V	≈ 193 psi-gal (50.00 bar-L)
EFFECTIVE SUCTION VOLUME - Ø5 MM PROBE AT 80°, SAE 30	0.53 gal/min (2,0 l/min)
EFFECTIVE SUCTION VOLUME - Ø8 MM PROBE AT 80°, SAE 30	1.05 gal/min (4,1 l/min)
EFFECTIVE SUCTION VOLUME - MERCEDES PROBE AT 80°, SAE 30	1.84 gal/min (7,1 l/min)

3. DIMENSIONS



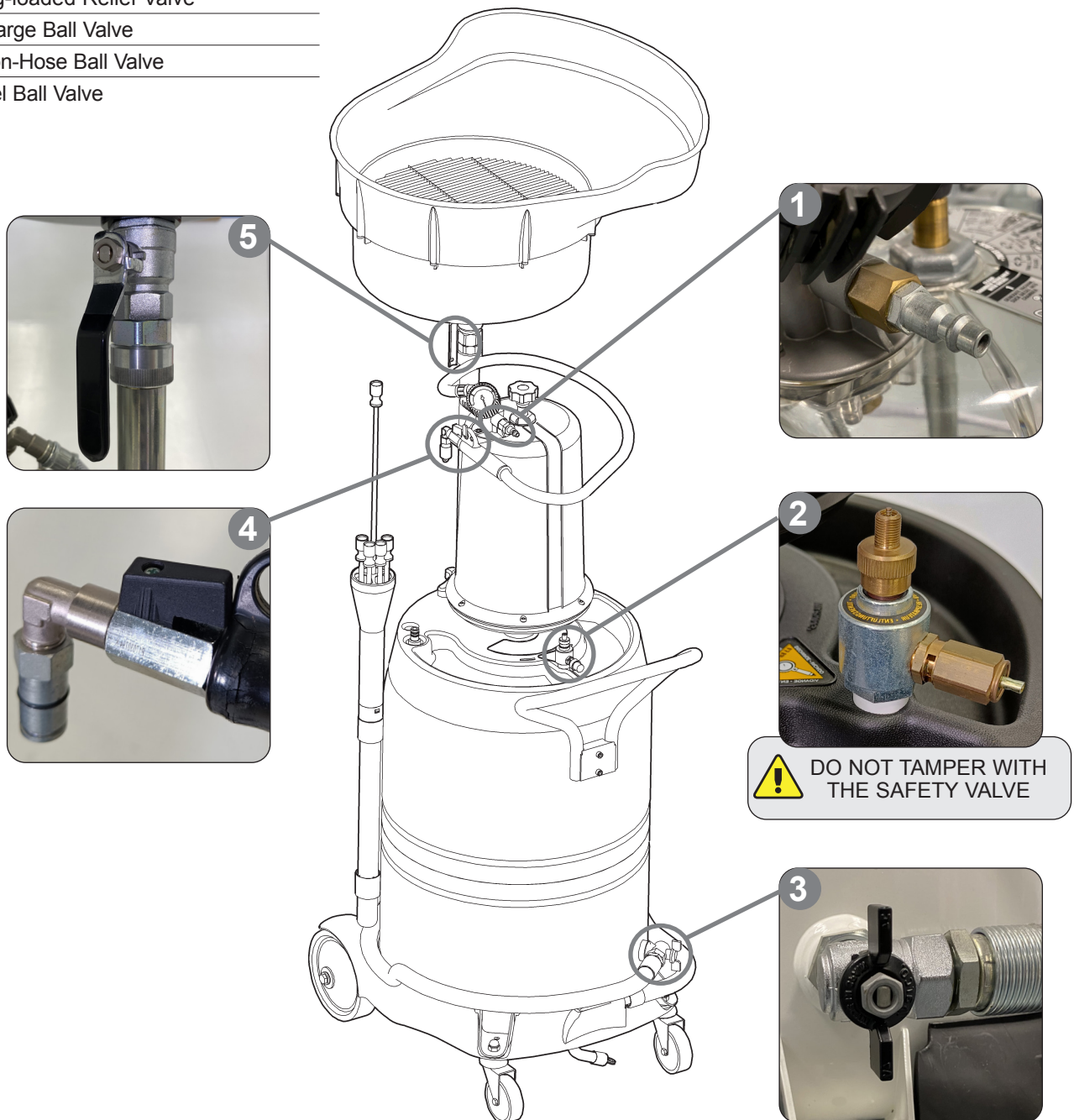
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4. EQUIPMENT DESCRIPTION

CODE	4110-030
NAME	27-GALLON COMBINED OIL SUCTION & GRAVITY COLLECTION UNIT
DESCRIPTION	- Used-oil recovery drainer by suction or gravity. - 27-gallon combined oil suction & gravity collection unit w/ 10 qt. transparent chamber - Includes a height-adjustable funnel with an anti-splash screen. - Includes a storage tank with a capacity of 27-gallon (100 liters). - Includes a probe kit and suction connectors. - Recommended for use in passenger cars or light industrial vehicles.

a. Valve location

- 1 Venturi Vacuum Generator Assembly
- 2 Spring-loaded Relief Valve
- 3 Discharge Ball Valve
- 4 Suction-Hose Ball Valve
- 5 Funnel Ball Valve



