EXTRAC-TEC

HEAVY PARTICLE CONCENTRATORS

www.extrac-tec.com

Extrac-TEC's Heavy Particle Concentration (HPC) technology allows for cost-effective gravity separation of materials of differing densities.

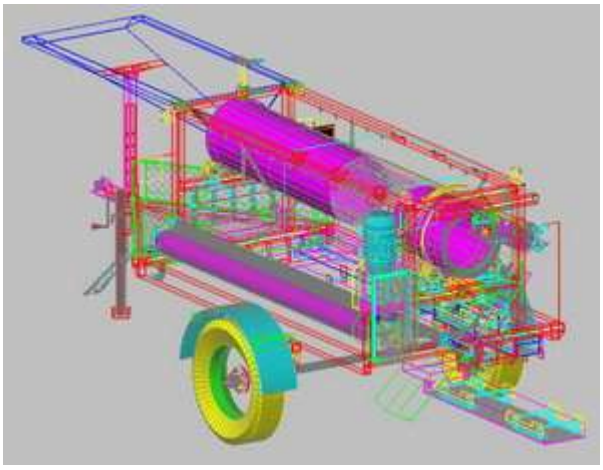
Based on our revolutionary, new patented transverse spiral belt separator and benefiting from almost 20 years of development experience, the system boasts recovery rates of up to 98% down to 40 microns.

Our design feedback and operating experience includes a total of over 125,000 machine hours (equivalent to operation of more than 14 years of 24 hours per day X 7 days per week) logged on our equipment.

Applications of this technology

The HPC system is ideally suited to the following applications:

- Mining (gold, PGMs, etc.):
  - alluvial / placer operations
  - reprocessing of tailings dumps
  - as a pre-concentration component in hard rock mines - prior to, or in place of chemical leaching processes
  - for exploration and bulk sampling activities
- Recovery of diamonds and other gemstones.
- For environmental cleanups / lead remediation projects in decontamination of polluted land, specifically shooting ranges.



HPC technology at a glance

- Up to 98% recovery rate of particles down to 40 microns
- Completely mobile
- Significantly less water requirement than conventional methods
- Super-concentration yields minimal concentrate volume for final processing.
- Operating costs and manpower have been reduced by 45% compared to competitive systems
- Internationally Patented

The HPC Technology is a combination of tested and proven technologies combined with Extrac-TEC's patented and proprietary reverse spiral concentration belt. The reverse spiral concentration belt is an ultra-high abrasion resistant, long retention-time concentration spiral which separates heavy particles which are then trapped in a carefully controlled sluice section.

HPC machines are innovative in their design and operation since they effectively integrate all of these technologies into a single, compact portable machine that can be set up & operating in a matter of hours instead of days and weeks. (minutes for the HPC-10)

Key benefits compared to other separation technologies

- Broad material-size processing spectrum (from 40 microns / 300 mesh fine up to 6-8” / 150-200mm) with up to 98% recovery rate.
- Mobile and simple to set up (it takes only minutes or hours instead of days or weeks to start producing).
- Over and above alluvial mining, the equipment has broad application as a component in traditional hard rock mining plants and in reprocessing of tailings with machine capacities ranging up to hundreds of tons per hour.
- Simple, secure and rapid final recovery stage allowing cleanup in a matter of minutes without requiring a system shut-down.
- Minimal concentrate volume produced (as low as 1-2 gallons / 4-8 liters per cleanup) means better security and minimal additional processing.
- Environmentally friendly system using no chemicals, 75% less water than competitive systems and reducing the need for major settling ponds.
- In alluvial applications, the system is designed to work prior to sluicing by washing and separating the raw material so that only pre-sorted material actually enters the sluice box.
- The HPC machines are self-cleaning which allows for continual use in a full-scale production environment.
- Economically viable, as the cost of the machine can be recovered in the first portion of an operating season by producing significantly greater yields.

The “bottom line” is a fully equipped, mobile, high yield, cost effective machine with minimal, basic skill, operator requirements and extremely low operating costs. This allows for processing of lower grade ore bodies in any location worldwide.

For videos, spec’s and more information visit www.extrac-tec.com or email us at info@extrac-tec.com

EXTRAC-TEC HPC-30

The trailer-mounted machine is extremely mobile.

