MODELS 10/20/30

CYCLONE SEPARATORS

Technical Specification

Product Description

- These cyclone separators utilize a one-piece pressure casing, eliminating temperature and pressure constraints imposed by designs using bolted and gasketed casing covers.
- The simple construction reduces the maintenance and inventory costs associated with more complex designs.
- The efficient, lightweight assembly provides lower pipe stress when inline mounted, while offering operating pressures up to 207 bar/3000 psi.

Design Features

- One-piece pressure casing
- Tungsten Carbide (model 10), stellite (model 20), and stellite/stainless steel (model 30) inserts
- NPT, socket weld, butt weld, or military O-ring connection

Performance Capabilities

- Pressure: up to 207 bar/3000 psi maximum

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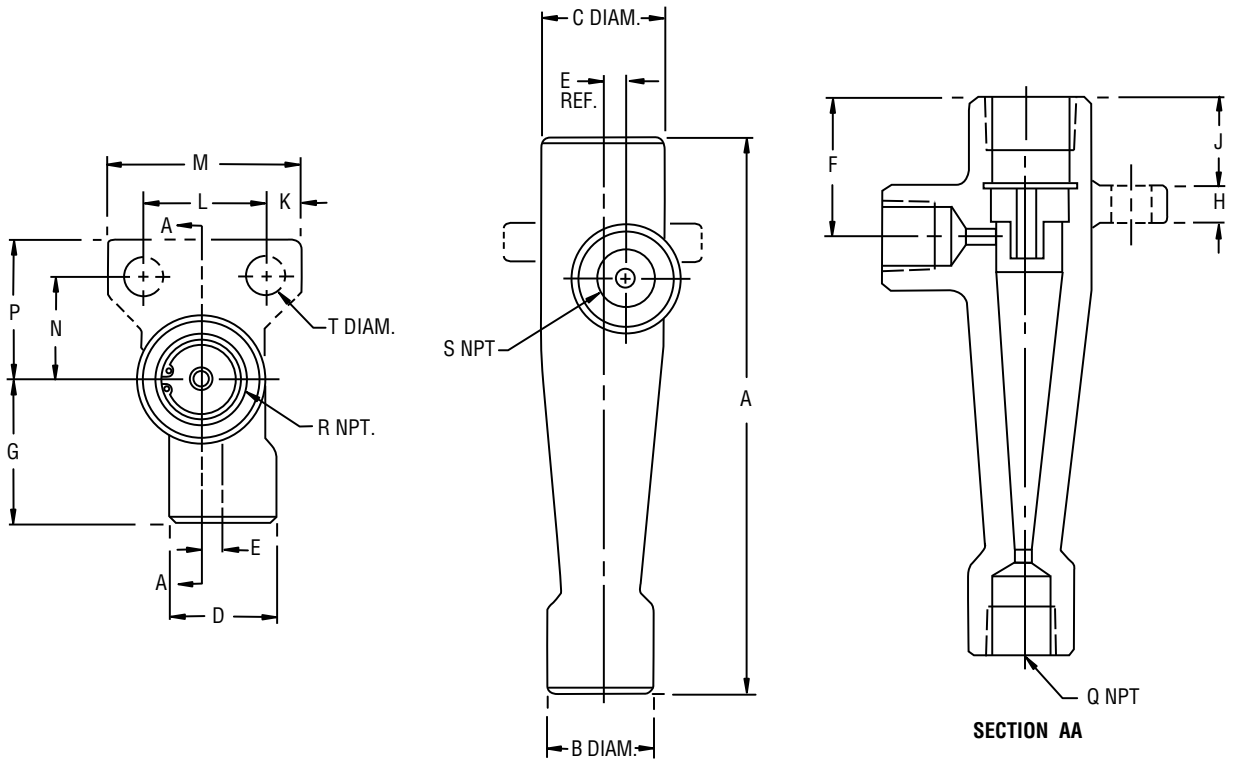
Typical Arrangement/Dimensional Data



Dimensional Data (mm)