5. PRODUCT CONTENT

BOX 1 - Tank Assembly

- 1) Tank
- 2) Handlebar
- 3) Wand assembly + support + probe rack



BOX 2 - Funnel Assembly

- 1) Splash guard
- 2) Funnel
- 3) Funnel tube
- 4) Funnel ball valve



BOX 3 - Transparent Vacuum-Chamber Assembly (KPV)

- 1) Pre-vacuum chamber
- 2) Vacuum pump + gauge
- 3) Hose



RECOMMENDED TOOLS

(Tools shown are not supplied with the product)

- 1) Tap (pipe wrench)
- 2) Wrench
- 3) Cutter
- 4) ALLEN wrench
- 5) Phillips screwdriver



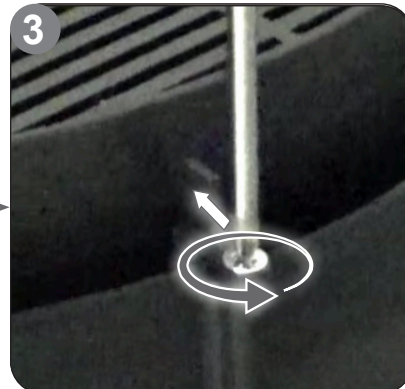
6. ASSEMBLY INSTRUCTIONS



CAUTION

Wear cut-resistant gloves (EN 388 Level 3) and safety goggles (EN 166 B) throughout the assembly procedure.

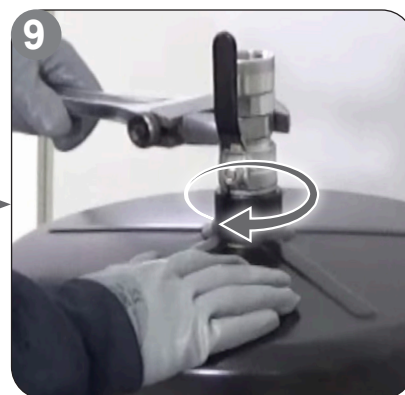
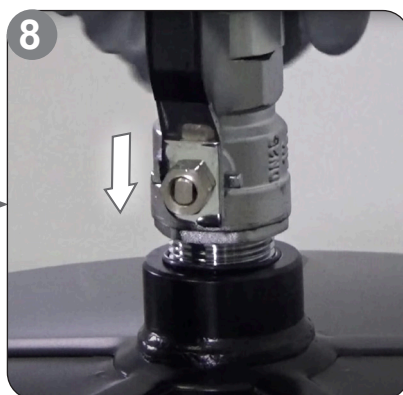
1. Bolt the push handle to the two inserts on the tank. Use the two hex-cap screws with flat washers to tighten.
2. Slide the probe-rack bracket into the tank socket and secure it.
3. Using the proper hex key, loosen (do not remove) the screws that clamp the splash-guard flanges to the strainer rim.



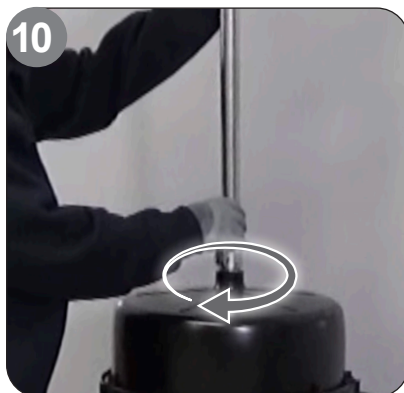
4. Rotate all the flanges outward 90 ° until they clear the strainer edge.
5. Set the funnel bowl squarely on the strainer, seating the gasket evenly.
6. Rotate the flanges inward until they grip the underside of the funnel rim.



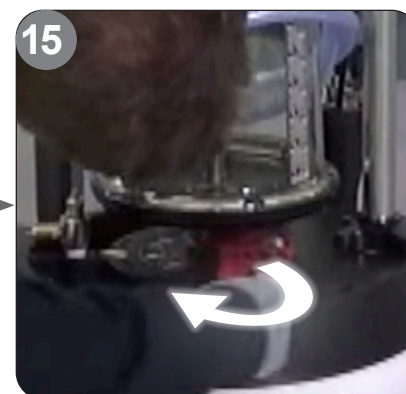
7. Tighten the clamp screws with the driver to fix the strainer.
8. Hand-thread the funnel ball valve into the funnel tube fitting.
9. Tighten the funnel ball valve with the wrench.



10. Thread the funnel tube onto the ball valve; hand-tighten until fully seated.
11. Lower the tube through the tank collar until the tube's bevel seats in the internal guide.
12. Engage the star nut and tighten finger-tight.



13. Place the Transparent Vacuum-Chamber Assembly (KPV) onto the tank neck, aligning the two locating dowels.
14. Spin the union nut clockwise by hand until the gasket contacts the tank lid. **CAUTION:** Do not use sealant or PTFE tape.
15. Tighten the union nut with a hook spanner or calibrated torque wrench.