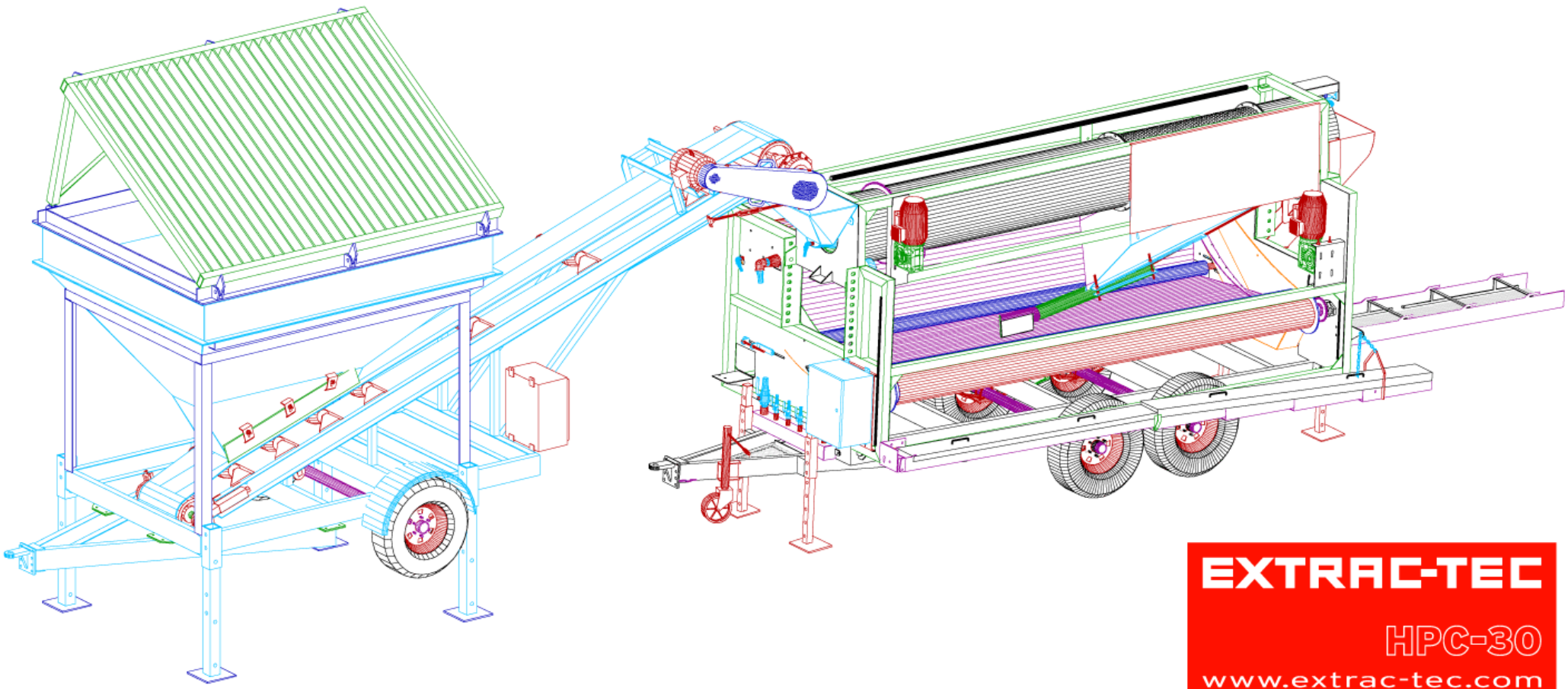
Setup is extremely simple and quick.

The HPC-30 is a robust, versatile machine suited to applications from Placer Gold Mining through to Gemstone recovery.

Multi-machine installations offer many benefits including operational flexibility and efficiency