	10	20	30
A	139.70	203.2	296.93
B	31.75	38.10	44.45
C	31.75	44.45	69.85
D	31.75	38.10	43.94
E	4.83	7.87	12.70
F	38.10	50.80	79.50
G	39.62	52.32	59.44
H	7.87	12.70	*
J	25.40	31.75	*
K	9.65	12.70	*
L	31.75	44.45	*
M	50.80	69.85	*
N	26.92	38.10	*
P	36.58	50.80	*
Q	12.70	19.05	25.40
R	12.70	25.40	38.10
S	12.70	19.05	25.40
T	11.18	14.22	*

Dimensional Data (inches)

	10	20	30
A	5.50	8.00	11.69
B	1.25	1.50	1.75
C	1.25	1.75	2.75
D	1.25	1.50	1.73
E	0.19	0.31	0.50
F	1.50	2.00	3.13
G	1.56	2.06	2.34
H	0.31	0.50	*
J	1.00	1.25	*
K	0.38	0.50	*
L	1.25	1.75	*
M	2.00	2.75	*
N	1.06	1.50	*
P	1.44	2.00	*
Q	0.50	0.75	1.00
R	0.50	1.00	1.50
S	0.50	0.75	1.00
T	0.44	0.56	*

***NOTE:** Model 30 is manufactured with E dimension located to the opposite side as shown.

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Technical Data

There are several operational factors that will adversely affect the expected performance of your cyclone separator.

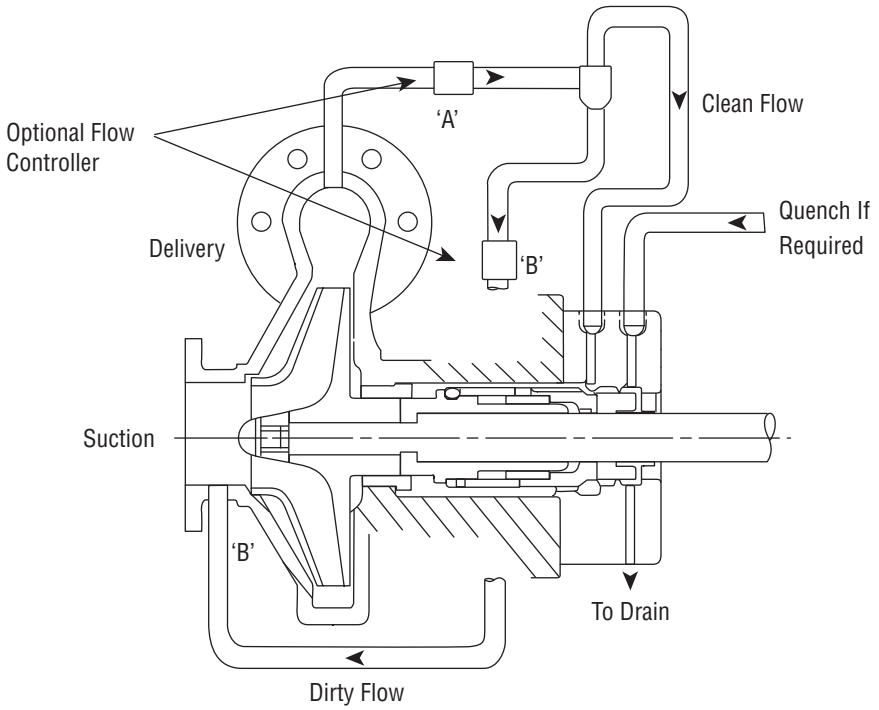
- **Abrasive Particle Size and Specific Gravity**
  A cyclone separator's removal efficiency increases as the particle size increases and as the differential between the liquid and particle's specific gravity increases. The practical lower limit of particle sizes for effective separation is 1 micron. The particle's specific gravity must always be greater than the fluid's.

- **Solids Content**
  The solids content of the pumped fluid should not exceed 10%. Above this threshold, the cyclone separator's capacity may prove inadequate and contamination carryover can occur, unless a multiple-stage separator system is utilized.

