3-STEP MAINTENANCE CONTROL FOR COMPRESSED AIR PIPING SYSTEMS

OPTIMIZATION GUIDE FOR THE MAINTENANCE MANAGER





Compressed air represents about 10% of the total electricity consumption in the industry. A properly planned, optimized compressed air system will be effective and will limit compressed air production and distribution costs. In order to maintain the safety and performance of the piping system, and pneumatic tools and equipment, a routine maintenance control must be done regularly by the compressed air manager.

In addition to this guide, reading the white paper "The Basics of Compressed Air" which outlines the main optimization measures, is strongly recommended.



- "Most facilities can easily save 10-20% of their compressed air energy costs through routine maintenance such as the fixing of air leaks, lowering air pressure, and replacing clogged filters."
- Natural Resources Canada, 2015

Why is it important to perform a maintenance check on the compressed air system?

- > To maintain the efficiency, performance and safety of the compressed air system, and of the pneumatic tools and equipment
- > To limit the costs associated with the production and distribution of compressed air (the fixing of air leaks)
- > To stay energy efficient over the years

Useful Tip

Take care and service all compressed air system equipment in accordance with the manufacturers' specifications. In order to make sure that your compressed air system is energy efficient, do not hesitate to perform checks more frequently than what is initially recommended.



HOW TO PROCEED TO THE MAINTENANCE CONTROL

Use the list of control steps, found in the next few pages, as your working tool. Prior to starting, make sure you follow this procedure to help you in your inspection and regular annual maintenance control.

Prior to proceed to the maintenance control



- Read the checklist in its entirety
- Determine what steps you plan to take in-house
 - and which ones need to be taken by an external expert



Set a date to carry out the checkup



How to proceed to the maintenance control

Check the pressure at the compressor's outlet (see pressure gauge reading)



Check the static pressure at the point of application using a pressure reading tool (see **TOPRING** product 62.015)

If the difference is greater than 10%, it means that there is excessive pressure loss in the system (energy costs and loss of efficiency).



- Carry out the inspection going upstream, from the tool toward the compressor, and use the complementary "Air Leak Report" (See Appendix p.9)
- Order all the material needed for the reparation, such as filtration elements, couplers and plugs

OPTIMIZATION GUIDE FOR THE MAINTENANCE MANAGER

To help you optimize your compressed air installation and, thus, improve the energy efficiency and performance of your pneumatic tools and equipment, here is a 3-step maintenance control. Easily identify the product groups associated with each step of the inspection:



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INSPECTION BETWEEN THE POINT OF APPLICATION AND THE PIPING SYSTEM

Internal	Externa	 Image: A start of the start of	Actions	Notes
			1.1 Leak detection	
			Perform an auditory check to detect leaks at the level of the FRLs, hoses, couplers, tools and equipment, up to the compressed air piping system	
			Use the "Air Leak Report" guide available in Appendix (p.9)	
			1.2 Inspection of the state of wear of the FRLs	
			Check for any noticeable air leak	
			Make sure that the percentage of pressure loss is acceptable	
			That filtering elements are not saturated (the differential pressure indicator is in the green zone)	
			That bowls are in good condition (no cracks, no impurities)	
			That regulators and gauges are functional	
			That the oil level in the lubricators is adequate	
			1.3 Inspection of the state of wear of quick couplers, plugs and fittings	
			Check for any noticeable air leaks	
			Make sure that couplers do not show sign of wear (no sharp edge, no rust)	
			That the connection/disconnection is easy (change for safety couplers)	
			That there is sufficient airflow (if needed, change for a fitting with a higher SCFM)	
			1.4 Inspection of the state of wear of the hoses and reels	
			Identify noticeable air leaks	
			Check the tension of the reels	
			(watch the video "Spring Tension Adjustment" on TOPRING .com)	
			Check the condition of the hoses (no apparent wear or swelling/bubble) — repair if necessary or choose a hose that's better suited to the environment	
			Check the length and diameter of the hoses (if needed, choose a hose with a larger diameter or a shorter one for greater flow)	
			Install anti-hose whip HOSEGUARD safety valves (see series 58)	
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INSPECTION BETWEEN THE POINT OF APPLICATION AND THE PIPING SYSTEM