The HPC-30 is ideally fed with a Hopper/conveyor

HPC-30 with Feed Conveyor



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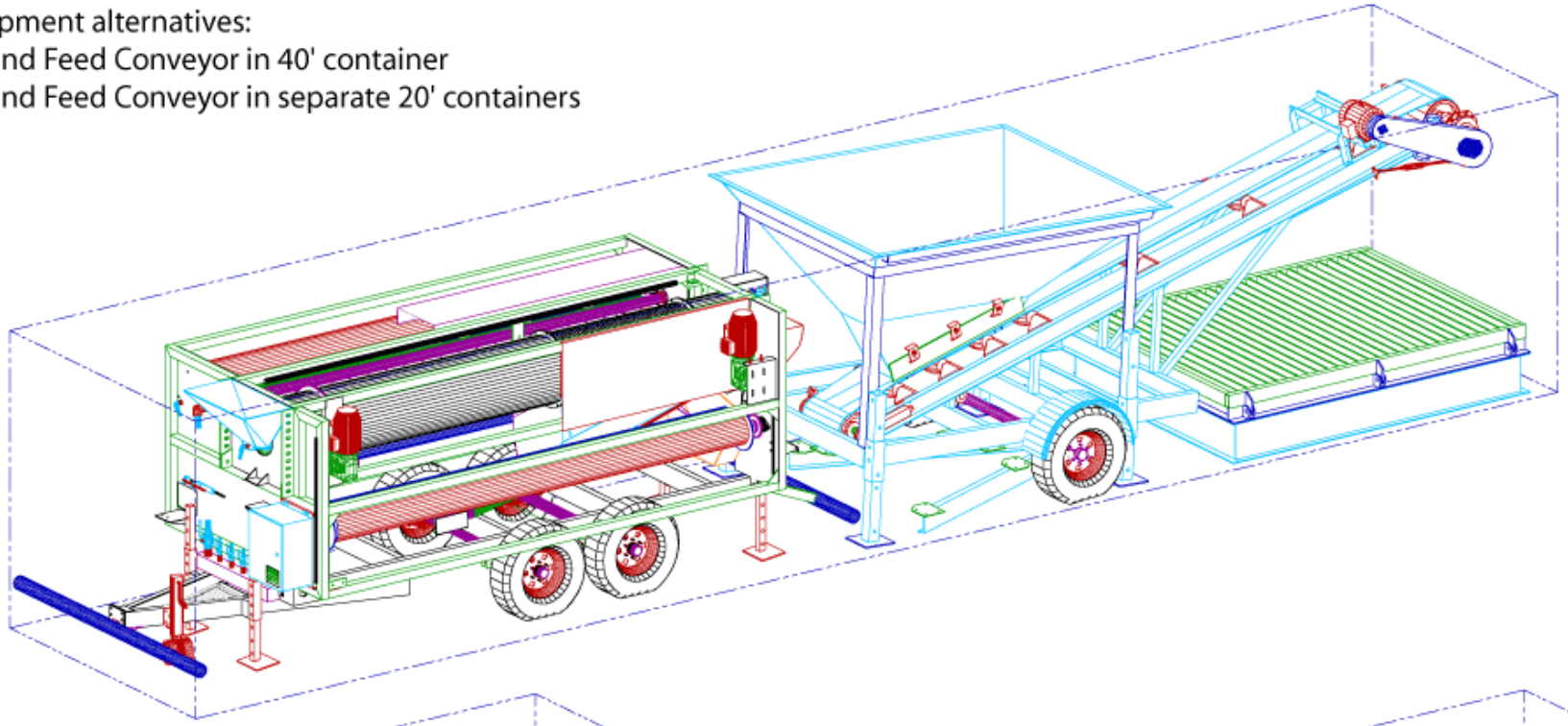
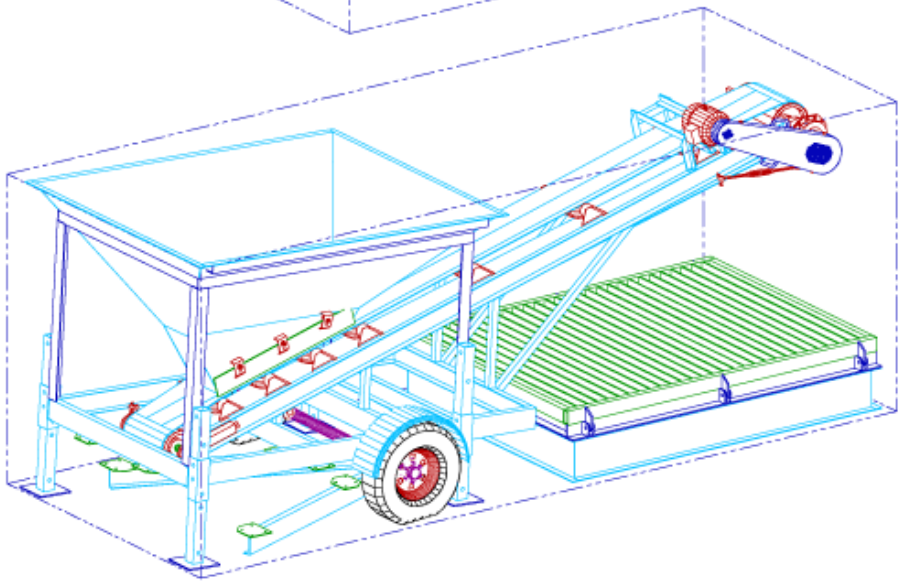
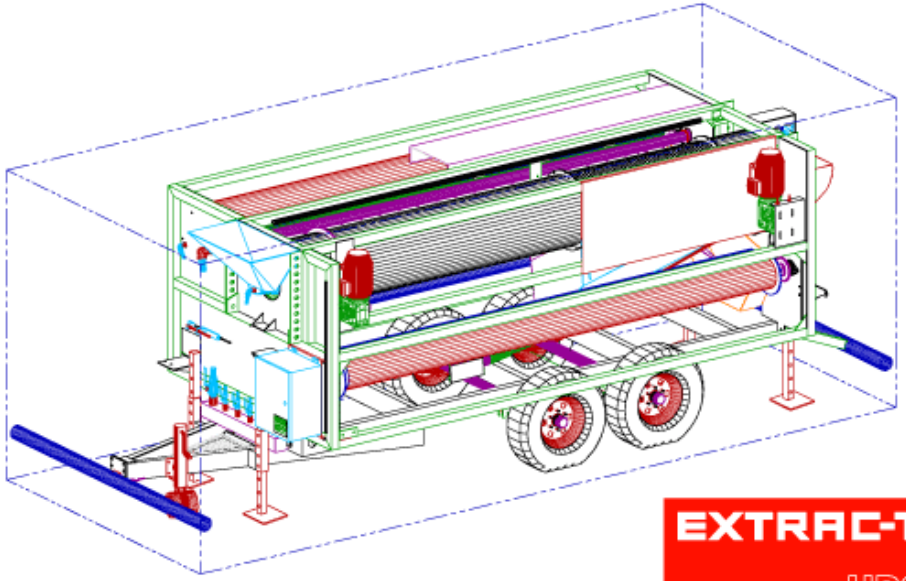
Ocean Shipment alternatives:
- HPC-30 and Feed Conveyor in 40' container
- HPC-30 and Feed Conveyor in separate 20' containers







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www.extrac-tec.com

HPC-30 Specifications

IE-TEC Marketing Limited
2576 Broadway #123
New York, NY 10025 USA
Phone: +1 (212) 222 0318
Fax: +1 (760) 860 9885
info@extrac-tec.com

