

## Aggregate Control

### Challenges

Aggregate control faces some unique challenges not found with other material handling applications. Aggregate control components are subject to harsh operating conditions due to often abrasive, heavy and large size product passing through them. These conditions require specialized valves and gates which are designed and constructed to withstand the harsh working environment.

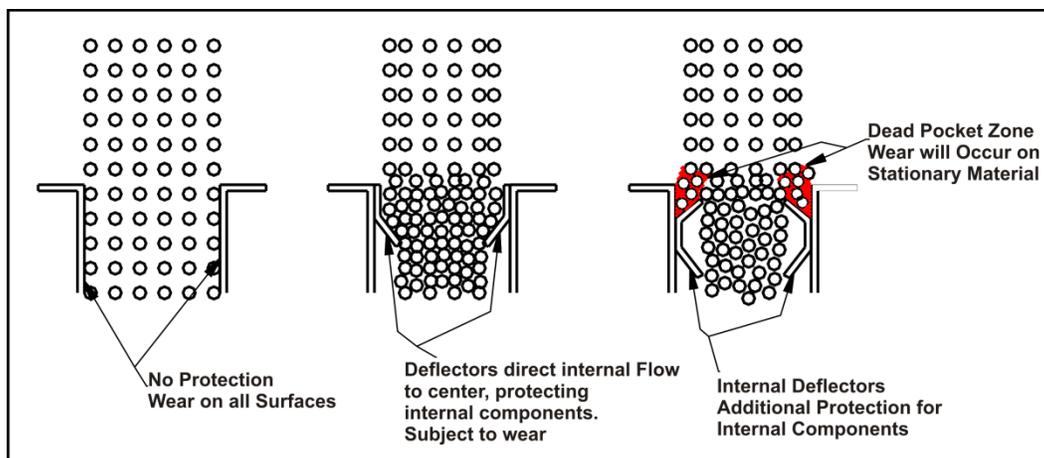
### Typical Applications

Aggregate Control Gates and Valves are typically utilized in situations where a dry, granular, potentially abrasive product with a particle size  $>0.5"$  is being conveyed by gravity, and where cross contamination, product spoilage and dust leakage are not major concerns. Applications such as: Gravel, Concrete, Grain, Animal Feeds, Glass and Metal Recycling and Coal Processing.

### Durability

Heavy gauge Carbon Steel construction is typically utilized throughout the aggregate control valve or gate. In addition to the steel construction, Nylon liners are also employed to provide a replaceable wear liner in certain applications.

Dead Pockets can be incorporated into the design of aggregate control products. Dead pockets are areas which will trap and hold material. This material then forms a contact surface for the product stream. As the moving product contacts the material held in the dead pocket, wear will occur on the dead pocket material and the product stream, rather than on the steel of the valve or diverter. This can substantially increase the life of an aggregate control diverter or gate.



Where the aggregate passing through the control valve or gate is highly abrasive, critical points which will be in direct contact with the material stream (dead pocket plates, Gate Blades, Diverter Buckets etc) can be fabricated from an

Abrasion Resistant Steel. Due to the material cost and fabrication challenges faced when working with Abrasion Resistant Steel, it is only utilized on these critical wear parts and not for complete construction.

## Types

Selection of an Aggregate Control Gate and an Aggregate Diverter Valve is based on the application.

An **Aggregate Control Gate** should be selected when only a single path of material is being controlled, such as a main control on a hopper or chute. Gates can be fully open, fully closed, or used as a metering device when closed/opened partially. When used as a metering device, the Gate blade will be subject to additional wear since it is constantly in the direct path of the flowing material. The blade is usually supported via rollers to ensure that it maintains alignment and it does not become distorted under the weight of the product.

An **Aggregate Diverter** is used when a single stream of product is required to be switched between two separate outlets. Diverters typically only function in one of two modes (directly flow to one of two outlets) and are not typically used to meter the flow. Aggregate Diverters are available in two main configurations: Straight Through and Y. Both configurations are typically designed to avoid becoming clogged or jammed when changing position. The Straight Through configuration provides a main straight through path, with a secondary path at a 30° or 45° angle. This configuration is ideal for situations where the aggregate stream mainly flows in one path (Straight Through), with only intermittent or occasional diversion to the second angled path. Because this configuration is not symmetrical, the flow rate may be slightly different when the stream is diverted to the angled outlet.

A Y configuration has both outlet streams at either 30° or 45° angles to the inlet. This configuration is ideal when the flow is switched frequently or equal flow rates are desired.

## Sizing

Sizing Aggregate Control Gates and Diverters is done in a similar manner to the sizing of other bulk material control equipment which considers the Material Characteristics and the Desired Flow Capacity in order to determine the size and type of the Valve or Gate required for a particular application. As a general rule, the Valve or Gate opening should be approximately 10-12x the average material size or 4-5x the largest expected lump size.

This is only a general rule. As material characteristics and operational conditions can vary greatly, each application may be unique and accurate information should be provided to the supplier or manufacturer, such that the proper Valve or Gate can be supplied to meet the application requirements.

## Connections

Aggregate Control Gates and Diverter Valves are typically built with square flanged inlets and outlets with a variety of bolt patterns. Square to round transitions or other adapters can be applied if required.

## Actuation Options

Valves and Gates can be actuated Manually, Pneumatically, Electrically or Hydraulically. Actuators are matched according to the size of Valve or Gate. Each option may require special mounting considerations and are not generally interchangeable. Choice of actuation will depend on various factors such as speed of actuation required, environmental conditions and available utilities.