

1.0 PURPOSE

An approval is normally granted for a machine covering all components receiving power from the trailing cable of the machine. The trailing cable therefore can be sized accordingly. With a distribution system, it is not always known at the time of approval, exactly what equipment will be connected to it. This prevents determining if the trailing cable and feed-through cables are sized correctly for the loads.

The purpose of these approval criteria for distribution systems is to take into account long cable runs and unknown loads. These criteria are in addition to the applicable requirements in Title 30 Code of Federal Regulations (30 CFR), Part 18.

2.0 SCOPE

These criteria apply to all distribution systems approved under 30 CFR, Part 18.

3.0 REFERENCES

30 CFR, Part 18.

4.0 DEFINITIONS

Distribution System—Distribution systems receive power from a power center through one or more trailing cable(s) and supply power to mining equipment through branch circuits. A distribution system can consist of one distribution box supplying power to branch circuits or to another distribution box(es) which, in turn, supplies power to branch circuits. An example of a distribution system is a trailing cable supplying power to a distribution box at the headgate of a longwall, which supplies power through a feed-through cable to another distribution box at the tailgate of the longwall. The second distribution box supplies power to approved pumps, drills, loading machines, etc. This system is illustrated in Figure 1. Inherent in the design are long cable runs and reduced short-circuit currents. Trailing cable lengths are still limited by 30 CFR, Part 18, Table 9, but feed-through cables are not. Distribution boxes may contain power transformers.

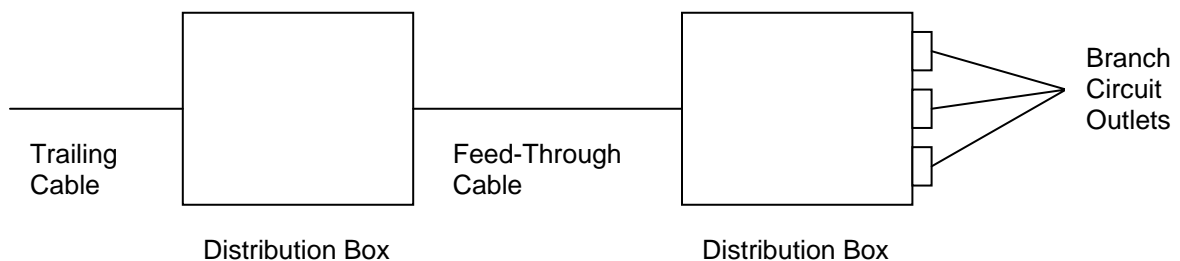


Figure 1

5.0 CRITERIA

5.1. Short-Circuit Protection

Short-circuit protection shall be provided for each branch circuit connected to a distribution box in the system. A warning tag shall be affixed to each distribution box stating "Warning, the minimum available phase-to-phase short-circuit current at the output of this distribution box is _____ amperes based on a No. _____, _____ foot long trailing cable and will be reduced at the end of any cable connected to this distribution box. The short-circuit protective device protecting a branch circuit must be set at no more than 70 percent of the minimum phase-to-phase short-circuit current available at the load end of the branch circuit or at the next short-circuit protective device." An alternative to the warning plate is to calculate circuit breaker settings for all specified lengths and sizes of cables which can be connected to the distribution box and place this information on the wiring diagram.

5.2. Current Carrying Capacity

The current carrying capacity of each lead outlet or receptacle must be compatible with the short-circuit protective device's continuous current rating. Each lead outlet or receptacle shall be plainly and permanently marked to indicate its current carrying capacity and voltage. The current carrying capacity of a lead outlet is the ampacity of the wire to the lead outlet.

5.3. Strain Relief

Provision shall be made to relieve mechanical strain on all connections to and from distribution boxes by the use of insulated clamps.

5.4. Overload Protection

Thermal overload protection shall be provided for the trailing cable and any feed-through cables in at least two phases such that actuation of a device in one phase will cause the opening of all three phases. Overloads shall be set at no more than the cable's ampacity rating based on a 20°C ambient temperature.

5.5. Ground Wire Monitoring

In addition to the trailing cable, ground wire monitoring shall be provided for any cables between distribution boxes (feed-through cables).