7. INSTRUCTIONS FOR USE

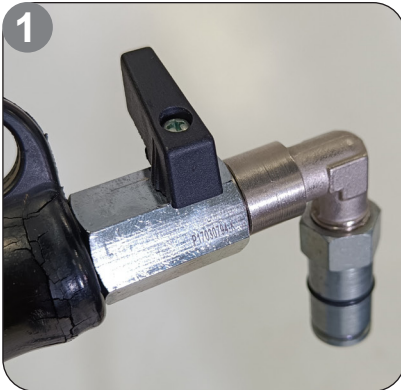
a. Vacuum generation within the chamber



CAUTION

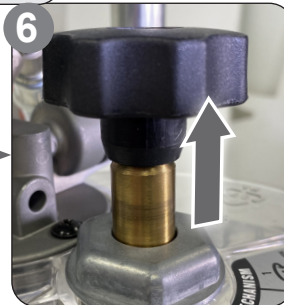
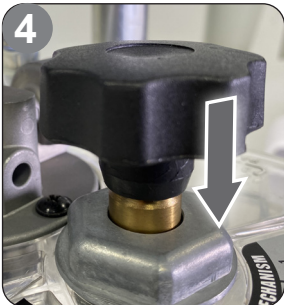
Wear safety goggles (EN 166 B / ANSI Z87.1 "D3") and heat-resistant gloves (EN 407) whenever compressed air is connected.

- 1-2. Close the suction-hose ball valve and close the discharge elbow valve on the tank outlet.
3. Close the funnel ball valve by moving the handle to the horizontal position.

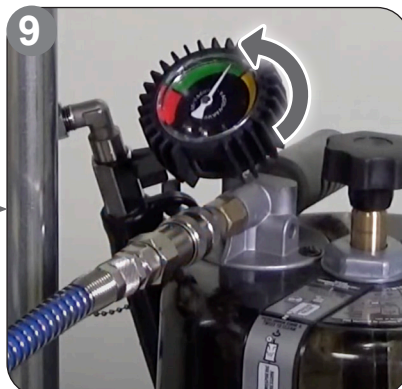
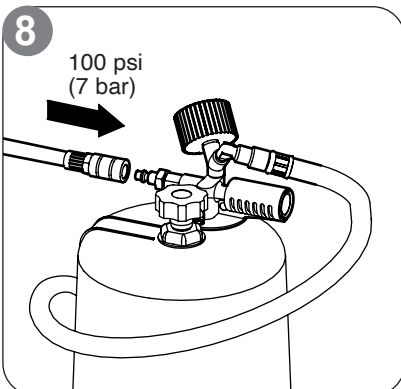


- 4-5. Press the chamber-isolation knob fully down and turn the knob 90 ° counter-clockwise to the "CLOSE" detent.
6. Release the knob; it rises to its upper (locked) position, confirming the chamber is isolated from the tank.
7. Verify the chamber gasket is fully seated.

CLOSE



8. Connect a clean, dry shop-air hose (6.0 – 7.0 bar g / 87 – 100 psi g) fitted with a female 1/4" BSPT quick-connect coupling to the male 1/4" BSPT quick-connect nipple on the chamber lid. Do not exceed 7 bar g (100 psi g).
9. Maintain airflow until the gauge pointer reaches the middle of the green band ≈ -0.7 bar g / -10 psi g, then disconnect the air line.
10. The chamber is now under vacuum and the unit is ready for oil suction.



b. Equipment + vehicle handling



CAUTION

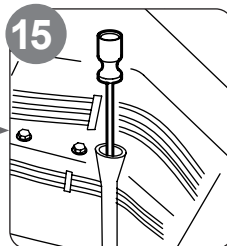
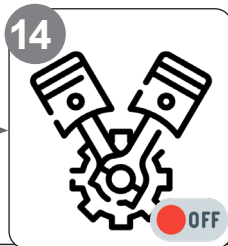
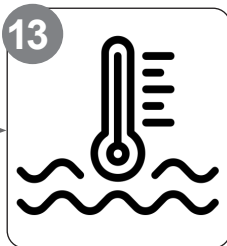
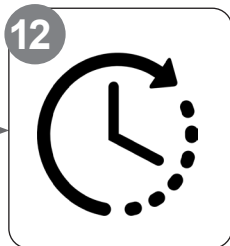
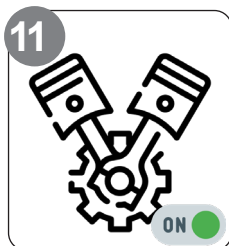
Wear heat-resistant gloves (EN 407) and splash-rated goggles (EN 166 B / ANSI Z87.1 "D3") throughout the extraction process.

11-12. Start the vehicle and let the engine idle. Run the engine for 1–2 min to reach a minimum oil temperature of 60 °C (140 °F).

13. Target oil-extraction temperature: 70 °C ± 5 °C (158 °F ± 9 °F).

14. **CAUTION:** shut the engine OFF and engage the parking brake before inserting any probe.

15. Remove the dipstick and insert the largest-diameter suction probe or the correct vehicle adaptor (Mercedes, VAG, PSA/BMW).