Applications	Small Mining operations
Capacity	The HPC machines are all rated according to nominal capacity based on bank-run material. This is material typical of Placer deposits which contain large and small rocks, gravel, stones and sandy material. The capacity of the HPC's spiral concentrator belt is designed to deal only with the undersize material scrubbed and screened from this bank-run feed. Accordingly, should you feed the HPC machine with material which is already undersize (or the deposit you are processing consists mostly of fine/sandy material), all of this material will pass directly to the concentrator belt and the effective operating capacity of the machine will be based on this. Safe/Conservative capacity calculations for the HPC-30 can be done as follows: • Maximum approx. 6-8 tons/hour of fine material (~ 1/3" minus or 8 mm minus) feed onto the concentrator belt • Feed to the scrubbing/screening trommel can be up to 30 tons/hour, provided the fine fraction component is kept at or below the maximum. Please refer to the attached Material Flow and Production Capacity Diagrams for additional information.
Drive System	The Concentrator Belt and Trommel are independently driven, each with the following components • Digital Variable Frequency Controller housed within a waterproof enclosure • 2.2kW (3.0 HP) 3-phase Drive Motor • Reduction Gearbox Note: Power supplied to the HPC-30 is supplied directly to the Variable Frequency Controllers which converts the power to 3-phase power required by the Drive Motors. The Variable Frequency Controllers can be adjusted to set the speed of the Concentrator Belt and Scrubbing / Screening Trommel independently.
Electrical Supply Requirements	Electrical Supply must be 3- Phase 380-480V and 50/60Hz. (The HPC-30 can be configured to accept Single Phase power - needs to be specified on order). The motors on the HPC-30 have a combined rating of 4.4kW so any generator or power supply capable of delivering this power will be adequate (excludes power required for feed conveyors and electrical water pump). HPC-30 is supplied with Electrical Supply cable Note: Electrical Generator is not supplied with the HPC-30.
Water Supply Requirements	The HPC-30 requires water supply of approximately 100 gallons/minute (400 liters/minute) at a pressure of approximately 45psi (310 kPa). Any electrical, petrol or diesel powered pump capable of providing this water flow may be used. The Water Supply must be connected via a 3" hose ("lay-flat" or discharge hose) clamped onto the inlet nipple on the Water Manifold. Note: Water Pump and connection hose are not supplied with the HPC-30.
Feed material	Maximum: 8" (200 mm) minus material. Recommended: 3" (75mm) minus.
Trommel	Scrubbing & Screening Trommel is 168" (4.27 m) long with 20" (0.5m) diameter and 100" (2.5 m) 2-stage Scrubber. Screen is 1/3" (8 mm). Trommel inclination, height and speed are independently adjustable.
Feed Hopper	Fixed Feed Chute designed to received feed from 18" (450 mm) conveyor
Dimensions	
– Length	230" (5.84 m) with Tail Sluice stowed / 300" (7.6 m) with Tail Sluice extended
– Width	90" (2.30 m)
– Height	88" (2.24 m) with Trommel fully Lowered / 110" (2.8 m) with Trommel raised
– Weight	7,000 lbs (3,200 kg)
Shipping info	Optimal shipping configuration: 1 HPC-30 in 20' container. International customs code: HS #: 8474.10.90.30. (Machinery: separating machines for earth stones, ores or other mineral substances)
Trailer	Double-axle trailer with Pintle-hitch.
Manning	1 equipment operator required. Note: for safety reasons, it is always best to have at least 2 people present when operating machinery.

Note: Specifications may be changed without notice

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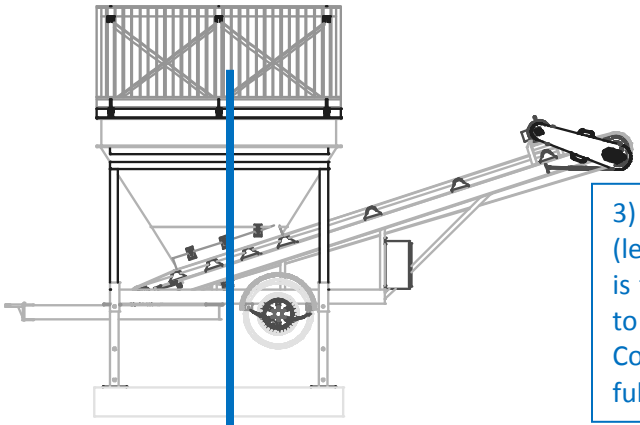
Material Flow

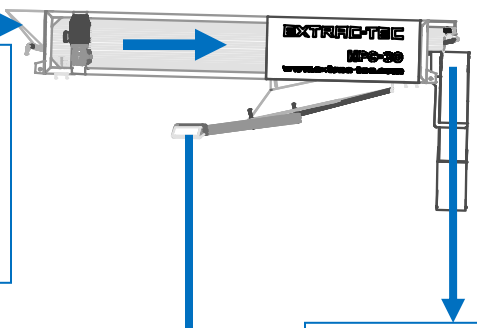
1) Raw feed is dumped onto the Grizzly above the Feed Conveyor. This material includes sand, gravel, stones and large rocks.