- **Fluid Viscosity**
  Fluids with a viscosity at pumping temperature in excess of 20 to 25 centistokes will inhibit the cyclone separator's vortex and thereby reduce separation efficiency.

- **Differential Pressure**
  The difference in pressure between the inlet source and the two outlet return connections must fall within the range shown on the Selection Requirements Chart. Pressure differentials outside this range will cause unpredictable vortex operation, resulting in poor separation.

- **Outlet Pressures**
  The pressures at the two outlet connections should be as close as possible. A difference of more than 10% will result in a measurable biasing of flow to the lower pressure outlet connection and a disruption of normal vortex operation. When in doubt, gauge all pressures prior to installation. Should a differential greater than 10% exist, install a Flow Controller in the Dirty Flow outlet line (position B) as shown in the diagram below. Should technical assistance be required at this point, please contact John Crane.



Materials of Construction

COMPONENTS	MATERIALS
Description	**Standard**
Casings	Stainless Steel Duplex Super Duplex Monel®

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Selection Requirements

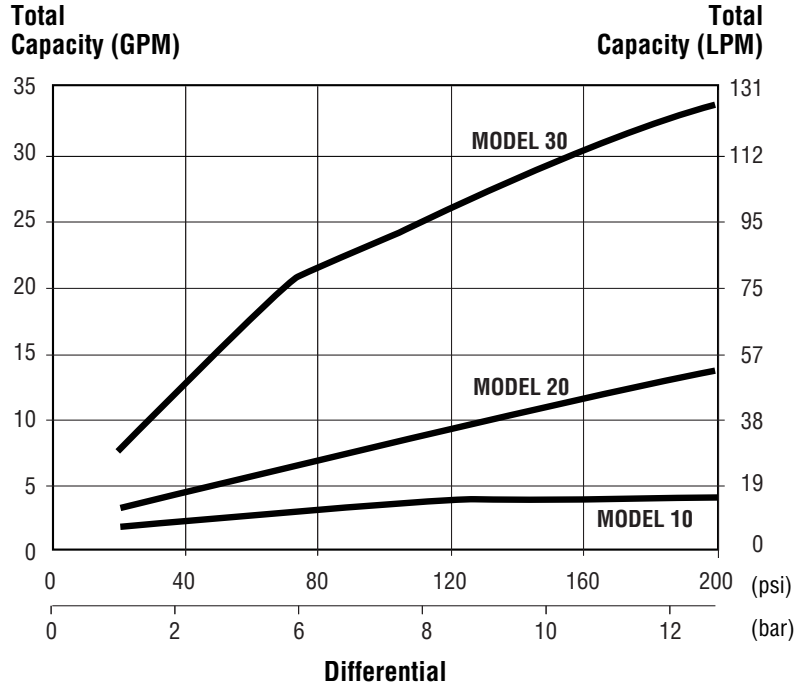
Cyclone separator performance is affected by many factors, but the following procedure will normally be satisfactory for selection requirements. For further guidance, consult John Crane.

- **STEP 1**
  Determine the maximum and minimum acceptable clean circulation flow rates. Reference seal manufacturer's information.
- **STEP 2**
  Establish the required total capacity of the cyclone separator.

  Total Capacity (GPM or LPM) = Clean Flow Rate x 1.4
- **STEP 3**
  Calculate available differential pressure.

  Differential Pressure =
  Pump Discharge Pressure - Stuffing Box Pressure
- **STEP 4**
  On the Selection Requirements Chart below, locate the intersection of the lines corresponding to total capacity and differential pressure. Choose the cyclone separator model with a flow rate greater than the minimum required.
- **STEP 5**
  If the selected separator gives a flow rate greater than the maximum acceptable, a flow controller should be fitted at position A as shown in the diagram on the previous page.
- **STEP 6**
  Specify the model and required materials of construction. 316 Stainless Steel or Monel are standard.

Selection Requirements Chart



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