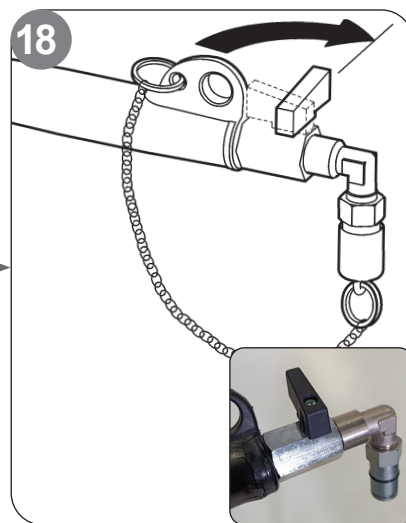
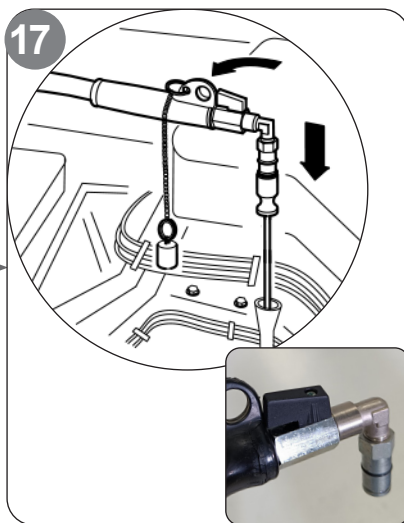
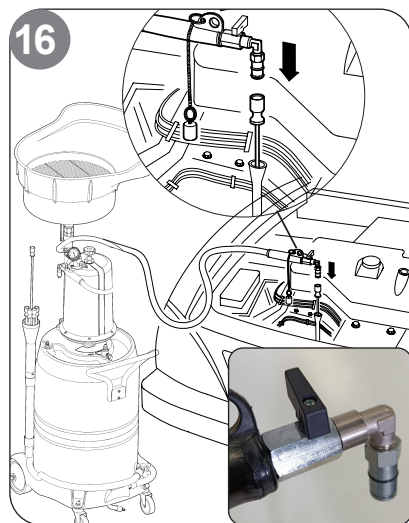
CAUTION:

TURN OFF THE
VEHICLE'S ENGINE

16. Remove the protective cap from the suction hose and couple the hose to the probe/adaptor.

17. Open the suction-hose ball valve to begin extraction. Maintain valve fully open until oil flow diminishes and becomes aerated.

18. When suction is complete, close the valve, disconnect the probe, and replace the hose cap.

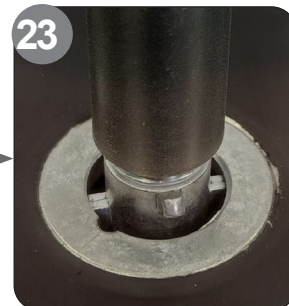
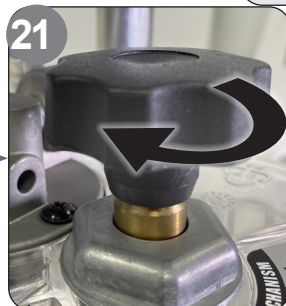
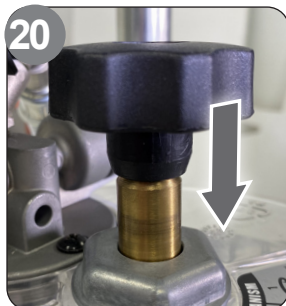


19. Re-insert the engine dipstick to its original position. To transfer the oil from the transparent chamber to the reservoir:

20-21. Press the chamber-isolation knob fully DOWN and rotate the knob 90° clockwise to the "OPEN" detent.

22-23. Release the knob; it moves to the lower (open) position. Wait until the sight-glass is empty (no oil visible).

OPEN



24. Verify the knob is locked in the OPEN position, then proceed to the next vehicle or to tank discharge.

c. Vacuum generation to send oil directly to the tank

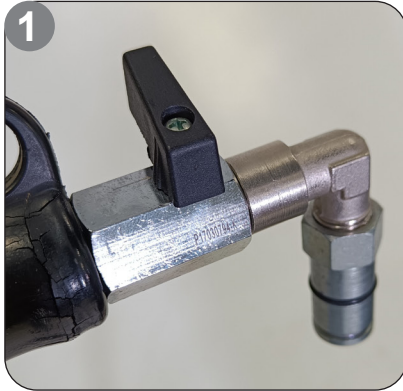


CAUTION

Wear safety goggles (EN 166 B / ANSI Z87.1 “D3”) and heat-resistant gloves (EN 407) whenever compressed air is connected.

1. Close the suction-hose ball valve. Rotate the lever 90 ° until it is perpendicular to the hose.

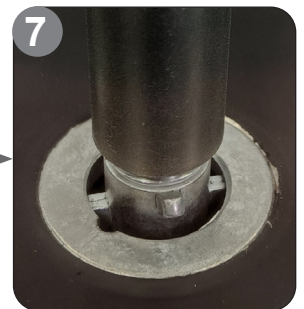
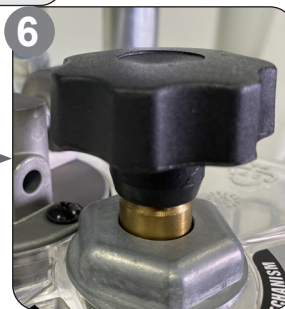
2-3. Close the tank-discharge elbow valve and close the funnel ball valve by placing the handle horizontal.



Connect chamber to tank:

4-5. Press the chamber-isolation knob fully DOWN. Turn the knob 90° clockwise to the “OPEN” detent.

