

FLOW SORT™ X-RAY DIAMOND RECOVERY BULK SORTER



FFXR 8/75 DW

**OF THE 700 SORTERS SOLD 680 ARE IN
OPERATION WORLD WIDE!**

TECHNICAL SPECIFICATION FFXR 8/75 DW SINGLE STAGE TWO (2) FEED CHANNELS X-RAY DIAMOND RECOVERY MACHINE

GENERAL

These diamond recovery machines are specifically designed to sort WET or DRY diamondiferous material, under virtually any conditions.

With 680 sorters in operation of the 700 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 this Bulk Sorter in a **SINGLE STAGE MODEL**, **two (2) feed channels**, **coded as FFXR 8/75 DW (single pass sorter)**,

The **FFXR 8/75 DW** is available as standard (**STD**) as well as marine (**SEA**) versions.

An optical scanning system specifically designed for the recovery of low luminescent diamonds is a standard feature on the **FFXR 8/75 DW**.

ELECTRIC SUPPLY SPECIFICATION:

FFXR 8/75 DW: **380 Volt (+- 10%), 50Hz, 3Phase**
 Power consumption approx. 5kVA.

Other Electrical Supply Specifications can be accommodated on request.

Flow Sort lightning and surge protection units, as well as phase failure detection, and voltage stabilizer units, available as optional extra, are specifically designed for FLOW SORT™ products.

WATER SUPPLY SPECIFICATION:

QUALITY:	Feed Water Supply must be filtered through a 100 Micron filter .
PRESSURE:	Recommended water supply pressure is 600kpa. (Max: 800kpa)
TEMPERATURE:	MIN: +2.5°C MAX: +30°C
CONSUMPTION:	Feed water consumption (flow Rate) largely depends on feed-rate, material size and type of material to be sorted (ranging from 30l / min).

Volume FFXR 8/75 DW: Typically 30 litres / minute

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:

Minimum SIZE for **FFXR 8/75 DW**:

Minimum size limit is **6mm**
(Recommended Minimum is **8mm**)

Maximum SIZE for **FFXR 8/75 DW**:

Recommended maximum is **75mm**
(No particle may exceed **100mm** in any dimension)

PARTICLE SIZE RATIO:

For maximum recovery efficiency we recommend a size ratio of **3:1**.

RECOMMENDED SIZE FRACTIONS:

TYPICAL SIZE SPLITS for FFXR 8/75 DW PER CHANNEL are:

2 fractions PER CHANNEL:	+ 8mm - 20mm,	+ 20mm - 32mm
	+32mm – 50mm,	+50mm – 75mm

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

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.

FEED RATE SPECIFICATIONS:

FOR **BULK FEED SORTER** MODEL **FFXR 8/75 DW**

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

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

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**.

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)

BULK SORTER Recovery FFXR 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**

YIELD: for both applications are: **24 x FR x 10⁻⁶** per ejection (**0,0024% of FR**)

RECOVERY EFFICIENCY:

Diamond recovery efficiency is influenced by many factors such as feed rate, feed material particle size ratio, feed material temperature, feed material contamination with fines and dirt, and so on.

Diamond detectability based on x-ray luminescence, varies with a diamond's colour, impurities, level of transparency, its nitrogen content etc. **FLOW SORT has developed technology that is capable of detecting the most faintly luminescent diamonds under the most difficult of circumstances!**

In practice, based on 680 FLOW SORT machines operating around the world, we are proud to say, that we have never encountered a case where actual diamond recovery efficiency of a properly set-up and maintained FLOW SORT was below 98 % (percentage calculated by number)! Recovery efficiency figures run very close to 100 %, when based on diamond value rather than number.

FLOW SORT OFFERS A DIAMOND LUMINESCENCE EVALUATION SERVICE, GEARED TO DETERMINE EXACTLY WHAT RECOVERY EFFICIENCY CAN BE EXPECTED IN SPECIFIC SORTER APPLICATIONS.

From sorter S/N 600 onward all sorters are be fitted with:

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

**Sorters with S/N 001 to 600 can be upgraded /retrofitted with these performance enhancing features.
All upgrades can be done on site. Contact FLOW for details!**

SORTER DIMENSIONS:

For actual machine dimensions refer to General Arrangement drawing:

- [FFXR-GA-01.dwg](#)

MOBILE OPTIONS:

FOR OPTIONAL MOBILE PLANTS, PLEASE REFER TO TRAILER AND CONTAINER SPECIFICATIONS!

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DESIGN AND MANUFACTURE

Flow-sort™

X-RAY DIAMOND RECOVERY EQUIPMENT