2) Large rocks fall off the Grizzly and undersize material (less than 3" / 75mm) falls into the Hopper.

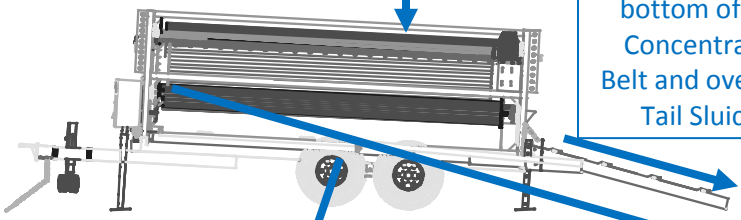
3) Undersize material (less than 3" / 75mm) is fed from the Hopper to the Trommel by the Conveyor. Feed Rate is fully adjustable.

4) Material is thoroughly scrubbed in the Trommel.



6) Oversize material (*) is fed out of the Trommel as Tailings.

5) Scrubbed undersize material falls through the Trommel Screen (*) and is fed onto the Concentrator Belt by the Material Distribution Chute.



7) Light particles flow off the bottom of the Concentrator Belt and over the Tail Sluice.

8) Heavy particles are fed off the top of the Concentrator Belt over the Concentrate Sluice.

9) Gold-bearing concentrate is removed from the Concentrate Sluice on a periodic basis when cleanups are done.

(*) Note: For the HPC-30, the size of the holes in the Trommel Screen can be customized to suit the application (must be specified on order). For example: if your largest gold particles are likely to be around ¼" / 6mm then a screen with ~1/3" / 8mm holes can be used.

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HPC-30 Production Capacity Guideline for Gold Recovery (tons/hour)

	HPC-30	
Undersize	**Fine**	**Normal**
100%	4.0	8.0
90%	4.4	8.9
80%	5.0	10.0
70%	5.7	11.4
60%	6.7	13.3
50%	8.0	16.0
40%	10.0	20.0
30%	13.3	26.7
20%	20.0	40.0

Undersize	% of raw feed which reports to the Concentrator Belt (standard screen size is -16mm for HPC-30) This corresponds to #5 on Material Flow Diagram
Fine	Feed material where there is a very high % of gold particle sizes below 150 mesh / 100 microns
Normal	Feed material where the majority of gold particle are larger than 150 mesh / 100 microns

This is a guideline only – it is impossible to guarantee capacity without testing specific materials.

IE-TEC Marketing Limited
2576 Broadway #123
New York, NY 10025 USA
Phone: +1 (212) 222 0318
Fax: +1 (760) 860 9885
info@extrac-tec.com

HPC-30 Feed Conveyor Specifications

- Feeder is custom designed to suit the HPC-30
- Hopper of ¼" plate steel with approximately 6 ton capacity
- 6' x 8' top opening with 3" Grizzly
- Extendable support legs
- 18" radial control gate (manual)
- 18" X 18' Conveyor
- 2.2kW / 3 HP electric motor
- Electrical Supply must be 3- Phase 380-480V and 50/60Hz. (can be configured to accept Single Phase power - needs to be specified on order).
- Shaft mounted gear reduction V-belt drive
- Lagged head pulley and Wing tail pulley
- Full length skirt boards
- 2 ply – 220 PIW conveyor belting with 3/16" x 1/16" covers
- VFD Controller for speed adjustment with detachable cabinet which mounts on HPC-30
- Mobile single axel design
- Ships in 20' container (or together with HPC-30 in 40' container)

