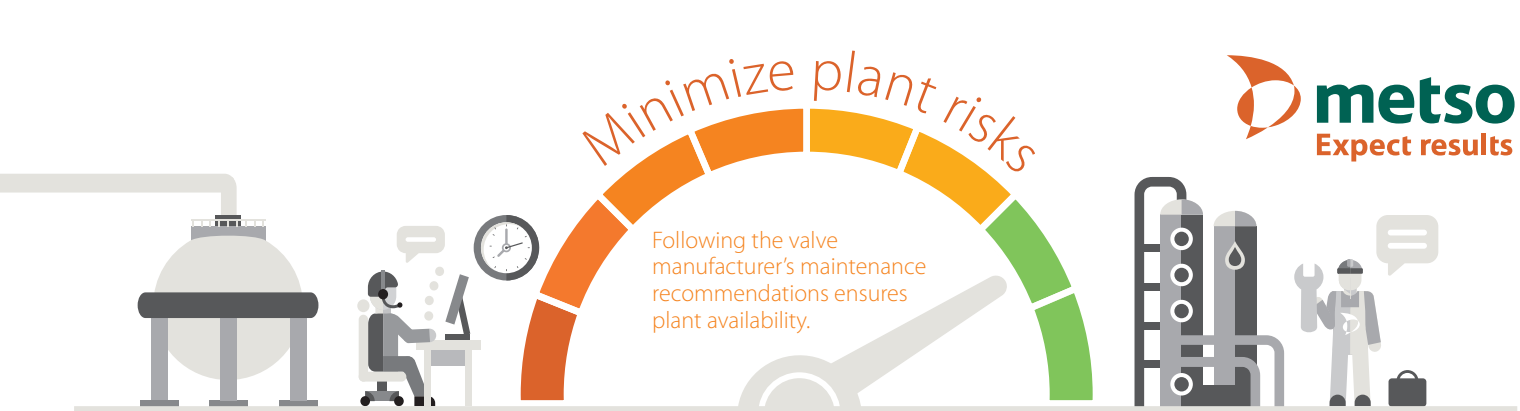

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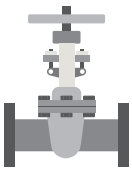
Neles and Jamesbury valve maintenance recommendation

General approach for plantwide maintenance cycles



	Maintenance scope		
	Inspection	**Minor maintenance**	**Major maintenance**
Maintenance intervals*	Every 5 years	Every 10 years	Every 15 years
Maintenance scope with required spare parts	Workshop inspection + spare part set	Workshop inspection + spare part set + seat & bearings	Workshop inspection + spare part set + seat & bearings + trim parts
Varying intervals according to valve condition	New inspection within 5 years if valve in good condition, otherwise according to the maintenance intervals.	If in minor maintenance trim parts are in good condition, only workshop inspection is needed in next 5 years. If trim parts are worn, then major maintenance.	When major maintenance is performed only workshop inspection is needed in next 5 years. If valve is an obsolete model replacement can be considered instead major maintenance.

* The rules are defined for general valve service. It is considered generally accepted good operating practice to operate valves at least once per year to verify they function. For high cycle, fast stroke, corrosive, erosive duty and special applications ask Metso sales for consultancy.

Bearings and sealing elements

Lever arm, bearings and sealing elements

Valve controller components

Instrumentation components

Operational benefits:

- Improved plant availability
- Optimized performance
- Ensured quality
- Improved safety

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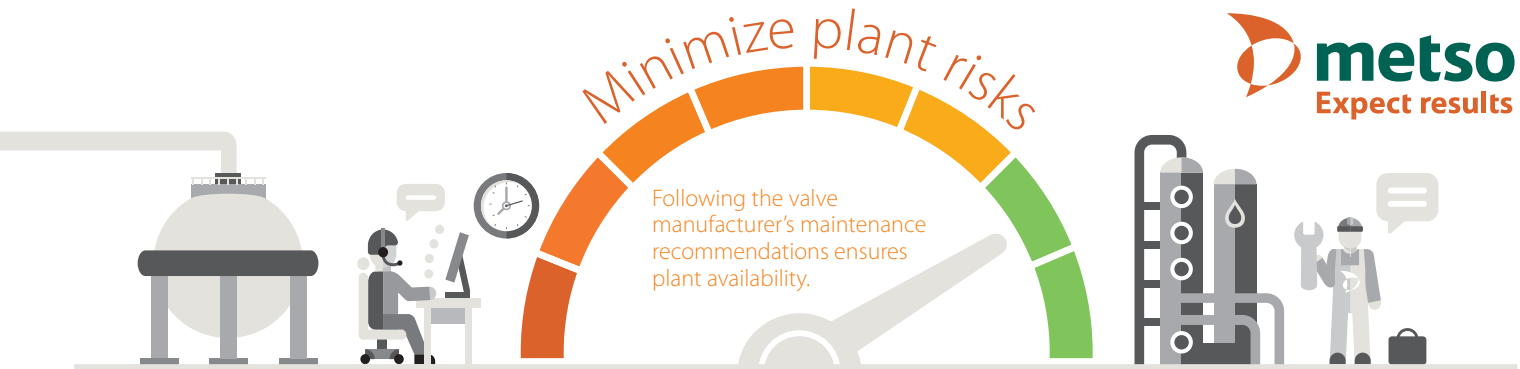

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Rotary actuator maintenance recommendation

General approach for plant wide maintenance cycle

B / B1-series pneumatic cylinder actuator	Maintenance scope	
	Inspection	Maintenance
Maintenance intervals*	Every 5 years	Every 10 years
Maintenance scope with required spare parts	Workshop inspection + spare part set	Workshop inspection + spare part set + linkage assy & cylinder

QP / OPX-series pneumatic diaphragm actuator	Maintenance scope	
	Inspection	Maintenance
Maintenance intervals*	Every 5 years	Every 10 years
Maintenance scope with required spare parts	Workshop inspection + spare part kit A	Workshop inspection + spare part kit B & driver arm

Kit A = diaphragm, guide buttons

Kit B = Kit A & bearings

* The rules are defined for general service. It is considered generally accepted good operating practice to operate actuators at least once per year to verify they function. For high cycle, fast stroke, corrosive, erosive duty and special applications ask Metso sales for consultancy.

Wearing out of devices:

Operational benefits:

- Improved plant availability
- Optimized performance
- Ensured quality
- Improved safety

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