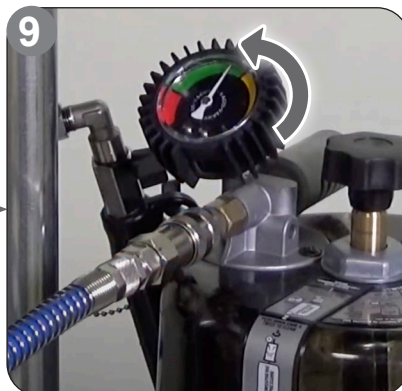
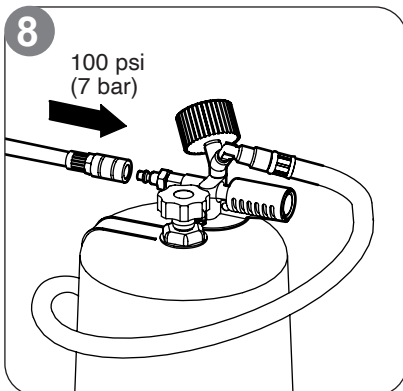
6-7. Release the knob; it remains in the lower (OPEN) position. Confirm gasket is fully seated.



Evacuate chamber + tank:

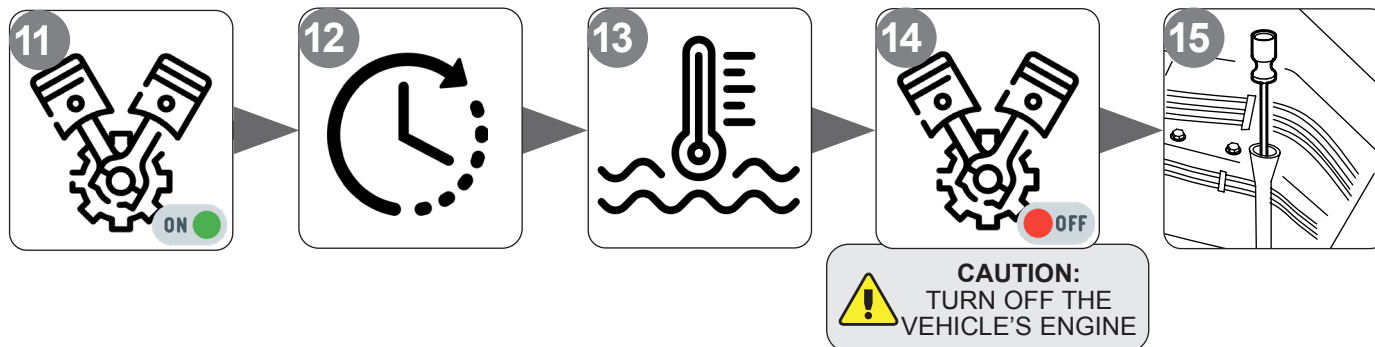
8. Attach a dry shop-air hose (6.0 – 7.0 bar g / 87 – 100 psi g) fitted with a female ¼-inch BSPT quick-connect to the male ¼-inch BSPT nipple on the chamber lid. Do not exceed 7 bar g (100 psi g).

9-10. Maintain airflow until the gauge pointer reaches the centre of the green band ≈ -0.7 bar g / -10 psi g, then disconnect the air line. The unit is evacuated and ready for continuous oil suction.

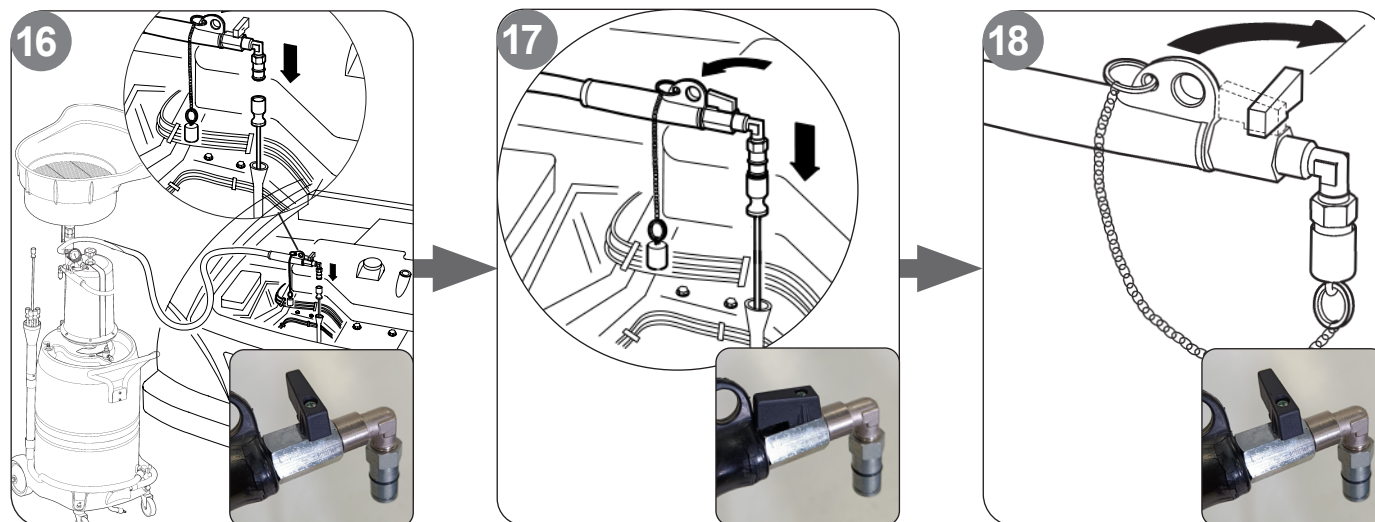


d. Equipment + vehicle handling

11. Start the vehicle and let the engine idle.
12. Run the engine for 1–2 min to reach a minimum oil temperature of 60 °C (140 °F).
13. Target oil-extraction temperature: 70 °C $\pm$ 5 °C (158 °F $\pm$ 9 °F).
14. **CAUTION** – shut the engine OFF and engage the parking brake before inserting any probe.
15. Remove the dipstick and insert the largest-diameter suction probe or the correct vehicle adaptor (Mercedes, VAG, PSA/BMW).