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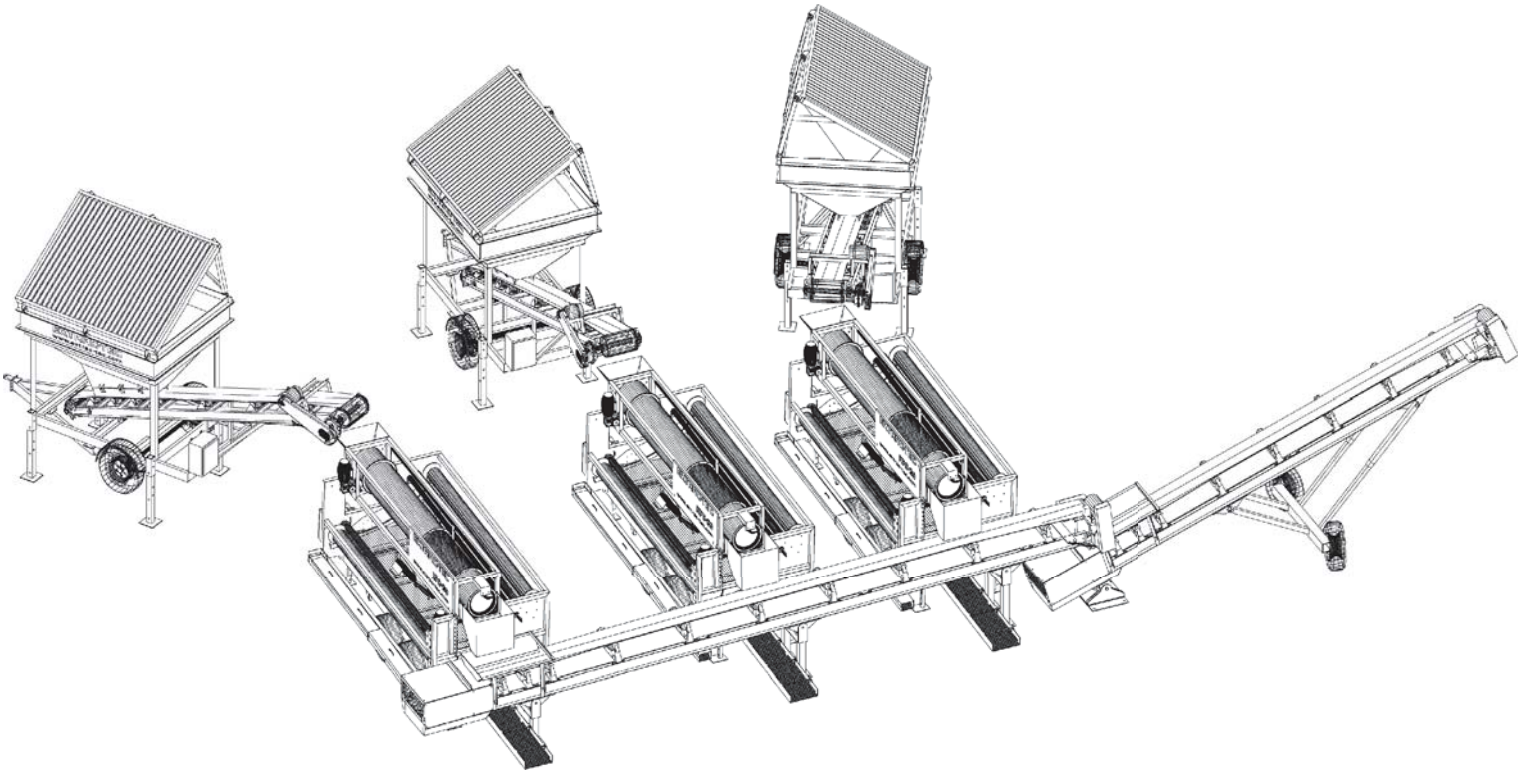
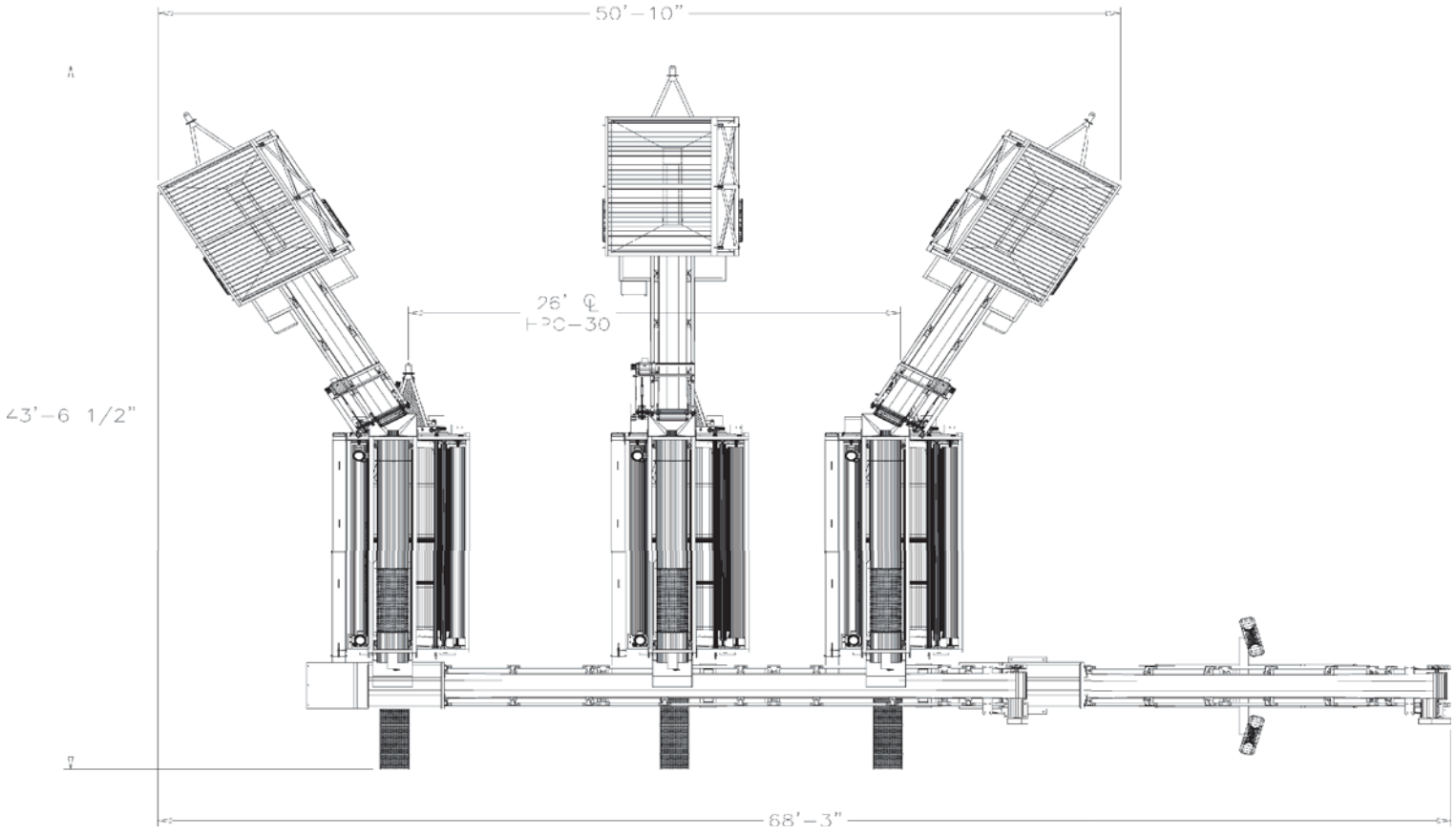
HPC-30 3-Line Installation with Tailings Conveyors





