

## Annex IV Safety Procedures and Report of The Commissioning Test

Safety procedures and report of the commissioning test shall comply with the following requirements:

1. Safety procedures and report of the commissioning test shall comply with requirements of CNS14490 or ISO 10218, and at least include the following:

Phase	Items for Commissioning test
Before applying power	The robot has been properly mechanically mounted and is stable.
	The electrical connections are correct and the power (i.e. voltage, frequency, interference levels) is within the specified limits.
	The proper electrical earth is provided.
	Over-current protection is provided.
	The safety-related parts of the control system are properly installed.
	The other utilities (e.g. water, air, gas) are properly connected and within specified limits.
	The peripheral equipment including interlocks is properly connected.
	The limiting devices that establish the restricted space (when utilized) are installed.
	The appropriate safeguarding means are applied.
	The physical environment is as specified (e.g. lighting and noise levels, temperature, humidity, atmospheric contaminants, vibration, electromagnetic radiation).
	The proper version of all programmes – normal control and safety-related – have been validated and are the versions that are installed.
	If necessary, recommendations about protective measures which have to be taken by the user. (e.g. additional or interim safeguards, safety distances, safety signs and signals)
During applying power	All personnel have withdrawn from the range of motion before the powering up.
After applying power	The start, stop and mode selection (including the key lock switches) control devices function as intended.
	Emergency stop and protective stop (where included) circuits and devices are functional.

	It is possible to disconnect and isolate the external power sources.
	Each axis moves and is restricted as intended.
	The teach and playback capabilities function correctly.
	Environmental conditions are considered for compatibility (e.g. explosion, corrosiveness, humidity, dust, temperature, electromagnetic, interference (EMI), radio frequency interference (RFI) and electrostatic discharge (ESD)).
	All safeguards, protective devices, enabling devices, and interlocks function as intended.
	All other safeguarding is in place (e.g. barriers, warning devices).
	In manual mode, the robot operates properly and can handle the product or workpiece.
	In automatic (normal) operation, the robot operates properly and can perform the intended task at the rated speed and load.

2. Any repeatedly regulated provision between the aforesaid Items and those (specified in ISO 10218-2 or any equivalent standards) of the Safety Certification Report requires no re-test.
3. The commissioning test shall be conducted by the technical staff of original manufacturer or qualified personnel recognized by the original manufacturer (certificates are required), and all testing shall be photographed and filmed for evidence.