16. Remove the dust-cap from the suction hose and couple the hose to the probe/adaptor.
17. Open the suction-hose ball valve to begin extraction; keep it fully open until flow subsides and becomes aerated.
18. When extraction is complete, close the valve, decouple the hose, and replace the dust-cap.



19. Remove the probe and re-insert the engine dipstick.

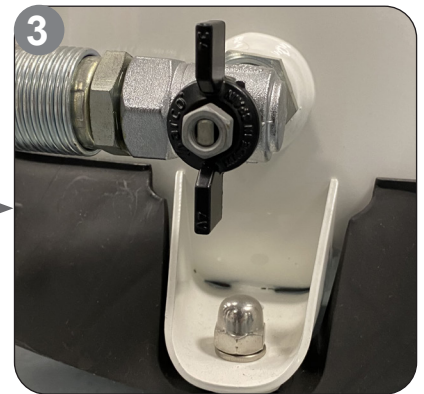
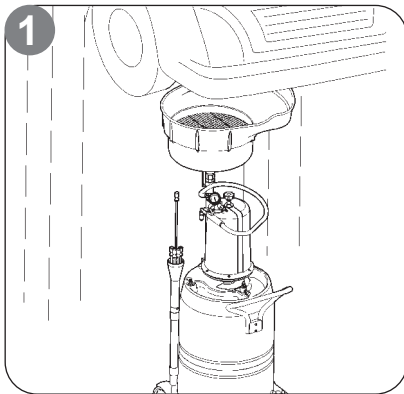
e. Gravity recovery/collection



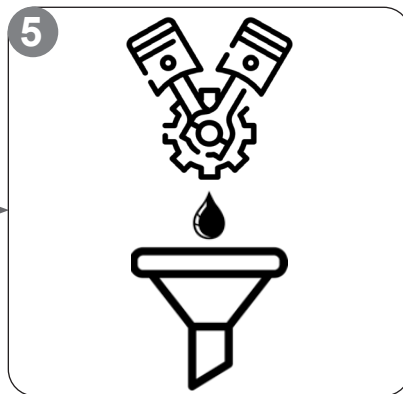
CAUTION

Wear splash-rated goggles (EN 166 B / ANSI Z87.1 "D3") and heat-resistant gloves (EN 407) during gravity draining.

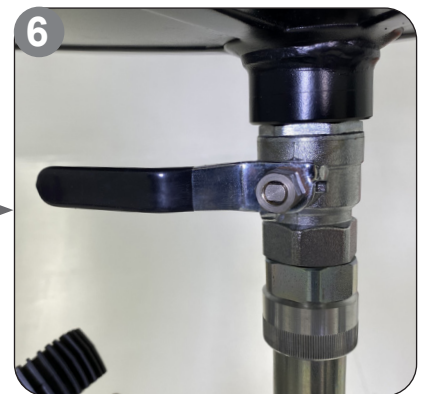
1. Position the drainer beneath the sump and raise or lower the funnel to the desired height using the star knob on the funnel tube.
2. Close the suction-hose ball valve.
3. Close the tank-discharge elbow valve.



4. Open the funnel ball valve.
NOTE: Ensure the splash-guard screen is seated correctly inside the funnel.
5. Remove the crankcase drain plug and allow the used oil to flow into the funnel.
6. When flow reduces to a drip, close the funnel valve.



CHECK FUNNEL AND FILTER PLACEMENT



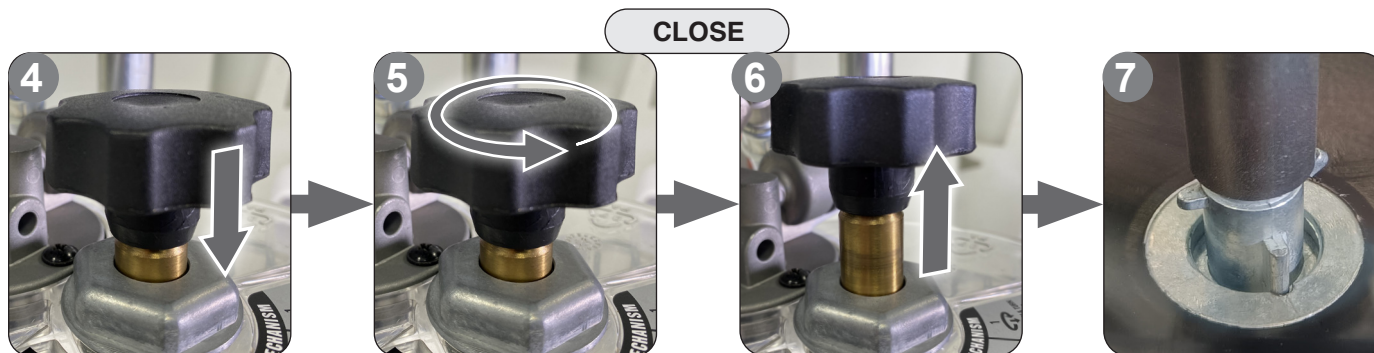
7. Refit and torque the crankcase drain plug to the vehicle manufacturer's specification.

