



LEADERS IN DIAMOND RECOVERY TECHNOLOGY

ESTABLISHED IN 1971

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TECHNICAL SPECIFICATION

XR 2/50 DW

TSXR 2/50 DW

GENERAL

These diamond recovery machines are specifically designed to sort WET or DRY diamondiferous material, under virtually any conditions, they are the “work-horses” in the FLOW SORT sorting machine stable.

With over 600 sorters sold into the “open” market they have become the most widely used X-ray diamond recovery machines! These sorters are suitable for “fixed” as well as “mobile” installations, be it on land or on sea diamond-mining vessels.

The sorter’s robustness, reliability, high recovery efficiency, easy operation and low maintenance, backed by FLOW’S uncompromising after sales service earned FLOW SORT products acceptance in the market place all over the world.

We offer our sorters in two basic models. **SINGLE STAGE MODELS** coded as **XR 2/50 DW** and **TWIN-STAGE MODELS** (double pass sorters) labelled **TSXR 2/50 DW**.

Both **XR** and **TSXR** sorters are available as standard (STD) as well as marine (SEA) versions.

Both sorter models can also be configured as re-concentration sorters (REC) designed to treat the concentrate of several primary sorter models.

From sorter S/N 550 onward all sorters came standard fitted with:

- Automatic Tracer Dispenser
- Automatic Tracer Recovery System
- Automatic Calibration System
- Automatic Stability Control System
- Zero Noise X-ray Generator
- Optic Scanner Unit (SA Pat Appl. No. 2011/07547)

Sorters with S/N 001 to 449 can be upgraded /retrofitted with these performance enhancing features. Most upgrade can be done on site. Contact FLOW for details

ELECTRIC SUPPLY SPECIFICATION:

XR models: 220 Volt (+/- 10%), 50 Hz, Single Phase
Power consumption approx. 2kVA.

TSXR models: 220 Volt (+/- 10%), 50 Hz, Single Phase
Power consumption approx. 3.5kVA.

Other Electrical Supply Specifications can be accommodated on request.

As optional extras Flow Sort also supplies lightning protection, surge and phase failure protection, as well as voltage stabilizer units.

WATER SUPPLY SPECIFICATION:

QUALITY: Feed Water Supply must be filtered through a 100µm filter.

PRESSURE: Water supply pressure must not be less than 400 kPa and not exceed 800kPa.

TEMPERATURE: MIN: +2.5°C MAX: +30°C

Volume XR-: Typically 15 litres / minute.

Volume TSXR-: Typically 25 litres / minute.

Feed water requirements do vary with sorter feed-rate, sorted material sizes and type of material. (from 10 l / min to 80 l / min)

OPERATING TEMPERATURE:

SORTER: MIN: +2.5°C MAX: +45°C REL HUMIDITY: 95% (none condensing)
CONTROL PANEL: MIN: -5°C MAX: +45°C REL. HUMIDITY: 95% (none condensing)

FEED MATERIAL SPECIFICATIONS:

MODELS **XR 2/50 DW** & **TSXR 2/50 DW**

Min SIZE for XR- & TSXR- 2/50DW: There is no minimum size limit!
Recommended minimum is **2mm**.

Max SIZE for XR- & TSXR- 2/50DW: Recommended maximum is 42mm.
Maximum is 50mm
(No particle may exceed 50 mm in any dimension)

PARTICLE SIZE RATIO:

For maximum recovery efficiency we recommend a size ratio of **2:1** for material below 4mm and up to **3:1** for material above 3mm.

RECOMMENDED SIZE FRACTIONS:

FLOW SORT OFFERS A PROFESSIONAL CONSULTING SERVICE TO ADVISE ON OPTIMAL SIZE SPLITS FOR SPECIFIC APPLICATIONS.

TYPICAL SIZE SPLITS for XR-2/50 DW & TSXR- 2/50 DW are:

4 fractions: + 2mm - 4mm, + 4mm - 10mm, + 10mm - 22mm, + 22mm - 42mm

3 fractions: +2mm – 5mm, +5mm – 12mm, +12mm – 32mm

FEED MATERIAL CAN BE WET OR DRY. IMPORTANT IS THAT THE MATERIAL IS “CLEAN” i.e. FREE OF CLAY, SLIME, VEGETATION OR OTHER FOREIGN OBJECTS.

FEED MATERIAL MUST BE PRESENTED IN APPROPRIATE SIZE-RANGES AND FREE OF UNDERSIZED AS WELL AS OVERSIZED MATERIAL.

FLOW SORT CONCENTRATE BINS (Optional Extra)

FLOW SORT SUPPLIES HIGH SECURITY SELF-LOCKING CONCENTRATE BINS, DESIGNED TO FIT DIRECTLY ONTO A SORTER'S CONCENTRATE OUTLET.

FEED RATE SPECIFICATIONS FOR PRIMARY FEED SORTER MODELS **XR-2/50 DW** & **TSXR-2/50 DW** and RE-CON MODELS **XR-2/50 DW-rec** & **TSXR-2/50 DW-rec**

Sorter feed rates "FR", in kg/hr, are computed by using the following formulae:

$$FR \text{ (kg/h)} = SC \times d(\text{mm}) \times SF \times sg.$$

d = AVERAGE PARTICLE DIAMETER (WITHIN A GIVEN SIZE FRACTION) in **mm**

SC = "SORTER CONSTANT" This value varies with sorter configuration and application. SC values for primary recovery applications vary from **150 to 600** and for re-concentration applications (REC sorter version) from **15 to 25**.

SF = "SHAPE FACTOR" = the particle volume expressed as a portion of the volume of a sphere with "d". (a particle with 60% of the volume of a sphere of diameter "d" results in a "SHAPE FACTOR" = 0.6)

sg. = AVERAGE SPECIFIC GRAVITY OF FEED MATERIAL (g/cm³)

Primary Recovery XR- or TSXR- machine feed rate with a **SC of 150**, fed with "NORMAL" shaped material (**SF ± 0.6**) with **sg. ± 2.7**. Sorter capacity (**kg/hour**) is approx.. equal to **FR ≈ 250 x d**

Re-concentration XR- and TSXR- machine with a **SC of 20**, the feed rate (kg/hr) for "NORMAL" shaped material (**SF ± 0.6**) with **sg. ± 2,7** is approx. equal to **FR ≈ 32 x d**

YIELD for both applications are: **12 x FR x 10⁻⁶** per ejection (**0,0012% of FR**)