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HPC-10

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Machine design based on feedback from demanding operations worldwide

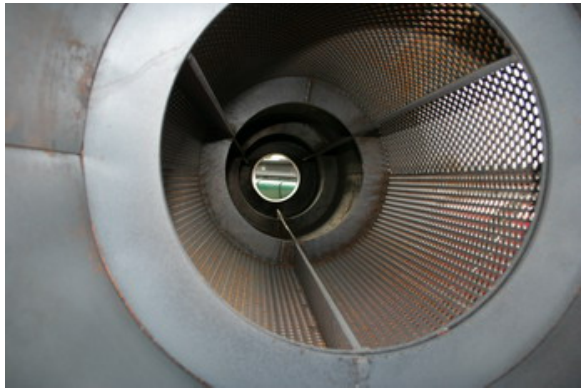
USA Production Line based on world-class manufacturing standards

Compact Layout: Hopper folded back for towing

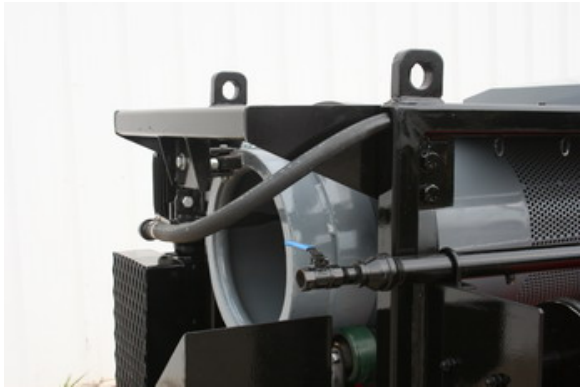
Optimum Shipping: Delivery of 4 machines in 40’ container or 2 machines in a 20’ container

Side view showing water-tight electrical control box for safety and reliability

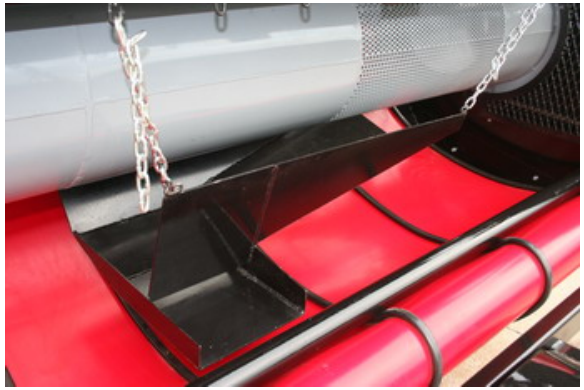
HPC-10 is extremely mobile and can easily be towed by most vehicles



Internal view of Trommel showing 2-stage Scrubber, Lifting Paddles and Screening Section



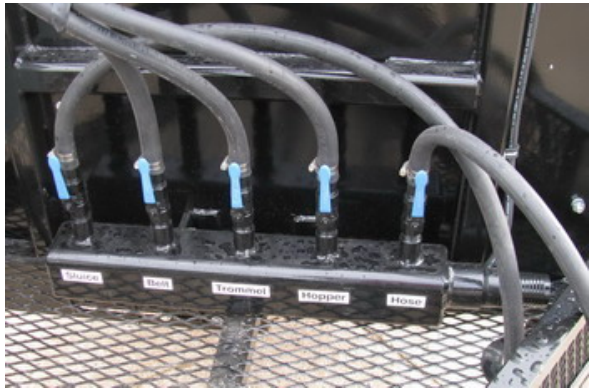
Robust Construction with Lifting Lugs for damage-free hoisting of machine



Side view showing Material Distribution Tray which ensures optimal feed to concentrator belt

Speed Control for Trommel and Belt mounted in waterproof enclosure with external On/Off switch

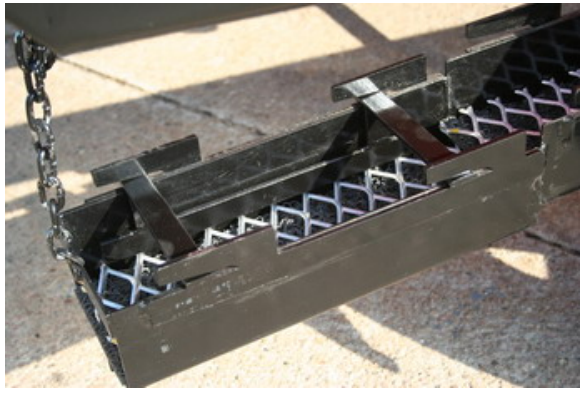
Water Control Manifold with heavy-duty hoses and electrical supply cable