f. Pressurized discharge

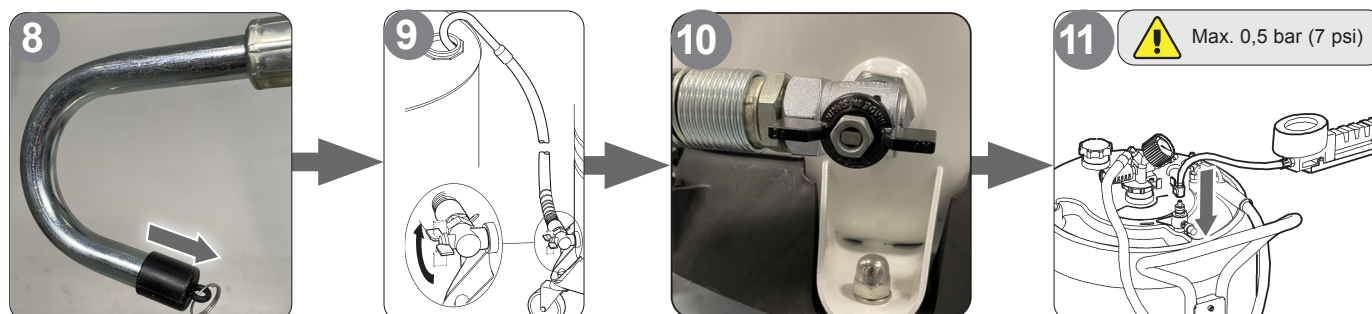
1. Close the suction-hose ball valve. Rotate the lever 90° until it is perpendicular to the hose.
2. Close the tank-discharge elbow valve.
3. Close the funnel ball valve by placing the handle horizontally.



4. Press the chamber-isolation knob fully DOWN.
5. Turn the knob 90° counter-clockwise to the “CLOSE” detent.
6. Release the knob; it rises to the upper (locked) position.
7. Verify gasket seating.

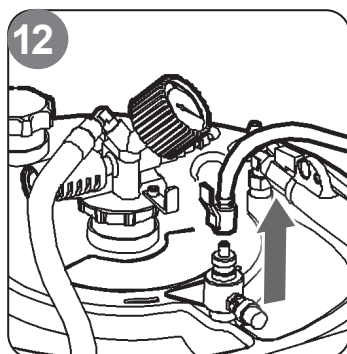


8. Remove the protective plug from the discharge hose and insert the hose end into a vented, approved waste-oil container.
9. Insert the hose end into a vented, approved waste-oil container.
10. Open the valve on the discharge hose to empty the tank.
11. Pressurise the tank to 0.50 bar g (7.3 psi g)—do not exceed this value. Oil will discharge under low pressure.



Once the tank has been emptied:

12. Bleed residual pressure via the inflator.
13. Close discharge hose valve.
14. Replace the discharge-hose plug.



8. TROUBLESHOOTING

POSSIBLE CAUSES	SOLUTIONS
The vacuum gauge needle is static during discharge	
Damaged or clogged vacuum gauge.	Replace vacuum gauge.
Vacuum gauge needle does not reach the middle of the green zone	
Insufficient air pressure.	Increase air pressure.
Insufficient air flow.	Increase pitch sections in the supply and limit the length
The equipment does not have yet air flow when the vacuum gauge marks the right pressure	
The oil is cold.	Keep the motor running for a few minutes before vacuuming.
The valve on the suction hose is closed.	Open the valve.
The wand or the connector is obstructed.	Clean or replace the wand/connector.
The equipment does not have air flow and progressively loses vacuum	
O-rings of the wand connector are damaged or worn out.	Replace O-rings.
The wand does not reach the oil because it is curved or deviated	Remove the wand and reinsert it, taking care to reach the bottom of the crankcase.

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9. WARRANTY & LIMITATION OF LIABILITY

WARRANTY & LIMITATION OF LIABILITY

The warranty is void if the product is:

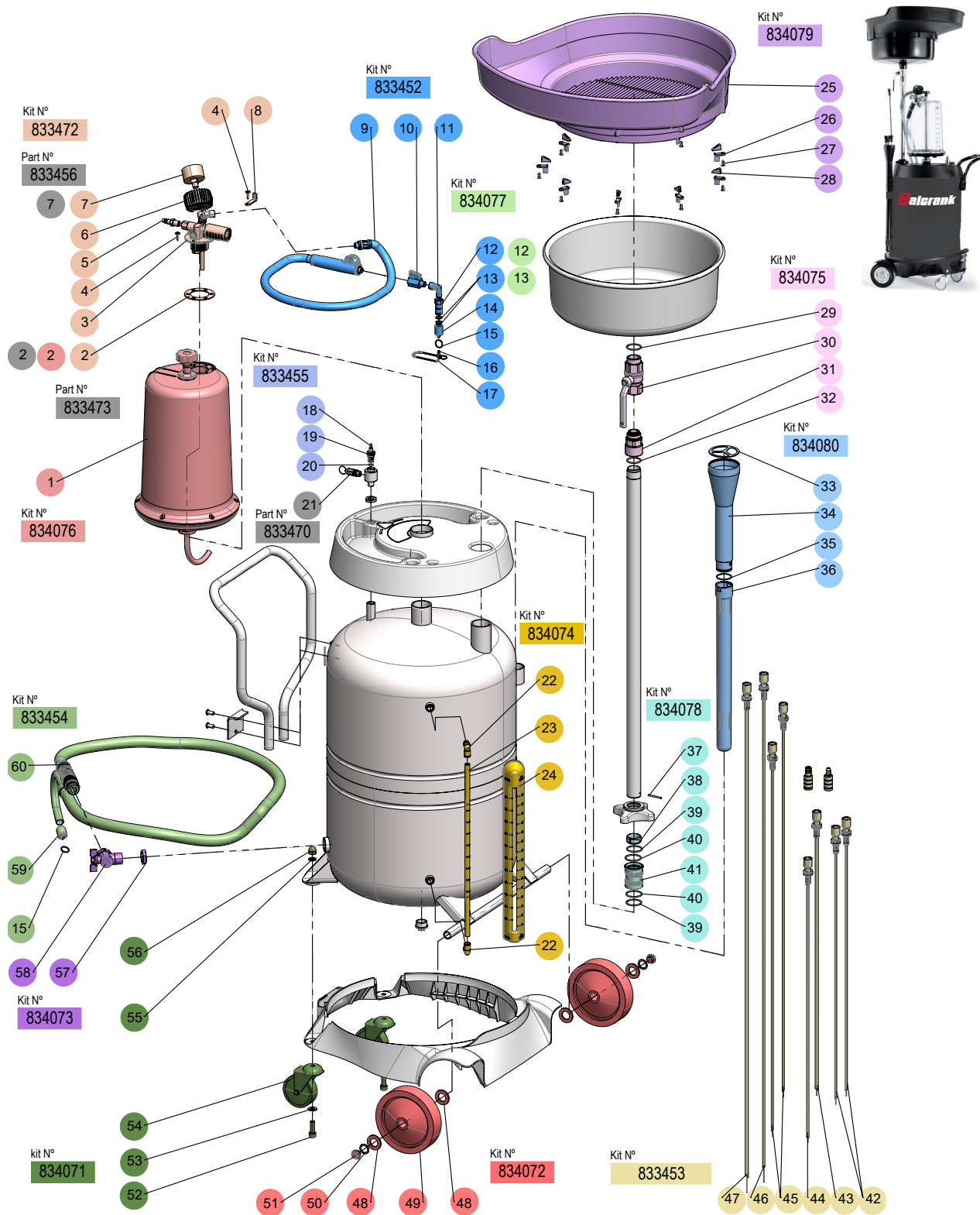
1. Operated outside the limits stated in Section 2 – Technical Data.
2. Modified, repaired or serviced with non-approved parts.
3. Used for fluids other than lubricating oils of viscosity 10 – 200 cSt at 40 °C or coolant.
4. Subjected to over-pressure, corrosive chemicals or mechanical abuse.

SPARE PARTS KITS

27-GALLON COMBINED OIL SUCTION & GRAVITY COLLECTION UNIT

Part #

4110-030



Balcrank Corporation, Inc. • 90 Monticello Road Weaverville, NC 28787 • www.balcrank.com

DRA10009.A

Product specifications are subject to change without notice.

KITS

Part #	Pos.	Description	Remarks
 834071	2x(52), 2x(53), 2x(54), 2x(55), 2x(56)	Ø 80 Mm Wheels Kit	-
 834072	4x(48), 2x(49), 2x(50), 2x(51)	Ø160 Mm Wheels Kit	-
 834073	57, 58	Elbow Valve Kit	-
 834074	2x(22), 23, 24	Level Guard Kit	-
 834075	29, 30, 31, 32	Swiver + Ball Valve Kit	-
 833472	2, 3, 2x(4), 5, 6, 7, 8	Vacuum Pump Kit	-
 834076	1, 2	Transparent Chamber Kit	-
 833453	2x(42), 43, 44, 2x(45), 46, 47	Wands Kit	-
 834077	12, 2x(13)	Mercedes Connector Kit	-
 834078	37, 38, 2x(39), 2x(40), 41	Bowl Bung Adaptor Kit	-
 833455	18, 19, 20	Pressure Valve Kit	-
 833452	9, 10, 11, 12, 2x(13), 14, 2x(15), 2x(16), 17	Suction Hose Kit	-
 834079	25, 9x(26), 9x(27), 9x(28)	Bowl Extension Kit	-
 833454	15, 59, 60	Discharge Hose Kit	-
 834080	33, 34, 35, 36	Wand Support Kit	-

PARTS

Part #	Pos.	Description	Remarks
 833473	2	Gasket	-
 833456	7	Vacuum meter	-
 833470	21	Safety valve	-

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**For Warranty Information Visit:
www.balcrank.com**

Balcrank®

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Revision Log:

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SERVICE BULLETIN SB4502
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