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Suppose the finite group G acts faithfully on some compact non-orientable surface S . Under what conditions does this action extend to a faithful action of some larger group on the same surface? This question will be considered, with particular attention to the case where the group G is cyclic. If such a cyclic group action is realised by means of a non-maximal NEC signature, then the action always extends, but in some other cases, the group G can be shown to be the full automorphism group of S . We can also find, for example, the largest cyclic group that is the full automorphism group of such a surface of given algebraic genus g , and the smallest algebraic genus of a non-orientable surface on which a given cyclic group C_n acts as the full automorphism group, or indeed the entire genus spectrum of such actions of C_n . (Received August 18, 2009)