nternal	External	Actions		Notes
		1.5 Inspection of the state of wear of pneumatic tools Identify noticeable air leaks Look for rust Replace worn out or defective blow guns with safe, quiet or low-consumption blow guns Repair or replace all worn out or faulty tools Check the tool's working pressure (if needed, install an in-line regulator)		
		 1.6 Inspection of the state of wear of automation products (valves, cylinders, push-to-connect fittings, and pneumatic tubings) Identify noticeable air leaks (at the level of the couplers, valves, cylinders, and of the muffle Check the condition of the pneumatic tubings (not cracked) Check the condition of the cylinders (firmly anchored, good rod alignment)) ilers)	
		 1.7 Control of the new compressed air requirements Have new tools and equipment been installed in the past year? Is the capacity of the network and connection lines (including FRLs, hoses, reels and fittin still sufficient? Are there any new air quality requirements? 	ngs)	
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2			INSPECTION OF THE MAIN PIPING SYSTEM	
Internal	External	✓	Actions	Notes
			2.1 Leak detectionPerform an auditory check to detect leaks in the main piping system and drops (couplers, elbows, unions, manifolds)Use the "Air Leak Report" guide available in Appendix (p.9)	
			2.2 Connection between the compressor and the main pipes Make sure that there is a flexible anti-vibration hose between the compressor and the compressed air system	
			 2.3 Configuration of the pipes Prioritize a constant size of piping diameter (to avoid pressure loss due to throttling) Prioritize a closed-loop network (see the introduction to compressed air piping systems at the beginning of group 2 in the TOPRING catalogue) Install ball valves to enable isolating sections of the network (safety Lockout ball valves ensure that air-powered equipment is safe to service) 	
			2.4 Water or rust presence Make sure that there is a condensate drain on each service drop and end of line	

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QUALITY CONTROL OF THE AIR EXITING THE COMPRESSOR (CONDENSATE TREATMENT)

Interna	Externa	√	Actions	Notes
			3.1 Leak detection	
			Perform an auditory check to detect leaks between the compressor	
			and the main piping system	
			Use the "Air Leak Report" guide available in Appendix (p.9)	
			3.2 Inspection of the main filtration system	
			Are there any new air quality requirements?	
			Are the filters equipped with a drainage system and connected to a water/oil separator?	
			Make sure that the filtration elements are not saturated	
			3.3 Inspection of the "zero air loss" automatic drains	
			Make sure that there are "zero air loss" automatic drains installed at the following locations:	
			– Compressor	
			- Water separator	
			— Refrigerant air dryer	
			- Compressed air filters	
			 Compressed air tank 	
			3.4 Inspection of the compressed air filters	
			Check that the filtering elements are in good condition (not saturated)	
			Check that the elements are appropriate for the air quality required (see series 53)	
			0. Elementian of the water/ail concreter	
			3.5 Inspection of the water/oil separator	
			Make sure that all the elements collecting condensates are connected to the separator	
			Check that the element are in good condition (not saturated) and that condensates are properly treated	

 Carried out by:
 Date:
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APPENDIX – AIR LEAK REPORT

	Date leak is repaired												
	Period ned	Shut down (OFF)											
	Repair I Plan	Active (ON)											
(YYYY)	Potential Risks/ Safety												
	E	Low											
(MM)	Seriousness f the Problen	Moderate											
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Date: (DD)	Leak Description												
	Location/ Leak Site												
ut by:	Compressor Room												
Carried o	No												

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APPENDIX – AIR LEAK REPORT

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APPENDIX – AIR LEAK REPORT

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6	High	High	High	High	High	High	High	High	High	High	High	High
Leak Description												
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WE CAN HELP YOU WITH YOUR COMPRESSED AIR PIPING SYSTEM

For technical assistance, please contact a technical advisor by calling 1 800 263-8677 or emailing solutions@topring.ca