Water flow to each part of the machine is independently controllable

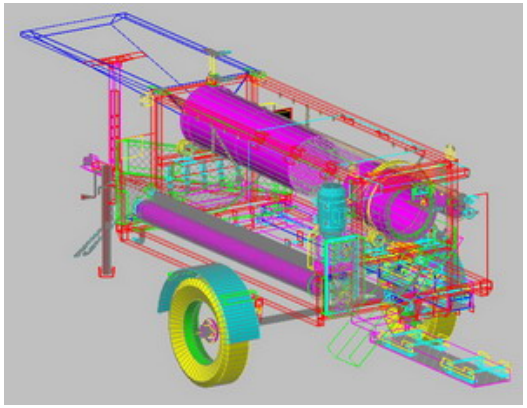
1.1kW (1.5 HP) Wash-down motor with heavy-duty gearbox

Feed Hopper allows staging of material and feed of 6” minus material



Sluices with corrosion-proof Riffles, Riffle Locks and Nomad Matting to retain heavy particles

Gold retained in Concentrate Sluice



3D Computer Aided Design used to optimize every detail for reliability and performance

HPC-10 Specifications

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Fax: +1 (760) 860 9885
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Applications	Exploration, Bulk Sampling, Artisanal mining, Recreational use
Capacity	The HPC machines are all rated according to nominal capacity based on bank-run material. This is material typical of Placer deposits which contains large and small rocks, gravel, stones and sandy material. The capacity of the HPC's spiral concentrator belt is designed to deal only with the undersize material scrubbed and screened from this bank-run feed. Accordingly, should you feed the HPC machine with material which is already undersize (or the deposit you are processing consists mostly of fine/sandy material), all of this material will pass directly to the concentrator belt and the effective operating capacity of the machine will be based on this. Also, recovery rate will depend on the particle size of the mineral being extracted – lower feed rates are required to ensure recovery of particles in the -150 mesh (-100 micron) range. Safe/Conservative capacity calculations for the HPC-10 can be done as follows: • Maximum approx. 1-2 tons/hour of fine material (~ 1/3" minus or 8 mm minus) feed onto the concentrator belt • Feed to the scrubbing/screening trommel can be up to 10 tons/hour, provided the fine fraction component is kept at or below the maximum. • For example: if 20% of your feed is fine material with gold particles above 150mesh / 100 microns and remainder is rock/gravel/coarse fraction, then expected feed rate will be 7-10 tons/hour.
Drive System	• Digital Variable Frequency Controller housed within a waterproof enclosure • 1.1kW (1.5HP) 3-phase Drive Motor • Reduction Gearbox Note: Single phase power supplied to the HPC-10 is supplied directly to the Variable Frequency Controller which converts the power to 3-phase power required by the Drive Motor. The Variable Frequency Controller can be adjusted to set the speed of the Concentrator Belt and Scrubbing / Screening Trommel.
Electrical Supply Requirements	Electrical Supply must be Single Phase 220V - 240V and 60Hz / 50Hz. The motor on the HPC-10 is rated at 1.1kW so any generator or power supply capable of delivering this power will be adequate (excludes power required if electric water pump is used). HPC-10 is supplied with Electrical Supply cable. Note: Electrical Generator is not supplied with the HPC-10.
Water Supply Requirements	The HPC-10 requires water supply of approximately 30-40 gallons/minute (120-160 liters/minute) at a pressure of approximately 45psi (310 kPa). Any electrical, petrol or diesel powered pump capable of providing this water flow may be used. The Water Supply must be connected via a 2" hose ("lay-flat" or discharge hose) clamped onto the inlet nipple on the Water Manifold. Note: Water Pump and connection hose are not supplied with the HPC-10. Water Recirculation is possible provided settling time is allowed to avoid clogging of water nozzles.
Feed material	Maximum: 6 inch (150 mm) minus material. Recommended: 2" (50mm) minus.
Trommel	Scrubbing & Screening Trommel is 92" (2.34 m) long with 15" (0.4m) diameter and 48" (1.22 m) 2-stage Scrubber. Screen is 1/3" (8 mm).
Feed Hopper	Manually adjustable, gravity fed
Dimensions	
– Length	154" (3.91 m) with Hopper folded back and Tail Sluice stowed / 200" (5.08 m) with Hopper and Tail Sluice extended
– Width	71" (1.80 m)
– Height	73" (1.85 m) with Hopper folded back / 69" (1.75 m) with Hopper extended
– Weight	2,200 lbs (1,000 kg)
Shipping info	Optimal shipping configuration: 2 HPC-10 machines in 20' container. International customs code: HS #: 8474.10.90.30. (Machinery: separating machines for earth stones, ores or other mineral substances)
Trailer	Single axle trailer with standard tow-hitch
Manning	1 equipment operator or team of 2-6 for manual operation Note: for safety reasons, it is always best to have at least 2 people present when operating machinery.

Note: Specifications may be changed without notice
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